LABOR MARKET ANAYSIS: ISSUES AND FACTS

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Keywords: agglomeration economies, urbanization, segmentation, non-farm, informal sector, poverty, slums, basic amenities, rural-urban migration, low income households, remittances.

Contents

Summary

The chapter reviews issues, models and empirical findings relating to labor economics. First, some of the general research questions are taken up in the context of labor demand and supply, which is followed by detailed discussions on rural and urban labor markets. In the rural context the agriculture and the non-farm sectors are analyzed separately. Four important streams of arguments in the context of urban labor market, namely the agglomeration economies framework, limited-industry based urbanization thesis, contact based migration and labor market segmentation theory and finally, the political vote bank theory are discussed in detail. Debates and differences in findings, if any, are brought out at the appropriate places. At the end, the main issues are listed in order to bring out the policy implications of the study.

1. Introduction

Issues and research questions, which have received extensive attention in the context of labor market analysis are enormous both in the context of developed and developing countries. Some of these themes include family enterprises, missing labor markets, geographical mobility, health/nutrition effects on productivity, labor adjustments to shocks in the presence of imperfect markets and information problems in labor markets (Behrman, 1999). We, however, while addressing some of these issues consider the rural and urban labor market analysis separately. This is because the rural-urban differences in terms of labor market characteristics, research questions and policy directives are quite substantive. However, before focusing on the rural and urban labor

markets we discuss some of the issues relating to the supply of and demand for labor in general.

Among several factors that influence labor force from supply side include age composition of the population, educational status, fertility rate, the ongoing wage rate and the overall business status of the economy (For a detailed review see Mitra, 2000). In fact, one important aspect of labor market analysis is the responsiveness of labor force participation rate to the business cycle. The latter is represented by the unemployment rate of the group, which is a better indicator of the stage of the business cycle as it operates in the labor market than is the overall unemployment rate (Pencavel, 1986). With a rise in the unemployment rate the participation rate is expected to decline due to the phenomenon of discouraged dropouts.

The following equation is fitted to annual U.S. data from 1955 to 1982 for the civilian labor force participation rates of different groups of males in the population (Pencavel, 1986):

$$L_{jt} - L_{jt-1} = a_j + b(U_t^r - U_{t-1}^r) + e_{jt}$$

where, L_{jt} is the civilian labor force participation rare of group j in year t and U_t^r is the unemployment rate of white males aged 35-44 years in year t.

At the micro level the observed hours of work (h) may be expressed as a function of reported hours of unemployment (UN) and a vector of variables believed to affect the hours an individual would choose to work in the absence of employer's mandates (Pencavel, 1986):

$$h = h_0(p, w, y; A, e) - a(UN)$$

where a is some unknown fraction of reported hours of unemployment that represents to sell labor, A is individual's personal characteristics, e for individual's tastes, p the fixed per unit price of bundle of commodities x, w the hourly wage rate, and y represents independent of the working decision.

The influence of social and cultural variables, particularly on the women participation rate is significant too. Spouse's earnings are also seen as an important determinant of participation as higher wages for males may induce women to allocate their time towards health, education and overall welfare of the children. However, in the context of a developing country like India mother's access to income is seen as an important determinant of children's (particularly that of the girl-children) well-being in terms of nutritional and educational status (see Mitra, 2000). Several studies in the past made an attempt to explain the variations in the work participation rate of males and females across regions, which are diverse in terms of socio-economic, demographic and cultural characteristics. This has been pursued mainly to capture the long-term behavior of the work supply given the paucity of long time series data.

Killigsworth and Heckman (1986) analyze the behavior of female labor supply with special reference to Western economies as the female labor supply has important implications for many other phenomena, including marriage, fertility, divorce, the distribution of family earnings, and male-female wage differentials. Although the inter-relationships, as the authors point out, between women's work and wages have been highlighted in a life-cycle setting, rigorous analysis of such issues using formal life-cycle labor supply models with endogenous wages still needs to be carried out.

Turning to labor demand, its analysis is required to determine the level of wages as long as the supply of labor is not perfectly elastic in the long run. However, if labor supply is perfectly elastic (or there exist instances of unionized employment), work demand allows one to determine the impact of exogenous changes in wages (Hamermesh, 1986). Two important determinants are the overall growth measured in terms of value added and the real wage rate. Also, the choice of technology is crucial in determining the quantum of employment, which in turn is taken to be a function of the relative factor prices. In a two-factor model the Allen elasticity of substitution (s) is defined as the proportionate change in capital (K)/labor (L) due to proportionate change in wage (w) to rental (r) ratio holding output constant:

$$s = F_{\mathrm{L}} F_{\mathrm{K}} / Y F_{\mathrm{LK}},$$

where Y is output, and F_{L} and F_{K} are marginal productivity of labor and capital respectively. F_{LK} is second order cross derivative representing change in marginal productivity of labor due to unit change in capital

The own-wage elasticity of labor demand at a constant output and constant r is given by

$n_{\mathrm{LL}} = -(1 - wL/Y)s$ and the cross-elasticity of demand by $n_{\mathrm{LK}} = (1 - wL/Y)s$

where wL/Y represents the share of labor in total revenue.

However, to explain the biases against labor intensive technology, variables, other than relative factor price, include trade unions strength and strikes, lockouts etc. After controlling for some of these variables estimation of elasticity of employment with respect to growth in value added has been an important feature of the empirical analysis. Another determinant of employment is man-days per worker. With higher magnitude of man days per worker total employment may decline whereas with no scope to increase the man-days per worker, i.e., if labor is utilized to the fullest extent with no possibility of under-utilization, the number of employees goes up in response to rise in demand.

The other issue of interest in this regard is the wage-productivity nexus. How much of productivity growth percolates to benefit workers in terms of wage increase is estimated by computing the wage elasticity with respect to labor productivity:

$$w = f(LP, K/L, M)$$

where, w is real wage rate per worker, LP, labor productivity, K/L, capital-labor ratio, and M, man-days per worker). In an economy-wide model, particularly in a general equilibrium framework wages of different sectors may be inter-related. For example, wages in the large industry can influence the earnings in the small-scale industries, which again may impact on the informal sector enterprises and so on. Further, issues of labor demand not only involve substitution of one factor for another but also possibilities of substitution among groups of workers. The impact on wages of policies such as skills training or population control, which change the demographic and the human-capital composition of the work force can be assessed if the nature and the degree of substitution relations among groups of workers are known (Hamermesh, 1986). So heterogeneity of labor needs to be considered while estimating the aggregate demand for labor in the process of economic growth. On the other hand, from an individual point of view person i's wage $(Y_i) = g(\mathbf{X}_i, S_i)$,

where, $\mathbf{X}_i$ represents vector of control variables including measures of ability and family background, and S_i, years of educational attainment, (Angrist and Krueger, 1999). This kind of specification is quite popular in analyzing the returns to education or human capital formation as it directly captures the impact of educational attainment on wages and earnings.

Job search and recruiting friction and need to reallocate workers from time to time across alternative productive activities are some of the issues falling into the research frontier. The equilibrium search approach, as Mortensen and Pissarides (1999) mention, emphasizes the role of employers on the demand side of the labor market, and it allows to understand the effects of alternative wage setting institutions and different work market policy regimes. In general, as Angrist and Krueger (1999) point out, broadly two types of empirical research have been pursued in labor economics: descriptive analysis and causal inference. While the former establishes facts that need to be explained by theoretical reasoning the latter seeks to determine the effects of particular interventions or policies or to estimate features of the behavioral relationships emerging from economic theory. Both are, however, important for understanding the reality and they are often complementary to each other.

2. Rural Work Market

Employment in agriculture is often an outcome of excess supplies of work implying gross underemployment. Decomposing the total production into area and yield, the determinants of these two variables have been identified. Acreage response depends on both irrigation and price factors. Yield is a function of irrigation, HYV technology and the improved quality of seeds, and the quality of work, particularly in terms of knowledge on operating higher levels of technology. But the latter component is somewhat a neglected issue though in analytical research this dimension has been brought out very distinctly. In standard production function models work is included as one of the factors of production without emphasizing the heterogeneity of work.

Since agriculture is the primary source of employment in the rural areas, agricultural performance in turn is one of the major determinants of the living standards, which can

be seen from the work on rural poverty (Ahluwalia, 1978). Other than food availability, prices are also important in determining living standards though the correlation between agricultural performance and prices can be very high. Hence, poverty (POV) may be expressed as a function of food availability per capita or per capita agricultural production (F) and prices (P): $POV = f(F, P)$. However, in an attempt to distinguish between the core inflation (that component of measured inflation which is growing due to their own momentum or not having any medium to long run impact on real output) and non-core inflation (prices which are associated with production) and similarly between core output and non-core output, the vector auto-regression (VAR) model seems to be appropriate as suggested by Quah and Vahey (1995). This can be represented as follows (with time being represented by t) though the original work was pursued in relation to real industrial output:

$$F = A_1F_t + A_2F_{t-1} + \ \ldots + \ B_1P_t + B_2P_{t-1} + \ldots + e_t$$

$$P = C_1P_t + C_2P_{t-1} + \ldots + D_1F_t + D_2F_{t-1} + \ldots + n_t$$

This helps us distinguish between the price incentive, which may be required for production to pick up, and the price rise, which has adverse effect on consumers. However, such kind of a model requires monthly data, which are less likely to be available for the agricultural sector specifically.

Agricultural wage, which directly impacts on the rural living standards, is a complex endogenous variable being influenced by several other variables in turn. Rural-to-urban migration may cause work shortage in the rural areas, particularly during the agricultural peak seasons, and this tends to raise wages. However, work contractors who capture work from backward regions and help them migrate by bearing the initial costs of migration expropriate a part of the work income and thus the actual gains to work due to rise in demand gets substantially suppressed. On the other hand, the rural work market and the credit market are often inter-connected, and thus it is difficult to make a distinction between the wage earned from the work performed and the costs and benefits associated with long term loans received from the employer. Any empirical research is most likely to encounter these problems rendering difficulties to the specification and estimation of agricultural wage function.

One model that explains rural poverty in a recursive framework capturing the interconnections between rural underemployment and poverty is due to Sundaram and Tendulkar (1992):

$$WDH = f(GINIA, DENHA)$$
$$PDUR = g(WDH, AHH, AGHA)$$
$$AVCE = h(AHH, AGHA, PDUR)$$
$$RPOVT = i(AVCE, GINIC)$$

where, the endogenous variables are WDH (wage work dependant households), $PDUR$ (person day unemployment rate), $AVCE$ (average consumption expenditure per capita)

and *RPOVT* (rural poverty headcount ratio). The exogenous variables in the model include Gini-coefficient of assets (*GINIA*), population per hectare of operated area(*DENHA*), average value of privately owned assets per household (*AHH*) and the value of agricultural output per hectare (*AGHA*), and size distribution of per capita consumer expenditure measured in terms of Gini coefficient (*GINIC*).

The rural non-farm sector has been viewed both in terms of 'supply push phenomenon' and 'demand induced' growth hypothesis. A number of studies in the past have focused on determinants of the non-farm sector growth. A positive relationship between agricultural productivity and share of non-agricultural employment is taken to substantiate the hypothesis of agriculture led growth (Unni, 1991). In favor of this hypothesis is the positive impact of land concentration, rural incomes, and cropping pattern (inclined towards the non-food crops) on the proportion of male work force engaged in non-agricultural activities. An increase in agricultural productivity can raise non-agricultural employment either by raising the demand for non-agricultural products and services or through a residual absorption of work displaced from agriculture because of mechanization, into non-agricultural activities (Bhalla, 1989). From a simple correlation between the two variables it may not be, therefore, possible to conclude that a demand linkage exists. However, in the context of rural industries in particular, a positive association between their performance and agricultural productivity (or the growth rate of agricultural output), is seen to be a reflection of the positive impact of rising purchasing power and resources for investment generated by the agricultural sector (Papola, 1987). On the other hand, demand and production linkage between agriculture and non-agriculture is said to be weak because large farmers tend to demand goods, which are produced in the urban areas. Rather a strong association between unemployment and non-agricultural employment has been noted by Kumar (1993), which tends to support the residual sector hypothesis.

The aggregate non-farm employment, particularly the manufacturing employment, in the rural sector varies positively with urbanization (Shukla, 1991). Industrial dispersal in the rural areas around the periphery of the big cities – which is quite limited in nature – may be attributed to the diseconomies of the agglomeration, measures adopted for controlling environmental pollution, scarcity and high price of urban lands, problems of work organization in large urban centers and so on. Subsequently, these villages, as Kundu (1992) argues, produce commodities and services quite similar to those produced in the urban localities and tend to get integrated into national market. However, he maintains that only in agriculturally prosperous districts, non-agricultural activities in rural and urban areas are found to be highly inter-related. Since land and work productivity are not strongly related to non-agricultural activities in the rural or urban areas of these districts, such rural-urban linkages in non-agricultural activities are said to derive their strength from the development dynamics in the region and they need not necessarily stem from work or land productivity.

Kundu, Sarangi and Dash (2003) held that non-farm activities located in the rural hinterland of the big cities offered considerably low earnings compared to the urban centers. Also, the other indicators of development such as school enrolment, per capita expenditure on education were much lower in these areas indicating the lack of rural-urban continuum and healthy interdependencies between urban centers and their

hinterlands. Without an increase in productivity mere expansion of non-farm activities can hardly make a dent on living standard of the rural population.

Acharya and Mitra (2000) noted that unorganized manufacturing employment in the rural areas is negatively influenced by both urbanization and agricultural value added per rural population. In other words, with a rise in urbanization, manufacturing tends to shift from their rural location to urban areas, which does not necessarily mean physical transfer rather it could be an outcome of reclassification of areas. Secondly the negative relation between agricultural growth and the relative size of manufacturing employment is again indicative of the lack of demand linkage. In the absence of productive employment in the agriculture sector, unorganized manufacturing is rather a forced alternative source of livelihood. It may also be argued that a rise in agricultural incomes perhaps generates demand for urban-based non-agricultural goods rather than those manufactured in rural settings. Both rural poverty and agricultural work are found to influence employment in rural manufacturing positively, lending support to the 'residual sector' hypothesis. However, the literacy coefficient bears a positive sign, favoring the view that education facilitates occupational diversification.

In the case of unorganized trade the coefficients of urbanization and the relative size of agricultural work show negative and positive signs respectively. The latter is indicative of a residual sector growth in trading, which is prompted by the fact that entry barriers in terms of skill etc., do not exist in this sector. The total non-farm sector employment, however, showed a positive association with infrastructure and a negative correlation with rural poverty, revealing the phenomenon of demand induced growth. Since during the nineties poverty has declined in several states, it may, therefore, be inferred that the growth of the non-farm sector in these states have occurred partly in response to the demand side factors.

The study by Lanjouw and Shariff (2002) based on a large nationally representative household survey for rural India in 1994 estimated that non-farm incomes account for nearly one-third of household income. They confirmed that poor earn significant shares of total income from casual non-farm wage employment, and also education determines access to non-farm occupations. The indirect effect of non-farm sector, particularly that of construction, on the agricultural wages and, hence, on rural poverty is quite beneficial. Rise in rural wages, moderate though, and a consequent decline in rural poverty are attributed to agricultural growth, increase in non-farm activities and union interventions too. As Radhakrishna and Sharma (1998) wrote, when rising work productivity is accompanied by an opening up of employment opportunities in the rural non-farm sector the trickle down effect works. Decline in public expenditure can be responsible for sluggish growth. Nevertheless, the pull factors are found to be more important in generating the growth of non-farm sector than the push factors (Sharma, 2001).

On the whole, it would be useful to specify the structural model of rural non-farm sector employment ($RNONF$) from supply side as well as demand side:

$$RNONF = S(.)$$
$$RNONF = D(.)$$

where, S and D represent supply and demand equations. Presuming that the observed employment is based on the equality of supply and demand, the reduced form equation of non-farm sector employment would include both supply side and demand side factors. The other aspect is to treat each major activity within the rural non-farm sector separately instead of clubbing them together. In other words, the demand and supply equation of each of the activities need to be considered specifically (Shukla, 1991). We may further note that the inter-connections among different activities within the rural non-farm sector also need to be highlighted, which then can be tackled better in a general equilibrium framework.

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Biographical Sketch

Arup Mitra is Professor of Economics, Institute of Economic Growth, Delhi. He completed Ph D in Economics from Delhi School of Economics, Delhi University. He worked as a Ford Foundation post-doctoral fellow with Professor Edwin S. Mills at Kellogg, Northwestern University, USA. Recently he received the visiting research fellowship to pursue research at Institute of Developing Economies, Japan. Earlier he received the fellowship from the French Ministry of External Affairs under the Indo-French Exchange Programme to work in Paris. He has worked as a consultant to APO, ADB, ILO, OECD, UNDP, WIDER and World Bank. His research area encompasses issues related to labour and welfare, urban development, industrial growth and productivity, infrastructure development and gender inequalities. He has published three books on urbanization, informal sector employment, slums and poverty. Besides, he has to his credit more than seventy research papers, which appeared in various journals and edited volumes. Some of his publications include Journal of Urban Economics (1999), Review of Urban and Regional Development Studies (2000, 2004, 2006), Economic Development and Cultural Change (2002), Development and Change (2005), Development Policy Review (2004), Journal of Developing Areas (2004), Asian Development Review (2005), International Journal of Employment Studies (2001), Journal of Health and Population in Developing Countries (1999) and Journal of Quantitative Economics (1993), Service Industries Journal (2008), Habitat International (2008) and Journal of Policy Modeling (forthcoming). He has received the Mahalanobis Memorial Gold Medal for his contribution in the field of quantitative economics.