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Flexible employment and cross-regional adjustment

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Abstract

Employment flexibility is commonly associated to greater labour mobility and thus faster cross-regional adjustments. The literature however offers very little hard evidence on this and quite limited theoretical guidance. This paper examines empirically the relationship between employment flexibility and cross-regional adjustment (migration) at the regional and local levels in the UK. Employment flexibility is associated to higher labour mobility (but only at a rather localised scale) and at the same time seems to reduce the responsiveness of migration to unemployment. This suggest that rising flexibility may be linked to higher persistence in spatial disparities, as intra-regional adjustments are strengthened while extra-regional adjustments weakened.

Keywords: Employment flexibility, regional migration, labour market adjustment

JEL Codes: R11, R23, J08, J61

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1. Introduction

Despite the voluminous research on the issue of inter-regional migration, both in the UK and internationally, research examining the influence of employment relations – and flexible employment arrangements in particular – on the size and responsiveness of migration flows is extremely limited. On the one hand, studies that have examined specifically the regional dimension of flexibility (Martin et al, 1996; Martin, 2001; Monastiriotis, 2005 and 2007; Bande and Karanassou, 2008) have not looked at this in conjunction with the issue of migration. On the other, the literature on inter-regional migration has rarely looked at issues relating to flexible employment.

In many respects this is rather puzzling. More so than at the national level, migration and flexibility are two key mechanisms for labour market adjustment (be it competing or complementary) at the regional scale (where competition is stronger and barriers to mobility weaker). In an integrated (national) economy, if a region is hit by an asymmetric shock, labour mobility will generate sufficient flows to restore unemployment differentials to their ‘natural’ levels (e.g., reflecting differences in amenities – Roback, 1982), even in the absence of (wage) flexibility (see Fischer and Nijkamp, 1987 and Mare and Choy, 2001). But if wages are flexible (and given that migration is costly), wage adjustment may be faster, restoring the unemployment differential before people migrate. If prices also adjust, relative real wages will remain constant across space, thus eliminating any incentives to move. Moreover, with flexibility, labour demand will eventually recover and more vacancies will be created (e.g., through savings in firing/hiring costs) thus leading also to a recovery of employment levels in the affected region. In this sense, flexibility can be seen as a substitute to migration.

But although rather plausible, this view of flexibility as a substitute to migration – and, as we discuss later, as a process that reduces the responsiveness of migration to changes in unemployment – is in sharp contrast to common perceptions about the complementary role of flexibility in facilitating labour mobility and market adjustments *across* space.¹ Indeed, employment flexibility can be argued to have a

¹ As Rebecca Blank puts it, “labour mobility is often taken to be a necessary ingredient of economic flexibility” (Blank, 1994; p.6).

direct impact on labour market flows – including geographical mobility (migration) – through its effects on job security/durations and job creation/destruction rates. By raising job turnover and weakening internal labour markets, flexibility lowers the costs of moving across jobs and thus allows for greater mobility also across space.²

It is almost alarming that there is very little to go about in trying to evaluate the relative weight of these ‘competing’ views on the link between flexibility and external mobility. Although a number of studies have examined the role of factors such as unionisation and unemployment benefits in restricting (but sometimes also encouraging) regional migration, the literature offers virtually no discussion about the role that flexibility at large – and, in particular, prevalent forms of flexible employment, such as temping and flexi-hours contracts – plays for migration and cross-regional adjustment.

In this paper we address exactly this issue, by utilising a detailed dataset on the extent and types of flexible labour use in the UK regions and examining through a simple inter-regional migration model the link between employment flexibility and two key aspects of migration: the extent of migration and its responsiveness to changes/differences in local unemployment rates. Our analysis covers a long time-period (1985-2009) and examines migration flows at both the regional and local scales. We find that flexibility has a negative impact on migration outflows at the regional scale (although this applies more to rates of change than levels of flexibility), but a positive effect at the more localised (intra-regional) level. Important variations in the intensity as well as the direction of this effect are found for different aspects of flexibility, although flexibility is almost uniformly found to lower the unemployment elasticity of migration, especially at the localised level.

The remainder of the paper is structured as follows. In the next section we discuss the theoretical links between flexibility and migration through a selective review of studies in the inter-regional migration literature that address, at least implicitly, issues

² For the UK it has been argued that raising employment flexibility during the Thatcher era was indeed seen as a strategy to increase responsiveness to differing regional economic conditions. In the words of Armstrong and Blackaby (1998, p.81), “[i]ndeed, there is a sense in which the reform of labour market institutions became one of the main government responses to the existence of spatial economic disparities in the UK”.

of employment flexibility. Section 3 discusses our measures of flexibility and derives a model via which flexibility is hypothesised to affect migration flows. Section 4 presents the empirical analysis, which includes an exploration of the issue at both the regional and sub-regional levels. The last section concludes.

2. On the link between flexibility and migration

Even a cursory look at the literature reveals that the volume of studies examining the link between flexibility and migration is anything but overwhelming. In a few cases, migration has been linked to national labour market institutions (but not to regional levels to flexibility as such). For example, Van Dijk et al (1989) have argued that national labour market institutions affect the extent and quality of inter-regional adjustments through migration by showing that Dutch institutions allow more efficient long-distance job searches that produce superior outcomes compared to the more ‘speculative’ migration moves observed in the USA. More indirectly, a number of papers have shown that inter-regional adjustment through migration becomes weaker as national unemployment rises since then inter-regional unemployment differentials matter less (Gordon, 1985; Pissarides and Wadsworth, 1989; Pissarides and McMaster, 1990; Gordon and Molho, 1998) – with the implication that if flexibility produces lower equilibrium unemployment it also contributes towards denser migration flows.

At the sub-national level, evidence on the link between flexibility and migration typically comes from studies examining the factors conditioning the mobility of individual population sub-groups. For the UK, numerous studies have shown that labour mobility is lower for people receiving housing support or other benefits; and that migration responses at the aggregate level are lower in areas with high shares of council-housing tenants (Hughes and McCormick, 1981; Cameron and Muellbauer, 1998).³ This argument has been extended to the case of social security payments (Minford et al, 1987), unemployment benefits (Pissarides and Wadsworth, 1989; Antolin and Bover, 1993; Tervo, 2000), active labour market policies (Westerlund,

³ Oswald (1999; see also Cameron et al, 2006) generalised this argument to home-ownership at large.

1998; Hamalainen, 2002) and, more recently, incomes policies more broadly (Haapanen and Ritsila, 2007).⁴ The intuition is simple: generous benefits diminish the incentives to migrate in response to spatial unemployment differentials. But arguments in the opposite direction can also be found in the literature: in the search-matching tradition, unemployment benefits can act as a ‘search subsidy’ (Burdett, 1979) that helps reduce job mismatch, including spatial mismatch through migration (Marimon and Zilibotti, 1999).

Another relevant stream of research, although with indirect only links to the issue of employment flexibility, concerns studies examining regional wage adjustability (typically, its responsiveness to unemployment changes). This literature essentially assumes a direct link between employment flexibility and wage flexibility and considers the latter to be interchangeable to migration as a mechanism for cross-regional adjustment (see, inter alia, Abraham, 1996 and Jimeno and Bentolila, 1998). For example, Baddeley et al (2000) argue that higher wage flexibility leads to lower cross-regional unemployment differentials (and, intuitively, to lower rates of migration). This argument has been made more broadly with regard to wage rigidities deriving from adversarial wage-setting institutions (e.g., unions). In a theoretical model linking trade unionism to migration, Faini (1999) shows that, under specific assumptions, unionism raises wage rigidity by more in less developed regions, thus stimulating skilled outmigration to regions that offer higher relative returns to skills.⁵ A similar result is obtained in the model developed by Suedekum (2004). But, as with the case of unemployment benefits, these arguments are not unchallenged. In his study examining cross-regional migration in the UK, McCormick (1997) argues that “greater unionization in Britain leads to a stress on ‘voice’ rather than exit” (p.585), thus *lowering* migration – in contrast to arguments found in the wage flexibility literature.

⁴ Unlike unemployment and other benefits, ALMPs do not fit easily in the flexibility-rigidity spectrum and thus it is not clear whether their effect to reduce migration is evidence for a positive or a negative link between flexibility and migration.

⁵ This essentially assumes that individuals respond to regional differences in returns to skills and thus migrate in search of higher levels of economic efficiency. In a different setting, Ashby (2007) makes this assumption more explicitly, viewing labour market rigidities not as an adjustment mechanism but as a ‘push’ factor for migration.

This ambiguity, about the direction of the link between flexibility and migration, extends clearly to the case of employment flexibility. Typically, employment flexibility is associated to higher mobility (including migration). On the one hand, non-standard forms of employment reduce labour market and job attachment for any given level of unemployment. On the other, they also make migration more *responsive* to unemployment differentials – by raising the proportion of ‘speculative’ (as opposed to job-to-job) migration moves (Gordon, 1995). Nevertheless, the literature on search-matching models has shown that high employment protection (less employment flexibility) is associated with higher unemployment durations and lower rates of job creation and destruction (Mortensen and Pissarides, 1994; Garibaldi, 1998; Zanetti, 2007; Sala and Silva, 2009). If this is true, then the incidence of migration should *increase* with employment protection – as the latter weakens the employment opportunities of ‘outsiders’, making them more likely to migrate.⁶

More generally, to the extent that employment flexibility lowers unemployment, it raises each individual’s probability of finding a job *without* migrating. Put in different terms, employment flexibility facilitates adjustment internally thus making extra-regional adjustment unnecessary. But flexibility also makes labour less ‘sticky’ and less ‘secure’, thus *facilitating* migration. In a way, this is essentially a demand- versus supply-side argument. Flexible labour use allows higher levels of adjustment *within* (inside the firm or within a given labour market), thus reducing the pressures for adjustment *across* labour markets – and, to the extent that it lowers unemployment, also the need for such adjustment. In other words, the ‘demand’ for migration in the economy declines. At the same time, flexible employment arrangements weaken internal labour markets and more generally the ties a particular employee has with her firm / labour market, thus reducing the constraints (or opportunity costs) to mobility. The ‘supply’ of potential migrants increases. This distinction suggests further that the particular types of flexibility that prevail in a regional or national economy will also affect the relationship between migration and flexibility. Some aspects of flexibility, such as flexible employment contracts, enable adjustment by making people more able to move – less tied to places. Other aspects, mainly those that reduce labour costs faced by employers (e.g., unpaid overtime), will tend to facilitate intra-regional

⁶ See also the work of Yves Zenou (e.g., Zenou, 2009) who, in a slightly different context, suggests that higher matching frictions lead to job searches further afield – thus also implicating more migration.

adjustment (and reduce unemployment) thus reducing the incentives to move. As with empirical evidence on the topic, it is clear that a strong theoretical framework is also lacking. By implication, the link between flexibility and migration – between internal and external adjustability – becomes predominantly an empirical issue. It is this empirical investigation that is the main focus of our paper.

3. Modelling migration and measuring flexibility

Our focus in the paper departs from the usual attention in the literature on wage adjustability and is rather more directly placed on what is commonly referred to as employment flexibility. We adopt a functional definition of this, looking not at the institutional arrangements that enable the flexible use of labour (union de-recognition, deregulation of employment protection) but at the actual extent and types of flexible labour use in the economy. This allows us to cover empirically a broad range of flexible employment arrangements, from temporary employment to irregular hours and from within-job occupational mobility to agency-work and sub-contracting. Analytically, it also allows us to draw a distinction between four types of flexibility along two axes: internal–external and numerical–functional flexibility. In this, we follow previous work on the topic and extend the indexes developed earlier, for the case of the UK, by Monastiriotis (2005, 2006) and Tinsley and Monastiriotis (2007).

Internal numerical flexibility covers numerical adjustments that happen within the production process (inside the firm) and includes indicators that measure the incidence of overtime (paid and unpaid), flexible-hours contracts and irregular hours, as well as an indicator that shows adjustment between hours demanded and hours supplied within the firm (the share of employees who want to work different/longer hours but stay with the same employer). *Internal functional flexibility* concerns more adjustments in the deployment of labour in the production process, including measures of shift-working, working on irregular days (e.g., occasional weekend work), working from home and changing work-tasks (proxied by the share of employees who change occupation while staying with the same employer). In turn, *external numerical flexibility* covers those aspects that affect the adjustability of the labour in-take, mainly through part-timing and temporary contracts (both overall and

the involuntary elements of these – proxied by the percentage of temps/part-timers who declare that they want a regular job). Last, *external functional flexibility* refers to the extent to which specific tasks/functions of the production process are externalised (e.g., through sub-contracting and out-sourcing) and, in the absence of specific data on this, it is proxied by the incidence of use of agency-workers (short-term temps), freelance and contracted employment (sub-contractors), and self-employment.

To construct these measures we rely on data from the UK Labour Force Survey. A number of base indicators, as listed above, are extracted from the primary data and are then aggregated into our four functional categories, using a simple linear scale transformation method.⁷ The four intermediate indexes are then further summarised into an aggregate index of employment flexibility. This approach allows us to obtain a measure of flexible working arrangements that exhibits both temporal (year-on-year) and spatial (cross-regional) variation and is consistently defined for a long time period (annually since 1985). It moreover provides us with measures of flexibility that capture the actual / empirical extent of flexible labour use rather than the potentiality of it (as would be reflected in measures relying on institutional arrangements) and to maintain functional distinctions that are important both analytically and for policy purposes. This approach is vindicated by the very fact that the resulting indexes exhibit a notable degree of both spatial and cross-category variation, unlike the underlying institutional arrangements which are largely constant across space.⁸

To examine the effect of thus defined employment flexibility on the extent of extra-regional adjustment we rely on a simple model of inter-regional migration, focusing predominantly on gross outmigration flows but also examining the effects on net (im)migration.⁹ Our underlying model follows the standard approach in the literature

⁷ Alternative methods of index construction have also been considered, but they produce largely identical indexes. See Tinsley and Monastriotis (2007) for a more formal examination of the construction method of such indexes.

⁸ See Monastriotis (2006) for a more detailed discussion about the disadvantages of relying on institutional measures of flexibility and the theoretical and empirical distance between “flexible institutions” and “take-up flexibility”.

⁹ Given our interest with the issue of flexibility as an adjustment mechanism (rather than an amenity) gross outmigration flows is the natural focus for our research. As we shall see later, this is not without problems. Empirically, the link between outmigration and unemployment is often weak (Hughes and McCormick, 1989; Pissarides and Wadsworth, 1989), as gross in- and out-migration flows are typically positively correlated (Molho, 1986; Gordon and Molho, 1998). This can result in an ‘outmigration paradox’, with unemployment reducing immigration as well as outmigration.

that links bilateral inter-regional migrations to a number of ‘pull’ and ‘push’ factors through a gravity model (Molho, 1986; Greenwood, 1997). Following Gordon and Molho (1998), the general model is given by

$$M_{ijt} = A_{it} B_{jt} f(D_{ij}) \quad (1)$$

where M is the bilateral migration flow between regions i and j at time t , A and B are a set of push and pull factors, respectively, and f is a distance function of the distance D between each pair of regions.¹⁰ Given our interest here on the role of employment flexibility, and concerns about the accuracy of data on bilateral migration flows especially at smaller geographical scales, we chose to work with a modified version of this model by aggregating across regions. Summing equation (1) across j gives

$$M_{it} = A_{it} B_t D_i \quad (2)$$

where B is now a time-specific indicator of *outside opportunities* (pull factors outside region i) and D , being the summation of all bilateral distances between region i and each j region, is a time-invariant measure of *accessibility*. The advantage of this formulation is that it maintains the role of the local push factors (including, as we show below, employment flexibility) while simplifying the representation of the measures of accessibility and of external pull – which are essentially reduced to a series of regional and temporal fixed effects respectively.

We model the local pull factor as a function of three distinctive influences: socio-demographic characteristics (S) that affect the mobility of the local population, such as age structure, education, and employment participation rates; characteristics that relate to the local labour market (U) and thus to the availability of job opportunities, captured in our model by the rate of unemployment; and ones that concern broader characteristics of the local environment (E), such as area quality and house prices. To these, we add the influence of employment flexibility (F). Given however our view of flexibility as an adjustment mechanism, we argue that flexibility does not exert a direct influence on migration (unlike Ashby, 2007) but instead influences the responsiveness of migration to unemployment. Formally, we assume that

$$A_{it} = S_{it}^{\beta_S} E_{it}^{\beta_E} \exp\{\beta_U U_{it}\} \quad (3)$$

¹⁰ This is a more general representation of the spatial interactions model which is often specified empirically in terms of relative values, as the differential between local and external characteristics (Pissarides and McMaster, 1990; Partridge and Rickman, 2006).

with

$$\beta_U = \phi + \lambda F_{it} + \rho \left(\frac{F_{it}}{U_{it}} \right) \quad (4)$$

so that employment flexibility influences the responsiveness of migration to unemployment both autonomously (through λ) and in relation to the level of unemployment (through ρ).¹¹ Substituting (3) and (4) into equation (2) and taking logarithms gives our final estimating model:

$$\ln(M_{it}) = b_i + d_i + \beta_S \ln(S_{it}) + \beta_E \ln(E_{it}) + \phi U_{it} + \lambda(F_{it} U_{it}) + \rho F_{it} \quad (5)$$

In our subsequent analysis we examine the performance of this model, and of parameters λ and ρ in particular, using two complementary samples. First, a balanced panel of self-reported inter-regional migration (gross and net flows) for the 12 Standard Statistical Regions of the UK over the period 1985-2009.¹² Second, a shorter panel of recorded migration between the 376 local authorities of England and Wales for the period 1999-2008.¹³

4. Empirical analysis

i. General trends

As mentioned previously, research into the relationship between inter-regional migration and flexible labour use (employment flexibility) is at best thin. We thus start our analysis by a visual inspection of the patterns of migration and flexibility across space and time. Figure 1 depicts the evolution of outmigration (panel a) and flexibility (panel b) over our sample period for each of the 12 SSRs in the UK. As can be seen, both regional migration and regional levels of flexibility follow closely a national trend, although notable differences exist across regions and over the business cycle. As is well documented (Gordon and Molho, 1998; Fotheringham et al, 2004),

¹¹ A simpler formulation would drop the F/U term from eq.(4) and add F directly into eq.(3). We opt for the current exposition to demonstrate the underlying assumptions entailed in such an approach.

¹² We use the old definition of regions because pre-1996 waves of the LFS do not allow us to identify the location of individuals into the current administrative system of Government Office Regions. Migration flows concern only working-age population and are measured as a share of the total working-age population in the region. They are derived from the LFS variables identifying region of residence currently and one year ago. International migrants are excluded.

¹³ Information on migration is derived from tables published by the ONS on migrant numbers by local authority. Unemployment figures at this level come from model-based estimates of unemployment that are available at the NOMIS website of the ONS. Data on population are also from NOMIS.

migration fluctuates with the business cycle but tends to decline over time. In contrast, flexibility exhibits an increasing trend until the late 1990s, followed by a rather sharp decline and then stabilisation throughout the 2000s.

Figure 1. Migration and flexibility in the UK regions, 1985-2009

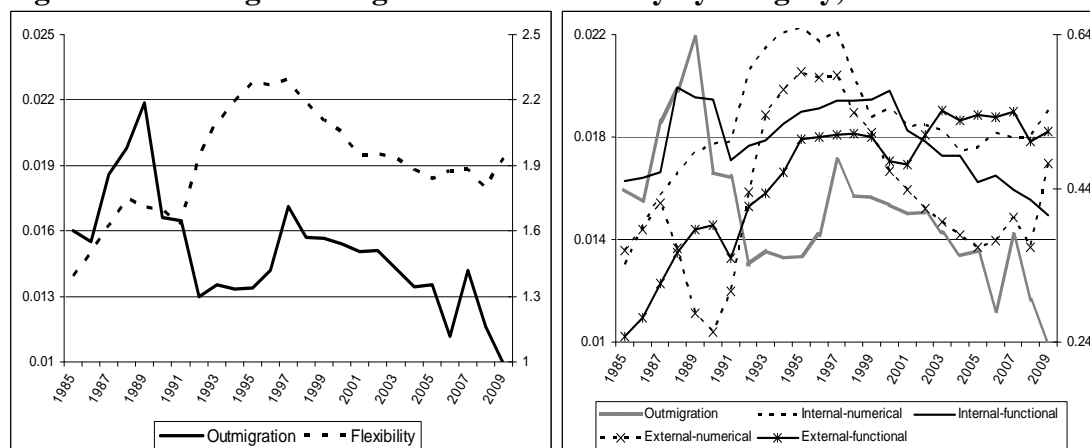


Source: UK LFS (various years); authors' analysis.

The national summary of these patterns is depicted in Figure 2. Nationally, migration and flexibility appear to move together for most of the period under consideration, with the notable exception of the first half of the 1990s, when the UK experienced a sharp rise in unemployment. As migration is known to decline with national

unemployment (Gordon and Molho, 1998) while flexibility is largely pro-cyclical (Monastiriotis, 2006), this seems to suggest that, despite a general trend of co-movement between migration and flexibility (which implies complementarity), in many respects the link between flexibility and migration is mediated through unemployment. This is consistent with the model developed in the previous section.

Figure 2. Inter-regional migration and flexibility by category, 1985-2009



Source: UK LFS (various years); authors' analysis.

The relationship, however, is less clear-cut when we look at specific types of flexibility. There, the patterns are much more variable. Internal functional flexibility shows some relative stability and a linear decline since the turn of the century. External numerical flexibility is much more cyclical, while external functional flexibility has been on the rise for most of the period – although at a decelerating pace. This motivates us to examine the link between migration and, not only aggregate flexibility, but also each of its functional categories. But there is a more substantive reason for doing so: as we discussed in section 2, different types of flexibility (e.g., ones that affect the intensity of labour use inside the firm versus ones that affect the external adjustability of the labour intake) may have different effects on migration (and on its responsiveness to unemployment). In the remainder of this section we set out to examine these relationships.

ii. Migration and unemployment

As a starting point we examine the performance of our estimating model without controlling for the impact of flexibility (i.e., setting $\beta_U = \text{constant}$ in eq.4). The importance of this will become immediately obvious. We start with a parsimonious

model that includes unemployment as the only ‘push’ factor¹⁴, alongside a series of national (year) and regional fixed effects (proxying for outside opportunities and accessibility, respectively) and past migration (to control for other time-varying but region-specific effects which account for migration persistence). In this simple model, unemployment is negatively associated to outmigration (column 1, Table 1). As we discussed earlier (see footnote 9), this is not an unusual finding and it is commonly interpreted in the literature as a result of the positive link between in- and out-flows, both of which are higher in more vibrant economies and areas of low unemployment.

The effect of unemployment remains negative and statistically significant when we include successively a series of ‘push’ factors, including age structure, sectoral employment, female participation, education, wages and regional cost of living.^{15,16} Moreover, unemployment remains negative also when we remove the regional fixed effects (which in our model act mainly as a proxy for accessibility) as well as when, additionally, we remove the other population-area characteristics. All evidence suggests that migration does not equilibrate unemployment across space: controlling for national (year-specific) fixed effects, regions with higher unemployment appear to experience *less* outmigration.

Table 1. Migration responses to unemployment

Dependent	Out	Net	In	Out	Out ^(#)
Lag-dependent	0.1108* (0.062)	0.2164*** (0.060)	0.1962*** (0.062)	0.4513*** (0.054)	0.4259*** (0.057)
Lag-unemployment	-0.0367*** (0.012)	-0.0181 (0.020)	-0.0538*** (0.016)	0.0330*** (0.006)	0.0396*** (0.007)
Constant	0.0148*** (0.002)	0.0013 (0.002)	0.0145*** (0.002)	0.0031*** (0.001)	0.0047*** (0.001)
Year FEs	Y	Y	Y	N	N
Region FEs	Y	Y	Y	Y	Differenced
Observations	288	288	288	288	276
R-squared (Wald Statistic)	0.918	0.451	0.851	0.841	103.47 (0.000)

Notes: Robust standard errors in parentheses. *, ** and *** show significance at the 10%, 5% and 1%,

¹⁴ Unemployment is entered both contemporaneously and with a one-year lag. Not surprisingly, the latter performs slightly better and it is thus the one included in the reported regressions.

¹⁵ Wage data come from the published tables of New Earnings Survey / Annual Survey of Hours and Earnings of the Office for National Statistics. Regional cost of living is derived from the Croner Rewards database. All other data are from the LFS.

¹⁶ Results are available upon request. Whereas all of these variables return the expected signs, many fail to be statistically significant, largely owing to the fact that they move only slowly over time and thus are highly correlated with the regional fixed effects.

respectively. All regressions estimated with OLS, except ([#]), which uses the Arellano-Bond linear dynamic panel-data estimation.

This interpretation, of migration essentially not responding to regional unemployment differentials, is also confirmed when we examine the effects on net migration flows.¹⁷ In column 2, unemployment is found to have a negative but not statistically significant effect on net immigration, with the implication that overall (net) migration flows do not respond to cross-regional unemployment differentials. Unemployment is in fact found to exert a strong negative effect on migration *inflows* (column 3), but this reflects perhaps more the effect that unemployment differentials have on the destination of the existing stock of migrations than on the decision to migrate.

This underwhelming evidence of adjustment only becomes significant when we remove the temporal fixed effects, but maintain the regional ones, thus shifting the focus of our analysis to within-regions inter-temporal adjustments. In this case, unemployment does indeed return a positive and highly significant coefficient (which is also robust across different estimation methods, e.g., when controlling for the correlation between past-outmigration and the fixed effects – column 5), meaning that within any given region, a rise in unemployment at time t leads to a greater outmigration flow at $t+1$. In other words, labour market adjustment through migration does indeed take place, but this is not in response to regional differences in unemployment rates (or other economic opportunities and amenities – ‘pull’ factors) but rather and solely in response to temporal changes in economic circumstances internally in each region (and, we repeat, *irrespective* of developments elsewhere in the country).¹⁸ In what follows we focus on this channel of adjustment and examine the influence that employment flexibility exerts on it.

iii. The impact of flexibility on cross-regional adjustments

Following the model of column 4/Table 1 and introducing our aggregate index of flexibility in the estimations produces rather unsatisfactory results. When entering contemporaneously (Table 2, column 1), flexibility returns a negative coefficient (reducing outmigration), but the effect is not statistically significant. This result is

¹⁷ We obtain similar results when replacing unemployment with average wages or employment growth.

¹⁸ Note also that net (im)migration the effect of unemployment remains non-significant (but negative). Outmigration adjustment, however, is quite sizeable. At mean values, our results indicate that an increase in local unemployment by one percentage point will lead to a rise in outmigration by 2.4%.

rather consistent across specifications. It applies when we exclude the unemployment variable (to avoid collinearity problems), when we re-introduce the temporal fixed effects and a series of area-population characteristics, and when we instrument the flexibility indicator to control for the possible endogeneity of flexibility to outmigration and unemployment.¹⁹ Introducing flexibility with a temporal lag returns a positive (but still not statistically significant) coefficient. The two effects (contemporaneous and lagged) become however highly significant (and the signs are maintained) when they are jointly included in the model (column 2). The coefficient on lagged flexibility suggests a positive association between flexibility and outmigration – and this is also consistent in a model explaining net migration (column 3) – but the contemporaneous effect points to the opposite direction. This implies that, at least at this aggregate level (overall employment flexibility and regional migration), it is *changes* in flexibility that bear a relationship with migration.

Table 2. The impact of flexibility on migration

VARIABLES	Out	Out	Net	Out	Net	Out
Lag-dependent	0.4312*** (0.0557)	0.3953*** (0.0557)	0.2179*** (0.0566)	0.4102*** (0.0539)	0.2211*** (0.0566)	0.4103*** (0.0540)
Lag-unempl.	0.0338*** (0.0064)	0.0427*** (0.0068)	-0.0053 (0.0079)	0.0423*** (0.0068)	-0.0085 (0.0084)	0.0411*** (0.0072)
Flexibility	-0.0009 (0.0007)	-0.005*** (0.0014)				
Lag-flexibility		0.0043*** (0.0013)	-0.0020** (0.0008)			
Flex/ty growth				-0.004*** (0.0013)	0.0033** (0.0016)	-0.0062* (0.0036)
Interaction (lagU x Δ(flex))						0.0224 (0.0437)
Constant	0.0068*** (0.0018)	0.0063*** (0.0017)	0.0042** (0.0018)	0.0048*** (0.0008)	0.0007 (0.0007)	0.0048*** (0.0008)
Obs	288	288	288	288	288	288
R-squared	0.309	0.337	0.077	0.334	0.073	0.335

Notes: See notes in Table 1.

Indeed, the results reported in columns 4 and 5 show that accelerating rates of change in employment flexibility are associated with declining outmigration and rising net migration. Intuitively, this may suggest a different mechanism linking flexibility to migration: the accelerated use of flexible employment may be leading to

¹⁹ Results are available upon request. When instrumenting flexibility using sectoral, age and gender composition variables, the effect of flexibility becomes statistically significant (at 5%) but the test of exogeneity is not rejected at the 5% level and although our instruments appear strong (the partial R² in the first-stage regression is 0.79) they nevertheless fail the usual tests of overidentifying restrictions.

improvements in economic outcomes which subsequently attract immigrants and contract outmigration. Partly as a means of testing for that, in column 6 we add an interaction term between lagged unemployment and flexibility growth. The direct effects remain significant but the interaction term is not statistically significant. Its positive value suggests that flexibility growth may contain outmigration more in cases of low unemployment, which is consistent with the hypothesis about improved economic outcomes – but the result does not carry sufficient statistical weight in order for a robust conclusion to be drawn.

As with our earlier discussion about the theoretical arguments and empirical evidence in the literature, it appears that the relationship between migration and employment flexibility is particularly difficult to discern. One likely reason for this is that, as discussed earlier, this relationship may differ for different types of flexibility. For example, internal numerical flexibility may be contributing to improved economic performance thus reducing (the need for) outmigration. In contrast, external numerical flexibility may be positively related to outmigration by reducing job-attachment and ‘stickiness’. Interestingly, this is a pattern that comes out in our analysis of the functional sub-indexes of flexibility.

We started this analysis by specifying the sub-indexes in terms of rates of change, following the results of Table 2. Here, however, the results were never significant. Instead, when specified in levels, the flexibility sub-indexes returned consistently strong associations with the migration variables. As is depicted in columns 1 and 2 of Table 3, these associations are robust irrespective of whether flexibility enters contemporaneously or with a time-lag. Moreover, the results become stronger and all variables are significant when each of the flexibility indicators is introduced on its own (columns 3-6) and also when we replace the sub-indexes with four exemplary base-indicators (column 7): the share of employees working on flexible-hours contracts (internal numerical); the share of employees on temporary / fixed-term contracts (external numerical); the share of employees on irregular working patterns (internal functional); and the share of agency workers (external functional). As can be seen, the relationships identified at the sub-index level apply in the same way to the base indicators.

Table 3. Functional aspects of flexibility and inter-regional migration

	(1)	(2) [§]	(3)	(4) [^]	(5) [^]	(6)	(7) [£]	(8)	(9)	(10)	(11)
Lag-dependent	0.265*** (0.0587)	0.300*** (0.0586)	0.418*** (0.0546)	0.394*** (0.0543)	0.4596*** (0.0576)	0.41017*** (0.05585)	0.190*** (0.0599)	0.422*** (0.0549)	0.394*** (0.0543)	0.46268*** (0.05565)	0.4090*** (0.0566)
Lag-unemployment	0.0232*** (0.00776)	0.0293*** (0.00826)	0.0348*** (0.00633)	0.0290*** (0.00628)	0.0335*** (0.00679)	0.01964*** (0.00802)	-0.00683 (0.00822)	0.0208 (0.0201)	-0.00019 (0.0259)	0.04779** (0.0263)	0.02376 (0.0169)
Int. numerical	-0.0126*** (0.00299)	-0.011*** (0.00297)	-0.00578** (0.00224)				-0.0313*** (0.0111)	-0.00882* (0.00469)			
Int. functional	0.0189*** (0.00301)	0.0183*** (0.00332)		0.0108*** (0.00276)			0.0587*** (0.0162)		0.00614 (0.00486)		
Ext. numerical	0.00120 (0.00204)	0.00343* (0.00198)			0.00374** (0.0015)		0.162*** (0.0279)			0.00629 (0.00476)	
Ext. functional	-0.00387 (0.00259)	-0.00148 (0.00273)				-0.0076*** (0.00240)	-0.00488 (0.00367)				-0.00672 (0.00386)
Interaction #								0.0325 (0.0441)	0.0638 (0.0550)	-0.03238 (0.0576)	-0.01254 (0.04403)
Constant	0.00622*** (0.00182)	0.00243 (0.00191)	0.00809*** (0.00150)	0.000507 (0.00136)	0.0030*** (0.0011)	0.00960*** (0.00173)	0.0104*** (0.00321)	0.00940*** (0.00233)	0.00263 (0.00228)	0.00186 (0.00232)	0.009301*** (0.002)
Obs	288	288	288	288	276	276	288	288	288	276	276
R-squared	0.412	0.382	0.321	0.342	0.325	0.336	0.455	0.323	0.345	0.326	0.336

Notes: Robust standard errors in parentheses. All regression have been estimated using the fixed-effects (within) estimator. Reported R-squares concern the within element.
[§]: The flexibility variables enter with a one-year lag. [^]: The flexibility variables enter with a two-year lag. [£]: The flexibility variables have been replaced by four base indicators as described in the text. [#]: Interaction term between lag-unemployment and the corresponding flexibility indicator, as included in the model.

Consistently across cases, some interesting patterns emerge. First, employment arrangements that belong to internal flexibility (numerical and functional) exhibit a stronger and more robust association with migration. On the face of it, this seems to suggest that internal flexibility is more effective in influencing factors that affect migration (positively or negatively), be it by reducing the need for migration (e.g., lowering unemployment) or by enhancing labour mobility (e.g., casualisation of employment). However, second, for the external categories the relationship to migration is stronger when flexibility is allowed to enter with a time-lag (columns 5 and 6). This in turn suggests that elements of numerical flexibility exert a more instantaneous influence on migration, whereas functional elements operate with some hysteresis as, presumably, their effects on unemployment and labour mobility take longer to materialise. Third, flexibility is associated with *less* outmigration in the case of internal numerical and external functional flexibility, but with *more* outmigration in the case of external numerical and internal functional flexibility. This confirms the view that the effect of flexibility on migration is largely conditioned on the type of flexible employment arrangements that prevail: aspects of flexibility that are associated to a rise in secondary job markets (temping, shift-work, etc) seem to be conducive to labour mobility; whereas aspects that contribute predominantly to cost-containment (overtime, subcontracting) seem to allow for greater adjustment within.

In the last four columns of Table 3 we examine further whether the effect of flexibility is in fact mediated through the responsiveness of migration to unemployment, by introducing an interaction term of flexibility and unemployment. As with the case of the aggregate index of flexibility, the results are again weak, suggesting that employment flexibility plays a limited role for extra-regional adjustments in response to changes in unemployment.²⁰ As can be seen, the signs of the coefficients for the direct effects are maintained, but the effects become statistically weaker (largely due to collinearity). The interaction terms are not independently statistically significant, although in all cases they are jointly significant when considered together with the linear flexibility terms (for the functional elements even at the 1% level). In three of

²⁰ The interaction terms fail any level of statistical significance when we revert back to our original model which includes time fixed-effects, which express all variables in terms of deviations from the national average, thus capturing outside opportunities.

the four cases the sign of the interaction term is opposite to that of the corresponding linear term, suggesting that the effect of flexibility on migration operates more fully in cases of low unemployment. Only in the case of external functional flexibility is the impact of the direct and interaction effect reinforcing. Interpreted in relation to the unemployment elasticity of outmigration, the results show that both of the internal elements of flexibility contribute to reinforce the effect of unemployment on outmigration, in other words, produce more extra-regional adjustment for any increase in the local unemployment rate. In the case of internal numerical flexibility this diminishes the adverse effect that this type of flexibility has on migration. In contrast, the two external elements of employment flexibility appear to reduce the responsiveness of outmigration to regional unemployment. In any case, however, these results should be treated with caution, as they are statistically rather weak and arithmetically quite small.

iv. Migration adjustments across local authority areas

Although the evidence obtained from the regional analysis is coherent and intuitively consistent, the fact that the results are not always particularly strong, at least in a statistical sense, can cast some doubt about their robustness. Further, the level at which we observe migration is rather aggregate and so we are missing many migration flows, especially short-distance ones – while our measure of unemployment overlooks the often substantial differences in unemployment rates existing *within* regions. Importantly, at smaller geographical scales the relation between migration and flexibility may be qualitatively different, since at the local level variations in flexible labour use are much more nuanced and responses to such variations can be mediated through commuting – which we do not observe. To explore the extent to which the impact of flexibility operates differently at different geographical scales, we replicate parts of the previous analysis for a 10-year panel of migration flows across the local authorities of England and Wales. By containing information at a finer geographical detail, this dataset provides a more accurate picture with regard to migration and its response to local unemployment.²¹

²¹ Our flexibility indicators are still measured at the regional level, as LFS data do not allow us to get into any finer geographical disaggregation when measuring flexibility.

Our analysis follows our earlier approach. We include a full series of area-specific fixed effects and the lagged value of outmigration but no year dummies or other controls for area characteristics. Standard errors are clustered at the regional level, to account for the fact that our flexibility variable is only measured at that scale. We examine the direct effect of aggregate flexibility and its sub-categories, as well as the indirect effect operating through the migration response to local unemployment. Table 4 presents the results.

Table 4. The impact of flexibility on migration (E&W local authorities)

Dependent	Out	Net	Out	Out	Out	Out
Lag-dependent	0.463*** (0.099)	0.386*** (0.046)	0.432*** (0.096)	0.444*** (0.080)	0.457*** (0.098)	0.436*** (0.079)
Lag-unemployment	-0.058*** (0.017)	0.0215 (0.018)	-0.0393* (0.019)	0.388** (0.127)	-0.0513** (0.022)	0.436*** (0.116)
Flexibility	0.672** (0.240)	2.72e-04 (0.147)		1.75*** (0.489)		
Lag-flexibility			0.0652 (0.134)			
Flexibility (x) U_{t-1}				-0.220*** (0.0660)		
Int. numerical					0.607** (0.247)	1.8102** (0.681)
Ext. numerical					0.768 (0.558)	1.587* (0.820)
Int. functional					0.438 (0.291)	1.8423** (0.680)
Ext. functional					0.841*** (0.258)	1.9120*** (0.486)
Int.Num (x) U_{t-1}						-0.293** (0.100)
Ext.Num (x) U_{t-1}						-0.174 (0.120)
Int.Func (x) U_{t-1}						-0.269** (0.102)
Ext.Func (x) U_{t-1}						-0.208** (0.0660)
Constant	0.0332** (0.011)	0.00609* (0.003)	0.0488*** (0.010)	0.0127 (0.015)	0.0334** (0.011)	0.0123 (0.013)
Obs	3384	3384	3384	3384	3384	3384
R-squared	0.975	0.860	0.974	0.976	0.975	0.976

Notes: See notes in Table 3.

A first deviation from the results obtained in the regional analysis concerns the relationship between unemployment and migration (the degree of persistence to past migration is qualitatively similar to, although higher than, that obtained in the regional

dataset). At this localised level, even when not controlling for ‘outside opportunities’ (year dummies), increases in unemployment are associated with less outmigration while they have no statistical or economic relation to net migration. This is not fully surprising as responses to unemployment at the local level can be mediated much more intensively through commuting rather than migration. The negative coefficient for unemployment in the case of outmigration captures the fact that high unemployment areas exhibit less dynamism in terms of job creation/destruction and lower job turnover (Gordon and Molho, 1998).

Further, in contrast to our earlier analysis, flexibility in this dataset produces a strong positive effect on outmigration (column 1; but no effect for net migration – column 2), which is strictly contemporaneous (column 3). Given that we control for local area fixed effects, the interpretation of this result is that increases in flexibility at the regional level are associated with an increase in the mobility of labour across local authorities. Although this may seem at first to contradict our earlier results, noting that intra-regional migration represents the largest share of migration flows in the country²² allows us to compromise the two findings. According to the results in Table 4 flexibility does indeed appear to create conditions for enhanced labour mobility; but in regions with flexible labour markets the geographical extent of this mobility may be more localised, leading us to observe at the regional scale a (less strong) negative relationship between flexibility and outmigration (as shown in Table 2). In other words, flexibility may indeed be facilitating adjustments *within*, at the expense of adjustment across regions – but clearly part of this internal adjustment has to do with cross-area adjustments at smaller spatial scales, typically within the boundaries of administrative regions.

This interpretation is consistent with the impact that flexibility is found to exert on the responsiveness of migration to unemployment (column 4). In this model, the direct effect of unemployment is to increase outmigration (operating as a standard ‘push’ factor) while the direct effect of flexibility remains also positive (facilitating outmigration). But the interaction term is strongly negative, suggesting that spatial

²² Indeed, in our data the share of inter-regional migration to average inter-municipal migration in each region is never higher than 35% (34.5% in 1999), dropping to just below 24% in 2008. Geographically, this share is highest in Greater London and East Anglia and lowest in the North West and in Yorkshire.

adjustments to rising unemployment are more nuanced in local labour markets located within regions that possess high levels of employment flexibility. This result is consistently reproduced when we move to the sub-indexes of flexibility, which are all found to have a positive direct effect on outmigration but a negative interaction effect. This finding, then, allows us to reach another compromise concerning the ambiguity about the role of flexibility for spatial adjustment. Flexibility has a direct effect in the direction of strengthening spatial adjustments – presumably by increasing job turnover and reducing labour ‘stickiness’. But by facilitating faster adjustment (both numerical and functional) inside a given labour market, and perhaps lowering unemployment persistence (Garibaldi, 1998; Sala and Silva, 2009), flexibility also reduces the intensity of adjustments across space in response to changes in unemployment. In that sense, the reduction in unemployment persistence within a labour market area comes partly at the expense of higher persistence in cross-area unemployment differentials.

5. Conclusions

Despite wide interest on the issue of flexibility in various academic and policy circles, and the voluminous research on migration in the regional literature, there is very little research – and very little knowledge – about the ways in which labour market flexibility, and employment flexibility in particular, impact on migration and extra-regional adjustment. Not-fully-developed theoretical arguments scattered through the literature often point to different directions; and conflicting predictions often appear to carry similar appeal. At the end, it is neither theoretical nor empirically clear, whether flexibility, as a factor facilitating vertical (within-area) adjustment, is a complement or a substitute to extra-regional adjustments, as facilitated through migration.

This paper has been motivated exactly by this theoretical ambiguity and the lack of empirical research specifically addressing the link between flexible employment and regional migration. We developed a simple migration model where flexibility is allowed to affect migration both directly and through its impact on the unemployment elasticity of migration and utilised a unique dataset measuring the extent of flexible labour use across the UK regions over a long time-period. Through these, we were

able to examine explicitly the empirical relation between flexible labour use and spatial adjustments operating through migration.

Our key results are as follows. At the regional scale aggregate employment flexibility appears to have a rather limited effect on migration. The extent of migration is lower in areas that experience accelerating increases in flexible labour use, but level effects, especially on net migration, are not statistically strong. Nevertheless, different types of flexibility do produce stronger associations with migration. Internal numerical and external functional flexibility seem to have a negative direct effect on outmigration, although only the latter actually produces a lower migration response to lower unemployment. Internal functional and external numerical flexibility have instead a direct positive influence on outmigration. At the local level, however, the different categories of flexibility seem to produce much more uniform, and qualitatively different, effects. In the case of inter-municipal migration, employment flexibility is found to be positively associated to outmigration and uniformly to reduce the migration response to rising unemployment.

These results provide a number of interesting conclusions. In line with common perceptions, it appears that employment flexibility does indeed help produce a more mobile workforce, which exhibits higher rates of outmigration – although evidence for this is only derived for rather localised (predominantly intra-regional) migrations. In contrast, however, to what is widely assumed, if anything, employment flexibility is associated with less intensive extra-regional adjustability: the responsiveness of outmigration to local (and, in some cases, to regional) unemployment declines as the extent of flexible labour use goes up. In this sense, flexibility appears to be a substitute to extra-regional adjustment – presumably due to its contribution to adjustments taking place within labour markets.

Although to the labour economist or the national policy-maker the difference between intra- and extra-regional adjustments may seem rather inconsequential, to the regional scientist it raises an important issue. The extension of flexible labour use, which has only been intensified with the on-going financial and fiscal crisis in Europe, although it may help produce better economic outcomes (lower unemployment) at the local and national scales, may at the same time diminish the responsiveness of local economies

to changes in unemployment (internally) and to unemployment differentials (across areas). Thus, although it may help reduce unemployment persistence and raise the cyclicity of unemployment (as if typically predicted in the macroeconomic literature) within areas, it may also have an adverse effect by raising the persistence of unemployment differentials *across* areas. If this is true, then more policy effort (and resources) will have to be expended in addressing spatial disparities that may be partly produced by increased flexibility in the national labour market. Although our results are too novel and not sufficiently tested to support conclusively this assertion, they at least raise the issue that, possibly, labour market policy aiming at extending the use of flexible employment should take into account the possible effects that this may have on spatial imbalances and the dynamics of cross-regional equilibration.

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