# Lecture 5a RELOCE
Interregional Migration

Aims:
Examine the simple classical theory of regional labour migration
Examine the evidence from recent migration trends and see what happens when some of the classical assumptions are relaxed.
Examine alternative theories of labour migration
Examine what happens to migration in periods of recession and try to answer the question of whether or not migration is an equilibrating influence.

Outcomes:
You should have a better understanding of regional labour migration
You should be able to understand the main and alternative theories of labour migration
To be aware of some of the recent evidence of migration between UK regions
To understand how migration impacts on important economic events

The Classical Model (Disequilibrium model in McCann)
Factor flows are important in defining the health of a region, neo-classical theory suggest that capital will flow to the region offering the highest rate of return and labour will flow to the region offering the highest wages. The reality is slightly less simplistic. Of the two, labour mobility is seen to be the more complex process and has attracted much more research.
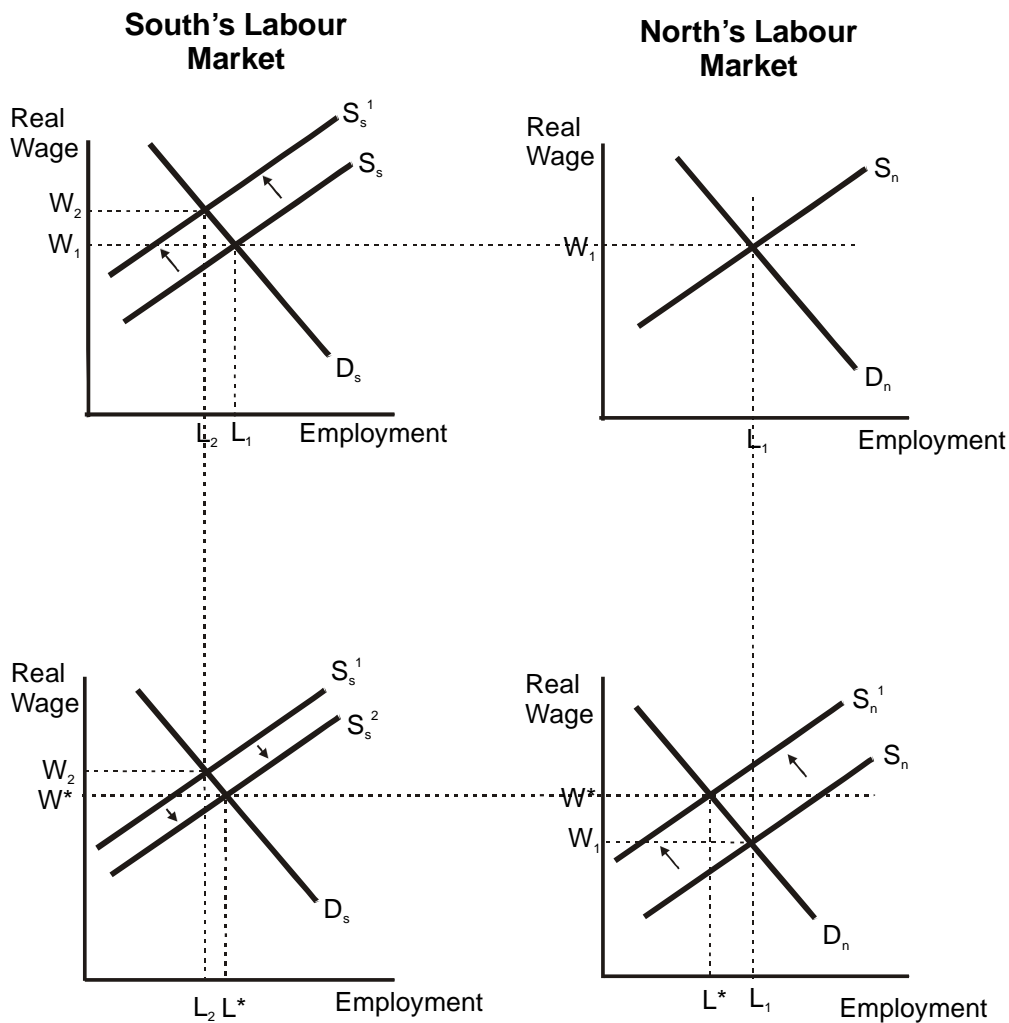
The classical model of factor migration provides a start-point and although it is very basic and simplistic the model provides a useful framework based around a set of restrictive assumptions:
a)   Perfect competition exists in all markets.
b)   Constant Returns to scale
c)   No barriers to migration (e.g. factor migration is costless)
d)   Perfectly flexible factor prices
e)   Homogeneous factors of production
f)   Complete information about factor returns in all regions

The model consists of two regions (North and South) producing a single good using the same technology with an identical and immobile capital stock. Initially the same demand and supply conditions exist in each region - both regions have the same real wage rate of W_1.

If there is a decrease in the labour supply of the South the labour supply curve shifts inwards to S_s^1 leading to an increase in the real wage in the south to W_2. Given perfect information and no barriers or costs associated with migration, workers in the North respond to the real wage differential (W_2:W_1) by moving to the South, this pushes labour supply curve outwards in the South to S_s^2 and moves the North's supply curve inwards to S_n^1 the new real wage level settles out to W^* in both regions and there is no incentive for further migration.

The Classical Model has been built upon extremely restrictive assumptions, so how well does it predict recent migration trends in Britain.

Recent trends in migration between British regions

Armstrong and Taylor use total population change figures, split between natural change (births and deaths) and other factors (including migration) to suggest that the classical theory appears to explain change only to a limited degree. They show that the north, north west, Yorkshire & Humberside and Scotland have consistently suffered out-migration over a 30 year period but in the West Midlands, South East and Wales the picture has been more patchy with periods of both in and out-migration. The figure below shows cumulative net flows for regions over the 90s. Only three regions had consistent out-migration, London, North West and West Midlands; five had constant in-migration, South East, South West, East, East Midlands and Wales.
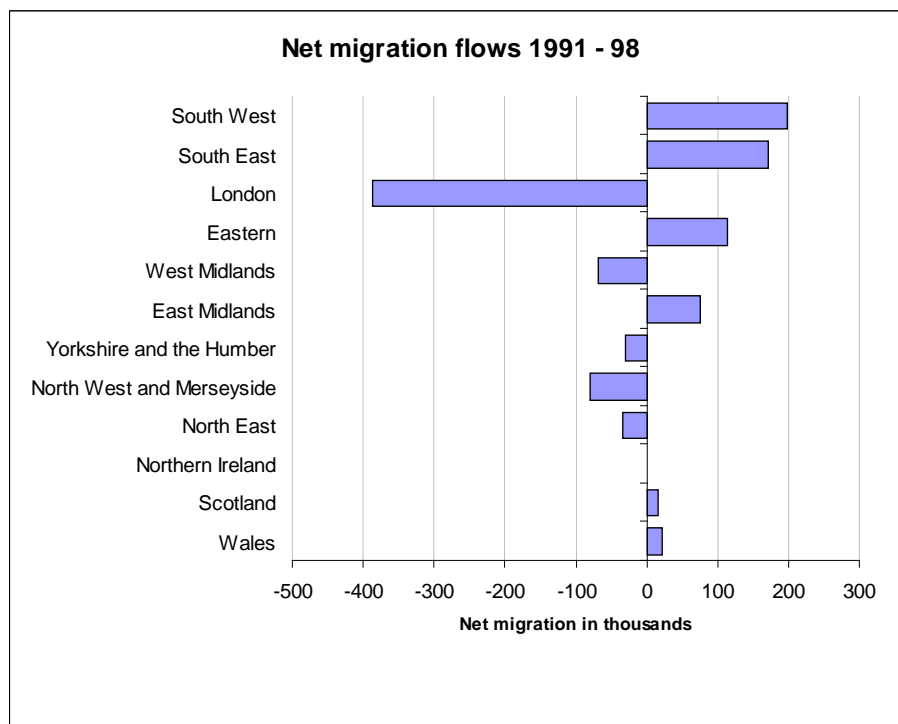
Indeed A&T demonstrate that metropolitan areas, cities and industrial towns have all experienced out-migration over the 10 year period 1981 to 1990 whilst new towns, resort and coastal areas, semi-rural areas and the remoter rural areas have all experienced net in-migration. Recent snapshot data (1998/99) reveals that out of 376 local authority areas in England and Wales the top 10% of out-migration authorities contained 20 London Boroughs, 4 industrial cities from West Midlands, Yorkshire, and the North West, 3 from the North East and 2 from the East Midlands and only one from the South East (Slough). On the other side of the coin, 14 of the highest in migration authorities were in the South East, 10 in the East and 5 in the South West and London some of the highest levels of in migration were in Chichester, IOW, Ashford and South Gloucestershire.

Other data referring only to net migration of working age males between 1960 and 1991 (see Table 9.1) suggests that the pattern doesn't exactly fit in with Classic Model. Only four regions have consistent patterns over the time period (one out-migration and three in-migration) the aggregated Northern regions and the conurbations however show a consistent pattern.

Table 9.1 Net migration of working age males between regions of Great Britain: 1960-91[1]

	1960-61	1965-66	1970-71	1975-76	1980-81	1985-86	1990-91
Northern	-4.4	-0.5	-0.5	1.1	-2.6	-2.3	0.8
Yorkshire & Humberside	-2.2	0.7	-5.3	-2.9	-3.5	-4.9	-1.2
North West	-1.7	-0.5	-4.1	-4.7	-8.1	-7.5	-2
East Midlands	**3**	**4.4**	**2.6**	**3**	**2.7**	**4.6**	**1.5**
West Midlands	2.2	-0.6	-2.7	-5.3	-4.4	-4.6	-1.5
East Anglia	**0.6**	**3.4**	**6.2**	**6**	**3.8**	**7.2**	**3.8**
South East	9.2	-5.2	0.3	-7.7	7.4	-0.6	-10.6
South West	**5.1**	**5.3**	**8.4**	**8.2**	**7.2**	**13**	**6.6**
Wales	-1.9	-0.3	0.1	1.7	-0.7	1	0.5
Scotland	-9.7	-6.7	-5.1	0.5	-1.9	-5.9	2
Peripheral Regions[2]	-17.9	-7.9	-17.5	-9.5	-21.1	-24.2	-1.3
Conurbation Regions[3]	7.5	-5.6	-11.8	-20.6	-8.6	-17.6	-15.3

Source: Gordon and Molho (1998), based on the Census and NHSCR.
Notes: 1. Figures are in thousands.
2. Consists of Northern, North West, Yorkshire & Humberside, Wales and Scotland.
3. Consists of South East, East Midlands, North West and Yorkshire & Humberside.

Gross flows show a much more complex picture of migration and demonstrate one of the major flaws in the Classical Model. There are quite substantial flows into regions that are economically depressed. It is clear that gross migration greatly exceeds net migration, and the net migration figures hide the fact that regions with a net gain in population are also significant sources of out-migration. For instance, the gross inflow for the South East in 1997 was 230,000 whilst 206,000 flowed outwards, however, the net figure was only +24,000 (See Table 9.2 below). Whilst it might seem strange that the North East exports 5,000 people to the South East and gets 4,000 back in return this can be explained by a variety of factors:

Table 9.2 Interregional movements: 1997

Destination	Region of Origin												Gross inflow
	NE	NW	YH	EM	WM	E	L	SE	SW	W	S	NI	
North East	.	6	8	3	2	3	4	4	2	1	4	1	39
North West	7	.	19	10	13	8	11	13	8	9	8	2	107
Yorkshire and the Humber	9	19	.	16	8	8	8	10	6	3	5	1	93
East Midlands	4	11	18	.	16	16	10	17	8	3	4	1	108
West Midlands	2	13	8	13	.	8	10	14	13	8	3	1	93
East	3	8	8	14	8	.	57	28	10	4	5	1	145
London	5	14	10	10	12	31	.	55	17	6	8	1	167
South East	5	14	11	15	15	29	87	.	35	8	9	1	230
South West	3	11	7	9	17	13	22	46	.	10	5	1	144
Wales	1	11	3	4	10	4	5	9	9	.	2	-	59
Scotland	5	8	6	4	3	5	7	9	4	2	.	3	55
Northern Ireland	-	1	1	-	1	1	2	1	1	-	2	.	10
Gross outflow	45	117	100	97	104	125	222	206	112	54	53	13	
Net flow	**-6**	**-10**	**-7**	**11**	**-11**	**20**	**-55**	**24**	**32**	**5**	**6**	**-3**	

Source: Office for National Statistics; General Register Office for Scotland; Northern Ireland Statistics and Research Agency
Note: Figures are in thousands and are based on patients re-registering with NHS doctors in other parts of Great Britain.

There are a number of reasons for perverse migration:

1. Labour is not homogeneous and the migration data includes workers with different skills.
2. Migration data also includes those not in the labour market.
3. Low-wage regions may be high-wage locations for particular industry sectors.
4. A substantial number are returning migrants moving back to their region of origin.
5. Some move for individual advancement, whilst others move as part of a career plan or because of company transfer policies (companies may move key workers around different plants).

The picture gets even more complicated when data for district authority areas is analysed. Data from 1998/99 shows that all regions have authorities that experienced net losses in working age population over the period. These range from 64% in London to 4% in the Southwest, in the Southeast almost half of all districts suffered net out migration in particular those on the outer reaches of London such as Wokingham, Wycombe and Windsor and Maidenhead UA. The largest gainers were Brighton and Hove, Milton Keynes and Arun.

Table 9.3 Inter district movements by working age residents 1998/99

	Districts	Net out migration	%		Districts	Net out migration	%
London	33	21	64%	South East	67	30	45%
North West	43	25	58%	West Midlands	34	15	44%
Wales	22	11	50%	East Midlands	40	11	28%
North East	23	11	48%	East	48	13	27%
Yorkshire and the Humber	21	10	48%	South West	45	2	4%
Average	376	149	48%				

Source: ONS Statbase 2000, Clark 2000
Migration of working age residents only

Armstrong and Taylor suggest that the classical model of migration is inadequate at explaining interregional migration flows.

Determinants of migration: relaxing the assumptions of the classical model

Given that the classical model fails to explain effectively interregional migration flows, it is possible to relax some of the assumptions in the Classical Model and look at alternatives. These include: the Human Capital model (which examines the role of lifetime earnings) and Job Search models, which differentiate between autonomous (those pursuing a career move), speculative (no job offer) and contracted (those with a job to go to) migrants.

The main deficiencies of the classical model are:
- The fact that it doesn't allow for regional differences in employment opportunities. It is argued that regional unemployment (or the threat of it) is more likely to induce migration than the differential regional wage rate. Although it has to be recognised that despite the fact that the unemployed are more likely (on average) to move than the employed, (Pissarides and Wadsworth, 1989), the sheer size of the employed sector means that flows are dominated by those with a job. Armstrong and Taylor use data from Northern Ireland (1988) to demonstrate the point (87% of Catholics and 79% of Protestants who left Northern Ireland, were previously in employment only 3% and 2% respectively were previously unemployed).

- Wages are not perfectly flexible they are "sticky in a downward direction. There is the possibility that there can be simultaneously excess demand (for labour) in one region and excess supply (unemployment) in another. This, is because of collective bargaining and firms isolation from the "regional wage", which results in poor wage information flowing to the potential migrant.

- There are also significant costs associated with migrating. These can be divided into two types; pecuniary (financial outlay) and non-pecuniary ('psychic' costs). Both increase with distance. Grant and Vanderkamp (1976) found that Canadian migrants would require considerably more income than the pecuniary marginal cost of migrating to make them move the extra mile. Thus suggesting that non-pecuniary costs are high or that lack of information is a serious barrier to migration. More recent evidence suggests that long distance commuting might now be a substitute for migration, particularly in regions close to a capital.

Table 9.4 - Selected characteristics of long-distance weekly commuters in the UK

Characteristic	Group	% of commuters
Gender	Male	77.7
	Female	22.3
Full-time or part-time	Full-time	86.8
	Part-time	13.2
Permanent or temporary job	Permanent	87.9
	Non-permanent	12.1
Major Occupational group	Managerial and administrative	21.8
	Professional	15.9
	Craft & related	11.2
	Clerical and secretarial	7.1
	Sales occupations	3.8
Job-related move in last year	Take up new job	1.3
	Job relocated	1.7
	Some other reason	9.0
	Not moved	88.0

Source: Green et al (1999)

- Migration is also selective. Higher income households will be better able to meet the financial costs and are thus more likely to move. Evidence shows that migrants are more likely to move between prosperous regions than from depressed to prosperous regions. Table 9.2 shows that the majority of people moving into the Eastern, London, South Eastern and South Western regions originate from the other three regions (figures are 66%, 62% 66% and 56% respectively). More prosperous regions are likely to have a stock of people who have moved before are therefore more likely to move again (facing lower non-pecuniary cost). In addition, those who have moved before are better placed to acquire the necessary information, which reduces the cost of information gathering.

- Most moves by migrant are over relatively short distances, Armstrong and Taylor suggest that 85% of all moves in the UK occur **within** the same region, thus suggesting that the 1.25m gross interregional moves in 1996 (Table 9.2) were but the tip of the iceberg. Table 9.5 which uses data from the 1991 Population Census shows that almost 4.7m people in Great Britain moved address in the 12 months prior to the Census. It also shows that 56% moved a distance of 4km or less and only 14% moved over 80km, so that most moves are likely to be intra-regional rather than inter-regional.

Table 9.5 - Distance of migrants' moves in GB 1990-91

Distance of move	Number of Migrants	% of total migrants
0-4 km	2,622,516	55.94
5-9 km	595,451	12.7
10-19 km	395,973	8.45
20-49 km	295,474	6.3
50-79 km	138,153	2.95
80 km and over	640,613	13.66
All distances	4,688,180	100

Source: 1991 Census of Population
Note: Refers to residents with a different address within Great Britain one year before the Census.

Armstrong and Taylor also cover two other determinants of migration, the institutional framework and the personal and family characteristics of migrants. The former includes the promotional policies of firms, those institutions impacting on the housing market (financial institutions and local authorities), recruitment agencies and job centres, and government through its taxation and benefit policies. Personal and family characteristics that are important include; family ties, dual jobs, divorce, education and retirement. Younger people are more likely to migrate as are those more highly educated, and future migrant are likely to follow waves of earlier migrants.

In a 1989 article in the Economic Journal Pissarides and Wadsworth use regressions of LFS data to predict the type of individual most likely to migrate. They found that:
- The likelihood of migration declines with age and rises with educational qualifications
- Females heading households are less likely to migrate than married or single males but male HoH with a working wife are less likely to move than those with a non-working wife.

- Working in manufacturing, energy and construction has a negative effect on migration whereas employment in services has a positive effect
- Being a council tenant has a strong negative effect (private rented tenants also exhibit a negative sign but the magnitude is significantly smaller) whereas owner-occupiers are the most mobile group.
- Unemployed people are more likely to migrate than those in employment.

These results are generally confirmed by Antolin and Bover (1997) in a study of inter regional migration in Spain using data from the late 80s and early 90s, where very similar individual characteristics were found.

Alternative Theories of interregional migration

Quite clearly migration is complex and alternative models have been developed to try to improve upon the classical model, however all of these also have disadvantages.

The Human Capital Approach (Endogenous human-capital model McCann)

The migrant is assumed to respond to higher lifetime earnings rather than just current wage rates. But the model recognises that the sooner higher earnings can be expected the more attractive will be the move. Thus lifetime earnings are expressed as a present value but using a discount rate to incorporate the migrants time preference. This is written in equation form as:

$$R_{ij} \sum_{t=1}^{T} \frac{y_{jt} - y_{it}}{(1+d)^t}$$

Where

R_{ij} = gross present value of the difference in lifetime earnings expected to result from migrating from region i to region j

T = number of years of working life remaining

$1/(1+d)_t$ = discount factor where d is the discount rate

yjt = expected earnings of the migrant in region j (destination) in year t

yit = expected earnings of the migrant on region i (origin) in year t

The model can be extended to incorporate risk and uncertainty. The advantage of the model is that it can incorporate all of the costs and benefits of migration, because potential migrants are assumed to weigh up all of the costs and benefits of migration, avoiding the pitfall of assuming away the costs of migration. The NPV of moving from one region to another is expressed as:

$$PV_{ij} = R_{ij} - C_{ij}$$

PV_{ij} = net present value of migrating from region i to region j

R_{ij} = gross present value of the time stream of expected benefits of migration from region i to region j

C_{ij} = gross present value of expected costs.

If there is a positive NPV then discounted benefits > discounted costs and migration is worthwhile and will be under-taken, further it is predicted that the region offering the highest PV will be selected.

The model is based on more realistic assumptions and thus the Human Capital model can explain the range of migration options better than Classical Model. Perverse migration from (prosperous to depressed regions) is explained because some migrants may actually be moving to a higher wage job whilst others might place a high premium on the non-pecuniary benefits (quality of life).

Armstrong and Taylor suggest that the Human Capital model does have its problems. Firstly it might be too successful in theory at predicting migration, but is less successful in practice as only a selection of the variables are likely to be used by the modeller. Secondly it doesn't deal with the process whereby individuals acquire information.

Job Search Theory
Search theory is based on the notion that the migrant chooses his/her eventual destination from a manageable selection of destinations. By treating the process as a series of sequential decisions from a given set of opportunities, migration becomes the outcome of a series of search decisions.
This two-stage process is:
1. To stay or leave the region of origin
2. Which region to choose if the individual does leave (this is the more complex of the two stages).

Probability of individual h migrating from origin region i to destination region j is given by

$$P_{hij} = A\big/B$$

Where A   is the pulling power of region j (this is a function of the migrants personal characteristics and the characteristics of region j including employment opportunities)
And B   is the countervailing pull of all other possible destination regions (this is also a function of the migrants personal characteristics and the characteristics of region itself).

Though the models are mathematically complex, they are more useful to researchers. It is possible to incorporate the migrant's reservation wage as well as the employer's hiring behaviour. Also of crucial importance is the distinction between Speculative (no job to go to) and Contracted (job waiting) migration. The model also recognises the existence of response lags (the lag in the flow of information from the destination region to the migrant, the time taken for migrants to form expectations based on the information and adjustment lags in their reaction to the expectations they have formed).

Gravity Models
These are fairly successful models developed by geographers. These models take the general form

$$M_{ij} = f\left(A_i, B_j, D_{ij}\right)$$

Where
Mij   = gross migration from region i to region j
Ai   = origin specific determinants of migration flows (e.g. population level in region of origin)
Bj   = destination specific determinants of migration flows (e.g. population level in the destination region)
F(Dij)   = distance decay function reflecting the costs of migrating from i to j (including gathering information)

Whilst incorporating less information about the individual migrant Gravity models are useful in explaining aggregate flows of migrants. A distinct advantage is that it can be extended to incorporate economic variables such as relative unemployment and wage rates. An extension in this form becomes:

$$M_{ij} = f\left(P_i, P_j, D_{ij}, U_j - U_i, W_j - W_i\right)$$

Where   P = Population
            D = Economic distance (Transport costs)
            U = Unemployment
            W = Wage rates

Migration during periods of recession
Gross migration flows are substantially reduced during recessions, as (in general) are net flows (net flows were higher in London during the depth of the 1990-93 recession but gross flows for the same period were also substantially lower) (See Table 9.6 for details).

Table 9.6 Gross inflows and outflows of migrants from selected regions of GB[1]: 1981-96

Inward migration	1981	1986	1991	1996
Eastern (E)	**121**	145	**122**	139
London (L)	**155**	183	**149**	168
South East (SE)	**202**	243	**198**	228
South West (SW)	**108**	149	**121**	139

Outward migration	1981	1986	1991	1996
North East (NE)	**39**	46	**41**	45
North West (NW)	**88**	101	**94**	103
Merseyside (M)	**34**	37	**29**	31
Yorkshire & Humberside (YH)	**73**	91	**85**	98
Wales (W)	**42**	50	**47**	53

Source: Office for National Statistics, General Register Office for Scotland and National Health Service Central Register.
Note 1. Figures are in thousands based on patients re-registering with NHS doctors in other parts of GB

A number of possible reasons for the fall in migration during recessions are put forward:
- The human capital model suggests that there will be lower expected returns from migration including the probability of getting a job and lower expected earnings.
- Greater general economic uncertainty particularly the risk of being made redundant in the destination region and the increased incidence of migrants returning back to their region of origin.
- Liquidity constraints, Armstrong and Taylor suggest that housing market conditions may reinforce the depressed jobs market by making it harder for migrants to dispose of property and acquire new property in the destination region.

Is migration equilibrating?

The fact is that there has been a persistence of regional unemployment and wage differentials, although it is suggested that unemployment rates would have been higher without out-migration.

At the individual level, migration tends to be beneficial, but sometimes losses in the first year, together with the psychic costs can result in migrant returning to his/her region of origin.

With free movement of capital, factor movements tend to reinforce each other in equalising differences in factor prices. But firms don't always move from high to low wage regions and migration of people away from a depressed region also reduces demand and investment in that region.

Hughes and McCormick (1994) find little evidence of a conventional impact of regional unemployment differentials on destination choice. Regional wage differentials do seem to have a conventional effect. Therefore they suggest that policies that rely on unemployment for the reallocation of labour between the regions are likely to be unsuccessful, whereas policies designed to enhance regional wage flexibility are likely to be more successful.

There are also a number of undesirable side effects of the migration process;
- Depressed regions are hit by selective migration (the more skilled and transferable workers) which makes it harder for them to attract capital investment. At the same time prosperous regions are improving their skills base and capital stock.
- Multiplier effects expand the output, employment and incomes of prosperous regions whilst further contracting those in depressed regions, in the extreme in-migration may push up the real wage in the receiver region because of the multiplier effect rather than dampening it down as predicted by the classical model.
- Capital may also flow into the prosperous region rather than as the classical model predicts into the depressed regions, this is because dynamic prosperous regions often offer a better return on investment with scale and agglomeration economies. In addition firms are more likely to plough back profits into existing plant rather than search for more profitable locations elsewhere and they are more likely to respond to "push" rather than "pull" factors.
- Unemployment is not always alleviated by migration because those most likely to be unemployed are those least likely to migrate

Overall evidence suggests that whilst migration may have some equilibrating effects on unemployment, labour market adjustment is very sluggish and migration is highly selective and sensitive to national recessions.

Conclusion:

Migration does not conform to the classical model, the evidence is clear that workers move into as well as out of depressed regions.

It is therefore the case that other factors are at play as well as real wage differentials.

The other major problem with the classical model is that the labour market is particularly sluggish.

Alternative models are better at predicting regional migration because they take more factors into account in what is essentially a complex process.

Migration is only partly equilibrating mainly because of the sluggish nature of the labour market and the evidence suggests that in recessions as job opportunities dry up so migration also falls substantially, therefore failing to reduce disparities and in some cases exacerbating them. It is only in long periods of boom that migration may start to erode regional employment disparities.

Some further recommended reading

Gordon, 1. and Molho, 1. (1998), "A multi-stream analysis of the changing pattern of interregional migration in Great Britain, 1960-9 1 ", Regional Studies, 32, 3 09-3 23.

Hughes, G. and McCormick, B. (1994), "Did migration in the 1980s narrow the North-South divide?", Economica, 61, 509-27.

Jackman, R and Savouri, S. (1992), "Regional migration in Britain: An analysis of gross flows using NHS central register data", Economic Journal, 102, 1433-50.

Molho, 1. (1986), "Theories of migration", Scottish Journal of Political Economy, 33, 396-419.

Pissarides, C. and Wadsworth, J. (1989), "Unemployment and the inter-regional migration of labour", Economic Journal, 99, 739-55.

McCann, P (2001) Urban and Regional Economics, Oxford University Press pp191-205

Next Lecture Regional Unemployment