# Linkages on food security, crop-diversity and wealth:

## Empirical evidences from rural Uzbekistan

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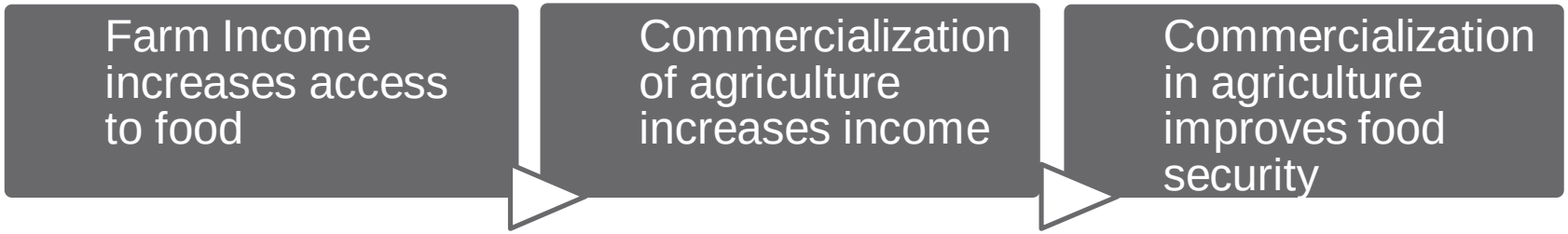
# Background & Theoretical debate

-The majority of malnourished people live in the rural area of the Global South (FAO, 2013)

- Complex relations between agriculture and food system (Hawkes, 2010; Dixon, 2009)

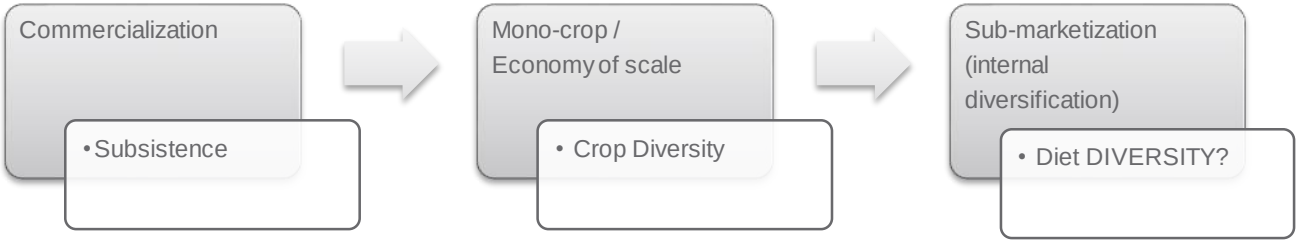
PRODUCTION ≠ SUPPLY ≠ DISTRIBUTION & ACCESS TO FOOD

One standard story is: (von Braun and Kennedy 1986; Komarek, 2010)



# Commercialization versus Crop-diversity?

Commercialization can determine a **concentration** and **specialization** of cash crops at the costs of crop diversity (Maxwell and Fernando, 1989, Tasciotti et al. 2016) reduce farm welfare (Kay, 2012) > food security ☹




…furthermore CROP DIVERSIFICATION (Jones et al. 2014; Collier, 2013).

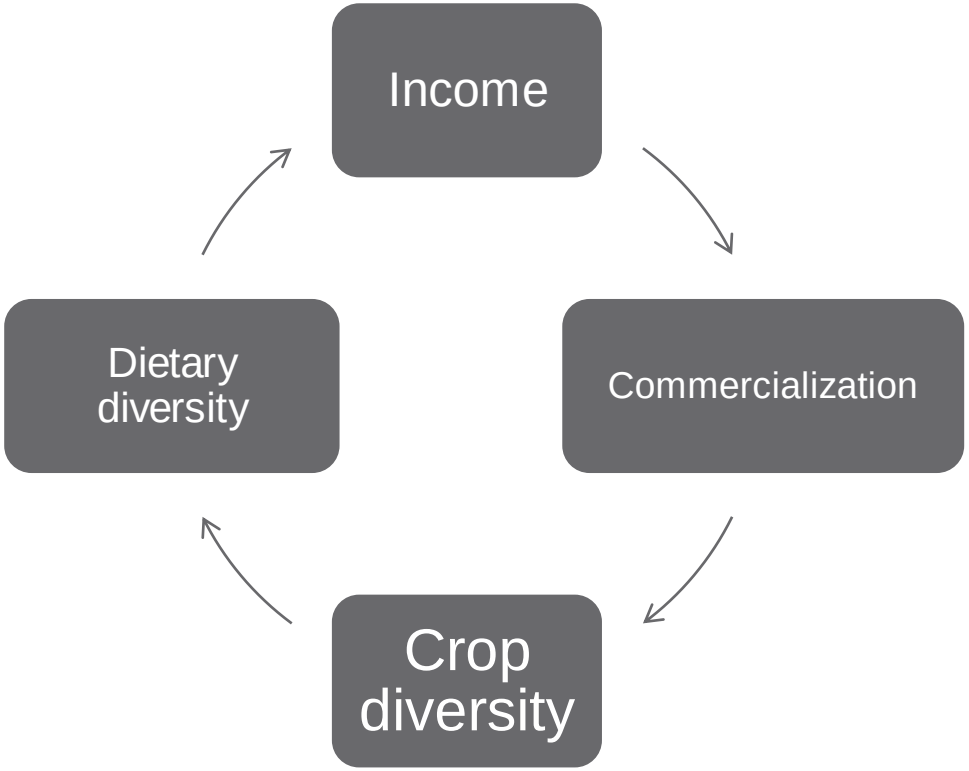
- Reduces vulnerability to price shocks
- Maintains bio diversity , reduces pests, improves soil
- Widens access to food for producers

Recently, commercialization has been pushed through a re-diversification of crops at national or regional level, mostly High Value Crops (HVC) – F&V> food security outcome ?

# Testing and unpacking in this case study the hypothesis that

**(a) Wealth (proxy for income) leads to higher dietary-diversity**

**(b) crop-diversity leads to higher dietary-diversity.**



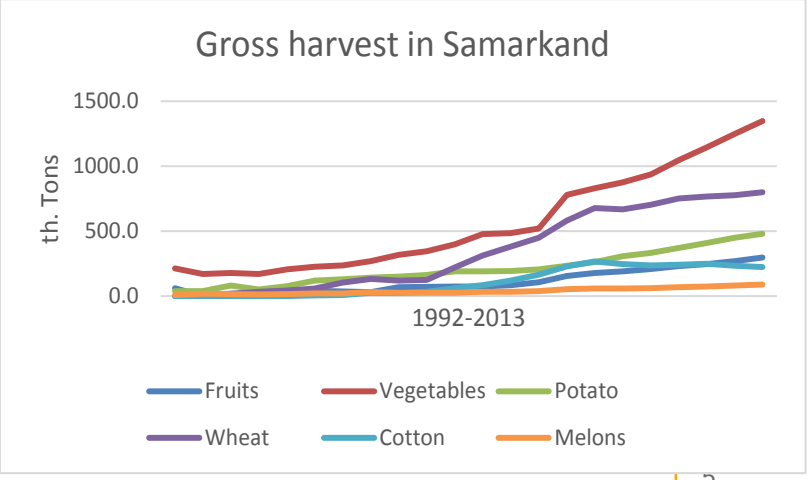
# Case study and Methodology

Province of Samarkand (Uzbekistan)
120 stratified purposive farmers survey (4 strata) +
qualitative questions = Mixed method

Three components
1) Individual Dietary Diversity Score (IDDS)
2) Crop diversity: Simpson diversity Index
3) Asset index–wealth

(PCA)

**Figure 1: Patterns of crop diversification in Samarkand**






**Source: State Committee of Statistics of Uzbekistan**

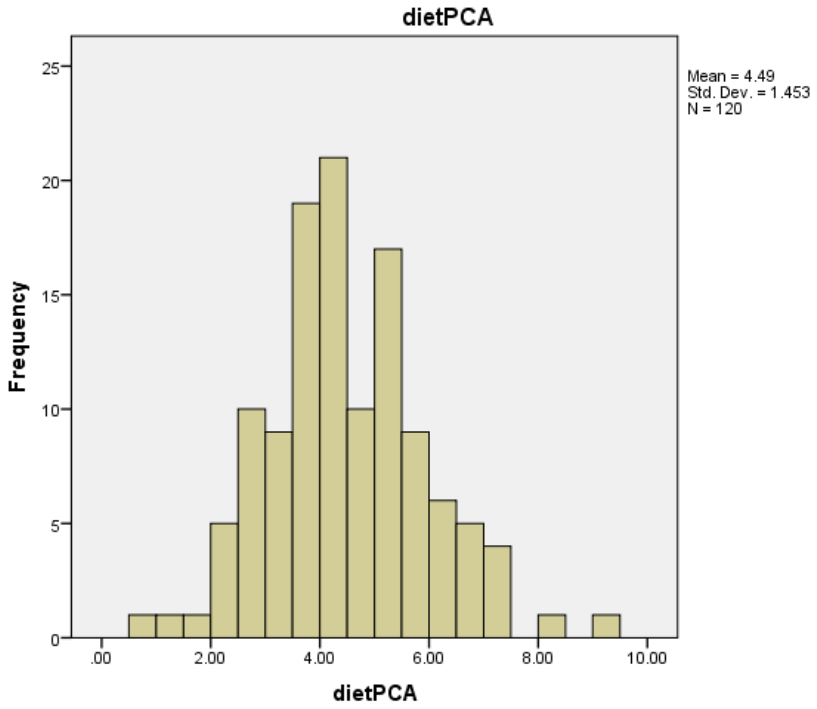
# *Hypothesis 1: Wealth leads to higher dietary-diversity*

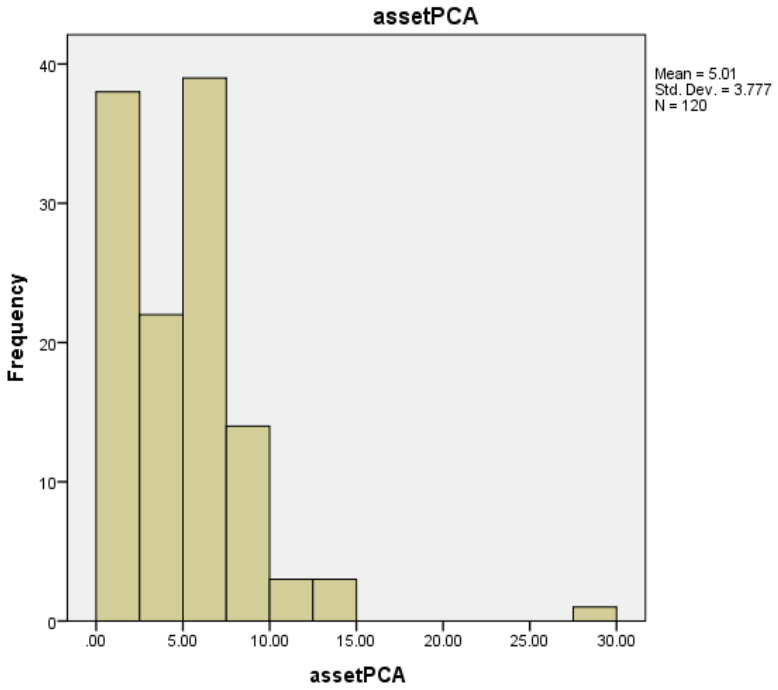
| Table 1: Correlations between diet diversity and asset index | | | |
|---|---|---|---|
| | | IDDS index | Asset index |
| IDDS index | Pearson Correlation | 1 | .534** |
| | Sig. (2-tailed) | | .000 |
| | N | 120 | 120 |
| Asset Index | Pearson Correlation | .534** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 120 | 120 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

**Source: Survey data**

| Table 2. Percentiles of IDDI and Asset index | | | |
|---|---|---|---|
| | | IDDS index | Asset Index |
| N | Valid | 120 | 120 |
| | Missing | 0 | 0 |
| Mean | | 4.4942 | 5.0140 |
| Median | | 4.2115 | 4.9675 |
| Percentiles | 20 | 3.3278 | 1.9042 |
| | 40 | 4.0934 | 3.6682 |
| | 60 | 4.7790 | 5.9890 |
| | 80 | 5.6238 | 7.3780 |

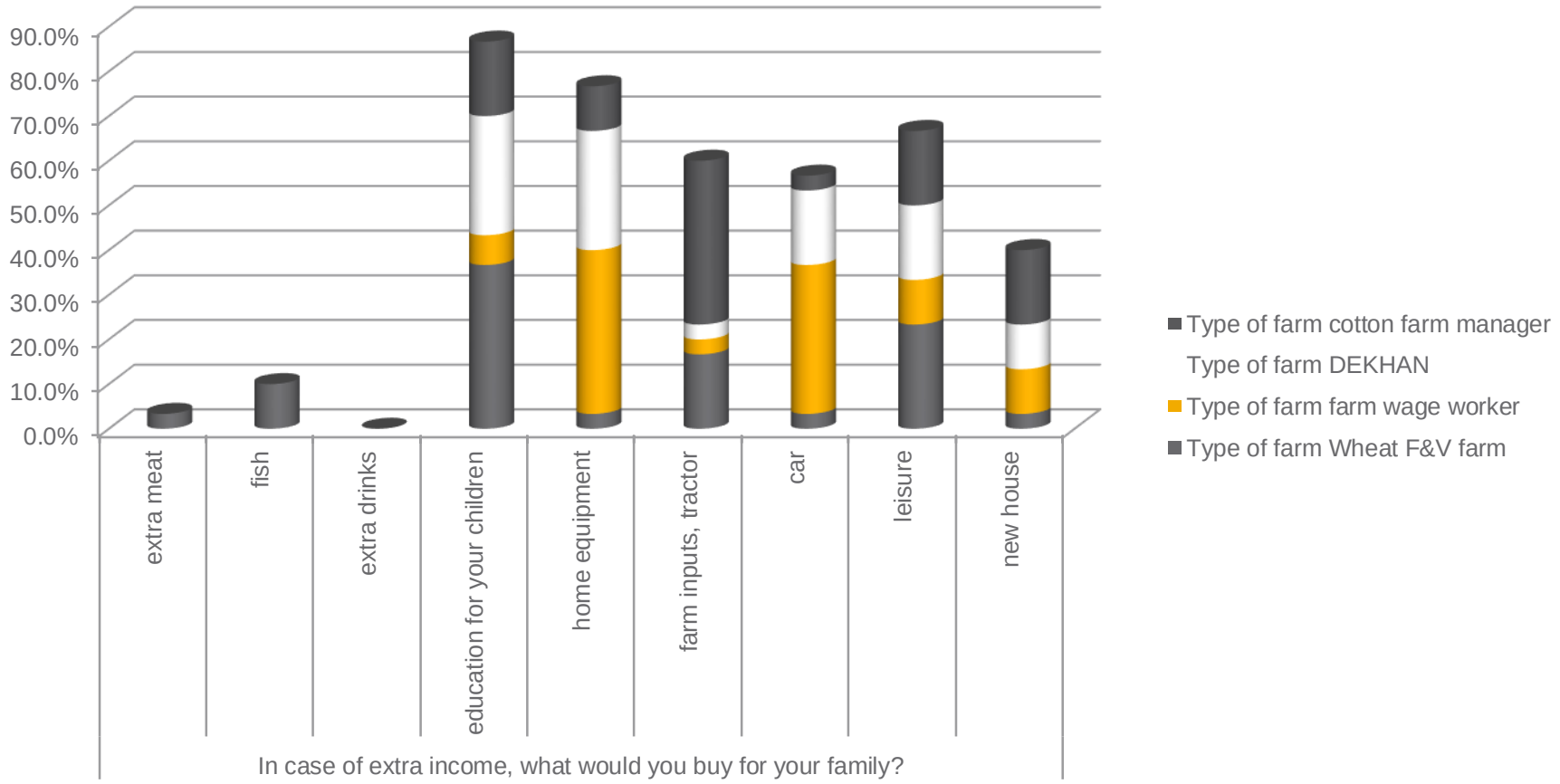
the IDDS index more symmetrically distributed around the mean.



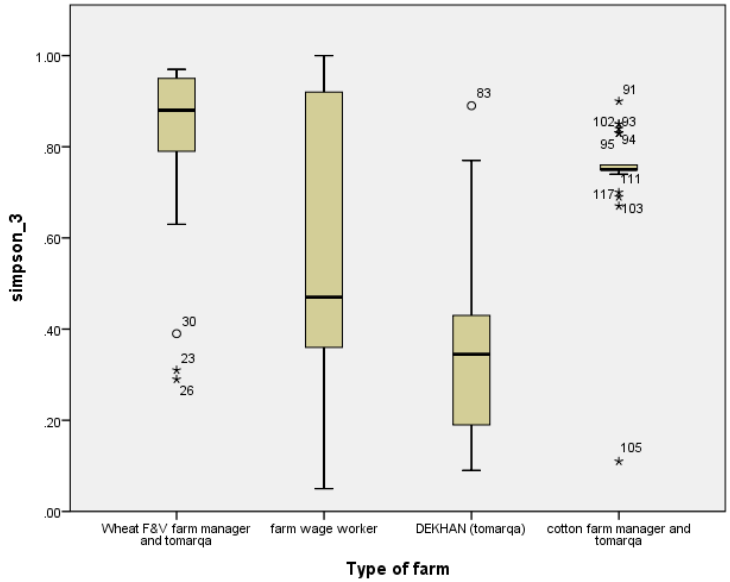

Diet not as polirised as asset endowmwnt

# “In case of extra income, what would you buy for your family?”



# Hypothesis 2: Crop diversity leads to dietary diversity

**Figure 2: Plot of Simpson index by type of farmer surveyed**




**Source: Survey data**

| Table 4: Correlations between Simpson index and IDDS index | | | |
|---|---|---|---|
| | | IDDS index | Simpson_index |
| IDDS index | Pearson Correlation | 1 | .366** |
| | Sig. (2-tailed) | | .000 |
| | N | 120 | 120 |
| Simpson_index | Pearson Correlation | .366** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 120 | 120 |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | |

# Concluding remarks

- The paper found positive correlations between asset index and dietary diversity and between crop diversity and dietary diversity
- However, multiples complex factors play an important role for diet outcomes
- the quality of food consumption and diets does not depend only on income but there are other mechanisms that drive food choices (availability, transport, social norms etc..)
- Nutrition objectives can enter in competition with a set of others needs thus even **multiple rational choices** and desirable preferences can coexist and compete among each other in a situation of budget constraints (Girard et al. 2012).
- Cash crop specialization is not always a factor of vulnerability in terms of food security but rather depends on specific institutional settings, i.e. access to inputs of production (land, access to market etc)

Thank you!