CMER WORKING PAPER SERIES

CMER WORKING PAPER No. 05-37

Centre for Management and Economic Research

Migration, Policy and Welfare in the Context of Developing Economies: A Simple Extended Family Approach

S.M. Turab Hussain

LAHORE UNIVERSITY OF MANAGEMENT SCIENCES

Centre for Management and Economic Research (CMER)
Lahore University of Management Sciences (LUMS)
Opposite Sector 'U', D.H.A, Cantt, Lahore, 54792
Pakistan
URL:http//ravi.lums.edu.pk/cmer

Abid. A. Burki
Director CMER
Professor of Economics
School of Arts and Sciences

About CMER

The Centre for Management and Economic Research (CMER) is a research centre of LUMS based in the Department of Economics. The mission of CMER is to stimulate, coordinate, and conduct research on major economic and management issues facing Pakistan and the region. CMER research and dissemination roles are structured around four inter-related activities: research output in the form of working papers; cases and research monographs; creation of data resources; and organization of seminars and conferences. LUMS-Citigroup initiative on corporate governance in Pakistan is a major on-going project of CMER.

CMER WORKING PAPER No. 05-37

Migration, Policy and Welfare in the Context of Developing Economies: A Sample Extended Family Approach

S.M. Turab Hussain

Assistant Professor, Department of Economics
Lahore University of Management Sciences
Lahore, Pakistan
turab@lums.edu.pk

CMER WORKING PAPER SERIES

First printing Dec. 2005

CMER Working Paper No. 05-37

ISBN 969-8905-23-5 (print)
ISBN 969-8905-22-7 (online)

Migration, Policy and Welfare in the Context of Developing Economies: A Simple Extended Family Approach

S.M. Turab Hussain

I. Introduction

Across most developing countries including Pakistan, a common and persisting demographic phenomenon has been rapid growth in cities. This high degree of urbanization is reflected by the fact that in the year 2000, out of 21 megacities, with populations in excess of 10 million people, only two were located in the developed world (Todaro and Smith, 2003). Both high population growth and the ever increasing rural to urban migration, have led to this unprecedented expansion of urban metropolises. The rate of economic growth and development within the cities has not kept pace with these adverse demographics resulting in a deterioration of socio-economic conditions of the population. According to the latest figures published by the UN Population Division over one third of the urban population in developing countries inhabit shanty towns and slums, where there is no access to clean water, sewage system, or electricity. In Karachi, for example, it is estimated that of the 8 million inhabitants about 2.5 million are squatters, living in 350 'katchi abadis'[1] in the city. This growing economic deprivation and inequality not only between the rural and urban sector, but also within urban areas is a source of social unrest and hence a potential threat for both the economic and political security of the country.

In the case of Pakistan, there has not been any explicit policy initiative towards addressing the issue of internal migration. In fact, the ever-increasing rate of rural to urban migration in the country is indicative not only of an urban bias in government policies but also of a lack of planning and implementation of rural development schemes. According to Karim and Nasar (2003), the volume of lifetime internal migration in Pakistan from 1951 to 1998 increased almost six times which was twice as much as the increase in the country's population within the same period. The sluggish growth in farm and non-farm employment opportunities in rural areas accompanied with an absence of effective subsidy provision and social safety nets have made the rural poor much more vulnerable to inherent price and income volatility in the rural sector. Furthermore, lack of access for the small farmer to formal credit markets, failures to redress land fragmentation and an absence of any political will or commitment to implement land reforms in areas with both high land ownership inequality and greater incidence of poverty, have all contributed to the widening of local and sectoral inequality. The policy biases and failures over the years have led to the systematic marginalization of the small land-holders, landless tenants and labourers, especially in interior Sindh, southern Punjab and Balochistan. All this has fueled the process of migration resulting in the unprecedented increase in the population of large cities such as Karachi, Rawalpindi and Lahore.

[1] Unregulated squatter settlement of migrant families on state land.

According to recent estimates about 24% of population growth in the urban areas of Pakistan is due to migration from the rural hinterland while in Karachi, the largest city in the country, migration accounts for almost half of the cities' population increase (Karim and Nasar, 2003). Fritz Selier (1988), in "Rural-Urban Migration in Pakistan', aptly describes the attitude of the government vis-a-vis migration in the following quote:

> "To a large degree the authorities in Pakistan have adopted a laissez-faire attitude (towards migration). In as far as policies were formulated and pursued, they have strongly discriminated against the poor. In as far as policies have been adopted which were obviously intended to serve the interests of the poorer sections of the population, such policies have not been pursued seriously."

At the urban end, policy towards migration has been reactive rather than anticipatory. Instead of taking a proactive role through the provision of housing and residential facilities with basic public amenities for lower income groups, such as migrants, the government has waited for slums and squatter settlements to emerge and grow in the periphery of urban centers. Some of these settlements are later regularized by the government while others, because of lack of public funds, come under the ambit of private entrepreneurs. Whether the central reason behind the passive approach of the government in this context is due to a lack of political will or resources is open to debate. It is however clear that the policy of 'settle first, regularize later' creates huge opportunities for government officials to extract maximum possible rents from private sector property developers, middlemen and residents of these illegal settlements(Gazdar, 2003).

An interesting and rather unique example of a proactive government policy is that of Orangi Township in Karachi, which was specifically developed by the local authorities in the 60s for low-income groups such as migrants. However, over the years the unabated flow of migrants from all over the country led to illegal sub divisions of residential plots and also to the unauthorized expansion of this otherwise regularized township. Most of the areas of the township are without any public amenities such as sanitation and sewerage, the disparate provision of which has been left to a private welfare enterprise, the Orangi Pilot Project.[2]

As mentioned earlier, a major contributing factor to the process of urbanization and rural to urban migration has been the urban-biased development policies pursued by the governments of developing countries including that of Pakistan.[3] The intellectual foundation of these policies were various models of development proposed in the 50's and 60's, all of which put forward one central ingredient for growth and that was capital accumulation or industrialization. Hence the `big push' model of development in the 50's, the Harrod-Domar Model (1946) along with the Lewis Model (1954) led less-developed countries to pursue policies to foster rapid industrialization and urban development. This urban biased development process was thought to alleviate the problems of under development and regional inequality by attracting the surplus labour from the countryside to fuel the process of industrialization

[2] For details on the Orangi Township and the Orangi Pilot Project, see Selier (1988), Chapter IV.

[3] In Pakistan's economic history the Ayub Khan era in the 50s epitomises the urban-industrial bias and the belief in the *trickle down* effect.

in the urban centres. This seemingly systematic process was supposed to continue till the wages in both sectors had equalized and the economy had been transformed from agricultural to a predominantly industrial state. Therefore migration was viewed as a necessary and positive feature in the transition of a traditional agricultural based economy into a modern industrial one. Though these policies resulted in respectable GNP growth rates in developing countries, the problem of urban unemployment, migration, regional inequality and poverty persisted hence casting a doubt on the degree of applicability and wisdom of these theoretical models of development.

The change in this theoretical orthodoxy was pioneered by both Harris and Todaro (1969, 1970). Their model of a dual economy was able to encapsulate the observed phenomenon of continued rural to urban migration even in the presence of urban unemployment in developing countries. In their framework, analysis of migration was based on individual decision, in which, the potential migrant weighed the benefits of migration in terms of future discounted expected earnings in the urban sector against the costs of migration which were the foregone wages in the rural sector and the direct costs of migration. The key feature of their model was the prevalence of equilibrium urban unemployment, a direct consequence of the minimum wage regulation in the sector. Harris and Todaro prescribed urban employment subsidies accompanied with the rather politically and socially unpalatable policy of migration restrictions as an effective policy combination to eradicate urban unemployment and increase social welfare. Subsequent seminal contribution by Bhagwati and Srinavasan (1974) and Basu (1980, 97) came up with more realistic optimal policy alternatives, i.e., rural development along with urban job creation.

The individual decision based Harris Todaro model became the standard framework of both further theoretical contributions and empirical analysis on migration issues. The basic assumption of migration being solely an individual decision was never abandoned in most of its extensions. It was only in the early 80's that the focus of analysis started to undergo a radical shift. The issue of migration was obviously not restricted to the domain of economics but had been analyzed both in anthropological and sociological studies. These migration studies on developing countries suggested that the decision to migrate was primarily a household one as opposed to just an individual's. This assertion was corroborated within economics by empirical studies which suggested a continued link which the individual migrant or a migrant family maintained with the origin/rural household [see Banerjee (1981), Stark and Lucas (1985) and Nabi (1986)]. These links took the form of regular visits to the countryside and a flow of financial transfers or remittances from both migrant to the rural household or vice -versa. All this implied that ties to the origin are not severed by the migrants, and, as the decision to migrate has economic repercussions not only on the migrant but also on the rural household it therefore could not solely and simply be based on individual decision making. These empirical studies exposed a major caveat in migration theory and led to the refinement and reformulation of ideas on migration in order to encompass the complexities of the migration processes in developing countries. Pioneered by Oded Stark this development in migration literature is often referred to as the New Economics of Labour Migration (*NELM*).

This new approach to migration combines both remittance and migration behavior, which previously were analyzed separately, in one framework. Migration is viewed as a rural household's strategy to diversify risk, which consequently leads to the establishment of a mutual support system between the migrant and the rural-origin household the mechanics of which, if appealing to self-interest, could be explained by a bargaining process, or, could be purely based on altruism. Whatever the reasons and nature of the bi-lateral income support the migrants in the urban sector can be viewed as an extension or a `satellite' of the rural household [Caces, (1985) and Banerjee, (1981)]. Thus migration in developing countries creates spatially separated but economically interdependent extended family units.[4]

Therefore, in light of empirical evidence from various developing countries which identifies the family as the relevant decision making unit, it is imperative to revisit policy analysis which in the past has been primarily conducted employing the standard Harris-Todaro type individual decision based migration models. Hence in this paper we would look at the effect of rural and urban subsidy on migration, unemployment and welfare employing an extended family model of migration. This particular approach integrates both migration and remittance behaviour under one framework of analysis. However before the model is outlined we will summarize the most relevant theoretical literature on migration and policy so as to establish a point of comparison with the results obtained in this paper using the extended family model. The variation of our results from the received wisdom will allow us to underscore the importance of using an extended-family framework instead of the usual Harris-Todaro type approach when conducting policy and welfare analysis.

2. Migration, Policy and Welfare: A Brief Survey of Literature

Harris and Todaro (1970) in their seminal paper specified a simple model of rural to urban migration in the context of a fixed minimum wage policy, which was the source of equilibrium urban unemployment. After highlighting this welfare reducing distortionary effect of the minimum wage policy in the presence of migration, the authors subsequently dealt with the issue of specifying suitable government policies aimed at eradicating this distortion and improving social welfare.

The first policy analyzed by the authors was an urban employment subsidy given by the government to the firms to employ more workers.[5] According to them such a subsidy by creating an additional job could have the adverse effect of exacerbating urban unemployment levels by potentially attracting more than one migrant for that job. Though the authors went on to show that a large enough urban employment subsidy could eradicate urban unemployment, they clearly pointed out that such a subsidy on its own would not be a `first best'[6] policy as in equilibrium, the marginal product in the urban sector would be lower than that of the rural which would be equal to the urban minimum wage.[7]

---

[4] In most of the anthropology literature this is termed as the `expanded family' [see, Bartle (1980) and Kaufman and Lindauer (1980)].

[5] The authors assume that the subsidy is financed through some form of non-distortionary lump sum taxation.

[6] A 'first best' equilibrium in terms of labour allocation is when the marginal products in both sectors are equal and there is no unemployment in the urban or the rural sector.

[7] A `first best' policy is a policy which would lead to no urban unemployment and equality of marginal products in both sectors i.e., the general equilibrium optimum or the Pareto optimum.

To achieve the desired Pareto optimum equilibrium, the authors suggested a policy combination, i.e., an urban employment subsidy accompanied by migration restrictions, which would enforce a distribution of population such that there is an equality of marginal products in both sectors. Thus the rural labourers who cannot find an urban job would be coerced back to the rural area. The most obvious problem with this policy proposal was the enforcement of migration restriction in rural areas, a policy which would not only be politically unpalatable, but, would be contrary to the aim of improving social welfare in a broader sense.

Bhagwati and Srinavasan (1974) put forward an elegant alternative to the Harris Todaro policy prescription, which has since become the standard first best policy solution. According to them a uniform subsidy financed through lump sum taxes extended simultaneously to both the urban and the rural sector would achieve the first best equilibrium outcome. Simply put, instead of imposing migration restrictions on rural labour an equal amount of subsidy disbursed simultaneously to the rural sector would by increasing the income of the rural labour, automatically reducing their incentive to migrate.

Bhagwati and Srinavasan also analyzed second best subsidies uniquely disbursed to both the sectors. They showed that a second best wage or employment subsidy in the urban sector need not be characterized by full employment. Also, similar to the Harris Todaro result they indicated that a wage subsidy can achieve full employment in the urban sector though it might be inferior welfare wise to l*aissez-faire - no subsidy provision*. Furthermore, the second best rural production subsidy was shown to achieve full employment in the urban sector by reducing the wage differential to zero and hence attracting all the unemployed labour from the urban sector back to the rural without affecting the urban output level.

Basu (1980, 1997) indicated a practical caveat in the uniform subsidy result so elegantly expounded by Bhagwati and Srinavasan (1974). According to him the authors implicitly presumed that a government or social planner computing the optimal subsidy to both the sectors would know the values of the marginal products in both sectors at the first best.

He stressed that ex-ante the first best values are not observed and hence because of this informational problem it would be impossible for a government to implement this policy as the optimal subsidy, s^* would be unknown. However, he proceeded to show that this informational problem is not insurmountable.

The main contribution of his paper is the proof that any subsidy greater than the optimum would result in the first best outcome with welfare remaining at its maximum, also, welfare would monotonically increase with the subsidy for all $s < s^*$. The difference being that subsidies greater than s^* would result in the wage in the urban sector to rise above the minimum, $w > \overline{w}$, a possibility not explicitly considered in the Harris-Todaro (1970) and Bhagwati Srinavasan (1974) analysis. Hence according to Basu the government could guarantee the first best outcome by choosing a subsidy in the interval, $[s^*, \infty]$, such as $s^* = \overline{w}$. The central problem which he himself enumerated is the financing issue of such a large subsidy extended to both sectors. According to him the ability of a government to internally finance such large parcels of subsidy from lump-sum non-distortionary taxes would be limited as the subsidy bill might well be in excess of the economies national income.

Corden and Findlay (1976) extended this standard policy analysis by relaxing the assumption of specific and hence immobile capital in the two sectors. According to the authors in the presence of capital mobility, a wage subsidy in the urban sector by increasing the labour to capital ratio would increase the marginal product of capital in the urban sector.

This subsequently, would attract capital from the agricultural sector till the marginal products of capital in the two sectors are equalized. The fall in agricultural capital and the resultant increase in its marginal product would be accompanied with a decrease in the marginal product of labour and wages in the rural sector. The capital flight led fall in the rural wage would further widen the rural-urban wage gap increasing migration and exacerbating the unemployment ratio in the urban sector. Thus, according to the authors the mobility of capital though increases the manufacturing output, results in the increase of the unemployment ratio also, which otherwise, under specific capital, would have gone down.

Similarly, the authors also looked at the impact of an agricultural wage subsidy in the presence of capital mobility. With immobile capital a wage subsidy in agriculture was shown to result in a certain gain by reducing the wage gap and attracting all the unemployed labour with zero marginal cost (no effect on urban output) back to the rural sector. With capital mobility, they indicated that the resultant increase in the labour-capital ratio in the rural sector would increase the marginal product of capital in the rural sector which would attract capital from the manufacturing sector. This capital inflow would reinforce the expansion of output in the agricultural sector but this would be at the cost of a fall in the level of output in the urban sector, though, the net gain in terms of output would still be positive. Therefore, Corden and Findlay concluded that a rural subsidy would always be preferred over an urban employment subsidy, however, they pointed out that when it comes to achieving the first best outcome, uniform subsidies would have to be extended to both the sectors.

Following on the above standard optimal policy analysis, Shukla and Stark (1990) modified the Harris-Todaro environment by including an external economies of scale effect in the urban sector. They analyzed optimal policy given this additional effect keeping all the other assumptions of the H-T migration framework unaltered. The condition obtained in their framework for welfare maximization equates the marginal product of labour in the urban sector taking into account the economies of scale externality with the marginal product of the rural sector. Hence the subsidies required to achieve the first best optimum are unequal, that is, the urban subsidy because of the external scale economies, exceeds the optimal rural subsidy by the marginal effect of the externality on urban output. They showed that in the absence of such scale economies the standard Bhagwati-Srinavasan (1974) result of uniform subsidies applies to support the first best optimum.

Gupta (1993) in his paper analysed effects of policy on urban unemployment and social welfare in a general equilibrium framework with an urban informal sector. The key feature of the model driving most of the results was that the availability of food in the urban sector determined the size of the urban labour force. Some of his results ran counter to those generated by the standard Harris-Todaro migration model. For example an increase in rural subsidy in his framework led to an increase in urban unemployment. This was essentially due to the higher food production in the rural sector which resulted in an increase in food availability and hence food consumption in the urban sector stimulating more migration thus expanding the urban labour force and worsening unemployment. Also, an urban employment subsidy by increasing labour demand resulted in a reduction in urban unemployment as it did not affect food production and hence the supply of labour. In the welfare analysis Gupta employed Sen's (1974) social welfare function which incorporated income inequality through a Gini-coefficient. His results showed that an increase in the price subsidy to the informal sector improves welfare while an additional capital subsidy extended to it decreases welfare.

Ghatak et al. (1996) in their discussion of socially optimal migration rates introduce the implications of family decision based migration models on policy and welfare. According to them individual or family migration decisions would always lead to a migration rate more than the socially optimal one. This they believe underpins the need for government intervention in the form of subsidies to check the high migration rates and hence increase social welfare. The intuition behind their argument is that the migrant individual or family when deciding on the optimal rate of migration does not take into consideration the negative effect of the increase in migration on the employment probability in the urban sector. Accordingly, any migration to them is socially inefficient as it inflicts a higher unemployment probability on the urban population, therefore, in the H-T class of models the socially optimal migration rate is zero.

In addition to this the authors incorporated the effect of negative externalities from migration into the analysis. These externalities are in the form of urban congestion, pollution in shanty towns etc. In order to include the current and over time impact of these externalities an intertemporal welfare function was defined. This welfare function consisted of a component of static externalities per period and also a term for dynamic externality. These terms were a function of the rate of migration and were subtracted from the total output of the economy. The authors concluded that the socially optimal migration rate obtained under such a framework would be lower than in the case without any negative externalities. In a more recent paper by Fields (2001) the standard policy prescriptions in the Harris Todaro model were tested for their effect on income inequality and welfare. The latter was defined as an abbreviated measure of labour market conditions such as labour earnings, unemployment, inequality of labour income and poverty rates. The three policies considered are urban job creation termed as modern sector enlargement, rural development referred to as traditional sector enrichment and modern sector wage restraint. The level of inequality was measured by a Lorenz curve derived using the three population groups, i.e., urban employed labour, the unemployed in the urban sector and finally the rural labour. The results showed that a policy of modern sector enlargement increased income inequality as it unambiguously increased unemployment while traditional sector enrichment reduced it by attracting the unemployed back to a positive wage in the rural sector at zero opportunity cost. The third policy of modern sector wage restraint only reduced inequality if the labour demand in the sector was sufficiently inelastic.

Finally, Fields analyses of the three policies using the abbreviated welfare function yielded ambiguous results on all except the policy of traditional sector enrichment, which was found to unambiguously improve welfare in terms of all the components of the welfare function. An alternative approach to analyzing welfare adopted by the author was the use of First Order Dominance, which compares the income of a particular group/person in two states of income distribution existing prior to a policy and after the policy implementation. Again the authors found that it is only the policy of traditional sector enrichment or rural development, which unambiguously increases welfare, the other policies result in ambiguous outcomes.

In the following section we develop the extended family framework of migration.

3. An Extended Family Model of Migration

As mentioned before, there is strong empirical evidence on rural to urban migration in developing countries which suggests that migration leads to the formation of geographically

separated but economically linked extended family units [see Caces et al. (1985) and Banerjee (1984, 1991)]. The established migrant household in the urban area not only provides shelter to the new migrants but also economic support to the origin or rural household in the form of remittances, thus, in a way, complementing or taking on the role of community level networks. Therefore in this particular paper we try to construct an analytical framework of migration where the decision-making unit is not the individual but the extended family.

The extended family in our model comprises of two households the urban migrant and the rural origin household. Thus the migrant after leaving the countryside joins friends or relatives in the urban migrant household which then acts as a support to the migrant in the instance of unemployment as we assume income sharing within the households. The link between these two households is maintained through remittances flowing from the migrants to their rural counterparts. Hence, remittance is an integral part of the extended family framework developed in the paper. Moreover, throughout the analysis we assume that individuals and the family at large is altruistic and therefore the decision of migration as well as remittance is based on maximizing the welfare of the entire extended family. We believe that in light of the empirical literature this extended family based approach in modeling migration is more comprehensive and hence closer to reality in analyzing migration issues in the context of developing countries than the standard method of focusing on individual decision making processes [see Stark (1985, 1991) and Banerjee (1981, 1991)].

The similarity with the Harris Todaro analysis comes from the modelling of the urban sector which for simplicity has been assumed to comprise of just one formal sector in which the firms pay a fixed minimum wage to its employees hence resulting in a fixed demand for labour and equilibrium unemployment, another persistent feature in cities in the developing world. In the model we assume that labour in the urban sector consists of just the migrants while the urban born are the owners of capital. Thus, in equilibrium we can determine the number of migrants, the fraction of remittance, the employment probability and subsequently the output levels in both the sectors. The Harris-Todaro type migration decision and its impact on migration levels in the urban sector appears as a special case of our framework.

Within this extended family framework we first analyze the impact of standard government policy prescriptions such as urban employment subsidy and a rural income subsidy on migration and urban unemployment. Secondly we look at the impact of a subsidy transfer from urban to the rural sector on social welfare. Throughout the analysis we assume that the subsidies are financed through some form of foreign aid.

3.1 The Model

There are two sectors urban X and rural Y in the economy. The urban competitive sector produces X units of output using both labour and a fixed capital endowment. The labour in the urban sector is assumed to comprise of migrants only. The number of migrants, M, from the rural sector are endogenously determined and are assumed to inhabit the same household in the urban sector which we would refer to as the migrant household. Therefore the total supply of labour in the urban sector is given by[8]

[8] In this model no distinction has been made in terms of skilled and unskilled workers in the urban sector therefore implicitly we are assuming that the migrant, are homogenous in terms of skills.

$$L = M \tag{1}$$

The fixed capital, $\overline{K}$, in the urban sector is assumed to be owned exclusively by the endowment of urban born native population, $\overline{L}$, all of whom comprise the urban born capitalist household. Assuming constant returns to scale the production function in the urban sector is therefore:

$$X = X(\widetilde{L}, \overline{K}); \qquad X_L > 0, \qquad X_{LL} < 0 \tag{2}$$

where, $\widetilde{L}$, is the employed migrant labour force.

Now looking at the rural sector, for conceptual simplicity we assume that it consists of a single household, where the total supply of labour is equal to the total endowment of labour in that sector, $\bar{l}$, minus the number of new migrants, M, that is:

$$l = \bar{l} - M \tag{3}$$

The household uses its labour, the only factor of production, to produce an output, Y, given by the following constant returns to scale production function:

$$Y = Y(\bar{l} - M); \qquad Y_l > 0, \qquad Y_{ll} = 0 \tag{4}$$

We assume a small open economy where the product prices are exogenous and without loss of generality assumed to be equal to one. Given exogenous product prices the firms in the urban sector are assumed to be perfectly competitive and therefore their profit maximizing conditions is

$$\overline{W} = X_L(\widetilde{L}, \overline{K}) \tag{5}$$

where, $\overline{W}$, is the institutionally fixed urban minimum wage received by each employed migrant in the urban sector.[9]

From (5) we can determine the firms demand for migrant labour, $\widetilde{L}$. Now as mentioned before, L, constitutes the migrants, therefore

$$\widetilde{L} = \widetilde{M} \tag{6}$$

[9] We maintain the standard Harris-Todaro assumption that the urban minimum wage, $\overline{W}$, is greater than the constant rural marginal product, Y_l, that is, $\overline{W} = X_L > Y_l$. Also as labour markets in developing countries are highly segmented, minimum wage regulation is only applicable to a generally very small formal sector while the bulk of employment is in the unregulated informal sector. In this model one can think of the unemployed migrants as being part of the large informal sector where they eke out a living. Hence, for simplicity, we assume here that these unemployed migrants earn a zero wage but survive through income sharing within their households.

As is clear from above we assume that there is unemployment amongst the migrant labour as a consequence of the fixed urban minimum wage. The employment rate, p, amongst the migrants is therefore

$$p = \frac{\widetilde{M}}{M} \tag{7}$$

where

$$0 < p < 1$$

The above employment rate is also taken as the probability of employment for the migrants. Now using (7) the income per capita of the members of the urban migrant household, y_M, and the rural household, y_R, is therefore

$$y_M = p\overline{W}(1-\alpha) \tag{8}$$

$$y_R = \left[\frac{Y(\bar{l}-M) + \alpha pM\overline{W} - CM}{\bar{l}-M}\right] \tag{9}$$

where, α, is the fraction of income the migrant household remits to the rural, and, C, is the direct cost of migration of a family member which is borne by the rural household, hence CM is the total cost of migration. The per capita utility levels of the members of the migrant household and the rural household are given by their indirect utility functions:[10]

$$V_M = V_M(y_M) \quad and \quad V_R = V_R(y_R) \tag{10}$$

where the indirect utility functions satisfy positive and diminishing marginal utilities

$$V'_M > 0; \;\; V'_R > 0 \quad and \quad V''_M < 0; \;\; V''_R < 0 \tag{11}$$

In this model, the migrant household in the urban sector is assumed to be the extension of the rural household, hence both the households make up one extended family unit. The decision to migrate in this framework is made at the family level, and we assume that the family size is large, so that, appealing to the Strong Law of Large Numbers, we can assume away the existence of aggregate uncertainty for the family, although new migrants face the probability of not getting a job in the urban sector and individually each member of both households is risk averse.[11] The extended family therefore decides the optimal number of migrants, M, to send to the urban sector by maximizing the following utilitarian family welfare function which is the sum of the utilities of the members of both the migrant and rural household:[12]

---

[10] Here we are assuming that members of one household have the same preferences hence implicitly we are making the assumption that migrants instantaneously change their preferences upon arrival in the city.

[11] For a similar assumption in the context of international migration see Lahiri and Fregoso (2000).

[12] Since we assume that there is no aggregate uncertainty, we do not need to consider expected utility. If we did not make this assumption we would have to consider risk premium which would entail possibly different comparative static results than the ones derived in this paper.

$$w = (M)V_M + (\bar{l} - M)V_R \tag{12}$$

Differentiating the above welfare function with respect to using (8), (9) and (10) and taking the probability, p of getting a job as given we get the following first order condition, assuming that the solutions are in the interior:[13]

$$\frac{\partial w}{\partial M} = [V_M - V_R] + V_R'[y_R - Y_t + \alpha p\bar{W} - C] = 0 \tag{13}$$

The above migration equilibrium condition can be rewritten as

$$V_M - V_R = V_R'[v_R], \tag{14}$$

where

$$v_R = -y_R + Y_t - \alpha p\bar{W} + C \lessgtr 0$$

In the above, v_R, is the net marginal cost of migration per member of the rural household including both the direct and indirect costs of migration. Where, C, is the direct cost of migration and, $-y_R + Y_t$, is the surplus or deficit which the marginal migrant produces for each member in the rural household, and, $\alpha p\bar{W}$, is what a marginal migrant remits to the rural household and is therefore a negative cost (benefit) of migration. Hence in equilibrium the utility differential for the migrants, $V_M - V_R$, or the marginal benefit of migration is equal to the marginal costs of migration given that these costs are shared equally between the family members of the rural household.

It has to be noted that the marginal cost to the rural household can be either positive or negative, but, in the presence of high direct costs of migration and low levels of initial income in rural areas, it is likely to be positive. Though, there exists a theoretical possibility in our model that if these costs are negative i.e., there are net benefits accruing to the rural household from the departure of a member we would have a migration equilibrium, see (14), with the utility of the migrants less than those of their rural counterparts.[14] Hence, we could have a scenario in which the family sends a migrant even when the per-capita utility of the rural household members is greater than that of the migrant, that is, the migrant is worse off than his or her rural family members. This interesting possibility in our model arises due to the fact that migration decisions are made at the level of the family and not the individual. However we shall assume here that the net marginal costs of migration to the rural household are positive, $v_R > 0$, so that $V_M - V_R > 0$.This condition simply ensures that there are gains from migration.

---

[13] Second Order Condition:

$$\frac{\partial^2 w}{\partial M^2} = \frac{V_R''(-v_R)^2}{(\bar{l} - M)} < 0$$

[14] If $v_R < 0 \leftrightarrow V_M - V_R < 0$

4. Policy Analysis

Similar to the standard Harris-Todaro framework, in our model the equilibrium sectoral labour distribution is inefficient compared to the first best defined by equality of marginal products in both sectors and no equilibrium unemployment. The source of inefficiency in both the H-T class of models and our framework is the minimum wage distortion in the urban sector which results in the equilibrium unemployment in the sector. Now given this inefficiency, the policy option suggested by Harris and Todaro (1970) was the creation of more urban jobs, so as to increase the urban employment and hence urban output accompanied by a migration restriction, which would hold migration at the social optimal, hence increasing the rural output also. Subsequent contributions by Bhagwati and Srinavasan (1974), Corden and Findlay (1975) and Basu (1980) suggested a more viable policy alternative in the form of a uniform wage subsidy extended simultaneously to both the urban and the rural sector. This uniform subsidy was shown to achieve the first best outcome, as defined above, if it was financed by some form of non-distortionary taxes.

The objective of this particular section is to examine the effectiveness of these standard government subsidy policies i.e., an urban employment subsidy and a rural income subsidy, in rectifying the equilibrium inefficiency, characterized by the equilibrium urban unemployment under the extended family setup. Therefore we analyze here the comparative static effects of these two standard government policy instruments on equilibrium migration and unemployment levels in the urban sector. Throughout this comparative static analysis we assume that these government subsidies are financed through some form of foreign aid. The results of these exercises are evaluated in light of those obtained in the standard H-T literature on migration.

4.1. Employment Subsidy in the Urban Sector

In order to examine the impact of an employment subsidy on equilibrium migration and unemployment levels we would first specify the function for the employment rate in the urban sector and the migrant supply function incorporating this subsidy. As is intuitively obvious the employment subsidy by creating more jobs in the urban sector would increase the urban employment probability which would subsequently effect the supply of migrants from the rural sector. We would first conduct the exercise under the assumption of exogenous remittances thus for simplicity and without loss of any generality throughout this section we shall assume the remittance fraction to be equal to zero.

4.2 The Case of Exogenous Remittances

Urban Employment Subsidy and The Urban Employment Rate:

The employment rate is derived from the first order condition of profit maximization of firms. Now with an employment subsidy of, s_M, per labour given to the firms in the urban sector, so that more labour is employed at the fixed urban minimum wage, the first order profit maximizing condition of firms is:

$$\bar{W} - s_M = X_L(\tilde{L}, \bar{K}) \tag{15}$$

Totally differentiating the above condition we get

$$d\bar{W} = X_{LL} d\tilde{L} + ds_M = 0 \tag{16}$$

Now as the employment rate in the urban sector is, $\tilde{L} = pM$, we have

$$d\tilde{L} = pdM + Mdp \tag{17}$$

Substituting the above equation into (16) and solving we get

$$dp = -\frac{p}{M} dM - \frac{1}{MX_{LL}} ds_M, \tag{18}$$

where

$$\frac{\partial p}{\partial M} = -\frac{p}{M} < 0; \quad \frac{\partial p}{\partial s_M} = -\frac{1}{MX_{LL}} > 0$$

The above partial with respect to the employment subsidy shows that an incremental increase in the subsidy by creating an additional job would increase the urban employment rate, i.e., shift the employment rate function to the right. Also this function is downward sloping with respect to the number of new migrants as an increase in their numbers has to be accompanied by a fall in the employment rate so as to keep the number of employed constant due to the fixed urban minimum wage.

The Employment Subsidy, Migrant Supply and Induced Migration:

The migrant supply function is derived from the first order condition of migration, which was:

$$\frac{\partial w}{\partial M} = [V_M - V_R] + V_R'[-v_R] = 0, \tag{19}$$

where, with $\alpha = 0$

$$v_R = y_R - Y_l - C = \frac{C\bar{l}}{l - M} > 0 \tag{20}$$

As the employment subsidy in the urban sector has no direct effect on migrant supply, the only effect is the indirect effect which comes through a change in employment probability, therefore given exogenous remittances we would write, (19), as a function:

$$w_1 = w_1(M, p) \tag{21}$$

Totally differentiating the above function we get the following implicit migrant supply function:

$$dM = -\frac{w_{12}}{w_{11}}dp \tag{22}$$

where, $w_{11} < 0,$ and with $\alpha = 0$

$$w_{12} = V'_M\left[\bar{W}\right] > 0, \tag{23}$$

therefore

$$\left.\frac{\partial M}{\partial p}\right|_{\alpha=0} = -\frac{w_{12}}{w_{11}} > 0$$

The above partial simply shows that an increase in the employment probability raises the expected income of the migrant labour in the urban sector hence resulting in more migration. Therefore we can clearly see that an increase in the urban employment subsidy by creating more jobs would attract more migrants from the rural sector. Thus solving the migrant supply, (22) and employment rate function, (18), simultaneously we get:

$$\left.\frac{dM^*}{ds_M}\right|_{a=0} = \frac{\left.\frac{dM^*}{ds_M}\right|_{a=0}\frac{\partial p}{\partial s_M}}{|J|} \tag{24}$$

where the denominator, $|J| > 0,$ [15] and from (18) and (20), we get the following comparative static results:

$$\left.\frac{dM^*}{ds_M}\right|_{a=0} > 0$$

and from (18)

$$\left.\frac{dp^*}{ds_M}\right|_{a=0} > 0$$

Proposition 1: With exogenous remittances an increase in employment subsidy in the urban sector would unambiguously increase equilibrium number of migrants and the employment rate in that sector.

---

[15] $|J| = 1 - \left.\frac{\partial M}{\partial p}\right|_{a=0}\frac{\partial p}{\partial M} > 0$

The above result, more commonly known as the case of `induced migration', is fairly intuitive and in line with the standard Harris Todaro type literature on policy and migration, [see Harris and Todaro (1970), Corden and Findlay (1975) and Fields (2001)]. An employment subsidy in the urban sector increases the demand for labour by firms, thus, the creation of more jobs increases the employment probability for migrants. This in turn induces the extended family to send more migrants to the urban sector.

The Urban Employment Subsidy and Equilibrium Unemployment:

Now we would look at the effect of this policy on equilibrium unemployment levels in the urban sector, though, the above results shows that the equilibrium employment rate in the sector would always increase as a consequence of the subsidy. The initial equilibrium unemployment level, U^*, in the urban sector is

$$U^* = (1-p^*)(M^*) \tag{25}$$

which can be written as

$$U^* = M^* - \tilde{L}, \tag{26}$$

therefore

$$\left.\frac{dU^*}{ds_M}\right|_{a=0} = \left.\frac{dM^*}{ds_M}\right|_{a=0} - \frac{d\tilde{L}}{ds_M} \tag{27}$$

Now from (15), we have the increase in labour demand, $d\tilde{L}/ds_M = -1/X_{LL} > 0$, and we know dM^*/ds_M . Therefore we get the following expression:

$$\left.\frac{dU^*}{ds_M}\right|_{a=0} = \frac{\left.\frac{\partial M}{\partial p}\right|_{a-0}\frac{\partial p}{\partial s_M}}{|J|} + \frac{1}{X_{LL}}, \tag{28}$$

which reduces to

$$\left.\frac{dU^*}{ds_M}\right|_{a=0} = \frac{w_{12}(1-p)+w_{11}(M)}{w_{11}(M)X_{LL}|J|} \tag{29}$$

The denominator in (29) is positive while the numerator is ambiguous:

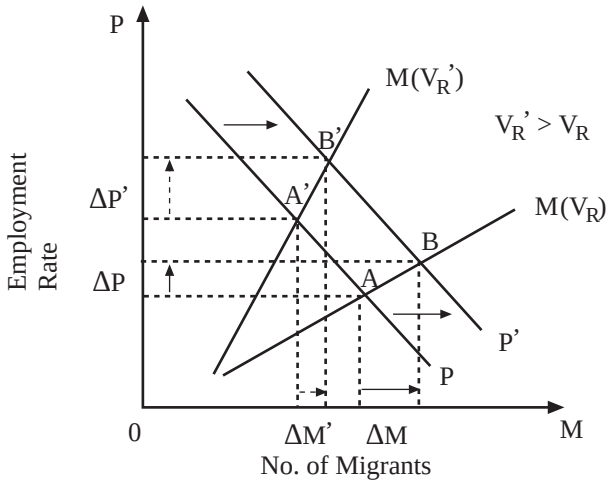
$$V_M'\left[\bar{W}\right](1-p) + \frac{V_R''(M)(v_R)^2}{\bar{l}-M} \lessgtr 0 \tag{30}$$

Looking at, (30), the possibility of a fall in equilibrium unemployment could exist if the direct costs of migration were sufficiently large, resulting in $v_R \gg 0$, see (20). Hence we can state the following conditional result as:

$$\left.\frac{dU^*}{ds_M}\right|_{a=0} < 0 \text{if}(\ v_R \gg 0 \text{ or } C \gg 0)$$

Proposition 2: In the absence of any remittances from the migrant household, an increase in employment subsidy might reduce (increase) urban unemployment if the direct costs of migration are sufficiently high (low).

Figure 1
Employment Subsidy and Induced Migration: Low and High Costs of Migration



Graphically, higher costs of migration, $v_R \gg 0$, entails an inelastic migrant supply function, see Fig. 1. Hence, if the direct costs of migration facing the rural household are large enough, then the resulting increase in employment probability, due to the incremental rise in the subsidy, would have a smaller effect on the increase in the number of new migrants to the urban sector (smaller elasticity of migration), creating the possibility of an actual decline in the unemployment level.

On the other hand, an increase in employment probability would have a more magnified impact on the level of migration (a high elasticity of migration) and hence, exacerbate urban unemployment if the non-negative marginal costs of migration are sufficiently low. In this instance the increased supply of migrants would exceed the rise in the rate of absorption of migrants into the labor force (higher labour demand) which comes as a consequence of the employment subsidy. Hence the net effect would be an enlargement of the unemployment pool in the urban sector.

Thus, under this extended family framework of migration, an employment subsidy given to the firms in the urban sector has the potential of exacerbating the problem of unemployment rather than ameliorating it specifically in situations where the rural households do not face high direct costs of migration. This result, as mentioned before, within this extended family migration framework is fairly consistent with those from the individual migration decision based literature dealing with policy implications on migration and unemployment. More specifically in their seminal paper Harris and Todaro (1970) explicitly show that if the elasticity of migration is greater than unity then in that instance, urban job creation would unambiguously increase the size of the urban unemployment pool.[21]

Now we would look at the case of endogenous remittances to see whether the results derived in this section change qualitatively or not.

4.3. The Case of Endogenous Remittances

The Employment Subsidy, Remittance Augmented Migrant Supply and Induced Migration:

In this sub section, we will look at whether there are any qualitative differences in the results if the remittance fraction is endogenised. This analysis is conducted under the assumption that the preferences of the extended family members are identical or homogenous[22]. The results under the assumption of heterogenous preferences are not qualitatively different from the analysis with exogenous remmittances hence, for the purpose of brevity, these have been excluded here. Now the extended family simultaneously decides on the optimal number of migrants to send to the urban area and also the optimal amount of remittance to send to the rural household. Therefore, maximizing the welfare function with respect to *M* (as before) and, assuming that the solutions are in the interior, we get the following familiar first order conditions:[23]

$$\frac{\partial w}{\partial M} = [V_M - V_R] + V_R'[y_R - Y_l + \alpha\, p\bar{W} - C] = 0 \tag{31}$$

$$\frac{\partial w}{\partial \alpha} = V_R' - V_M' = 0 \tag{32}$$

While (31) is the migration equilibrium condition, (32), gives the optimal remittance condition.[24] The latter states that the urban migrant household would remit a fraction, α, of its income till the marginal utilities of both the households are equalized.

---

[21] See, Harris and Todaro (1970), Appendix II, P. 139.

[22] The results under the assumption of heterogenous preferences are not qualitatively different from the analysis with exogenous remmittances hence for the purpose of brevity these have been excluded here.

[23] Second Order Condition (remittances):

$$\frac{\partial^2 w}{\partial \alpha^2} = V_R''\left[\frac{\bar{W}(pM)}{\bar{l} - M}\right] + V_M''[p\bar{W}] < 0$$

[24] As done in the last chapter we assume here that there are gains from migration, $V_M - V_R > 0$, therefore $v_R > 0$.

Homogenous Preferences: When the preferences of both the household members are identical, than looking at the optimal remittance condition which states that in equilibrium the marginal utility of income of both the households should be the same, (32), it is clear that with homogenous preferences this implies that the migrant household would remit to the rural household till the income per capita of both the households are the same, i.e., $y_M = y_R$. Therefore substituting (32) into (31) and putting $y_M = y_R$ into the migration equilibrium we see that the net marginal costs of migration would go to zero, yielding the following simplified migration equilibrium we see that the net marginal costs of migration would go to zero, yielding the following simplified migration equilibrium condition:

$$\frac{\partial w}{\partial M} = p\bar{W} - Y_l - C = 0 \qquad (33)$$

The above condition is similar to the Harris-Todaro type migration equilibrium condition indicating that the extended family would keep on sending new migrants till the expected wage in the urban sector is equal to the marginal product in the rural sector plus the direct costs of migration. Hence, as the urban wage is fixed and so is the rural marginal product, migration equilibrium in this case is brought about by the change in the employment probability and therefore expected wages in the urban sector. The similarity with the Harris-Todaro condition comes from the fact that in this model with endogenous remittances and homogenous preferences the extended family becomes one large identical group with the same income per capita and preferences, which correspond to the rural household or labor force in the H-T model thus giving the same first order conditions.[25] In the H-T model no distinction is made between migrant and non-migrant groups and hence in their equilibrium the population proportion in both sectors as well as equilibrium unemployment is determined and not the number of employed and unemployed migrants explicitly.

Now with this modified first order condition we can analyze the comparative static results of an incremental increase in employment subsidy. We can explicitly solve for equilibrium migrants by substituting the equation for employment probability into the migration condition, giving us:

$$M^* = \frac{\tilde{L}(s_M)}{(Y_l + C)}\bar{W} \qquad (34)$$

From the above we get:

[25]It is worthwhile to note that in their seminal paper, as Harris and Todaro (1970) did not distinguish between the urban born labour and the migrant labour, they assume that "the typical migrant retains his ties to the rural sector and, therefore, the income that he earns as an urban worker will be considered, from the standpoint of sectoral welfare, as accruing to the rural sector" [Harris and Todaro (1970), page 127)]. The authors justify this assumption by highlighting the observed phenomenon of migration leading to the emergence of extended family systems with remittances flowing between the migrant and the origin.

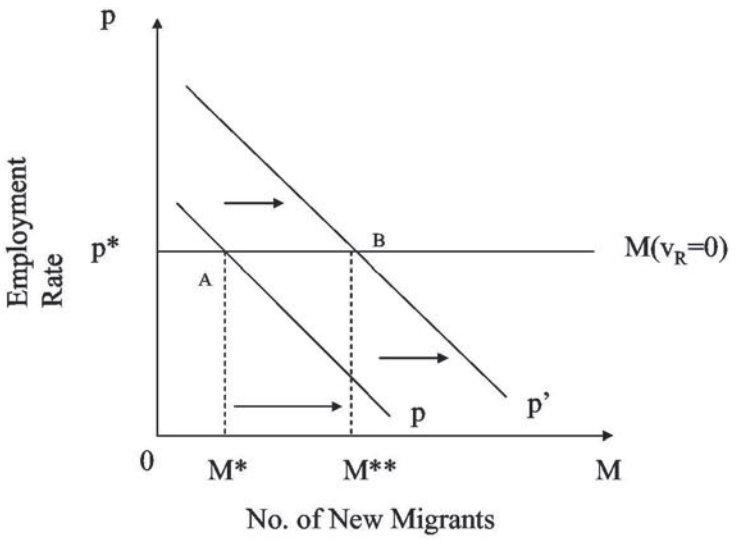
$$\frac{dM^*}{ds_M} = -\frac{1}{pX_{LL}} > 0$$

and from (33)

$$\left.\frac{dp^*}{ds_M}\right|_{\alpha^*} = 0$$

Proposition 3 *With endogenous remittances and homogenous preferences of the extended family members, an employment subsidy in the urban sector would unambiguously increase the equilibrium number of migrants in the urban sector while the employment rate would remain unchanged.*

Figure 2
Employment Subsidy and Induced Migration
With α^* and Homogenous Preferences



Graphically, see Fig. 2, the effect of the subsidy in this case can be shown as a rightward shift in the function for the employment rate and with a perfectly elastic migrant supply we would have an increase in equilibrium migration with the employment rate unchanged. In this case the employment subsidy increases labour demand as before and initially the employment probability goes up substantially attracting a large number of migrants from the rural sector. This increase in the number of migrants is to such an extent that the employment rate finally goes down to its original initial equilibrium level. Thus, the overall effect on the level of migration in this particular case would be unambiguously greater than under exogenous remittances.

The Urban Employment Subsidy and Equilibrium Unemployment:

Now we can determine the effect of the subsidy on the level of unemployment in the urban sector under this assumption of homogenous preferences. The change in unemployment level in the urban sector is:

$$\left.\frac{dU^*}{ds_M}\right|_{\alpha^*} = \left.\frac{dM^*}{ds_M}\right|_{\alpha^*} - \frac{d\tilde{L}}{ds_M}$$

Now from (15) we have the increase in labour demand, $d\tilde{L}/ds_M = -1/X_{LL} > 0$, and we know, dM^*/ds_M. Therefore we get the following expression:

$$\left.\frac{dU^*}{ds_M}\right|_{\alpha^*} = -\frac{1}{pX_{LL}}(1-p) > 0$$

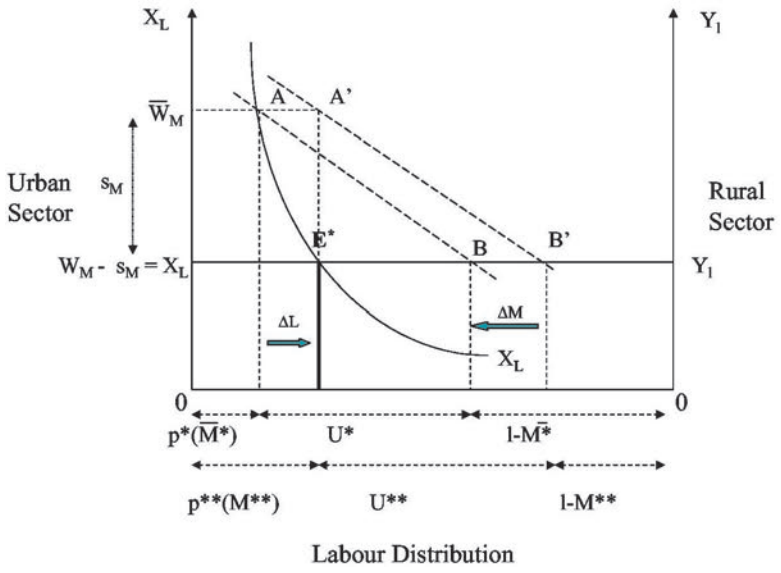
Proposition 4 *With homogenous preferences an increase in employment subsidy would unambiguously increase the level of unemployment in the urban sector**

The intuition of the above result is simply that the creation of one additional job in the urban sector through the employment subsidy attracts more than one additional migrant from the rural sector, that is, $dM^*/d\tilde{L} = 1/p$ resulting in the unambiguous expansion in the urban unemployment pool, (see Fig. 3 where $\Delta M > \Delta L$ and hence $U^{**} > U^*$). This result is identical to that in the Harris-Todaro model with the assumption of a constant marginal product in the rural sector.[26]

Therefore, we have shown that with endogenous remittance there is a substantial difference in the results if we assume homogenous preferences of the extended family members. In this particular case, as the direct and indirect costs of migration are driven to zero, the effect of the employment subsidy on migration levels is always larger than when remittances are assumed to be exogenous in the framework. Furthermore, this large increase in the level of migration on account of the employment subsidy leads to an unambiguous expansion in the urban unemployment pool.

[26]In drawing the rectangular hyperbola in Fig. 3 we simply assume that the direct cost of migration *C* is equal to zero.

Figure 3
Enlargement of the Unemployment Pool
The Case of Endogenous and Homogenous Preferences



Summary of Results:

The following table summarizes the comparative static results obtained in this section:

Table 1
Effect of Urban Employment Subsidy

Case	M^*	P^*	U^*
$\alpha = 0$	+	+	+/–
α^* (Homogenous Pref.)	+	0	+

In the following section we will analyze the impact of an income subsidy to the rural sector on equilibrium rural to urban migration and urban unemployment.

4.4 Income Subsidy in the Rural Sector

A policy which, has shown to be successful in both curbing migration and improving welfare in the H-T class of models, is a rural income or employment subsidy. Such a subsidy, by reducing the income gap between the urban and rural sector, is shown to lessen the incentive for migration and hence attract the unemployed migrant labour back to the rural sector thus increasing rural output and reducing urban unemployment. Here, we analyze the impact of such a policy in the extended family framework of migration. Therefore a

subsidy of, $s_{R,}$ per capita is given to the members of the rural household who do not migrate i.e., the rural 'stayers', in order to create an incentive for the family to lower the number of migrants it sends to the urban sector. The income per capita of the rural household with the subsidy is now:

$$y_R = \frac{Y(\bar{l} - M) - CM + \alpha\, pM\bar{W}}{\bar{l} - M} + s_{R,} \tag{35}$$

while the income per capita of the migrant household is the same

$$y_M = p\bar{W}(1-\alpha) \tag{36}$$

With the above income per capita the migration equilibrium condition is now:

$$\frac{\partial w}{\partial M} = \left[V_M - V_R\right] + V_R'\left[-v_R\right] = 0, \tag{37}$$

where

$$v_R = -y_R + Y_l - \alpha\, p\bar{W} + s_R + C$$

The additional term in the above marginal cost of migration is s_R', which is the loss of the incremental subsidy to the rural household as a result of the departure of a family member to the urban sector. Here again we maintain the assumption $v_R > 0$, that so that migration is beneficial for the migrant, $V_M - V_R > 0$.

4.5 The Case of Exogenous Remittances

Migrant Supply and the Income Subsidy to the Rural Stayers:

Now as the rural subsidy effects the supply of migrants we would have to derive the migrant supply function again. Writing the above migration equilibrium as a function assuming remittances to be exogenous and equal to zero:

$$w_1 = w_1(M, p, s_R) \tag{38}$$

Totally differentiating the above function we get

$$dw_1 = w_{11}dM + w_{12}dp + w_{13}ds_R = 0 \tag{39}$$

Solving for dM :

$$dM = -\frac{w_{12}}{w_{11}}dp - \frac{w_{13}}{w_{11}}ds_{R,} \tag{40}$$

where

$$\left.\frac{\partial M}{\partial p}\right|_{\alpha=0} = -\frac{w_{12}}{w_{11}}; \qquad \left.\frac{\partial M}{\partial s_R}\right|_{\alpha=0} = -\frac{w_{13}}{w_{11}}$$

The function for the employment rate is unaffected and hence is:

$$dp = -\frac{p}{M}dM \tag{41}$$

Now we can now solve (40) and (41) simultaneously to get the comparative static results:

$$\left.\frac{dM^*}{ds_R}\right|_{\alpha=0} = \frac{\left.\frac{\partial M}{\partial s_R}\right|_{\alpha=0}}{|J|} \tag{42}$$

Now in the above, $|J| > 0,$ and in the numerator we have

$$w_{13} = -V_R' - V_R''[v_R] \gtrless 0, \tag{43}$$

and given that $w_{11} < 0,$ we get

$$\left.\frac{\partial M}{\partial s_R}\right|_{\alpha=0} = -\frac{w_{13}}{w_{11}} \gtrless 0$$

Therefore we can state the following conditional result and proposition:

$$\left.\frac{dM^*}{ds_R}\right|_{\alpha=0} < 0 \quad \text{and} \left.\frac{dp^*}{ds_R}\right|_{\alpha=0} > 0 \text{ if } v_R < \frac{1}{\sigma_R},$$

where $\sigma_R = -V_R''/V_R'$ is the ratio of absolute risk aversion.

Now as, $v_R = C\bar{l}/(\bar{l} - M) > 0,$ the above sufficient condition becomes:

$$\left.\frac{dM^*}{ds_R}\right|_{\alpha=0} < 0 \quad \text{and} \left.\frac{dp^*}{ds_R}\right|_{\alpha=0} > 0 \text{ if } C < \frac{1}{\sigma_R}\left(\frac{\bar{l} - M}{\bar{l}}\right)$$

Proposition 5 *With exogenous remittances the rural subsidy would lower equilibrium migration and increase the urban employment rate if the direct costs of migration are sufficiently small.*

The above results are conditional because the increase in the income subsidy has two effects, which run counter to each other. The first effect (see first term in)is the increase in the income per-capita or the utility per capita of the rural household on account of the increase in subsidy, which by reducing the utility differential between the urban/migrant and rural household lessens the incentive for migration. This can be termed as a dampening of the 'pull' factor of migration. The second effect (second term in w_{13}) comes also from the increase in per capita income of the rural household which by reducing the marginal utility of income, in the presence of positive marginal costs of migration, $V_R > 0$, reduces these costs in terms of utility thus stimulating more migration. The latter positive effect can be termed as an increase in the 'push' factor of migration.

Now, the overall effect of the increase in the subsidy on migration level depends on the relative strength of these two effects and also on the shape of the preferences of the rural stayers. Hence, the effect would be negative if either direct costs of marginal migration were sufficiently low or the risk aversion ratio of the rural stayers was small.[27] The interesting aspect of this result is that it is markedly different from that in the Harris-Todaro type individual migration decision models where a rural subsidy always decreases migration by reducing the rural urban wage or income gap. In our framework the modelling of migration in terms of a family welfare maximization problem results in this apparent ambiguity in the predicted effect of a rural subsidy.

This particular result underlines the significance of the economic characteristics of the rural household in the eventual effectiveness of government income subsidy policies directed towards rural areas. In the case where such subsidies are provided to relatively poor rural households, the additional income supplement reduces the households migration cost constraint and therefore instead of reducing their incentive to send more migrants actually helps them to finance more migration. In literature on both internal and international migration it has been shown that a higher income at home or the origin can boost migration. See, for example, Banerjee and Kanbur (1981) in the context of rural-urban migration, Lopez and Schiff (1998) and Lahiri and Fregoso (2000) for the case of international migration. In the first two, increased income makes it easier for the potential migrant to borrow to finance the costs of migration while in the third, similar to our result, the authors show that higher aid income facilitates migration by lowering the costs of migration in terms of utility.

The Rural Income Subsidy and Equilibrium Unemployment:

The effect of the income subsidy on the unemployment level is trivial as it just follows from the above result. We know that the change in unemployment is given by:

$$\left.\frac{dU^*}{ds_R}\right|_{\alpha=0} = \left.\frac{dM^*}{ds_R}\right|_{\alpha=0} - \frac{d\tilde{L}}{ds_R} \tag{44}$$

Now as the rural subsidy has no impact on equilibrium employment level in the urban sector, that is, $d\tilde{L}ds/_R = 0$, therefore the level of unemployment in the urban sector would fall if the equilibrium migration level falls. Hence,

$$\left.\frac{dU^*}{ds_R}\right|_{\alpha=0} < 0 \text{ if } C < \frac{(\bar{l} - M)}{\sigma_R(\bar{l})}$$

[27] A low risk aversion ratio translates into a utility function with a flatter curvature. Therefore when the income of the rural household goes up on account of the subsidy the resulting change (decrease) in the marginal utility of income would be relatively small and hence the fall in the marginal costs of migration in terms of utility would be of a lower magnitude i.e., a dampening of the 'push' factor of migration.

Proposition 6 *The level of unemployment in the urban sector would fall on account of the increase in rural subsidy if the direct costs of migration are sufficiently low.*

Now we would look at the case of endogenous remittances.

4.6 The Case of Endogenous Remittances

Remittance Augmented Migrant Supply and the Income Subsidy to the Rural Stayers:

Now the extended family simultaneously decides on the optimal number of migrants to send to the urban area and also the optimal amount of remittance to send to the rural household. Therefore maximizing the welfare function with respect to M and α (as before), assuming that the solutions are in the interior, we get the following familiar first order conditions:

$$\frac{\partial w}{\partial M} = \left[V_M - V_M\right] + V_M' \left[y_R - Y_l + \alpha\, p\bar{W} - s_R - C\right] = 0 \tag{45}$$

$$\frac{\partial w}{\partial \alpha} = V_R' - V_M' = 0 \tag{46}$$

Writing the migration and remittance equilibrium conditions as functions:

$$w_1 = w_1(M,\ p, \alpha, s_R) \tag{47}$$

$$w_3 = w_3(M,\ p, \alpha, s_R) \tag{48}$$

Totally differentiating the above two functions and carrying out appropriate substitutions we get the following implicit migrant supply function:[28]

$$dM = \left[\frac{w_{13}w_{32} - w_{12}w_{33}}{w_{11}w_{33} - w_{13}w_{31}}\right] dp + \left[\frac{w_{13}w_{34} - w_{14}w_{33}}{w_{11}w_{33} - w_{13}w_{31}}\right] ds_R \tag{49}$$

[28] Here, $\frac{\partial M}{\partial s_R} = \left[\frac{w_{13}w_{34} - w_{14}w_{33}}{w_{11}w_{33} - w_{13}w_{31}}\right]$, can be written altematively as:

$$\left.\frac{\partial M^*}{\partial s_R}\right|_{\alpha^*} = \frac{\left[\left.\frac{\partial M^*}{\partial s_R}\right|_{\alpha=0} + \frac{\partial M}{\partial \alpha}\frac{\partial \alpha}{\partial s_R}\right]}{\left[1 - \frac{\partial M}{\partial \alpha}\frac{\partial \alpha}{\partial M}\right]}$$

In the above we can see the additional effect from endogensing remittances separately.

Solving the above and the migrant demand function simultaneously we get

$$\left.\frac{dM^*}{ds_R}\right|_{\alpha^*} = \frac{\left.\frac{\partial M^*}{\partial s_R}\right|_{\alpha^*}}{|J|} = \frac{\left[\frac{w_{13}w_{34} - w_{14}w_{33}}{w_{11}w_{33} - w_{13}w_{31}}\right]}{|J|} \tag{50}$$

where, $|J| > 0$, [29]and in the numerator the term, $w_{13}w_{34} - w_{14}w_{33}$, of the following partial effects:

$$w_{13} = -V_R''\left[\frac{p\bar{W}(M)}{\bar{l} - M}\right][v_R] > 0 \tag{51}$$

$$w_{34} = V_R'' < 0 \tag{52}$$

$$w_{14} = -V_R' - V_R''[v_R] \gtrless 0 \tag{53}$$

$$w_{13} = -V_R''\left[\frac{p\bar{W}(M)}{\bar{l} - M}\right][v_R] > 0 \tag{54}$$

Hence,

$$\frac{\partial M}{\partial \alpha} > 0, \quad \frac{\partial M}{\partial s_R} \gtrless 0, \quad \frac{\partial \alpha}{\partial s_R} < 0$$

Using the above partials the entire terms, $w_{13}w_{34} - w_{14}w_{33}$, simplifies to

$$V_M''V_R''[p\bar{W}][v_R] + V_R'[p\bar{W}]\left[\frac{V_R''(M)}{\bar{l} - M} + V_M''\right] \gtrless 0, \tag{55}$$

and from the above expression we can derive the following conditional result:

$$\left.\frac{dM^*}{ds_R}\right|_{\alpha^*} < 0 \text{ and } \left.\frac{dp^*}{ds_R}\right|_{\alpha^*} > 0 \text{ if } \left[v_R < \frac{M}{\sigma_M(\bar{l} - M)} + \frac{1}{\sigma_R}\right]$$

The above condition is similar to the one obtained for the case of exogenous remittances, in fact the exogenous remittance condition would be sufficient to satisfy the above result. Hence we can state the following proposition:

---

[29] $|J| = 1 - \left.\frac{\partial M}{\partial p}\right|_{\alpha^*} \frac{\partial p}{\partial M} > 0$

Proposition 7 *If the marginal costs of migration are sufficiently low, than in this instance, an increase in the rural income subsidy would reduce equilibrium migration and increase the employment rate in the urban sector given endogenously determined remittances.*

With endogenous remittance the additional effect which comes through remittances is negative, $(\partial M/\partial \alpha)(\partial \alpha/\partial s_R) < 0$, as an increase in the subsidy, by lowering the marginal utility of income for the rural household, would decrease marginal remittance from the migrants, $\partial \alpha/\partial s_R < 0$, see (52). This decrease in remittance would in turn have a negative effect on the number of migrants as, $\partial M/\partial \alpha > 0$. This is because a decrease in marginal remittances by lowering the per-capita income of the rural household would increase the costs of migration in terms of utility hence reducing the number of migrants, see (51). Therefore the condition, in terms of the size of the positive marginal costs of migration, for the total effect to be negative is less stringent than in the case of exogenous remittances.

Now similar to last section, we would look at the case of homogenous preferences.

Homogenous Preferences With homogenous preference the migration equilibrium condition, (37), would reduce to the following simple H-T type condition,

$$w_1 = \frac{\partial w}{\partial M} = p\bar{W} - Y_l - C - s_R = 0 \tag{56}$$

which can be written as:

$$p\bar{W} - C = Y_l + s_R \tag{57}$$

The above equilibrium condition states that the rural household would keep on sending migrants till the expected urban wage net of direct costs of migration is equal to the marginal product of labour in the rural sector plus the income subsidy per member of the rural household.

From (57), using the equation for the employment probability, $\tilde{L} = pM$, we obtain the following equilibrium level of new migrants:

$$M^* = \left[\frac{L(\bar{W})}{(Y_l + C + s_R)}\right]\bar{W} \tag{58}$$

and hence

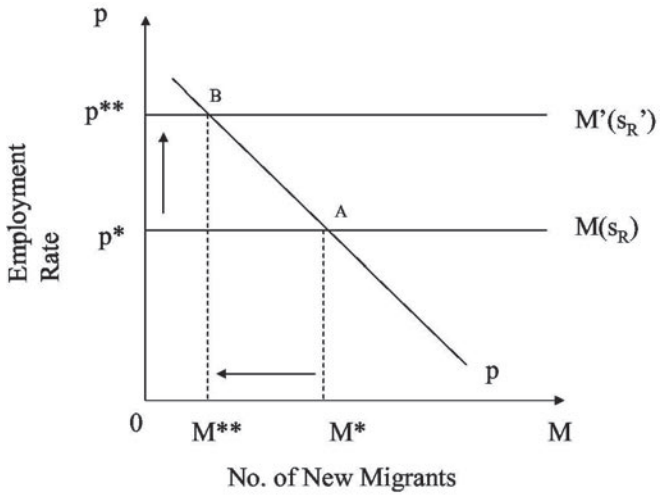
$$\left.\frac{dM^*}{ds_R}\right|_{\alpha^*} = -\frac{(M)}{p\bar{W}} < 0, \tag{59}$$

and from (57)

$$\left.\frac{dp^*}{ds_R}\right|_{\alpha^*} = \frac{1}{\bar{W}} > 0 \tag{60}$$

With endogenous remittances and homogenous preferences of the extended family members, the indirect costs of migration, v_R, are driven to zero, and, the income per capita of both the urban migrant and rural household are equalized giving us the migration equilibrium (57). Therefore the increase in income subsidy by simply reducing the gap between rural and urban income would lessen the incentive of migration directly and unambiguously, see Fig. 4.

Figure 4
Rural Income Subsidy and Migration: With α^* and Homogenous Preferences



The Rural Income Subsidy and Equilibrium Unemployment:

Now we would look at the effect of the subsidy on unemployment level in the urban sector given the assumption of homogenous preferences:

$$\left.\frac{dU^*}{ds_R}\right|_{\alpha^*} = \left.\frac{dM^*}{ds_R}\right|_{\alpha^*} - \frac{d\tilde{L}}{ds_R} \tag{61}$$

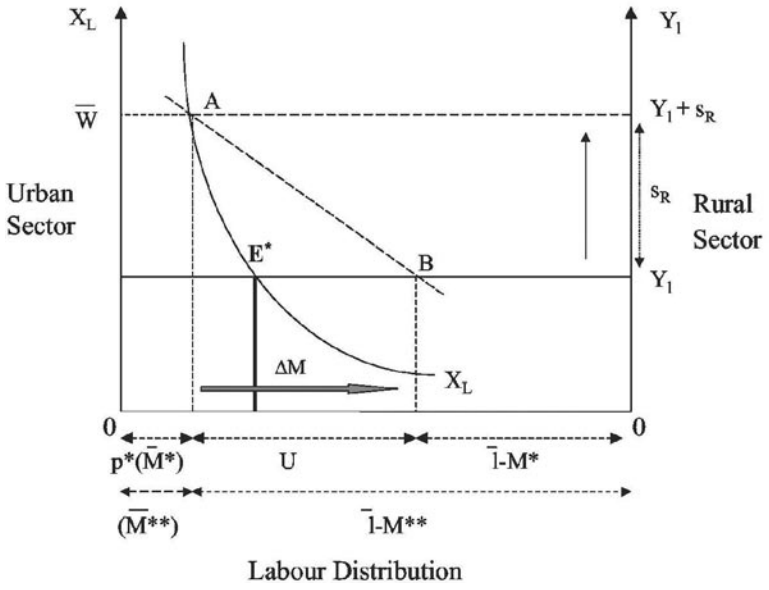
As explained in the previous section the rural subsidy has no effect on equilibrium fixed employment level in the urban sector therefore, $d\tilde{L}/ds_R = 0$. Hence the change in unemployment is just determined by the effect of the subsidy on equilibrium migration, which in this case is unambiguously negative, $dM^*/ds_R < 0$ Hence

$$\left.\frac{dU^*}{ds_R}\right|_{\alpha^*} = \left.\frac{dM^*}{ds_R}\right|_{\alpha^*} = -\frac{(M)}{p\bar{W}} < 0 \tag{62}$$

Proposition 8 *With endogenous remittances and homogenous preferences of the extended family members an income subsidy to the rural sector would unambiguously decrease the equilibrium level of new migrants, increase employment probability in the urban sector and would also decrease the unemployment level in the sector.*

Therefore the assumption of homogenous preferences of the members of the family leads to a qualitative difference in the results. The rural subsidy in this case is very effective in reducing the level of migration to the urban sector and therefore also ameliorating the urban unemployment problem, see the Fig.5.

Figure 5
Rural Subsidy which restores Full Employment in the Urban Sector



Hence in this scenario it would be preferred to an urban employment subsidy as a policy tool to reduce the urban unemployment level.

Summary of Results:

The following table summarizes the results obtained in this section:

Table 2
Effect of Rural Income Subsidy

Case	M^*	P^*	U^*
$\alpha = 0$	+/−	+/−	+/−
α^*	+/−	+/−	+/−
α^* (Homogenous Pref.)	-	+	-

5. Welfare Analysis

The welfare analysis within the H-T class of models has been generally focused on the type, size and allocation of subsidy provision aimed at achieving the 'first best' outcome. In their seminal paper Bhagwati and Srinavasan (1974), showed hat a uniform subsidy financed through some form of non-distortionary tax extended simultaneously to the rural and urban sector would result in the first best outcome to be realised. As most of the developing countries have varied external and internal sources of revenue generation and a large part of their development budgets for both rural and urban projects are often financed through bilateral and multilateral foreign aid or development grants our assumption of foreign aid financed subsidies is in accordance with the observed pattern of budgetary financing. However the interesting issue which arises with foreign aid financed subsidies is the optimal usage or allocation of these given that such aid or grant is in most cases fully fungible. This section, therefore, focuses on the welfare implications of distributing this limited but fungible foreign aid resource to either the urban or the rural sector. More specifically, now that we have analyzed the comparative static effects of the two subsidy policies on both migration and unemployment here we look at the effect on social welfare, as defined by a Weighted Utilitarian Social Welfare Function (WUSFWF), of a transfer of the foreign aid financed subsidy resources from the urban to the rural sector.

5.1 Welfare Effects of a Transfer of Foreign Aid Financed Subsidy from the Urban to the Rural Sector.

Weighted Utilitarian Social Welfare Function:

First of all we would specify the Weighted Utilitarian Social Welfare Function, which is a sum of the indirect per-capita utility of each member of the economy or all the households in our model, i.e., the urban born, the migrant and the rural:

$$W = \sum_{i=1}^{N} a_i V_i(y_i) \tag{63}$$

where

$$N = \bar{L} + \bar{l}$$

the above welfare function can be written as

$$W = a_{\bar{L}} \bar{L} V_{\bar{L}}(y_{\bar{L}}) + a_M [M] V_M(y_M) + a_R [\bar{l} - M] V_R(y_R) \tag{64}$$

As mentioned before we have assumed that the urban born population, $\bar{L}$ are the sole owners of the capital stock, $\bar{K}$, therefore their income is derived from the rental rate of capital, *r*, which is obtained from the first order profit maximization condition of firms in the urban sector:

$$r = X_K(L, \bar{K}); \qquad X_K > 0, \qquad X_{KK} < 0 \tag{65}$$

The Foreign Aid Constraint:

Now the following is the relevant Foreign Aid constraint:

$$s_M \widetilde{L} + s_R \left(\overline{l} - M \right) = \overline{F}, \tag{69}$$

the left hand side of which is the total subsidy expenditure, and the right hand side, $\overline{F}$ is the total foreign aid disbursed. Totally differentiating the above constraint and putting, $d\overline{F} = 0$, we get the following equation specifying an incremental transfer of subsidy from one sector to another:

$$ds_M = - \frac{\left(\overline{l} - M \right)}{\widetilde{L}} ds_R \tag{70}$$

Now substituting the above into equation (68) we get:

$$\left. \frac{dW}{ds_R} \right|_{s_M \to s_R} = - \frac{\left(\overline{l} - M \right)}{\widetilde{L}} \left(\frac{\partial r}{\partial s_M} \overline{K} \right) - \frac{\left(\overline{l} - M \right)}{p} \overline{W} \frac{\partial p}{\partial s_M} + \overline{W} \frac{\partial p}{\partial s_R} (M) + \left(\overline{l} - M \right) \tag{71}$$

The above equation captures the change in social welfare from the incremental transfer of subsidy from the urban to the rural sector. The first term in the above is the change in the per capita utility of the urban born from a incremental fall in the urban employment subsidy. This is negative as a decrease in the employment subsidy by lowering the urban employed migrant labour force results in a decline in the rental rate of capital and hence a fall in the income of the urban born capitalists, that is, using the first order condition of firms:

$$\frac{\partial r}{\partial s_M} = \frac{\partial r}{\partial s_M} = - \frac{X_{KL}}{X_{LL}} = \frac{\widetilde{L}}{\overline{K}} > 0 \tag{72}$$

The above positive partial effect on the rental rate is the positive effect on the income per capita of the urban born capitalists from an increase in migrant labour on account of the employment subsidy. This effect is similar to that expounded in the literature on migration surplus which constitutes the gain in the incomes of the capitalists at the destination from marginal migration. [Borjas (1995)].

Therefore, the income per capita of the urban born is:

$$y_{\bar{L}} = \frac{r\bar{K}}{\bar{L}} \tag{66}$$

The income per capita of the migrant and the rural household is the same as before, see (35) and (36).[30]

Now writing the above social welfare function as a function of both the employment subsidy and the rural income subsidy we get the following expression:

$$\begin{aligned} W(s_M, s_R) = a_{\bar{L}}\bar{L}V_{\bar{L}}\left[y_{\bar{L}}(s_M, s_R)\right] + a_M\left[M(s_M, s_R)\right]V_M\left[y_M(s_M, s_R)\right] \\ + a_R\left[\bar{l} - M(s_M, s_R)\right]V_R\left[y_R(s_M, s_R)\right] \end{aligned} \tag{67}$$

To allow for inter personal comparison of utilities we assume that the preferences of all the members in the economy are the same in the above social welfare function. Now totally differentiating the above function and using the migration and remittance equilibrium condition and also substituting the weights which are chosen by the social planner to be the inverse of the marginal utility of income of each member:

$$a_{\bar{L}} = \frac{1}{V'_{\bar{L}}}; a_M = \frac{1}{V'_M}; a_R = \frac{1}{V'_R}$$

we get the following reduced expression:

$$\begin{aligned} dW = \left\{\left(\frac{\partial r}{\partial s_M}\bar{K}\right) + \bar{W}\frac{\partial p}{\partial s_M}(M)\right\}ds_M + \\ \left\{\bar{W}\frac{\partial p}{\partial s_R}(M) + (\bar{l} - M)\right\}ds_R \end{aligned} \tag{68}$$

[30]As the direct cost of migration *C* is exogenous in the framework we simply assume that it is equal to zero. Otherwise these would translate into a lump sum income transfer to the urban born and would in any case cancel out from the expression of the total differential of the welfare function.

However in this case the marginal decrease in the urban employment subsidy by reducing the demand for migrant labour lowers the rental income per capita and hence utility of the urban born capitalists thus representing a deficit to the urban capitalists.

The second and third term in (71) is the net change in the per-capita utility of the migrants from the subsidy transfer. From the comparative static policy analysis done in the previous section for the case of endogenous remittances and homogenous preferences of the extended family, we have:

$$\frac{\partial p}{\partial s_M} = \left.\frac{dp^*}{ds_M}\right|_{\alpha^*} = 0$$

$$\frac{\partial p}{\partial s_R} = \left.\frac{dp^*}{ds_R}\right|_{\alpha^*} = \frac{1}{\bar{W}} > 0$$

Therefore, the decrease in the employment subsidy has no effect on equilibrium urban employment rate and hence on migrant expected income per-capita while the subsequent increase in the rural subsidy lowers migration unambiguously and increases the employment rate and expected income per capita of the migrants. Thus the net effect on income and utility of the migrants from the incremental transfer of resources from the urban to the rural sector would be positive.

Finally the last term in (71) is the increase in the utility of the rural household members from the rise in the rural income subsidy. Now substituting the above three results into (71) and simplifying we get the following overall result:

$$\left.\frac{dW}{ds_R}\right|_{s_M \to s_R} = (M) > 0$$

Proposition 9 *A transfer of subsidy from the urban to the rural sector in the case of homogenous preferences of the extended family unambiguously increases the welfare of the society.*

In the case analyzed above, a rural subsidy unambiguously reduces migration and increases the employment probability and hence, expected migrant/labour incomes in the urban sector while also increasing the income per capita of the non-migrants in the rural sector. On the other hand, an employment subsidy while increasing the number of employed migrants in the urban sector stimulates more migration resulting in no change in equilibrium employment probability, hence, keeping the expected income in the urban sector unchanged. Therefore, a shift of resources or aid from the urban to the rural sector increases the expected labour/migrant income in the urban sector and also the rural income, these two positive effects on social welfare outweigh the negative welfare effect of a fall in rental income of the urban born individuals due to the incremental reduction in the urban employment subsidy thus resulting in an overall welfare improvement. This result is similar to the one obtained by Fields (2001) within a Harris-Todaro environment of migration. He ranks the rural

subsidy above an urban employment one in terms of improving social welfare which is defined as an abbreviated measure of labour market features such as urban unemployment. The above result underpins the importance of rural development as opposed to urban biased policies in improving the economic conditions of developing countries.

6. Conclusion

This paper attempted to formalize some aspects of the complex migration process in developing countries by incorporating into a theoretical framework the empirically observed phenomenon of migration leading to the development of spatially separated but economically linked extended families. Thus, an extended family model was developed which encapsulated both migration and remittance behaviour. We saw that the analysis of migration and policy within this methodology generated much richer and varied results than the simple Harris-Todaro individual decision based model. For the case of the urban employment subsidy it was found that in both the case of exogenous and endogenous remittances, the increase in the subsidy by increasing the expected wage in the urban sector attracted more migrants from the rural sector in equilibrium. Furthermore, with regard to unemployment levels, the employment subsidy was found to exacerbate the problem, if migration costs were sufficiently low, encouraging more equilibrium migrants from the rural area. In the case of homogenous preferences of the members of the extended family, the migration equilibrium reduced to the familiar H-T type condition where the effect of the subsidy on unemployment level was found to be unambiguously positive. The broader policy lesson which could be drawn from the analysis of employment subsidies is that any initiative of the government, which concentrates on urban sector development, such as provision of housing facilities etc, is bound to increase the pull factor of migration and worsen existing employment conditions in the sector. The tough policy choice facing any decision maker would be in terms of weighing the welfare improvements of the current and potential migrants from such policy initiatives with the socio-economic costs, which these would entail in terms of greater unemployment and lower expected incomes spread over the entire urban population.

Although the results on the impact of the employment subsidy on migration under the extended family framework were fairly intuitive and in line with the H-T type literature on migration and policy issues, the effect of the rural subsidy on migration was found to be quite different. It was shown that under the extended family framework of migration the rural subsidy did not unambiguously decrease migration, as is the case in the individual decision models of migration. In fact, if the costs of migration were high enough the subsidy was likely to encourage more migration. The intuition here was that although the subsidy to the rural household reduces the income gap between the sectors and hence, lowers the incentive for migration, it also simultaneously encourages migration by lowering the costs of migration in terms of utility facing the rural stayers.

Thus one would expect that increases in income subsidy to low income rural households, for whom the direct costs of migration are relatively higher, might initially encourage them to send more migrants. Therefore, in a way the rural subsidy facilitates the extended family in financing more migration. Only under the assumption of homogenous preferences and endogenous remittance, where the migrants remit a fraction of their income to the rural/origin

household so that both households have the same income per-capita, do we obtain an unambiguous decrease in equilibrium migration on account of the rural subsidy. These results highlight the importance of the underlying economic characteristics of rural households in the eventual success of any policy aimed at reducing migration through targeting the rural-origin sector. A policy which broadly targets rural households i.e., lump sum transfer payments, without taking into consideration the prevalent economic diversity such as income distribution and extent of poverty at the village and household level runs the risk of being counter productive.

The results obtained in these policy comparative static analyses underscore the importance of both the economic characteristics of the rural or origin household and the remittance linkage between the two households in determining the eventual effectiveness of the policies in terms of curbing migration and reducing the level of urban unemployment. Thus, this extended family approach allows us to comprehensively analyze the various possible effects of policy which in an individual decision framework would not be addressed. In the last section on Welfare Analysis we saw that a shift of foreign aid financed subsidy resources from the urban to the rural sector unambiguously led to an improvement in social welfare. This result highlights the importance of rural development to successfully curb migration, reduce urban unemployment and thus increase social welfare. It also corroborates the findings by Fields (2001), which show that in the H-T framework a rural subsidy increases rural output at a zero opportunity cost by attracting the unemployed urban migrant labour back to the rural sector and hence is superior welfare wise to an employment subsidy which tends to exacerbate urban unemployment. As these results focused on sectoral welfare effects of the subsidy transfer these had some limited similarities with the immigration surplus literature which looks at the effect of immigration on the welfare of the incumbent or native population. In our case the incremental transfer of subsidy from the urban to the rural sector by reducing the employed migrant labour force had the opposite effect of decreasing the rental income and hence welfare of the urban native capitalists.

REFERENCES

A. R. Kemal, Irfan, M., and Mahmood, N. (2003). *Population of Pakistan: An Analysis of 1998 Population and Housing Census*. Pakistan Institute of Development Economics. Islamabad.

Banerjee, Biswajit (1981). Rural-urban migration and family ties: An analysis of family considerations in migration behavior in India. *Oxford Bulletin of Economics and Statistics.* 43(4), 321-354.

Banerjee, Biswajit (1984). Information flow, expectations and job search: Rural-to-urban migration process in India. *Journal of Development Economics.* 15, 239-257.

Banerjee, Biswajit (1991). The determinants of migrating with a prearranged job and of the initial duration of urban unemployment. *Journal of Development Economics.* 36, 337-351.

Bartle, Philips F.W. (1980). Cyclical Migration and the Extended Community: A West African Example. *Paper.* Afrika Studiecentrum. Leyden.

Basu, K. C. (1980). Optimal policies in dual economies. *Quarterly Journal of Economics.* 95(1), 187-95.

Basu, K. C. (1997). *Analytical Development Economics.* Cambridge, MA: MIT Press.

Bhagwati, J. N. and Srinavasan, T. N. (1974). On reanalyzing the Harris-Todaro model: policy rankings in the case of sector specific sticky wages. *American Economic Review.* 64, 502-8.

Bhattacharya, B. (1985). The role of family decision in internal migration. *Journal of Development Economics.* 18(1), 51-66.

Bhattacharya, P. C. (1993). Rural-urban migration in economic development. *Journal of Economic Surveys.* 7(3), 243-81.

Bhatia, K. B. (1979). Rural-urban migration and surplus labour. *Oxford Economic Papers.* 31, 403-14.

Borjas, G. (1995). The economic benefits from immigration. *Journal of Economic Perspectives.* 9(2), 3-22.

Caces, F., Arnold, F., Fawcett, J.T. and Gardner, R.W. (1985). Shadow households and competing auspices: Migration behavior in the Philippines. *Journal of Development Economics.* 18(1), 51-66.

Corden, W. M. and Findlay, R. (1975). Urban unemployment, intersectoral capital mobility and development policy. *Economica.* 42, 59-78.

Fields, Gary. S, (2001). A welfare economic analysis of labor market policies in the Harris-Todaro model. *Working Paper SILR*. Cornell University.

Gang, I. N. and Gangopadhyay, S. (1987). Optimal policies in a dual economy with open unemployment and surplus labour. *Oxford Economic Papers.* 39, 378-387.

Gazdar, H., A review of migration issues in Pakistan Paper presented at the Regional Conference on Migration, Development and Pro-Poor Policy Choices in Asia. 22–24 June 2003 in Dhaka, Bangladesh Refugee and Migratory Movements Research Unit, Bangladesh/ DFID UK.

Ghatak, S., Levine, P., Price, W. S., (1996). Migration Theories and Evidence: An assessment. *Journal of Economic Surveys.* 10. (2), 123-198.

Gupta, M. R, (1993). Rural-urban migration, informal sector and development policies: A theoretical analysis. *Journal of Development Economics.* 41, 137-151.

Gupta, M. R, (1988). Migration, welfare, inequality and shadow wage. *Oxford Economic Papers.* 40, 477-486.

Habitat (UNCHS). *State of the World's Cities. 2001*, http://www.unchs.org.

Harris, J. R. and Todaro, M. P. (1970). Migration, unemployment and development: A two sector analysis. *American Economic Review*. 60, 126-42.

Karim, M.S and Nasar, A (2003). Migration patterns and differentials in Pakistan. In A.R. Kemal, Mohammad Irfan, and Naushin Mahmood (eds.), *Population of Pakistan: An Analysis of 1998 Population and Housing Census.* Pakistan Institute of Development Economics, Islamabad.

Kaufmann, D. and Lindauer, D. (1980). Basic needs, inter-household transactions and the extended family. *Urban and Regional Report* No. 80-15, World Bank, Washington, D.C.

Lahiri, S. and Gayton-Fregoso, H, (2000). Foreign aid and illegal immigration. *Journal of Development Economics.* 63, 515-527.

Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *Manchester School of Economics and Social Studies.* 22, 139-91.

Lucas, R, E. and Stark, O, (1985). Motivations to remit: Evidence from Botswana. *Journal of Political Economy.* 93, 901-18.

Mazumdar, D., (1976). The rural-urban wage gap, migration, and the shadow wage. *Oxford Economic Papers.* 28(3), 406-425.

Nabi, I., Hamid, N. and Shahid, Z. (1986). *The Agrarian Economy of Pakistan: Issues and Policies.* Oxford University Press, Karachi.

Selier, F. J. M., (1988). *Rural-Urban Migration in Pakistan.* Vanguard Books., Lahore.

Shukla, V. and Stark, O. (1990). Policy comparisons with an agglomeration effects augmented dual economy model. *Journal of Urban Economics.* 27(1), 1-15.

Stark, O., (1991). *The Migration of Labour.* Oxford and Cambridge, MA: Basil Blackwell.

Todaro, M. P. (1969). A model of labour migration and urban unemployment in less developed countries. *The American Economic Review.* 59 (1), 138-148.

Todaro, M. P., and Smith, S. C. (2003). *Economic Development,* 8th. Edition. Addison Wesley.

Williamson, J. (1988). Migration and Urbanization, in H. Chenery and T. N. Srinavasan (eds.). *Handbook of Development Economics. I*. Amsterdam: North Holland.

CMER Working Paper Series

2005

No. 05-43
Jawaid Abdul Ghani and Arif Iqbal Rana:
The Economics of Outsourcing in a
De-integrating Industry

No. 05-42
Ahmed M. Khalid and Muhammad N. Hanif:
Corporate Governance for Banks in Pakistan:
Recent Developments and Regional Comparisons

No. 05-41
Atif Ikram and Syed Ali Asjad Naqvi:
Family Business Groups and Tunneling
Framework: Application and Evidence from
Pakistan

No. 05-40
Junaid Ashraf and Waqar I. Ghani:
Accounting in a Country:
The Case of Pakistan

No. 05-39
Rasul Bakhsh Rais and Asif Saeed:
Regulatory Impact Assesment of SECP's
Corporate Governance Code in Pakistan

No. 05-38
S.M. Turab Hussain:
Rural to Urban Migration and Network Effects
in an Extended Family Framework

No. 05-37
S.M. Turab Hussain:
Migration Policy, and Welfare in the Context of
Developing Economies: A Simple
Extended Family Approach

No. 05-36
S.M. Turab Hussain:
Combed Cotton Yarn Exports of Pakistan to US:
A Dispute Settlement Case

No. 05-35
Waqar I. Ghani and Junaid Ashraf :
Corporate Governance, Business Group
Affiliation and Firm Performance:
Descriptive Evidence from Pakistan

No. 05-34
Abid A. Burki, Mushtaq A. Khan and Faisal Bari:
The State of Pakistan's Dairy Sector: An
Assessment

2004

No. 04-33
Syed Zahid Ali:
Does Stability Preclude
Contractionary Devaluation?

No. 04-32
Syed Zahid Ali and Sajid Anwar:
Trade Liberalization Under New Realities

No. 04-31
Sikander A. Shah:
Mergers and the Rights of Minority
Shareholders in Pakistan

No. 04-30
Abid A. Burki and Mahmood-ul-Hasan Khan:
Effects of Allocative Inefficiency on Resource
Allocation and Energy Substitution in
Pakistan's Manufacturing

Abstract

After giving an overview of the state of migration policy in developing countries with special reference to Pakistan this paper essentially revisits the issue of policy and its effect on rural to urban migration under an extended family theoretical framework. This specific approach is motivated by empirical literature on migration in the context of developing countries which suggests the emergence of spatially separated but economically linked rural and urban households - expanded or extended families. The extended family in this paper consists of two households, the rural-origin and its urban-migrant offshoot. The migrant after leaving the countryside joins relatives in the city who through the assumption of income sharing within households sustain the migrant in case of unemployment. The economic tie linking the two households is remittances flowing from the migrants to the family members left behind. All decisions, migration and remittance, are based on altruism rather then self-interest. Thus in the model both migration and remittances are endogenously determined. This extended family framework is then employed to analyze the effect of the standard policy prescriptions, i.e., urban employment subsidy and a rural income subsidy on migration and urban employment. Also, the welfare effect of a subsidy transfer from urban to rural sector is analyzed. The results, especially in the case of the rural subsidy provision, are qualitatively different from those in the standard Harris-Todaro type literature on migration suggesting the sensitivity of predicted policy effects on the type of methodology employed.

CMER

Centre for Management and Economic Research

Lahore University of Management Sciences,
Opposite Sector 'U', Defence Housing Authority,
Lahore Cantt. 54792, Pakistan
Phone: 92-42-5722670-9 (Ext. 4201)
Fax: 92-42-5722591
http://ravi.lums.edu.pk/cmer/

VERSATILE