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THE ROLE OF AMENITIES AND QUALITY OF LIFE IN AGRICULTURE PRODUCTIVITY RURAL ECONOMIC GROWTH A CASE STUDY OF SINDH

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Abstract: *The present study investigates the role of amenities facilities on quality of life in Rural Sindh and how it reflects the agriculture production in Rural Sindh. A structural model of regional economic growth is estimated using data from 200 rural households by using simple random technique, for this study a structured questionnaire designed to get the reliable results from the chosen sample. Five districts Larkana, Shikarpur, Jacobabad, Khairpur and Sukkur of Rural Sindh where sample has been conducted. It was revealed that education as well amenities facilities has positively associated with the agricultural production. It was observed that rural areas where facilities like, road, education, health and amenities facilities were there they have impact on the Agriculture production and enjoying the highest level of yield compare with the traditional farming activities. In areas where Farmers were educated and they were using all the modern implements and their usage. Results suggested that amenity characteristics can be organized into consistent and meaningful empirical measures that move beyond ad hoe description of amenities. In addition to insights into the influence of local characteristics ranging from tax burdens between amenities, quality of life, and local economic performance exits in various villages of rural Sindh. It was further revealed that only 20% of the villages of all five districts where quality of drinking water was available.*

Key words: *Economic; Growth; Amenities; Development; Quality; Rural*

Introduction

Rural Economic structure in many parts of Pakistan has undergone significant changes over past one decade Traditional good producing sectors such as agriculture and manufacturing are giving way to service producing sectors such as those that support natural resources based leisure activities. Numerous studies have been documented in western countries but not a single study was conducted in Pakistan. The quality of life plays an increasingly important role in community economic development and growth Duller and

Duller, Halstead and duller. In detail review of literature Gotten suggest that the arguments for using amentias attributes s an economic growth tool appear toy be very powerful. Even through such strategy fails to provide jobs in rural areas concern has been expressed those how ever such changes may leads to the high yield performance in agriculture sector in case of Rural Singh. While shift to market based (e.g., extractive and manufacturing activities) to non market based (recreation and retirement) activities are well documented in the rural economic growth literature. (Walker and Duller) The impact in the shift on the structure of regional economies and the well being of rural residents is not well understood the entire market structural changes in Pakistan. Our farmers are mostly illiterate and middleman are getting 10-20% of their income when they are selling their products a well as crop to the different markets, except few owners (progressive farmers) who knows the tactics of the market. This research investigates the nature and extends of economic structural changes in the regional markets in rural areas and how farmer is taking the right decision. The main objectives of this research are (1) the construction of family of consistent measures of mentis and quality of life and (2) the determination of role of amenities and quality of life attributes in production performance and economic growth in rural Sindh.

The current SR model view addressed the different issues of rural house hold and their consumption pattern and production system traditional as well progressive approaches are applied. In general we assume that both households and firms are free to make decision about the production derived both from the consumption of the market good and non market amenities. Progressive farmers are maximized the profit by utilizing modern inputs mechanized operations.

Precisely we construct two central hypotheses in this research.

H_0: Amentias has positive role in agricultural production and economic growth
H_1: Amentias has no impact in agricultural production and economic growth

According to above hypotheses our goal is to examine formally and rigorously the level and degree of this hypothesized relationship as it relates to amentias.
Based upon SR model

$$1)\ P^* = f\ (E^* I^* \backslash\ \Omega^P)$$

$$2)\ E^* = g\ (P^* I^* \backslash\ \Omega^E)$$

$$3)\ I^* = g\ (P^* E^* \backslash\ \Omega^I)$$

Where P, E and I are equilibrium levels of population, production, profit and income level and Ω^P and Ω^E and Ω^I are the set of variables describing initial conditions and other historical information contained in the letter set of information are measure of amentias attributes. Relying on the equilibrium conditions laid out above, a simple linear representation of those conditions can be expressed as

$$4)\ P^*\alpha_{0P} + E^* + \beta_{2P} I^* + SD_{IP}\ \Omega^P$$

$$5)\ E^*\alpha_{0E} + E^* + \beta_{2E} I^* + SD_{IE}\ \Omega^E$$

6) $I^*\alpha_{0I}+E^*+\beta_{2I}I^*+\Sigma\delta_{II}\,\Omega^I$

More over production response, income level likely to adjust to their equilibrium levels with substantial lags (i.e. Initial conditions) Partial adjustment equations to the equilibrium levels are

7) $Pt=Pt\text{-}1+\Lambda_{p}\,(P^*\text{-}Pt_{\text{-}1})$

8) $Et=Et\text{-}1+\Lambda_{E}\,(E^*\text{-}Et_{\text{-}1})$

9) $It=I_{t\text{-}1}+\Lambda_{p}\,(I^*\text{-}I_{t\text{-}1})$

After slight rearrangement of terms this yields

10) $\Delta P=P_t\text{-}P_t\text{-}1=\Lambda_P\,(P^*\text{-}P_t\text{-}1)$

11) $\Delta E=E_t\text{-}E_t\text{-}1=\Lambda_P\,(E^*\text{-}E_{T\text{-}}1)$

12) $\Delta I=I_t\text{-}I_t\text{-}1=\Lambda_P\,(I^*\text{-}I_t\text{-}1)$

Measures of Amenity and Quality of Life Attributes

In current research we propose five broad based indices of amenity and quality of life attributes climate, land, water, winter recreation and developed recreational infrastructure. We capture regions climate conditions such as temperature level of recreational activities, agricultural farming system progressive as well traditional mode of cultivation significantly historical and cultural dimensions. In the set of land variables we want to capture the regions land resources such as the percentage of the acres. The set of available timely water for irrigation as well pure drinking water facilities, roads and other infrastructure facilities.

Data Set and Methodology

A structural model of regional economic growth is estimated and data were collected from 200 rural households by using simple random technique, for this study a structured questionnaire has been designed to get the reliable results from the chosen sample. Five districts Larkana, Shikarpur, Jacobabad, Khairpur and Sukkur of Rural Sindh where sample has been conducted.

Empirical Specification

In the design of the $\Omega^{P,}$ Ω^{E} and ΩI vectors, we follow the logic proposed by Wagner and Duller we hypothesize that there are four broad classifications of factors influence regional economic growth, market, labor, government and amenity attributes. The data drew from the Primary sources as well s secondary sources.

Market

In this category, we attempt to capture the factors that influence the demand side of the regional market. Generally these factors are designed to describe the region's market size and consumption ability. We used five Variables

1. Population of the Area
2. Percentage of the population who are engaged in Farming
3. Percentage of population who are educated.
4. Percentage of the household who direct sell to the market
5. Percentage of the farmers who indirect sell their crop yield in the market.

Progressive Farmer

In this category intend to use the modern implements and input for the better production, and also have knowledge about the markets. The variable that measure human capital flow and income generated from the crop significant to capture the influences of this side of the market on the regional economic growth. The variables we use to capture the progressive farmers are chacteristics are

1. Percentage of the Progressive farmers with high School diploma.
2. Knowledge towards agriculture inputs

Government

The local government's finance is fundamental to the growth potential of the region. On the other hand high taxes on agriculture sector are generally deemed to be determinable to the local economic growth. Yet on the other hand government revenue finances the local infrastructure and public serves that may attract household firms to establish in the region, then eventually simulate the local economy. We used two variables to represent the local Government finance.

1) Agricultural tax
2) Total government spending on Agriculture sector

Amenities

The role of amenity attributes is hypothesized to be a central factor in the economic growth of the rural areas of Sindh through its impact on quality of life within the region. As described above, these five sets of amenity variables are (1) climate (2) recreational infrastructure (3) land (4) Water (5) Consumption pattern

Empirical Results

For this analysis there are two distinct sets of empirical results first, the principal component analysis used to construct the measures of amenity attributes and second the reduced from results of our model SR(Shaikh, Rahpoto) of regional economic growth.

Amenity Measurement

The results from the principal components analysis for the five board measures of amenity attributes are report in Tables 1-4 (see the appendix) the final measure accounts for 33% of the variation of six separate input variables Only February and July temperature do not play an important role in final measure. Higher values of climate measure tend to be associated with southern regions like Jacobabad and Shikarpur. The developed recreational infrastructure measure is intended to capture the role of amentias that tend to be more artificial or man made (table-2). Fourteen separate variables are used to construct this particular amentias attribute measure. Individual measures that that determine the final amenity measure include number of park and recreational departments with in the country the number of cricket grounds and other facilities of sports. The number of play grounds recreational centers is significantly contributed in the economic growth, due to the relatively large number of variables introduced in this measure, coupled with large number of variables not loading into the final principal component measure only 18% of the cumulative variance is explained. The progressive farmer measure intended to describe the nature and tertian and land resources and input used for high growth in productivity. Given these results districts if Upper Sindh would tend to be enjoying the high yield compare with lower Sindh. Again due to the large number of variables not loading into the final principal component measure only 20% of the cumulative variance is explained. The availability of the water for irrigated land captures the water resources available in Pakistan and especially in Sindh. The final principal component measure used for this analysis tends to b emphasis value add businesses associated with water resources and Agriculture sector is depending the water availability and time constraints are also important in the yield of the different crops available in door step-in rural Sindh. The measure as defined by principal components analysis appear to be identifying those districts that tend to have reasonably high levels recreational development combine with amenity based as proposed those area of that have sonly higher level of raw amentias. The final measure of amenity attributes used in the analysis capture recreational activities and opportunities where farmers have enjoy the facilities.

Growth Model

As predicted by theory, Initial conditions play and important role in detraining overall growth levels (table3) .The negative and statistically significant coefficient on initial levels for each respective equation all else constant reinforces prior results of the rural renaissance. Countries like Pakistan that had higher levels of population, employment and precipitate income at the beginning of the period (2005) tided to experience lower tats of overall growth and development. Higher initial levees of population appear to lead to higher employment growth while higher level in per capital income. Given theses results the scone hypotheses laid out above appear to hold true and there appear to be patterns of convergence. In Table-4 where there is big gap in the production performance of progressive farmers compare with the traditional farmers. If you just look at the difference 20-30 percent.

Other interesting results including the strong negative relationship between population percentage and economic growth. A higher percent of the population they are

illiterate and 70% are engaged in Agriculture where only 3% are progressive farmers. The income results coupled with the initial income condition results above, might be due the lower level of income in these areas to begin with. Of the five amenities attributes measures all five appear to play a significant role in the regional economic growth.. Based on the simple reduced from the results some strong pattern between amenities and economic development and growth become apparent. Climate appears to strongly influence growth levels in population, have no role employment growth, and have weak influence on per capita income growth. Given that the regions with high climate amenity scores tend to be retirement destination areas, this result seems to make intuitive sense. Similarly, countries with higher levels of water amenities as measured by our simple principal component index also tend to be associated with higher levels of population and income growth, but water amenities do not appear to influence job growth directly. These results might b capturing retirement migration, the growth in recreational demand for natural resources amenities, or higher end residential areas within the commuting shed of urban areas.

Developed recreational infrastructure is strongly associated with population employment, and income growth rates. Recall that the index is driven by availability of parks, play grounds and other recreational facilities, it was revealed that where facilities and amenities facilities were found those villages farmers were progressive and they have innovative strategies of production distribution and consumption of their yield and market structure where they sell their crop yield.

The final amenity measures, attributes that support winter recreational activities is positively related to growth rate in population, employment , income, and yield performance. Demand for the winter recreational activities such that Cricket, Mallah, Kabadi and football, have been and expected to continue growing in the rural areas of Sindh. In the last in general conclusion that all statistically significant amenity attributes are positively related to the economic growth in rural Sindh.

Conclusions and Policy Implications

As the demand for natural resource amenity attribute increases many rural areas of Pakistan are in position to capitalize economically on available resources endowments While the rural growth and Natural resource management literature are acknowledged the important of amenity attributes in economic performance knowledge of Market and progressive farmers are enjoying the high yield per acre compare with the traditional farmers in Rural Sindh and progressive farmers are more conscious about the amenities facilities in their villages has and At the same time, at lest a part of the skills that citizens of developing countries like Pakistan possess have been acquired in universities and training institutions in developed countries. Education, health and other necessities were available for the villages where progressive farmers are conducting there. Types similarly our amenity measures did not account for any spatial affects across country any advice in to those rural areas that may be said to be amenity poor. The policy implication appears to be simple and straight forward . Rural areas endowed with key natural resources amenities can manage those resources to capture growth more effectively. Given expected levels of growth in the demand f recreational uses of these resources, the future growth and development potential of many rural areas may be additionally tied to range of tourism activities.

References

1. Andrews's **FM comparative studies of life Quality Comments on the Current State of the Art and some Issues for Future Research**, The quality of Life comparative Studies Szlai and FM Andrews ed Newbury Park CA SAGE, 1980
2. Angrist, J., Krueger, A. **Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments**, Journal of Economic Perspectives, vol. 15, no.4, 2001, pp.66-85
3. Barkley D. Henry, M.S. and Bao, S. **The Role of local School Quality and Rural employment and Population Growth**, Rev Regnlstud 28, summer 1998, pp. 81-102
4. Bartik, T., Who, J. **Benefit for the state and the local economic development policies?** Kalamazoo MI: W.E , Upjohn Institute, 1991
5. Beale, C.L., Johnson, K.M. **Tthe identification of the recreational countries in non metropolitan areas of the USA' Population Resources**, Policy. Rev. 17, 1998, pp. 37-53
6. Dissart, J.C., Deller, S.C. **Quality of life in planning literature,** J Planning lit. August,15, 2000, pp. 135-16
7. Dorf R.J., Emerson, M.J. **Determinants of Manufacturing Plant Location for Non Metropolitan Communities in the West North Central Region of the US,** Journal Regl. Sci. 18, April 1978, pp.109-120
8. Duffy N.E. **The Determinants of State Manufacturing Growth Rates: A Tow Digits Level Analysis**, Journal Regl. Sci 34, May 1994, pp. 137 –162
9. Duffy N.E., Dena K.T. **The Effect of Federal wilderness on county growth in their inter mountain Western Untied States,** Journal Regl. Sci. 38, February 1998, pp. 109-36
10. Duller S.C., Tsia, T.S. **Examinations of the Wage Curve: A Research Note,** J. Regl. Anal Policy 28, no. 2, pp.3-54
11. Ellerman, D. **Policy Research on Migration and Development**, World Bank Policy Research, Working Paper No WP-t13, Sussex University, CANADA, access, 2003
12. English D., Marcouiller, B.K. and Cordell, H.K. **Linking Local Amenities with Rural tourism Incidence: Estimates and effects Soc**., Natur. Res., 13, 2000, pp.185-202
13. Fulton, J.A., Fuguitt, G.L.V. and Gibson, R.M. **Break Polistan Migration Streams**, Rural Sociology, 62 Fall, 1997, pp. 363-384
14. Gottlieb, P.D. **Amenities as an economic Development Tool: is There Enough Evidence?**, Econ Develop, quart, August, 1994, pp. 207-85
15. Graves, P. **A life Cycle Empirical Analysis of Migration and Climate**, Journal of Urban Economics, 6, 1979, pp. 135-47
16. Greenwood, M.J. **Humana Migrations Theory Modes and Empirical Studies**, Journal Regl. Sci., 25 November, 1985, pp. 521-544
17. Hildebrandt, N., McKenzie, D. **The Effects of Migration on Child Health in Mexico,** World Bank Policy Research Working Paper 3945, 2005
18. Mansuri, G. **Temporary Migration and Rural Development**, mimeo, World Bank, 2006
19. Nord, M., Cromartic, J.B. **Migration: the increasing importance of rural natural Amenities,** Choices, Third quarter, 1997, pp. 31-32
20. Porell, F.W. **Inter metropolitan Migration and quality of life,** Journal of Rel. Sci., 22, May, 1982, pp.137-158
21. Rudzitis, G. **Amenities increasing draw people to the rural west,** Develop. Perpect 14, August, 1999, pp. 23-28
22. Stagier, D., Stock J. **Instrumental variables regression with weak instruments**, Econometrics 65(3), 1997, pp.5 57-86

23. Walzer N., Deller, S.C. **Rural issues and Trends: Role of Visioning Program Community visioning Programs,** Practices and Experiences N. Walzer ed. New York, Praeger, 1996
24. Walzer, N., Deller, S.C. **Rural issues and trends: role of visionary programs**. Community visionary Programs; Practices and Experiences, N. Walzer, ed. New York, Praeger, 1996
25. Wanger, J.E., Deller, S.C. **Measuring the effects of economic Diversity on growth and stability**, Land Economics, 74,Nov,1998, pp. 541-556
26. Yang, D. **International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks**, NBER Working Paper 12325, 2006
27. * * * **Economic Survey of Pakistan** various issues from 2000-2008
28. * * * **The International Migration Agenda and the World Bank, Managing Risks Enhancing Benefits**, World Bank at http:/www.worldbank.org/migration, 2006

Appendix

Table 1. Principal Component Eigenvectors:

Climate Variables	Eigenvectors
Climate Average Temperature 0.5016	
Average annual precipitation	0.5387
January Temperature	0.5160
January sunny days	0.0391
July Temperature	0.0747
July humidity	0.04300
Cumulative variance explained	46.17

Table 2. Principal Component Eigenvectors: Developed Recreational

zonal departments	0.2368
Urban facilities Variables	**Eigenvectors**
#Tour operations and sightseeing tour operations	0.4884
#Playground and re carrion centers	0.0287
#Private and Public swimming pools	0.0785
#organized camps	0.5550
#Tourist attractions and historical places	0.32739
#Amusement places	0.3559
#fairgrounds	0.6534
#Local and country park	0.0135
#Private and public golf courses	0.0313
#ISTEA funded greenway trails	0.4908
Estimated of acres of urban and built up and from 1995 national	0.3300
Resources Inventory (NRI)	0.6680
Cumulative variance explained	16.69%

Table.3. Estimation on Reduced Form

Intercept-	52.174	74.102	152.007
	(8.511)	(5.730)	(18.949)
Population in 2005	0.0001	0.000.5	-0.0001
	(0.245)	4.00	

Table.4. Progressive farmers comparison to Traditional Farmers in Rural Sindh

No. Acres 10-acres	**Yield of Progressive Farmers**	**Yield of the Traditional Farmers**
Crop Rice	78/acre	45/acre
Wheat	45/Acre	35/Acre
Cotton	35/Acre	20/acre

Survey-2008