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Relative Attraction of Cities and Inter-City Migration: An Analysis Using the Gravity Setup

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The study provides both descriptive as well as regression analysis explaining the relative dominance of one city over another, to attract migrants from other cities. The empirical analysis reveals that the relative size of the informal sector in a city and the magnitude of the flow of foreign direct investment towards theses cities foster in-migration. Empirical assessment is based on two estimation techniques, generalised method of moments (GMM) and Tobit regression. The techniques examine migration pattern across 14 major cities focusing over a time period of 7 years (2005-06 to 2012-13). It is found that the labour market variables (expected wages, employment, and unemployment rate) and regional economic contribution have strong significant influence on inter-city migration flows. Distance, as suggested by the gravity model, and years of education, reflecting human capital, and have positive significant impact on migration flows across cities. Further migration flows are significantly depending on the area or regional positive and negative amenities attached to it supporting theories of location. Migration is an equilibrating response to existing disparities and disequilibrium among regions and across cities. Concentration of economic activities generates employment opportunities which are a strong driver of migration and development of the region. The results proposed that Government should opt for horizontal urbanisation framework rather following vertical urbanisation pattern. Hence if government wants to target development of various regions following balance strategy it should divert economic activities towards the targeted region and cities.

Keywords: Intercity Migration, Pakistan, Location Amenities, Type of Cities, Tobit

1. INTRODUCTION

It is in human's very nature that they keep seeking for more and more. They keep improving from relatively low standard of living to relatively better standard of living. If the natives are faced with unemployment, or if employed they are not satisfied with what they earn or with their standard of living they seek towards places offering what they felt deprive at their current location. While on the other side of the coin, factor such as rapid economic growth charm of better employment opportunities and physically attractive regions, such as regions with better recreational activities, high rises etc pull individuals

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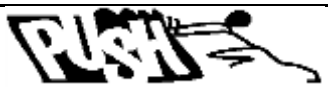
to move in Saskia (2016). It is also apparent from the rapid pace of urbanisation, which is dominantly contributed from migration rather than from natural population increase, as rate of natural population growth is declining in Pakistan. In Pakistan number of migrants is increasing year by year and so does the interests of researchers in analysing it. Though most, not all, of the existing research bore the country level analysis. When it comes to migration in our country, the literature is found to focus migrants and their characteristics rather focusing the characteristics of locations that attract migrants. This seeks answers to questions like why migrants rush towards some specific locations, what one location offers in relation to other locations, rural-urban migration is well defined but what defines intercity migration, why one urban area is preferred over the other etc. This is the grey area in Pakistan's migration literature and this research is designed to explore the same area to the best it could.

People migrate from one place to another because of three major reasons; Socio-economic, Cultural and Environmental. Each of them can be analysed using Push and Pull Factor Analysis. A Push Factor is the reason or condition that drives out individuals from their current location while a Pull Factor is the one that attracts them to move in a particular area. The Table 1 summarises some of the push and pull factor under each head.

Table 1

Factors Affecting Migration

Reason	 Factors	 Factors
Socio-Economic	→ Relatively low income	→ Industrial growth
	→ Unemployment	→ Employment
	→ Land shortage	→ Investment
	→ Negative Amenities	→ Positive Amenities
	→ Demographics	→ Demographics
	→ State policies	→ Social Network
		→ State policies
Cultural	→ Political instability	→ State policies
	→ Ethnic clashes	→ Mega socio-cultural opportunities
Environmental	→ High risk of natural disasters	→ Low risk of natural disasters
	→ Extreme climates	
	→ Pollution	→ Physically attractive regions

Source: Author's presentation of migration reasons and the push-pull factors attached to them.

The difference between per capita income or wage level across regions is a significant variable for explaining migration. Expected wages that accounts for probability of attaining employment in destination is relatively a better measure for explaining migration pattern as per Haris and Todaro (1970) and Barnum and Sabot

(1977). The attraction of high wages attracts both skilled and unskilled labours, Glickman and McHone (1977). More and better employment opportunities at a location either in formal or informal sector raise in-migration to that location, Pissarides and Wadsworth (1989). Apart from wage and employment other attributes of destination such as education, health, social and recreational opportunities also foster rural-urban migration as well as urban-urban migration. Cities relatively more rich in these attribute and contributing more in economic growth of the nation attracts migrants not only from traditional sector but also from relatively less urbanised sector following maximisation behaviour Henderson (1974).

Distance to and contacts in host location are also very important in deciding where to move for migrants, Schwartz (1973). Distance deters migration as it has both economic and social cost. Larger distance means high commuting cost not only between origin and destination. This higher commuting cost limits the frequency and ease for visiting back home, thus putting social cost on migrants as well. Though, negative distance consideration, commuting and moving cost, fades out as individual's job earnings increases or means of transportation gets improve. As per Ravensten (1885) second law of migration *"The facilities of communication may frequently countervail the disadvantages of distance"*. Yap (1977) indicated that people are more migratory towards areas where they have their friends and family, linguistic, cultural or ethnic majority [Huntington (1974)] and earlier migrants from the same location they belong [Alpay, Filiztekin, and Gokhan (2008)]. Despite of the social attachment, contacts in destination are source of information regarding socio-economic opportunities (employment, housing, wages etc.) at destination for the ready-to-migrate individuals at origin, Greenwood (1972, 1971).

Migration increases city size both physically and economically. Physical definition of city size incorporate population as greater land area is needed to accommodate it while economic size incorporate economic contribution by city. Domestic and foreign investment in a particular area increases the city size by increasing job opportunities resulting in increased labour demand and higher wages which foster migration flows towards that city from rural areas as well as other cities, Lowry (1966).

Developing countries lacks funds to follow balance growth strategy. Hence they follow imbalance growth strategy[1] [Hirschman (1988)] and invest in some specific regions rather than in all. Usually policies of developing countries are biased towards industrialisation or urbanisation for rapid economic growth. Thus, create inequalities between rural and urban areas which provoke rural-urban migration. While inter-urban migration is majorly effected by the pace of growth and urbanisation in different urban areas.[2] This frames the base for this research.

The aim of this research is to seek answers to what induces labour migration from one city towards another, rather from rural to urban which is common in literature, in the light of relationships discussed above. The analysis is performed using descriptive as well as empirical investigation using a micro-penal data set comprising of 14 major cities in Pakistan defined by Labour Force Survey (LFS) for the period 2005-06 to 2012-13. The

[1]Unbalanced growth theory: This theory stresses on the need of investment in strategic sector of the economy instead of all the sectors simultaneously. According to this theory the other sectors would automatically develop themselves through what is known as "linkages effect".

[2]Cole and Sanders (1985), Etzo (2008) and Andrienko and Guriev (2003).

rest of the paper is organised to present review of existing theoretical and empirical literature in the next section followed by framework of the study, empirical analysis involving both descriptive and regression outcomes, conclusion and policy recommendations.

2. REVIEW OF LITERATURE

2.1. Theoretical Literature

Regional labour market clearing process is based either on the adjustment of labour demand that depend on regional capital endowments or on the adjustment in labour supply that depend on mobility of labour. The neo-classical remedy for adjustment of labour demand is based on wage flexibility. In absence of any external factor, the theory suggests that a decline in wages increase labour demand. In contrast, Keynes (effect) argue that consumption is largely a function of local wages and if it is tackle by a wage decline, its effect would be a negative income effect on aggregate demand. Further because of the multiplier impact of this negative effect, involuntary unemployment will be generated. In neo-classical approach Pigou effect[3] dominate Keynesian effect while in Keynesian approach Keynes effect will dominate.

Alternative mechanism to bring regional labour market to equilibrium is by allowing the regional supplies of labour to adjust that depend on migration behaviour, which this research aims to deal with. In literature, we have various theories and models discussing these supply considerations to bring equilibrium in the regional labour market via inter-regional migration behaviour. In general these inter-regional migration models and theories are classified depending if wage is a key determinant of migration. Theories and models taking wages as a key factor defining migration falls under the head of wage models while those who don't belongs to non-wage models. The basic underpinning behind migration is either disparity across regions or the urge for better and secure living that provides an incentive to migrate for individuals from one place to another.

As per Lewis (1954), in McCatty (2004), it is because of the difference in wages between the traditional and the industrial or modern sector that provides an incentive for individuals to move from the former to the later sector. Lewis (1954)'s traditional sector can be agricultural, rural or any sector that is relatively less developed technologically or infra-structurally from the modern, industrial or urban sector, Ray (2009). Classical approach explains labour migration by emphasising on actual wage differential but Harris-Todero (1970) in their rural-urban migration model emphasised on the expected wage differential between rural and urban sector. In Todero's own words,

> *"the theory assumes that members of the labor force, both actual and potential, compare their expected incomes for a given time period in the urban sector (the difference between returns and costs of migration) with prevailing average rural incomes and migrate if the former exceeds the latter."*
>
> *(Economic Development, 8th edition)*

According to Harris-Todero (1970) along with the relative high urban wages, the probability of obtaining employment in urban sector will motivate migration even in the

[3]Pigou Effect: The willingness of firm to increase employment in response to decline in wage rate.

presence of urban unemployment. Other wage models or theories in literature considers equalisation of amenity[4]-adjusted wages for bringing inter-regional labour market to equilibrium rather simple wages or expected wages. Amenity-adjusted wages are the wages adjusted for the bundle of amenity goods to be consumed at a certain location or region. These location amenities differ across region and can be positive or negative. Positive amenities provide utility while the negative cause disutility. Thus the former attract while the later repels in-migration to a region. Wages, other than being a reward for labour services in production, are also perceived to be a partial compensation for the amenity differences between regions. For a given level of utility, migrants can trade off between wages and the amenities offered in different regions. Individuals may be willing to accept low (high) wages in a high (low) amenity area to be at a certain utility level. Thus the decision to migrate will rely on the inter-regional amenity-adjusted wage differentials though inter-regional wages may be in equilibrium. Moreover, Sjaastad (1962) introduced human-capital framework for explaining migration which was further discussed widely by Becker (1962). The basic idea behind this theory is that the more an individual invest in attaining human capital (education, training etc.) or in staying in regions with high average years of schooling (an indicator for human capital in a region) would increase their productivity and efficiency through knowledge spill over effects. This yields higher wages for them as they become more competent. Hence, in order to enhance their productivity and efficiency individuals are more likely to migrate towards areas enrich with such knowledge spill over effects. Thus, asymmetries in Location and individuals also effect migration decision, Bunea (2012).

Non-wage models suggest that migration will take place even though wages or expected wages, or amenity-adjusted wages, are in equilibrium. The gravity model of migration suggests that the level of migration between two regions are directly associated with the population sizes of the area and inversely related to the distance between the two regions. Distance deterrence argument implies that the likelihood of migration between any two locations will be inversely related to the distance between them because as distance increases, the economic cost and risk associated with migration increases as well.

2.2. Empirical Literature

It was Ravenstein (1885) who came up with the laws of migration at first. He analysed 1881 UK census data descriptively and stated that migration is inversely proportional to distance and hazardous conditions while directly proportional to prosperous economic and environmental conditions.

Zhang and Song (2003) performed an empirical analysis using China's data for the year 1998 of 28 provinces, concluded that urban-rural income gap was a significant factor in defining intra and inter provincial migration. Distance tends to deter inter-provincial migration. Further unilateral causality flowing from rapid economic growth to migration using a data set from 1978 to 1999 was also found. Implementing generalised gravity mode Si-ming-li (2004) also analysed China's two data sets, 1985-90 and 1990-95, showed that in comparison with migration from urban areas population pressure, lack of cultivated land and distance was more a push factor for migration from rural areas. GDP per capita was contradicting and was found to be positively related to urban migration.

[4]An amenity is a desirable or useful feature or facility of a building or place.

Urban unemployment rate was insignificant. Average wages were significant statistically with correct sign in all cases.

In Netherland internal and international migration flows were compared descriptively using 1997 data for four mega cities, the capital Amsterdam, Rotterdam, Hogue and Utrecht. The research revealed these cities were well-hosting immigrants from across the national border while as far as internal migration is concerned they had a negative net balance that is individuals were moving out of these mega cities to got settle in the adjacent areas, Huis, Nicolaas and Croes (2004). Alpay, Filiztekin and Gokhan (2008) also conducted a research using Turkish provincial data from 1990 and 2000 census implying extended gravity model for analysing gross migration flows from origins to destinations. Real GDP, Population, Unemployment rate, Youth share in total population, Average year of schooling, No of migrants prior to the period of analysis and cost of travelling in the province of destination and origin were all significant at 1 percent significance level in explaining migration along with having the expected signs. Further Ozmucur and Silber (2002) also highlighted significance of spatial inequalities on turkey's internal migration while Peeters (2012) emphasised on the importance of gravity and spatial structure in the context of inter-state migration in Mexico.

3. METHODOLOGICAL DESIGN

The methodological design adopted in this research for the empirical analysis includes descriptive as well as regression analysis. Descriptive analysis involve an examination of relationships in terms of data presented in tabular form while the regression analysis determines the inferential strength and magnitude of the factors explaining intercity migration along the relationship of these factors with the dependent variable.

3.1. Descriptive Analysis

The main contribution of this research is analysing the attractiveness and the relative attractiveness of cities in stimulating migration from one city to another. For this a detailed descriptive analysis is performed. To understand individual city dynamics various characteristics of a city are considered which includes inter and intra city migration flows, economic participation of cities, employment opportunities, positive and negative amenities that each city holds.

3.2. Regression Analysis

This research targets the difference in one city from another in order to define migration across cities. The purpose is served by taking differenced variables representing city characteristics and analyse their impact on city-wise net migration for the major 14 cities in Pakistan over a period of 7 years using gravity model. Net migration is the difference of out-migration (emigrants) from in-migration (immigrants) All variables in this regression model are used in difference form (destination value — origin value) so as to represent the gap between destinations and origins for a given variable. This means the greater the gap for example in unemployment rate between destination and origin, the lesser is the resultant net migration because immigration is then expected to decline while emigration is expected to increase. Similarly if the gap

increases for positive city amenity indicator, there will be more immigration and less emigration expectedly.

3.2.1. *The Model*

The econometric model for estimation is as follows:

$$\begin{aligned} NM_{ijt} = \propto + \beta_1 D_{EW_{ijt}} + \beta_2 D_{UER_{ijt}} + \beta_3 D_{IFS_{ijt}} + \beta_1 D_{EMP_{ijt-1}} \\ + \rho_1 \, D\_DR_{iJt} + \varphi_1 \, D_{ijt} + \gamma_1 \, D\_CEC_{Ijt} + \gamma_2 D\_ \, UI^{+}_{ijt} + \gamma_3 NM_{ijt-1} \\ + \gamma_4 D\_HC_{ijt} + \gamma_5 \, D\_FDI_{ijt} + \gamma_6 D_{UI^{-}_{ijt}} + \mu_{ijt} \quad \dots \quad \dots \quad \dots \quad (1) \end{aligned}$$

Where,

i, j and *t* represent origin, destination and time respectively.

NM_{ijt} = Net migration from origin city (i) to destination city (j) at time (t).

D_EW_{ijt} = Difference of expected wages between cities (ji) at t.

D_UER_{ijt} = Differenced unemployment rate prevailing between cities (ji) at t.

D_IFS_{ijt} = Difference of informal sectors own by city j and city i at t.

D_EMP_{ijt-1} = Lagged differenced of employment between cities (ji) at t.

D_DR_{iJt} = Differenced dependency ratio between cities (ji).

D_{ijt} = Distance between cities (ji).

D_CEC_{ijt} = Difference between economic contributions made by cities (ji) measured in terms of their real gross domestic product.

$D\_UI^{+}_{ijt}$ = Difference between positive city amenities index (ji).

$D\_UI^{-}_{ijt}$ = Difference between negative city amenities index (ji).

D_HC_{ijt} = Differenced years of education attainment between cities (ji).

D_FDI_{ijt} = Differenced foreign direct investment inflows between cities (ji).

NM_{ijt-1} = Lagged net migration between cities.

μ_{ijt} = residuals from the regression model.

3.2.2. *Variables and Data Sources*

The analysis in this research demands data for all the variables in the model at city level which in itself is quite challenging to gather especially for the cities in Pakistan. The data set is compiled using various data sources and their various issues. Some variables are constructed using the published data sources while the others are extracted from a micro-panel data base i.e. Labour Force Survey (LFS) by aggregating the data at city level.

Migration is taken as the number of migrants in the region excluding the non-migrant children of the migrated families. Net migrants to one city from another are immigrants less emigrants in that city from a particular city. Expected wages are defined as real wages times the probability of attaining employment at destination following Harris Todaro's definition. City-wise consumer price indices, obtained from inflation monitor published by State Bank of Pakistan, are used to make city-wise wages real. Dependency ratio is equal to the ratio of dependent population (population minus employed population) to employed population. Employment, years of schooling, informal sector and unemployment rate were extracted from LFS as well.

For foreign direct investment in cities a proxy is used to reflect investment by foreign sources in intermediaries and telecommunication which constitutes a substantial portion of FDI inflows, Nazeer, Tabassum, and Alam (2017). The data for this variable is gathered from Banking Statistic of Pakistan and Pakistan Telecommunication Authority. Cities economic contributions are calculated using top-down technique from the sector-wise national gross domestic product, published in Pakistan Statistical Yearbook. City amenity indices are calculated using Education Statistics of Pakistan and Development Statistics of Sindh, Punjab, KPK and Balochistan. Variables used for positive city amenity index include provision of education and health by individual city as well as domestic financial institutions there. While for negative amenity index, congestion and reported crimes are used. Finally, the data for distance between one city to the remaining cities is obtained from the internet.[5]

3.2.3. *Construction of Variable*

For the analysis construction of variables are given immense importance. Construction of each variable is explained below

- **Real Gross Domestic Product (RGDP)**

City level real GDP is calculated using top-down approach, a statistical technique, for disaggregating the annual aggregate value of sector-wise real GDP using a suitable base for this disaggregation. These sectors include agriculture, manufacturing and services. For obtaining City-wise real GDP production of these three sectors is added up at City level as per production method for GDP measurement.

Deciding Base for Disaggregation

The base of disaggregation, industry-wise employment, is suggested by the very basic production equation regarded as a corner-stone in the foundation of production theory. Consider the Cobb-Douglas production function.

$$Y = AL^{\alpha}K^{1-\alpha} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Here A is the factor productivity, α is the labour share, $(1-\alpha)$ is the share of capital and K and L are the labour and capital respectively. As capital is fixed in short-run, labour became the base for disaggregation which tends to be considered even a stronger base for disaggregation when it is applied to labour abundant countries like Pakistan.

Production of industry belongs to the sector mentioned above is also dependent upon the same production function as

$$RGDP_s = \sum_{j=1}^{n} K_j L_j \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

Here,

$RGDP_s$ = Real GDP of sector s
K_j = Capital in industry j
L_j = Labour employed in industry j

[5]http://distancecalculator.globefeed.com/pakistan_distance_calculator.asp

Estimation of GDP

After identifying the base for disaggregation, estimation of district-wise real GDP was conducted as per the formulation below

$$RGDP_{ct} = \sum_{s=1}^{3} \frac{RGDP_{st}}{L_{st}} * L_{stc} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

$$Subject^{6}\ to\ \sum_{c=1}^{n} RGDP_{stc} = RGDP_{st} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

Here s stand for sector, c for city and t is for year.

- **Foreign Direct Investment (FDI)**

Foreign direct investment (FDI) received by Pakistan is in service dominated sector. Financial businesses and telecommunication are the two, grabbing the major share of these FDI inflows out of the services share. A city-wise FDI index is generated using these two heads as per the following equation

$$FDI\ Index_{it} = w_1 FB_{jt} + w_2 FTF_{jt} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

Foreign bank branches (FB) and telecommunication franchises owned by foreign companies (FTF) in Pakistan as a proxy for FDI in 14 major cities (*j*). $w_1 = 1/3$ is the weight given to foreign bank branches (FB) while $w_2 = 2/3$ is the weight assigned to foreign telecommunication franchises (FTF) at time t. Assigning of weights is dependent upon the degree of consumption, ease to access and spread of these branches and franchises spatially.

- **Dependency Ratio (DR)**

Dependency ration is calculated using the following formulation

$$DR_{jt} = \frac{\mu_{it} - Emp_{it}}{Emp_{it}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

Where, *j* and *t* are regions and time respectively.

DR = Dependency Ratio of *j* at *t*.
μ_{it} = Population of *j* at *t*.
Emp_{jt} = Employment in *j* at *t*.

Population data is extracted from LFS at district level.

- **City Amenity Index (UI)**

The formula for city amenity indicator index for positive amenities (UI_{jt}^{+}) is

$$UI_{jt}^{+} = w_1 EI_{jt} + w_2 HI_{jt} + w_3 FI_{jt} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

Where w represents fractional weights (w_1=w_2= 2/5 and w_3 =1/5) allotted to education index (EI_{jt}), health index **(**HI_{jt}**)** and financial institutions **(**FI_{jt}**)**. *j* and *t* is for cities and time.

[6]Subjective function is based on the assumption that LFS covers all existing regions in the country.

And the formula for city amenity indicator index for negative amenities (UI_{jt}^{-}) is

$$UI_{jt}^{-} = \frac{CTI_{jt}+CI_{jt}}{n} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

Where CTI_{jt} abbreviation is for congestion and transportation index while CI_{jt} symbolizes reported crime index for city *j* at time *t*.

- **Expected Wages (EW)**

Expected wages are calculated following Todaro's formulation

$$EW_{jt} = RW_{jt} \times PAE_{jt}$$

Or

$$EW_{jt} = \frac{W_{jt}}{CPI_{jt}} \times \frac{Emp_{jt}}{LF_{jt}} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

Here,

EW_{jt} = Expected wages of city *j* at time *t*.

RW_{jt} = Real wages of city / region *j* at time *t* = Nominal wages (W_{jt}) divided by CPI.

PAE_{jt} = Probability of attaining employment in city *j* at time *t* = Employment in *j* at *t* divided by urban labour force (LF_{jt}) in *j* at *t*.

- **Distance (D)**

Distance between cities, and from other areas of the country towards major cities and other urban areas are extracted manually from the internet in kilometres. The web link can be found in the data sources. For rural-urban regression average distance is calculated from origin districts to cities and other urban areas defined by LFS while for urban-urban regression individual distance to a specific city is used from the remaining 13 cities. Distance to a specific destination is from all origins is calculated as

$$Average\ D_{ji} = \frac{\sum_{i=1}^{n} Dji}{\sum n_i} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (11)$$

$Average\ D_{ji}$ = Average distance to a certain destination (*j* = cities or urban areas) from all origins (*i*).

$\sum_{i=1}^{n} Dji$ = Sum of all the distances from origins (*i* = 1, 2, 3….. n) to a specific destination (*j*).

$\sum n_i$ = Sum of number of origins (*i* = 1, 2, 3….. *n*)

3.2.4. *Econometric Techniques*

As the dependent variable in the above regression model is net migration it may take a value equal or less than zero. Positive values of net migration reflects more immigrants than emigrants, its negative values means less immigrants than emigrants and its zero value indicates that either no one migrates from or migrates in city i from a particular city j. Or there are exact number of immigrants and emigrants which on differencing yields zero net migration. Having values ≤ 0 limits the log transformation and makes the estimation biased. To tackle this two techniques are applied.

First is the use of Tobit regression for such censored data. Tobit model, also called censored regression model, is attributable to Tobins (1958)'s work. It is applied when the data is censored by some criteria**.** It is estimated on the basis that endogenous variable is censored at some value.

Consider a latent relationship, between *x* and *y*, of the form

$$y_i' = x_i'\beta + u_i, \;\; u_i \sim N(0, \sigma^2) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (12)$$

Where y_i is the dependent variable, *xi* represents independent variables, β are slope coefficients and *u* is the independently distributed error term following a normal distribution with mean 0 and constant variance (σ^2).

The observability rules for censored variable are

Rule: 1 y = $y_i'.1(y' > c) + c\ 1(y' \leq c)$
Rule: 2 y = $y_i'.1(y' < d) + d\ 1(y' \geq d)$
Rule: 3 y = $y_i'.1(\ c < y' < d) + c\ 1(y' \leq c) +\ d\ 1(y' \geq d)$

Rule 1 is the case when the dependent variable (*y*) is censored at and below a limit *c*, rule 2 is the one when it is censored at and above a threshold d while rule 3 depicts the possibility that the data is censored from both ends, at and below the limit c and at and above the limit d at the same time.

Depending on the characteristics of the regres and considered in urban-urban regression the observability criterion followed is:

$$y_i = y_i'.1(y_i' > 0) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (13)$$

The probability of observing censored and non- censored observation can be calculated as,

$$\Pr(y_i = 0|xi) = 1 - \Phi(x_i^*\beta/\sigma) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (14)$$

$$\Pr(y_i > 0|x_i) = \Phi(x_i^*\beta/\sigma) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (15)$$

From the Tobit specification with censoring from below at zero, we can derived the expected value of the observed dependent variable y_i as

$$E(y_i \mid x_i) = \Pr(y_i > 0/x_i).E(y_i \mid x_i > 0) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (16)$$

That is the expected value of all observation, Ey, is equal to the product of the probability of being above the limit, Pr ($y_i > 0/x_i$) = F(z), and the expected value conditional upon being above the limit.

Marginal effects for latent, censored and uncensored expected values can be obtained by taking partial differential of equation 6.[7] The marginal effect on the latent variable is given by

$$\frac{\partial E(y_i)}{\partial x_i} = \beta \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (17)$$

Considering the effect of change in independent variable on the expected value of observed dependent variables for the whole sample, the marginal effect conditional on

[7]Mcdonald and Moffitt (1980).

censoring is expressed as a the product of marginal effect of the latent variable multiplied by the probability of being above the limit. Symbolically,

$$\frac{\partial E(y_i \mid x_i)}{\partial x_i} = \beta \,.\, \Phi(x_i^* \, \beta / \, \sigma) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (18)$$

And finally, the marginal effect of change in some independent variable on non-censored dependent variable is

$$\frac{\partial E(y_i \mid x_i, y_i > 0)}{\partial x_i} = \beta \, (\, 1 - \, \frac{\partial E(y_i \mid x_i)}{\partial x_i}) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (19)$$

Apart from the Tobit analysis, a statistical concept is also applied to deal with the censored dependent variable. A constant greater than the minimum of the dependent variable series (C > min. NM) is added to the dependent series (NM+C) just to make it greater than zero (NM>0) and then GMM estimation is carried out following Arellano-Bover / Blundell-Bond (1998) linear dynamic panel-data approach. The approach is designed especially to account for a panel with time (t) less than cross sectional units (n). Arellano-Bover / Blundell-Bond (1998)'s methodology is more feasible, than the one presented by Arellano–Bond in 1991, because of an additional assumption that first differences of instrument variables are uncorrelated with the fixed effects that allows the introduction of more instruments and increase efficiency. The results from the two techniques are then compared. The consistency of the GMM estimator depends on the validity of the moment conditions and this can be tested using two specification tests: the Hansen test is a test of the over identifying restrictions and the joint null hypothesis is that the instruments are valid, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation; and the Arellano-Bond test for no second order serial correlation in the error term Baltagi (2005).

4. DESCRIPTIVE RESULTS

As per descriptive scrutiny of the fact, about 41 percent of the total migrants rushed towards major fourteen cities who only occupy 11percent of the total region in Pakistan as per the labour force survey (LFS) on average. 20 percent of the regions attract 15 percent of the total migrants and 69 percent of the regions are successful in grabbing 44 percent of total migrants.

Table 2

In-Migration by Destination Regions

		Average		2012-13	
S. No.	Area	Migrants	In %	Migrants	In %
1	Major Cities	5273353	40.90	4396405	36.41
2	Other Urban Areas	1991578	15.45	2005063	16.60
3	Rural Areas	5627671	43.65	5674621	46.99
	Total	12892603	100.00	12076089	100.00

Source: Author's Tabulation.

It would be interesting to know the characteristics of these 11 percent regions, the fourteen major cities that caught a bigger chunk of the migrant pie. Urban migration is different from simple migration as it takes into account the geography of region's location and its location-specific features.

4.1. Migration and Economic City Size

Size of a city plays an important role in defining in-migration of a city. Size of a city is usually measured in terms of real GDP produced by a city. Cities with relatively greater economic size tend to experience more in-migration.

Table 3

Migration, Real GDP and Type of Cities

Migration, Real GDP and Type of City Averaged for 7 Years		
Cities	Migration Count	Real GDP Rs In Million
Lahore	1057704	299734.4
Faisalabad	359138	120765.2
Rawalpindi	394077	76714.6
Multan	130691	59055.4
Gujranwala	194122	61772.4
Sargodha	31901	18963.6
Sialkot	40765	17304.1
Bahawalpur	77140	30877.3
Islamabad	276048	24256.7
Karachi	2234148	516157.4
Hyderabad	138566	63095.6
Sukkur	32936	19416.7
Peshawar	250670	55345.9
Quetta	27356	25731.2

Source: Author's Tabulation.

The above tabulation shows that Karachi has the largest share in income among cities and thus also hosts the largest number of migrants among cities also followed by Lahore and others. Relatively greater share of a city in gross domestic product reflect relatively greater production and employment opportunities in them. Thus, attracting more migration towards them.

4.2. Size of Informal Sector and In-Migration

Migration and the size of informal sector are positively linked to one another. Existence of a large informal sector is a strong driver for attracting unskilled labour migration especially. Informal sector and migration flows in major cities are tabulated below, sorted in ascending order with respect to the size of informal sector hold by the cities on average.

Table 4

Size of Informal Sector and In-Migration in Major Cities of Pakistan

Informal Sector and In-Migration		
	Average City-wise	
Name	In-Migration	Informal Sector
Karachi	2234148	1541552
Lahore	1057704	1096897
Faisalabad	359138	471303
Gujranwala	194122	266756
Rawalpindi	394077	261200
Multan	130691	248558
Hyderabad	138566	207513
Peshawar	250670	188376
Bhawalpur	77140	90084
Sargodha	31901	74581
Quetta	27356	68937
Sialkot	40765	68054
Sukkur	32936	66733
Islamabad	276048	61692

Source: Author's Tabulation.

Cities with enlarged informal sector encounter more migration inflows. Karachi has the largest informal sector employment and hosts the highest number of migrants as well. In-migration is highest in Lahore after Karachi and so does its informal sector. Islamabad has the smallest informal sector. Islamabad is the capital city of Pakistan. It is home to ministries and major government headquarters. Thus, the city is more documented (formal economy). Migrants reaching Islamabad are mostly the skilled ones and for them informal sector matters less.

4.3. City Amenities Influencing Migration

City amenities play an important role in grabbing migrants from various destinations. Positive amenities such as financial intermediaries, education, health and recreational opportunities tend to increase in-migration. While, the view from other side of the mirror, negative area amenities like crime rate and congestion are repulsive in nature. It is more economical and viable for the public and private sector both to incur overheads for providing such social services to masses because of relatively lower unit costs rather than to those divergent over geographical limits of an area. Cities are areas with high population concentrations living in intimate proximity; hence these positive amenities are readily available and accessible there. Apart from the spill over effects of concentrations, ills generated from them were also enormous. Population concentrations give rise to conflicts and congestion as well. Hence area with higher concentrations may have higher positive as well as negative amenities.

Table 5

City Amenities Influencing Migration in Major Cities of Pakistan

City Amenities Influencing Migration (Average of 7 Years)				
S. No.	Cities	Migration	Positive Urban Amenities Indicator	Negative Urban Amenities Indicator
1	Karachi	2234148	722.91	223592.04
2	Lahore	1057704	554.79	387711.51
3	Rawalpindi	394077	359.85	68028.05
4	Faisalabad	359138	337.98	97595.56
5	Islamabad	276048	268.78	67961.81
6	Peshawar	250670	217.63	78086.71
7	Gujranwala	194122	249.86	61440.89
8	Hyderabad	138566	240.70	14176.05
9	Multan	130691	244.32	174533.10
10	Bhawalpur	77140	290.43	50132.38
11	Sialkot	40765	295.97	50574.85
12	Sukkur	32936	178.08	8106.43
13	Sargodha	31901	282.00	40306.32
14	Quetta	27356	218.15	32730.84

Source: Author's Tabulation.

Karachi ranked first for both highest in-migration and for highest positive amenities indicator among major cities. Lahore is second and so on. Cities with higher positive amenities indicator also suffer potentially from the negative by-products of higher concentrations as well. Also, initially the prime objective of migrants in their working life is earning rather concerning about amenities especially the negative ones. Hence despite of high negative amenities indicator cities seems to have high in-migration as individuals got compensated economically for bearing them.

4.4. Foreign Direct Investment in City and In-Migration

Cities with greater foreign direct investment generate greater and better employment opportunism than local investment which in turn increases labour demand that has to be met either locally or migrated labour force. Thus cities with high FDI signals migrants to rush towards them.

Karachi and then Lahore holds the highest FDI index among all cities. These two cities facilitate other cities, host migrants and provide social, political and economic opportunities as well. The index for Faisalabad is almost half that of Lahore and so does its in-migration. Developments carried out in Peshawar and Multan might be contributing to increased employment, in-migration and better FDI indices over there. There also exists a possibility that cities with relatively low FDI indices might have some forces at work such as receiving domestic investment, unfavourable conditions for living in other areas, political or social pressures etc., which are creating employment or catching migrants.

Table 6

City-wise FDI Indices, In-Migration and Employment for the Year 2012-13

City-wise FDI Indices, In-Migration and Employment				
S. No.	Cities	In-Migration	FDI Indicator Index	Employment
1	Lahore	832993	73.67	1273932
2	Faisalabad	401666	30.17	746108
3	Rawalpindi	384726	22.00	361584
4	Multan	98107	36.17	302701
5	Gujranwala	180678	26.17	328416
6	Sargodha	27436	17.67	99190
7	Sialkot	28505	10.33	105699
8	Bhawalpur	68683	6.67	147636
9	Islamabad	305617	18.50	189238
10	Karachi	1658442	86.17	2823079
11	Hyderabad	108450	21.83	293450
12	Sukkur	25235	15.67	85081
13	Peshawar	254297	36.00	289041
14	Quetta	21570	17.17	120800

Source: Authors calculation using various data sources and official websites.

4.5. City-wise Migration: Within and Across Cities

The forthcoming table enlightens our understandings about migration with-in and between cities. Out of total in-migration in these cities 29.19 percent and 25.51 percent migration is intra city migration as per the average and 2012-13 figures. Karachi's share in intra migration is very much higher for both average around the years and in 2012-13, 23.76 and 19.70 percent in exact sequence as stated. This is understandable as Karachi, the city of lights, is the only city that has five districts in it otherwise cities is usually situated with-in a district. This is the reason why statistics for Karachi usually stands out predominantly among other cities. It also has highest in as well as out migration.

Table 7 (a)

Migration with-in and in between Major Cities

Migration With-in and Between Cities										
	Average (7 Years)					2012-13				
	In-Mig[8]			Out-	Net	In-Mig			Out-	Net
Names	Intra	Inter	Total	Mig	Mig	Intra	Inter	Total	Mig	Mig
Lahore	2.13	10.24	12.37	13.24	10.27	1.14	9.23	10.37	10.83	9.01
Faisalabad	0.57	3.79	4.36	7.66	–3.55	1.39	5.09	6.48	6.91	5.24
Rawalpindi	0.44	4.73	5.17	6.57	1.84	0.73	6.71	7.44	7.95	5.97
Multan	0.45	2.28	2.73	5.18	–3.15	0.41	1.91	2.32	4.95	–5.35
Gujranwala	0.88	5.64	6.53	5.92	7.98	1.45	6.26	7.72	4.82	16.18
Sargodha	0.05	0.62	0.67	3.24	–5.51	0.11	0.52	0.64	3.89	–8.86
Sialkot	0.01	0.71	0.72	5.37	–10.45	0.00	0.28	0.28	3.32	–8.60
Bahawalpur	0.27	1.87	2.13	2.45	1.37	0.27	1.92	2.19	1.58	3.98
Islamabad	0.01	4.65	4.66	1.79	11.55	0.00	5.82	5.82	1.67	17.92
Karachi	23.76	33.02	56.79	33.02	113.80	19.70	34.58	54.28	38.26	101.05
Hyderabad	0.17	1.16	1.33	6.87	–11.97	0.09	1.13	1.22	6.44	–14.02
Sukkur	0.14	0.70	0.84	2.53	–3.20	0.17	0.47	0.64	2.41	–4.54
Peshawar	0.29	1.25	1.54	4.41	–5.34	0.02	0.56	0.58	5.69	–14.35
Quetta	0.02	0.15	0.17	1.76	–3.63	0.02	0.01	0.04	1.30	–3.65
Total	29.19	70.81	100.00	100.00	100.00	25.51	74.49	100.00	100.00	100.00

Source: Author's Tabulation.

[8]Mig stands for migration.

Lahore earned second position for both in and out migration. The rest of the cities follow afterwards. As for the net migration, Hyderabad, Sialkot, Peshawar, Quetta, Sukkur, Sargodha and Multan experience net out migration while Karachi, Lahore, Islamabad, Rawalpindi, Gujranwala and Bahawalpur are more prone to net in-migration for overall average and for the latest year statistics. Faisalabad had net out-migration on average while having net in-migration in 2012-13.

5. REGRESSION ANALYSIS

The outcome of both estimation techniques are tabulated below for an easy comparison. Descriptive summary and correlation matrix of the variables are presented in the appendix attached to this chapter (Table A-1 and A-2 respectively). Post estimation tests of GMM estimation are reported in Tables A-3 and A5-4 in appendix. Informal sector is dropped from the model on the basis of its high correlation with real gross domestic product, a proxy for city's economic contribution (CEC). The results of the tobit and GMM estimations of the model presented in Equation 3.6 of chapter 3, are reported in the Table 1.

Table 8

Intercity Migration Regression Model Results

Method Regress and Regressors	GMM Results NM*C			TOBIT Results NM		
	Coefficient	Z	P>|z|	Coefficient	Z	P>|z|
NM (-1)	0.132	11.31*	0.000	0.107	2.55*	0.011
D_CEC	0.012	2.46*	0.014	0.022	1.89*	0.058
D_CEC(-1)	0.013	1.46	0.145			
D_UI^{+}	2.544	2.89*	0.004	4.210	2.37*	0.017
D_UI^{-}	–0.007	–2.46*	0.014	–0.014	–2.02*	0.047
D_HC	735.019	2.33*	0.020	934.730	2.08*	0.038
D_DR	–69.732	–0.38	0.705	–787.727	–2.33*	0.020
D_EW	0.023	2.56*	0.010	0.048	2.74*	0.006
D_UER	–30.867	–2.51*	0.012	–57.781	–2.47*	0.014
D_FDI	30.574	0.89	0.374	–38.513	–0.78	0.433
D_EMP (-1)	0.002	2.01*	0.044	0.005	2.01*	0.048
D	7.268	1.11	0.269	2.651	1.73*	0.084
Constant	75118.880	16.89*	0.000	840.752	0.73	0.467
Number of Obs	=	1092		=	1092	
Number of Groups	=	182		=	182	
Wald chi2(11)	=	528.6		=	83.49	
Prob > chi2	=	0		=	0	
Number of Instruments	=	49				
Log Likelihood	=		–5585.7			
Rho	=		0.4882	0.393		0.584

Source: Author's estimation and tabulation using Stata 12.

*Mean significant at less than 5 percent.

**Mean significant at less than 10 percent.

All variables bear correct signs except for distance in both regressions. Distance is significant in Tobit results while its insignificant in GMM results. Distance is found to be positively linked with migration and which is justified partially because of the ease in mobility within the cities with no barriers, controls or policies limiting or directing migration flows. Thus for individuals employment opportunities matters more and they are willing to move across distances if they expect to grab either an employment or a better employment opportunity at destination. In-migration is partially because of the argument that increased expected wages and improved means of transportation vanish distance's negative consideration, especially across Punjab, the province with majority of the migration flows.

The economic contribution of a city is reflective of concentration of economic activities in it such as investment, production, consumption, trade etc. Hence cities contributing more towards the national GDP are more prone to net immigration relative to origin city. If real GDP of a city increases by one thousand relative to other cities, net immigration to that city increases by 12 migrants.

The three labour market variables that are expected wages, unemployment rate and lagged employment are statistically significant in both models, endorsing the fact that relative difference in labour market variables even across cities is of immense importance in directing migration flows from one city to another. With one percent change in unemployment rate gap (D_UER) between destination and origin city, net migration change by 31 and 58 migrants as per GMM and Tobit estimations respectively in the opposite direction at destination city. Likewise, if the expected wage gap (D_EW) between two cities increases, the city with higher expected wages tend to encounter relatively more in-migration and less out-migration or a net in-migration. The result indicate that if the expected wage gap between cities change by 1000 rupees, net migration in the city with relatively higher wages changes by 23 (0.023*1000) migrants in the same direction. Greater the gap in lagged employment (D_EMP (-1)) between cities, greater the net migration is inclined towards the city that relatively has more employment in the previous time period. More employment in the previous year reflects more investment expenditure in it. And as investment follows multiplier effect, more opportunities in the current period are to be generated which attracts migrant in the current year.

Dependency ratio (D_DR) is insignificant in GMM estimation while the Tobit estimation is contradicting it. More dependency ratio at origin city relative to destination city results in increased net migration at destination through discouraging emigration from destination city and encouraging immigration into it.

High year of education attainment in a city is backed by the provision of a sound education system. Inhabitants of cities with better access to education facilities are relatively more productive, efficient and equipped to adopt new technologies easily. Cities with more human capital (HC) attract more investment because of its efficient labour force. Investment generates more employment vacancies and thus migrants are attracted toward the city. In both GMM and Tobit results, the statistical significance and positive sign of coefficient of the variable reflecting human capital has provided evidence for it.

Migration is positively linked with positive amenity provision not only for a better livelihood but also for the betterment of their family. The index for positive city amenity is significant in GMM and Tobit estimation. The more positive amenities destination city holds in comparison with origin city, more net in-migration is experienced by the destination city. For a unit increase in positive urban indicator gap (D_UI^{+}) net migration is increased by 3 (GMM results) and 4 (Tobit results) migrants approximately. Similarly negative amenities (D_UI^{-}) like congestion and crime in a city discourage immigration and encourage emigration from it. Negative amenities slow down the pace of city's economic growth.

6. CONCLUSION AND POLICY SUGGESTIONS

This research is designed to explore and explain the inter-city migration patterns in Pakistan. Migration is a major contributor towards the rapid urbanisation than natural population increase. Migration is derived by various push and pull factors at various origins and destinations. Desire to be economically prosperous motivates individuals to move towards area with relatively better economic and social environment offering a better standard of living. Hence, they move from relatively less urbanised areas to highly urbanised and modernised areas.

This research is unique in explaining intercity migration in the context of Pakistan. The study provides both descriptive as well as regression analysis explaining the relative dominance of one city over another, to attract migrants from other cities. The empirical analysis reveals that the relative size of the informal sector in a city and the magnitude of foreign direct investment in them fosters in-migration towards cities. Regression analysis that consist of two regression techniques, generalised method of moments (GMM) and Tobit regression techniques to examine migration across 14 major cities is focused over a time period of 7 years (2005-06 to 2012-13). It is found that the labour market variables (expected wages, employment, and unemployment rate) and regional economic contribution have strong significant influence on inter-city migration flows. Dependency ratio is statistically insignificant to affect migration flows as per GMM estimation though it is significant in explaining migration across major cities as per Tobit estimation results. Distance, as suggested by the gravity model, and years of education, reflecting human capital, have positive significant impact on migration flows across cities. Further migration flows are significantly depending on the area or regional positive and negative amenities attached to it supporting theories of location.

Government policies, in developing countries especially, are of immense importance in shaping and directing migration flows in order to accelerate the pace of sustainable development. In developing countries, a balanced growth strategy is difficult to adopt usually owing to lack of availability of funds. Thus, unbalanced growth strategy is being implemented, usually biased towards few urban regions. The policies implemented are unduly inclined towards rapid urbanisation via industrialisation. As a result investment is confined to some specific regions leading to unequal income distribution and disparities across regions provoking migration towards few urban centres. A number of valuable policy recommendations can be drawn from this research that would enable the government and the relevant authorities to control and direct migration towards the betterment of our nation and converge it towards the path of prosperous relative balance growth and development.

Government should revise its policies in favour of balanced growth of regions and cities. It should make effective policy arrangement for slowing down the pace of rapid urbanisation concentrating in only few regions or cities rather it should divert and boost the process of urbanisation to small towns and rural area. This would help not only in growing the number of urban areas but also stabilises the existing major urban centres like Karachi and Lahore for which diseconomies of scale are becoming persistently more visible with bulk of masses moving into them year after year making their sustainable development debatable. Even across major cities, there exist inequalities in their growth resulting from biased policies in favour of few cities. Government should accelerate development in comparatively smaller cities rather than over investing in one or two. Migration is considered as an equilibrating response to existing disparities and disequilibrium among regions and across cities and the government should come forward to reduce this urban bias. Concentration of economic activities generates employment opportunities which are a strong driver of migration and development of the region. Hence if government wants to target development of various regions following balance strategy it should divert economic activities towards the targeted region and cities.

Provision of basic utilities and facilities such as health, education, recreational activities, stable law and order condition etc also plays a vital role in shaping migration and encouraging a region's growth. These factors could also be used by the government to formulate effective policies of migration and growth. Availability of better health, education and political stability across regions would diminish the need to move towards certain specific areas for such facilities and would eventually reduce the unnecessary burden from these specific host region and cities. Moreover, provision of health and education facilities across regions would increase labour productivity and efficiency. They would become more skilled, trained and productive thus would contribute more towards national development and growth.

APPENDIX

A-1

Descriptive Statistics for Intercity Migration Regression Model.

Descriptive Summary	NM	D_DR	D_HC	D_EW	D_FDI	D_IFS	D_NUI	D_CEC	D_UER	D	D_EMP (-1)	D_PUI
Mean	0	0	0	0	0	0	0	0	0	631.514	0	0
Median	0	0	0	0	0	0	0	0	0	537.5	0	0
Maximum	82804	5.603	4.929	180063.9	86	1586793	526192.4	584858.5	77.815	1448	2717341	1323.708
Minimum	-82804	-5.603	-4.929	-180064	-86	-1586793	-526192	-584859	-77.8149	18.9	-2717341	-1323.71
Std. Dev.	12419.81	0.931	1.606	40563.1	30.777	666795.4	152229	212930.8	24.566	406.873	1060402	266.421
Skewness	1.21E-16	-5.62E-16	7.47E-17	5.35E-17	0	2.59E-16	-5.29E-16	2.81E-17	-5.32E-16	0.465	-1.96E-16	-4.16E-16
Kurtosis	17.921	22.061	3.719	4.597	3.403	3.097	5.049	3.675	4.292	2.029	3.432	11.743
Jarque-Bera	10130.07	16530.93	23.585	116.093	7.396	0.432	190.955	20.744	75.991	82.240	8.501	3478.017
Probability	0	0	0.008	0.000	0.025	0.806	0.000	0.000	0.000	0.000	0.014	0.000
Sum	0	0	0	0	0	0	0	0	0	689613	0	0
Sum Sq. Dev.	1.68E+11	944.9542	2815.135	1.80E+12	1033390	4.85E+14	2.53E+13	4.95E+13	658412.4	1.81E+08	1.23E+15	77439206
Observations	1092	1092	1092	1092	1092	1092	1092	1092	1092	1092	1092	1092

A-2

Correlation Matrix of the Variables in Intercity Migration Regression.

Correlation Matrix	D_DR	D_HC	D_EW	D_FDI	D_IFS	D_NUI	D_CEC	D_UER	D	D_EMP (-1)	D_PUI
D_DR	1.000										
D_HC	-0.098	1.000									
D_EW	-0.077	0.661	1.000								
D_FDI	-0.119	0.025	0.092	1.000							
D_IFS	-0.234	-0.007	-0.004	0.898	1.000						
D_NUI	-0.189	0.125	0.065	0.586	0.828	1.000					
D_CEC	-0.211	0.064	0.067	0.492	0.980	0.680	1.000				
D_UER	0.268	-0.071	-0.522	-0.126	-0.161	-0.089	-0.146	1.000			
D	0.036	-0.037	-0.027	0.013	-0.011	0.004	-0.004	0.059	1.000		
D_EMP (-1)	-0.209	0.053	0.056	0.591	0.981	0.819	0.699	-0.154	-0.006	1.000	
D_PUI	-0.171	0.224	0.131	0.699	0.701	0.696	0.741	-0.111	-0.002	0.753	1.000

A-3

Inter City Migration Regression Model Post-Estimation Sargan Test of Over Identifying Restrictions

Inter City Migration Regression Model Sargan Test of Over Identifying Restrictions H0: over identifying restrictions are valid		
chi2(34)	=	18.69218
Prob > chi2	=	0.6503

A-4

Inter City Migration Regression Model Post-Estimation Arellano-Bond Test for Autocorrelation

Inter City Migration Regression Model Arellano-Bond Test for Zero Autocorrelation in First-Differenced Errors		
Order	z	Prob > z
1	-4.6705	0
2	-0.06827	0.9456
H0: no autocorrelation		

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