Economic Growth In the Philippines: A Spatial Econometrics Analysis
At the Provincial level, 1991–2000

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Introduction:

Economic growth in the Philippines has been studied in the past at the sub-national level through the use of neoclassical and endogenous growth theories. Balassa and Funes (2004), applied the Solow model, an endogenous spatial growth model, using data from the provincial level in the Philippines. The study determined initial conditions and policy variables that impacted the annual growth rate of mean consumption per capita. Jalakas (2005), revisited economic growth factors in the Philippines again using the Solow model as well as the Markovian Random Walk model, to focus on the role of endogenous growth in the Philippines.

Methods:

This study revisits the Solow and Markov Random Walk models using spatial econometrics techniques to account for spatial dependency. The goal is to investigate what drives economic growth at the provincial level in the Philippines.

Objectives:

This study revisits the Solow and Markov Random Walk models using spatial econometrics techniques to account for spatial dependency. The goal is to investigate what drives economic growth at the provincial level in the Philippines.

Models:

The models used in this study are:
1. Solow model
2. Markov Random Walk model
3. Spatial econometrics

The Solow model is a neoclassical growth model that assumes that economic growth is driven by capital accumulation and technological progress. The Markov Random Walk model is a stochastic model that allows for the incorporation of random shocks into the economic growth process. Spatial econometrics models allow for the analysis of spatial dependencies and are used to account for the spatial transmission of economic shocks.

Results & Discussions:

- Figure 1 shows the spatial distribution of per capita income in the years 1991, 1994, 1997 and 2000.
- The concentration of high per capita income in the National Capital Region (NCR) has remained consistent throughout these years.
- During the last two provinces, there has been a reduction in the number of provinces per capita income, mainly in the southern part of the country.

Table 1: Table 1: The provincial level Solow model and Markov Random Walk model results. * and ** indicate statistically significant at 10% and 5% level respectively.

<table>
<thead>
<tr>
<th>Model</th>
<th>Parameter</th>
<th>Value</th>
<th>SE</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solow model</td>
<td>a perd capita income</td>
<td>1.08***</td>
<td>0.01</td>
<td>1.08***</td>
<td>0.01 ***</td>
</tr>
<tr>
<td>Solow model</td>
<td>b</td>
<td>0.16</td>
<td>0.02</td>
<td>0.16</td>
<td>0.02</td>
</tr>
<tr>
<td>Markov Random Walk model</td>
<td>a</td>
<td>1.08***</td>
<td>0.01</td>
<td>1.08***</td>
<td>0.01 ***</td>
</tr>
<tr>
<td>Markov Random Walk model</td>
<td>b</td>
<td>0.16</td>
<td>0.02</td>
<td>0.16</td>
<td>0.02</td>
</tr>
</tbody>
</table>

- Table 1 shows the estimated coefficients for the Solow model and Markov Random Walk model. The values indicate the statistical significance of the coefficients. The Solow model shows a positive and statistically significant coefficient for the Solow growth rate, indicating that an increase in the Solow growth rate leads to an increase in per capita income. The Markov Random Walk model also shows a positive and statistically significant coefficient, indicating that an increase in the Markov growth rate leads to an increase in per capita income.

- Figure 2 shows a scatter plot of the annual average growth rate of per capita income over the period 1991–2000.
- The negative trend in the line indicates the economic growth convergence.
- High income provinces tend to grow slower while low income provinces grow faster.

Conclusions:

- Spatial econometrics techniques are used to account for spatial dependencies in the economic growth process. The study finds that the Solow and Markov Random Walk models are able to explain a significant portion of the variation in per capita income growth.
- The study also finds that the Solow and Markov Random Walk models are able to explain a significant portion of the variation in per capita income growth.
- For instance, given the importance of rice in the Philippines, it could be beneficial to invest in the role of rice production on economic growth.

References:


- Figure 3 shows the standardised real per capita income in 1991 and 2000.
- There is a concentration of points in the upper right and lower left, which suggests that provinces with above-average per capita income in 1991 tend to have below-average per capita income in 2000 and the same is observed for the below-average per capita income provinces.

- Figure 4 shows a scatter plot of the standardised real per capita income over the period 1991–2000.
- The negative trend in the line indicates the economic growth convergence.
- High income provinces tend to grow slower while low income provinces grow faster.

- Figure 5 shows the Solow scatter for the average growth of per capita income over the period 1991–2000.
- The average annual growth rate of each province is regressed against the province’s weighted average of the annual growth rate of its neighbors.
- The fitted line has a positive slope which is small in magnitude, indicating that the neighbors influence is minor.