The Economic Impact of Shelter Assistance in Post-disaster Settings

Goals of the EISAPS Study

Approaching Emergency Shelter As a Tool for Economic Recovery

- A thorough analysis of literature on issues which would inform this issue
- A study of the impact of emergency shelter on beneficiary incomes in three post-disaster situations (Sri Lanka, Colombia, El Salvador).
- A draft econometric model of the relationship between economic activity and housing production based on measurements suggested by other exisiting models.

Thinking more Precisely

A econometrist's approach

Benefits

Benefits for who or what?

Economic Benefits of Shelter

- Internalized benefits (direct relief – reducing loss of life and relieving suffering)
  - Little or no spillovers
  - Given sufficient income, households would acquire efficient amounts with no outside intervention
  - This consideration is important for appropriate policy construction

Economic Benefits

- Internalized benefits
- Shelter provision for private consumption
- Shelter as input to production – HBE's
- These sources of benefits are tangible and important
- If benefits are truly internalized, then benefits would be obtained with an income transfer

Economic Benefits

- External benefits of shelter provision
  - Spillover effects
  - One family's consumption of housing provides some form of benefit to other families
  - Household consumes shelter only up to point where the benefits to themselves balance the cost
  - Are there external benefits from shelter?

Economic Benefits

- External benefits of shelter provision
  - Communal health benefits
  - Kinship networks?
  - Maintenance of community
  - Established trading networks and experience
  - Continued returns on social capital investments
  - These are all dependent on provision of shelter so as to **maintain proximate location**

Job Creation- Other Impacts

- NAHB model projects that

100 single units in average city produce:

$11.6 million in local income

$1.4 million in taxes and other revenue for local governments

and 250 local jobs

Plus ongoing, annual local impacts

Adaptation of NAHB model in Oregon

$5.2 million in local income

$307,076 in state income taxes paid

161 local jobs

Measurement Techniques

- Macro approaches
  - These generate the usual “multipliers” for income and employment
  - Derived from analysis of inter-industry trade
    - What shelter providers buy from other sectors of the economy in the course of shelter production
    - What households purchase as a direct result of having shelter or being employed in its production

CHF Poland Results 1992-1999
Calculation of employment through construction of a typical 20 house complex

	Average Person/Months generated by each unit	Average gross income generated by each unit
Basic construction	21.55	$11,162.9(at $518/month)
Furnishing and equipment per unit	4	$1,776 (at $ 444/month)
Total	25.55	$12,938.9

Measurement Techniques

- Macro problems
  - Multipliers so far obtained using data from an economy in “normal” circumstances – emergency shelter impacts may be different
  - Most inter-industry analyses assume fixed factor proportions, so that there is little possibility for capturing the increase in productivity from shelter provision
  - Multipliers and linkages – particularly forward linkages – involve conjecture, or are not completely measured
  - Most difficult problem: **the data have not been collected in Post-disaster situations** to permit a local, sector specific evaluation

Possible Economic Benefits

- Employment Generation
  - Yes – but at what cost?
  - What is the opportunity cost of labor employed in shelter production?
  - If there is unemployment in the economy, then employment generation may be a tangible benefit

Possible Economic Benefits

- Skills acquisition
  - Yes – but how productive?
  - Emergency setting is naturally a time of distortion in the economy.
  - Not generally efficient for everyone to have the skill of shelter production.
  - Benefits are likely to be concentrated on only a few households?
  - How are additional skills useful as a diversification of income strategies?

Possible Economic Benefits

- Capital - How important is it?

  - Almost never taken into consideration by emergency planners

  - Capital platforms shown to be a very significant factor for successful income strategies in informal economies (HBEs)

  - "*the major stumbling block that keeps the rest of the world from benefiting from capitalism is its inability to produce capital*" - de Soto

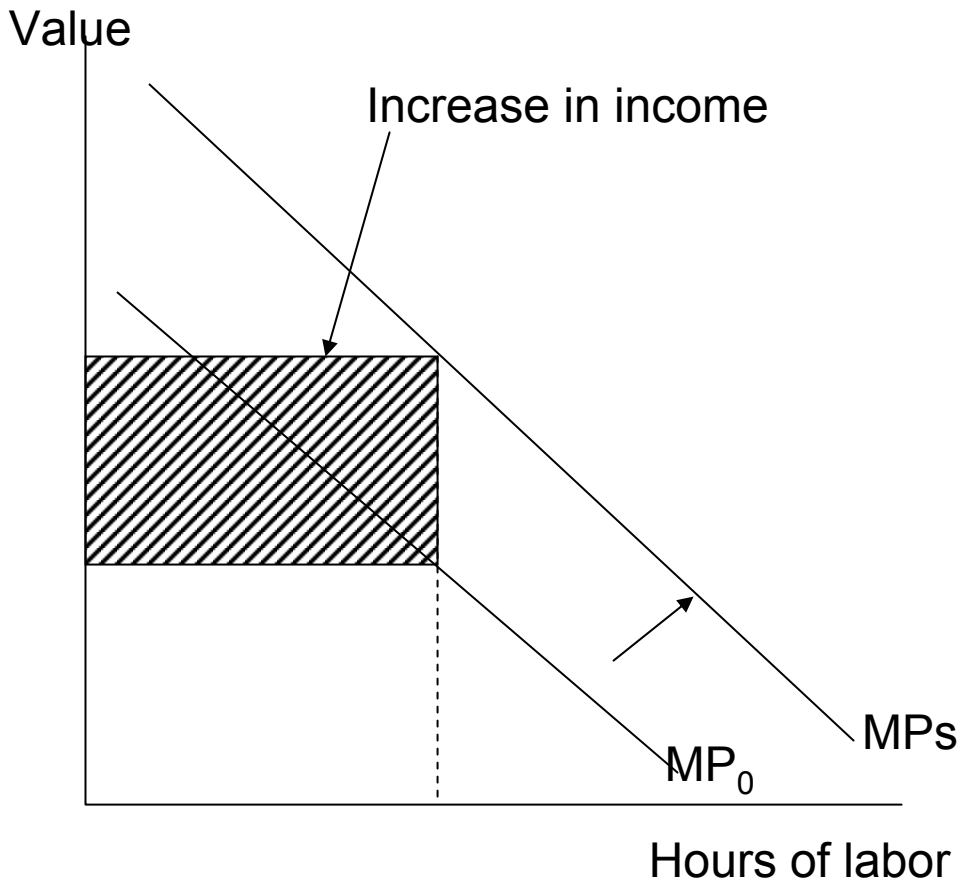
Measurement Techniques

- **Micro approaches**

  hypothesis **- Shelter increases worker productivity**

  - Maintenance of community and economy
  - Health
  - HBEs
  - Employment and skills

  – **Increased productivity implies increased incomes**



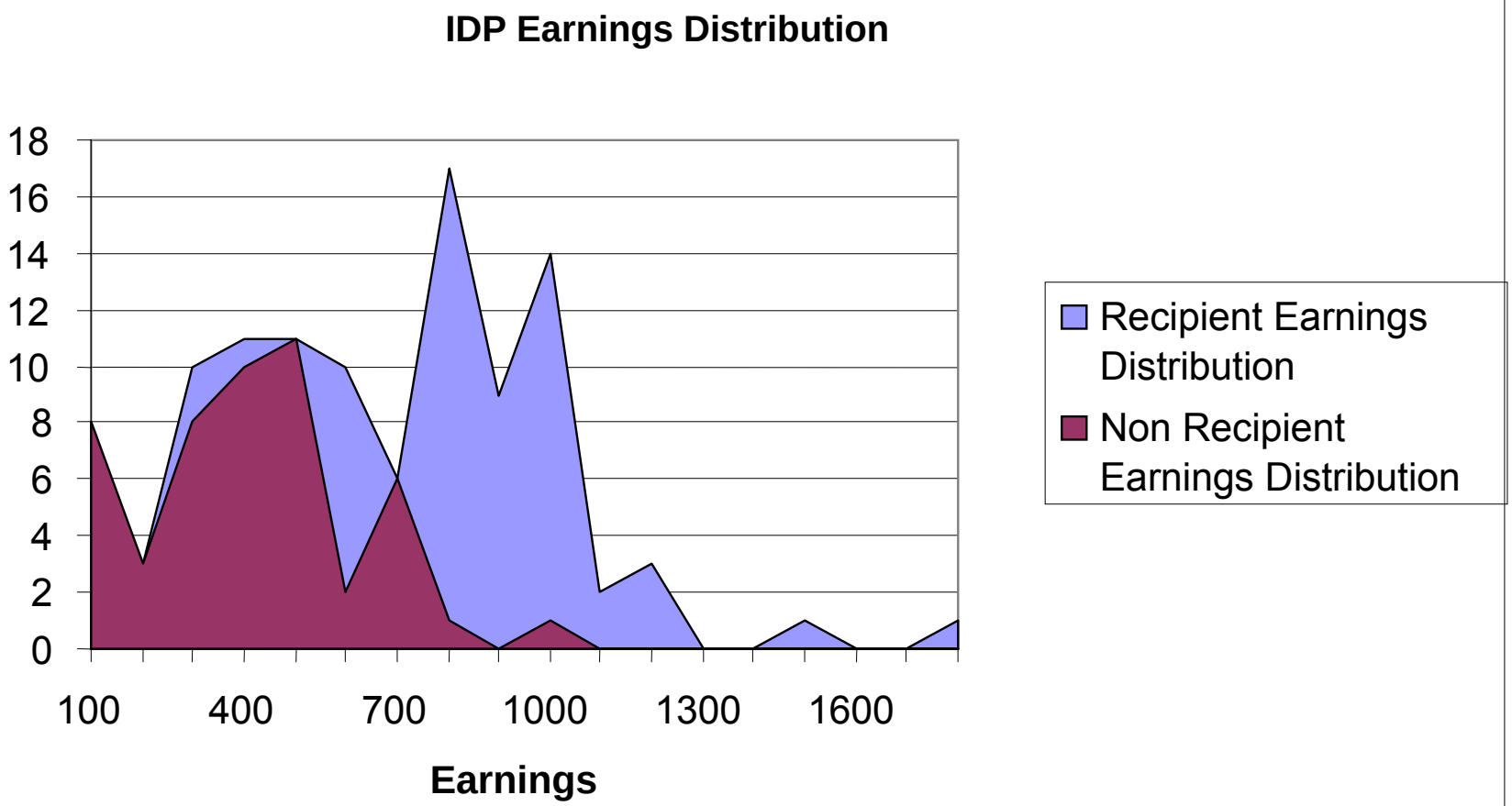
Benefits Analysis

- Surveys required for either macro or micro based analysis
- Survey for macro analysis: inter-industry flows to determine patterns of trade between producers
- Survey for micro analysis: household survey to measure income earnings and assets
- Should also measure other factors that might influence labor productivity and that would vary within the sample population
- ***The CHF analysis undertook household surveys for micro analysis***

CHF Survey Analysis

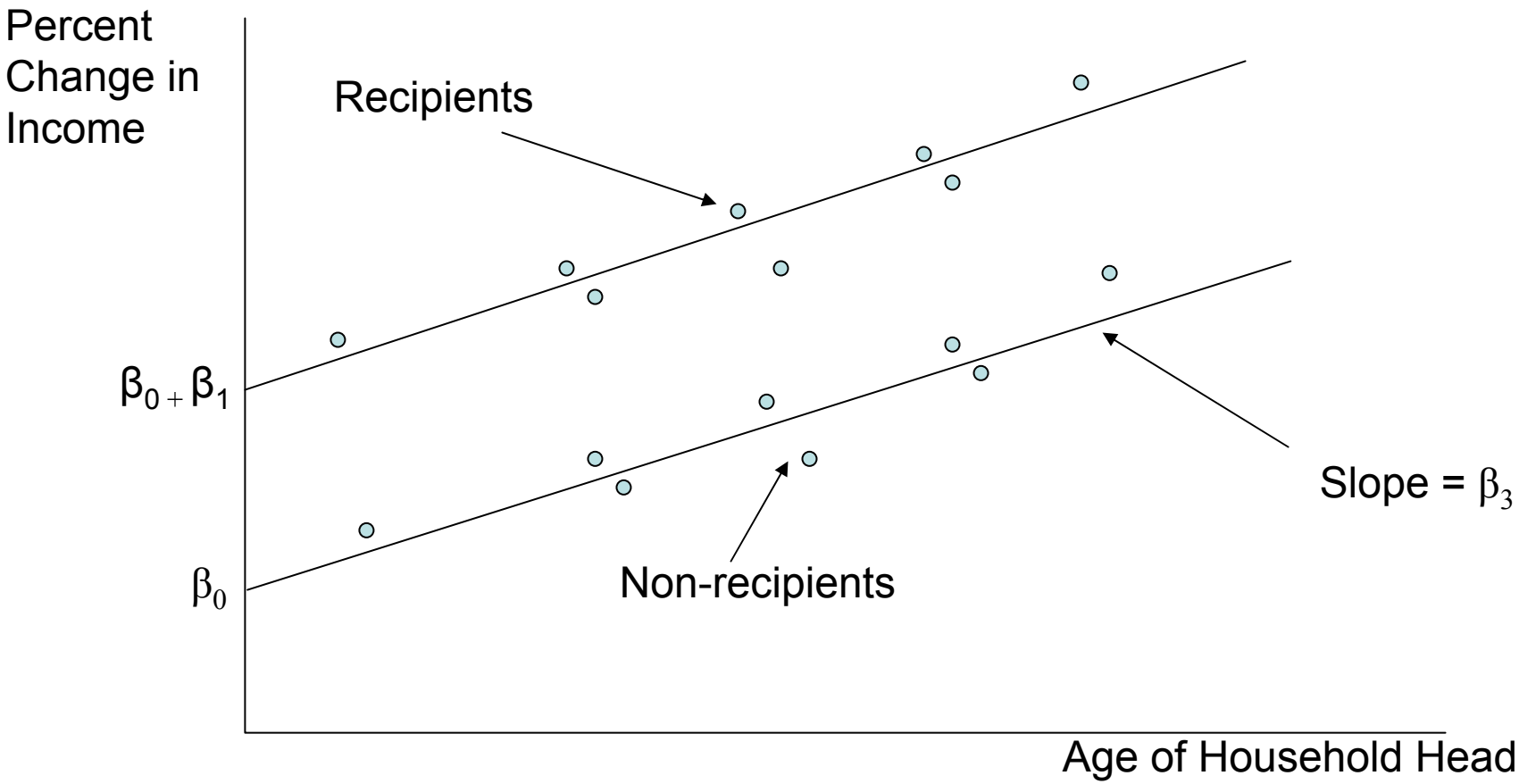
- Initial Evaluation of Survey Results
- Looking only at shelter recipients
  - Incomes increase in El Salvador and in Sri Lanka
  - Incomes “lower” in Colombia
  - In El Salvador total assets increase
- Is this a complete analysis?
- Do we believe shelter provision caused incomes to decline?
- Problem: incomes depend on many variables
- Solution: undertake a multivariate analysis

Sri Lanka Earnings Distribution



Multivariate Analysis

- Some intuition behind the analysis



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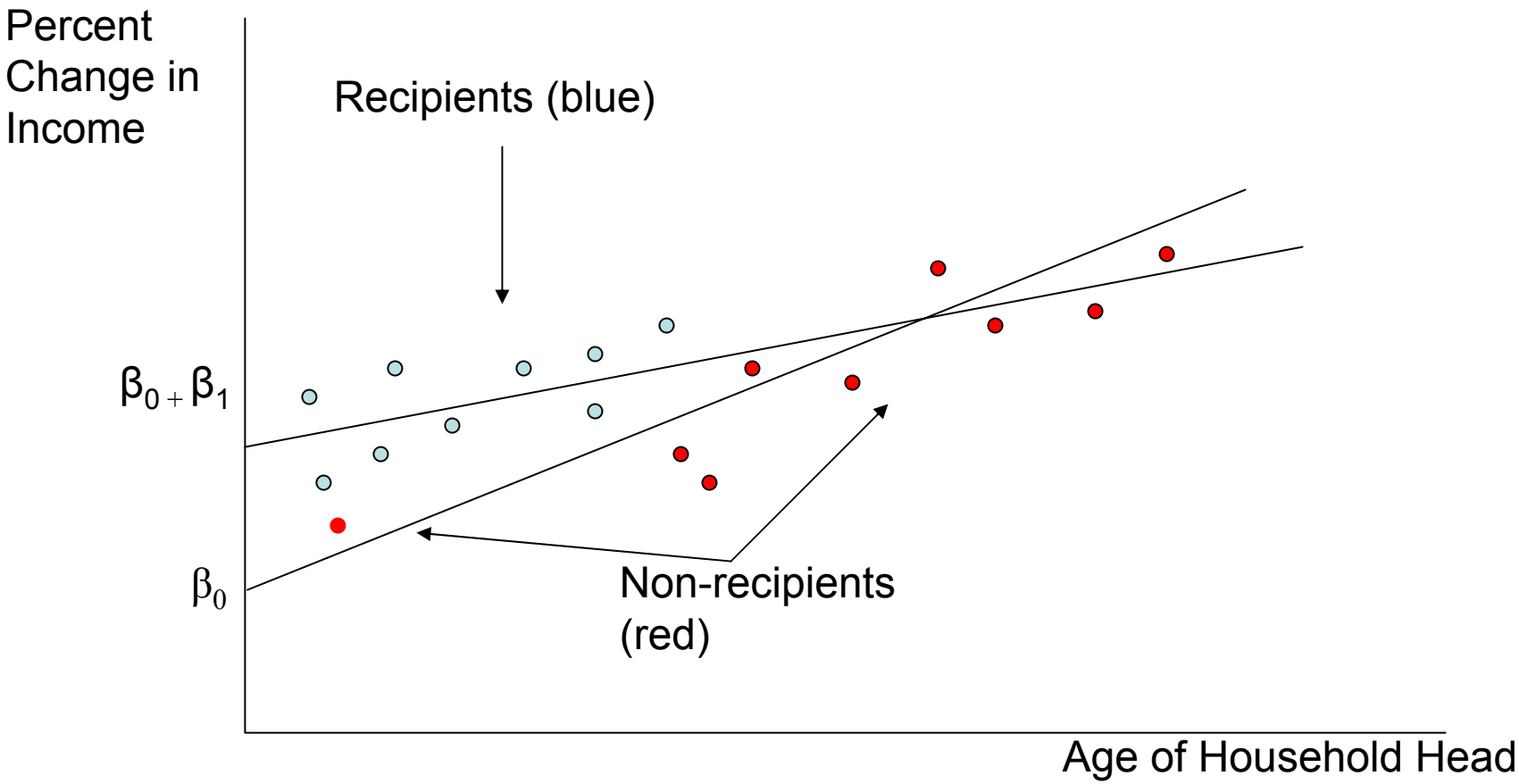

Multivariate Analysis

- Multivariate analysis considered two models
- Linear

$$\frac{Y_{after} - Y_{before}}{Y_{before}} = \beta_0 + \beta_1 \cdot \text{AidRecipient} + \beta_2 \cdot \text{PersonsInHousehold} + \beta_3 \cdot \text{AgeOfHeadOfHousehold} + \beta_4 \cdot \text{Vulnerable}$$

- Logarithmic

$$\ln\left(Y_{after} - Y_{before} + base\right) = \beta_0 + \beta_1 \cdot \text{AidRecipient} + \beta_2 \cdot \ln\left(\text{PersonsInHousehold}\right) + \beta_3 \cdot \ln\left(\text{AgeOfHeadOfHousehold}\right) + \beta_4 \cdot \text{Vulnerable}$$

- Use survey data to estimate parameters

Multivariate Analysis - Accuracy

Model Estimates

- **Impact of shelter always has expected sign**
  - Even in Colombia
- **Impact of shelter is not always statistically significant**
  - It always is for Colombia
- **Proportion of total variance in income explained is relatively small**
- **Could benefit from larger sample sizes?**
- **Calculate "multiplier" as ratio of marginal cost of shelter to present value of income increase**

Multiplier

- El Salvador

Multiplier Calculations for El Salvador

Income Multiplier	Annual Income Increase	Multiplier r=0.1	Multiplier r=0.05
Log Model	$525.54	8.7589	17.5178
Linear Model	$222.40	3.7067	7.4133
Mid-range estimate		6.2328	12.4656

Multiplier

- Colombia

Multiplier Calculations for Columbia

Income Multiplier	Income Increase	Multiplier r=0.1	Multiplier r=0.05
Log Model	$5,218.60	17.1495	34.2990
Linear Model	$957.91	3.1479	6.2958
Mid-range estimate		10.1487	20.2974

Multiplier

- Sri Lanka

Multiplier Calculations for Sri Lanka

Income Multiplier	Income Increase	Multiplier r=0.1	Multiplier r=0.05
Log Model	$79.33	2.4792	4.9584
Linear Model	$25.57	0.7990	1.5980
Mid-range estimate		1.6391	3.2782

Evaluation of Multipliers

- Colombia has the largest
  - Underscores the importance of multivariate model
- Sri Lanka has the smallest
  - Timing of program relative to survey
  - Unique characteristics of subject population
- El Salvador an intermediate case
  - Longer lag between shelter provision and survey

Evaluation of Multipliers

- Why are these so much larger than others?
  - Typical “input-output” based multipliers would be approximately 1.8 to 2.2
- Emergency shelter is different than shelter provision in ordinary circumstances?
  - Selected population – vulnerability
- Input-output based multipliers have difficulty measuring impact on factor productivity

Survey Summary

- Emergency shelter provision generates large economic benefits for recipients
- Impacts are larger than would be expected using typical housing production multipliers
- Advantage of the Multivariate Model

  - accounts for different program types (beneficiary selection)

  - rigour

Survey Summary

- Caution:
  - These are modest sized samples
  - These are not “randomly selected” recipients
  - These may not be typical of all emergency settings

Findings

- Shelter assistance post-disaster is significant in increasing incomes of the beneficiaries.
- Investments in emergency shelter provision provide significant returns, generating a payback conservatively valued at 3 to 8 times the value of the initial investment.
- Even for the programs serving the poorest and most vulnerable, and given only a short time for benefits to emerge, shelter provision appears to return considerably more than the initial investment.

Findings

- The benefits from emergency shelter provision appear to persist beyond the immediate emergency period that necessitated the assistance.
- The benefits from shelter provision appear to be larger after a period of a year or two has passed to enable forward linkages in the economy to emerge

Findings

- The role of shelter as capital is particularly important in accelerating development and increasing incomes, but is typically unappreciated, particularly among post-disaster program planners.

- Beyond capital, but linked to it, the role of shelter as an overall platform for increasing incomes - with links to credit, training, agricultural support, small business development – is underappreciated as well.

Future Directions

- Recommend continued survey collection as routine part of evaluation and monitoring in all emergency shelter settings
- Particularly important where other sources of household survey data are available for construction of comparison population
- Undertake an evaluation using macro based approaches to provide a comparison and broader context