Resilience of Tsunami Affected Farm Households in Coastal Region of Tamil Nadu, India

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In the morning of 26th December 2004, a large scale earthquake that occurred in Indian Ocean and caused tremendous damage to the eastern coastal area of India. In Tamil Nadu state, the damage by tsunami in Nagapattinam district was largest with more than 7,000 casualties and 5,000 hectares of agricultural lands. In those areas, the incidence of PTSD among tsunami affected fishermen and farmers was more than 70 percent immediately after tsunami. It is of primary importance for government and communities to consider how and in what way the affected people and communities in coastal ecosystems recover from a huge disaster such as tsunami. Resilience is a particularly relevant concept for considering the recovery of communities affected by disasters and the development of rural societies whose livelihoods are highly dependent on natural resource base. Not only the fast recovery of social-ecological system, but the capacity to cope with uncertainty and surprise is required (Adger et al., 2005).

This paper investigates the magnitude of income shocks and their recovery of tsunami affected households during the post-tsunami period 2005-2008 in Nagapattinam District, Tamil Nadu, India. Most farmers suffered from decline of income and assets immediately after tsunami. During the 2004/05 planting season, our estimate indicates that farming households saw their income drop by as much as 30 percent. By 2007/08 agricultural season, households showed a near complete recovery of their incomes. After tsunami, there is a major transformation of the livelihood from agricultural production to wage labor. The major coping strategies dominated by receiving aid, borrowing money for most households. Other coping strategies included consumption reduction followed by removing children from school.

Our empirical approach is inspired by Carter, Little, Mogues and Negatu's (2007) asset growth model that allows transitional dynamics and shocks to play explicit roles in determining the growth of household wealth (e.g. asset or income). In this model, growth rate is related to an initial level of income, shocks and a host of factors determining efficiency and steady state. The model is applied to examine resilience to shock as defined by a capacity to recover asset or income to a pre-shock level by using data of four cropping seasons from pre- and post-shock periods.

The empirical results showed strong growth convergence during post-tsunami period. During the post-tsunami period, nearly in all categories of nominal incomes, the recovery was observed. However, when the price increase is taken into account, the effect of the recovery become less obvious. Shock sensitivity analysis indicated that the access to factor markets such as aid received, access to credit market and access to labor market are important household resilience enhancing factors in terms of income shock recovery. As the results, the speed of the recovery was different in biophysical environment and in social environment in tsunami affected area. Government needs to carefully monitor soil and water to suggest recovery of agricultural

production and support disaster affected people by providing access to factor market so that they can recover from income loss quickly.