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Domestic Solid Waste Discharge: Volume, Structure and Determinants in Rural China

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Backgrounds

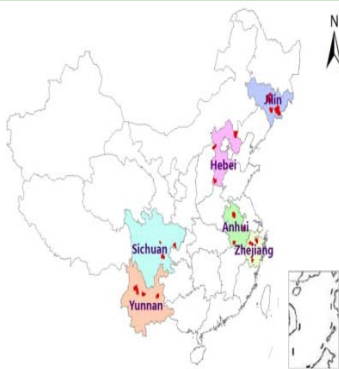
- Rural domestic solid wastes accounts for 53% of all rural pollution sources in China
- The massive discharge of rural domestic solid wastes has posed serious impact on rural environments
- The research on rural domestic solid wastes is not enough, there even have no statistical data about the discharge of rural domestic solid wastes in China

Questions

- What is the total discharge volume of rural domestic solid wastes in China?
- How about the characteristics of the rural domestic solid wastes discharge?
- What are the determinants of discharge volume of the rural domestic solid wastes in China?

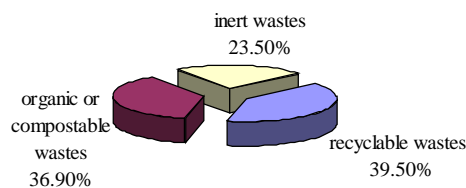
Methods and Data

- Econometric model analysis.
- Data come from a face to face field survey conducted in 2010, covered 1,104 farmers, 105 villages and 18 counties in 6 provinces in China.



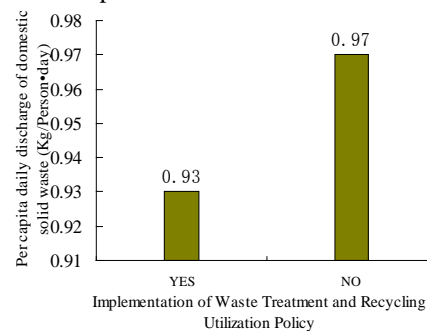
Discharge Volume and Structure

- In 2010, Rural domestic solid wastes discharge volume was 0.96 kg/person•day, overall discharge volume reached 236 million tons in China.
- Discharge Structure

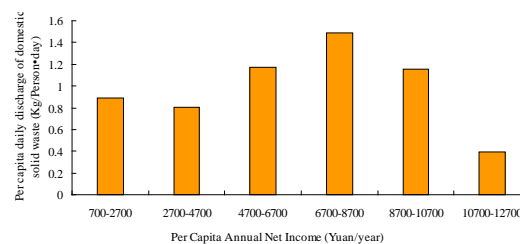


Determinants of Discharge Volume

- Solid Waste Recycling and Disposal Policies and the Per Capita Waste Output.



- Per Capita Net Income and Per Capita Waste Output



Econometric Analysis

- Econometric model (OLS):

$$W_i = \alpha + \beta P_i + \delta I_i + \rho D_i + \varepsilon$$

W_i : Per capita domestic solid waste discharge volume (kg/person•day); P_i : whether implementation of Solid waste recycling and disposal policies; I_i : socio-economic conditions; D_i : control variable.

Estimation results of key variables:

| | Coefficient | T Value |
|---|-------------|-----------|
| Solid waste recycling and disposal policies (1=yes; 0=no) | -0.600 | (1.78) * |
| Per capita net income of farmers (RMB 10000/year) | 2.494 | (1.81) * |
| Square of per capita net income of farmers (RMB 10000/year) | -2.184 | (2.42) ** |
| Number of enterprises | 0.046 | (2.19) ** |
| Proportion of non-agricultural labor force (%) | -1.366 | (1.83) * |
| Observed value | -0.05 | (1.12) |
| Adjusted R^2 | | 0.28 |

Note: “*”, “**” and “***” respectively means $P < 0.1$, $P < 0.05$ and $P < 0.01$.

Conclusions and Political Implication

- Daily discharge per capita of rural domestic solid wastes in China in 2010 was 0.96 kg.
- Recyclable wastes occupy the largest proportion in the discharge structure of rural domestic solid wastes, say, 39.5%, while organic or compostable wastes and inert wastes respectively occupy 36.9% and 23.5%.
- Solid waste recycling and disposal policies can significantly reduce the discharge per capita of rural domestic solid waste.
- the relationship between daily discharge per capita of rural domestic solid wastes and per capita annual net income of farmers is of an obvious inverted U-shaped curve.