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IMPACT OF DAIRY BUSINESS HUBS ON NUTRITION

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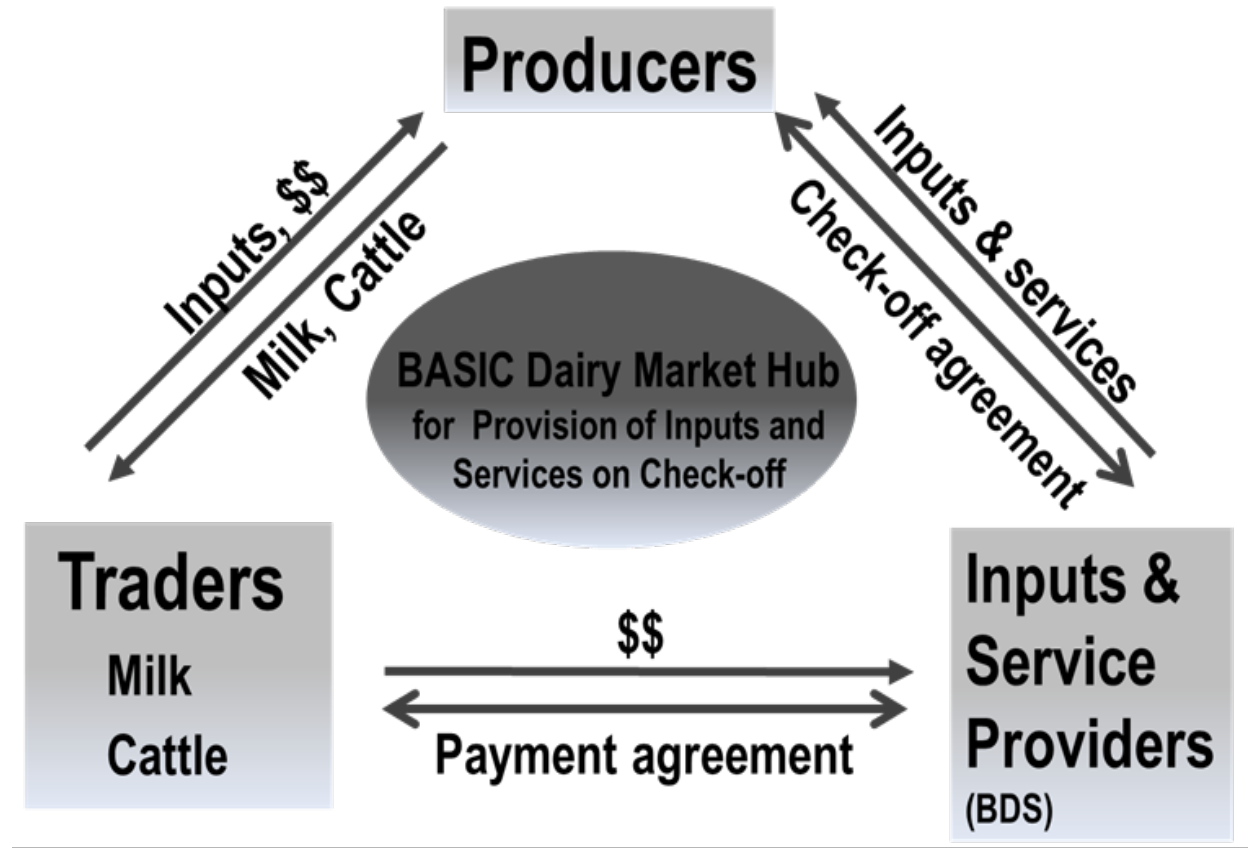
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Introduction

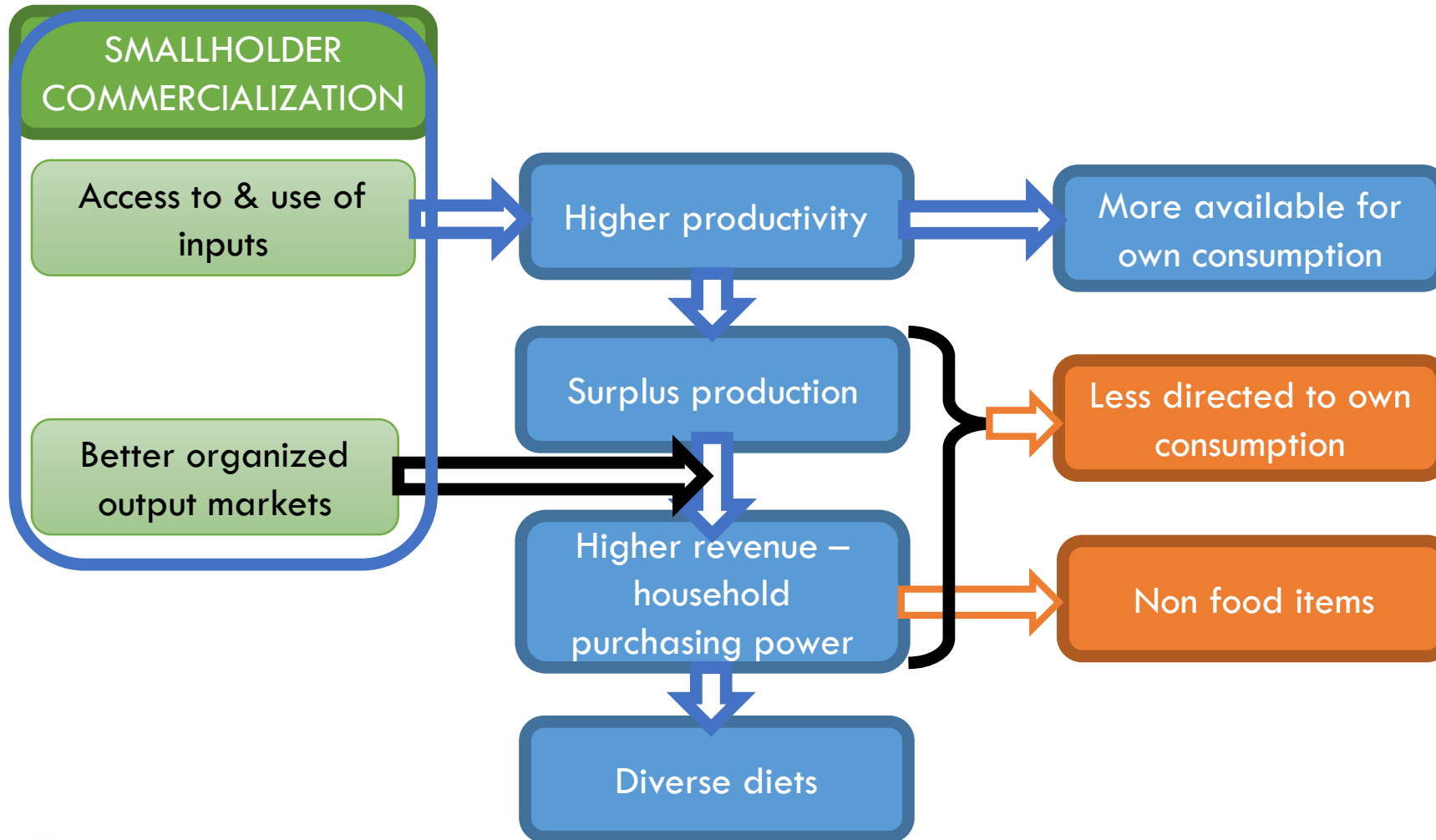
Smallholder commercialization via dairy business hubs (DBHs)

- Many developing countries still characterized by limited market participation by smallholders
- Substantial effort still directed at enhancing smallholder commercial orientation
- In Tanzania, dairy business hubs (DBHs) is implemented towards this goal
- DBH is a mechanism to upgrade dairy VC that:
 - *Clusters dairy services around a milk buyer*
 - *Is based on a tri-partite contractual agreement*
 - *Improves efficiency of milk marketing*
 - *Enables farmers to access milk markets as well as inputs and services*



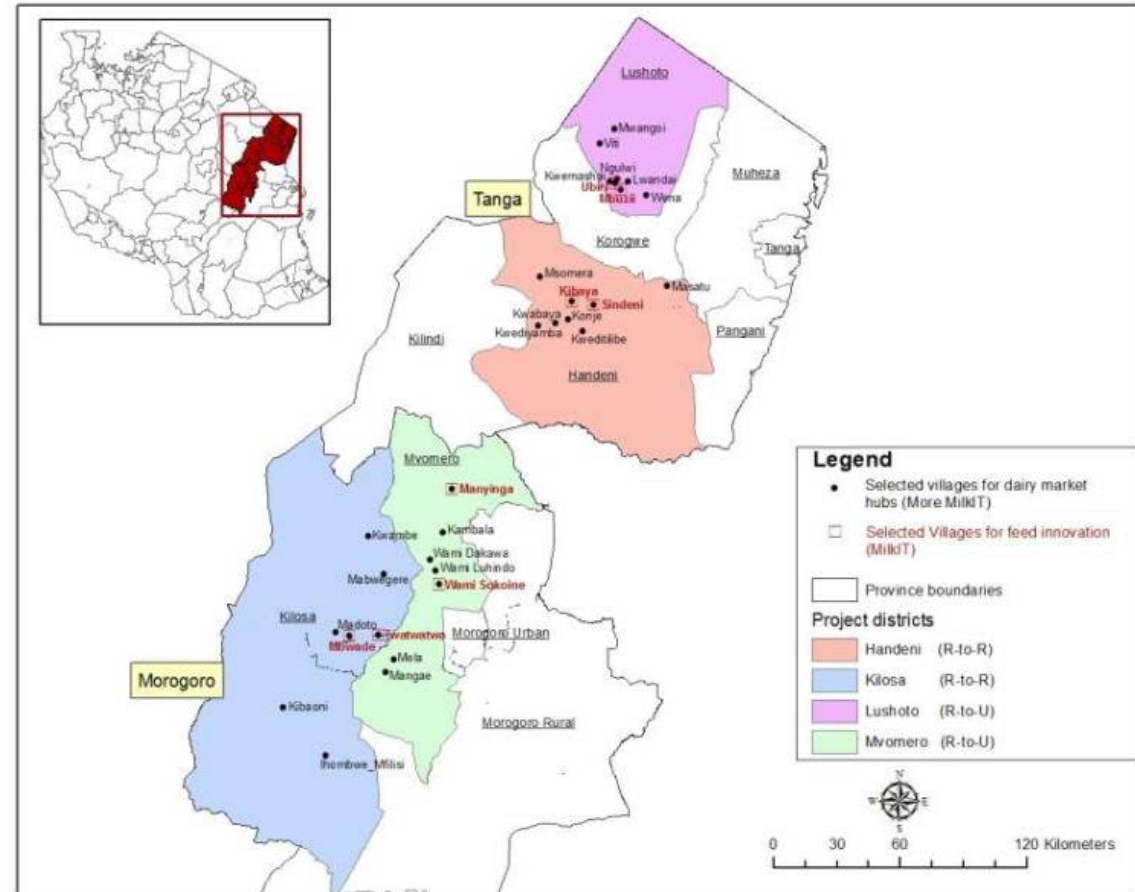
Introduction

Nutritional consequences of commercialization



Data and methods

- Data was collected from two regions in Tanzania – Tanga & Morogoro
- A total of 464 households interviewed as part of a monitoring survey
- 373 of these households additionally subjected to nutrition & women empowerment survey
- Only 292 households had women of reproductive age (15-45 years) – these are used in this analysis
- The study employs an instrumental variable (IV) approach
- Augmented by systems estimation – conditional mixed process (cmp) model – to understand pathways of effects



Results

- Participation in hubs has negative and positive influence on dietary diversity
 - *Yet previous studies reveal positive effects of hubs on household income*
 - *It is likely that ensuing income is directed at non-food items especially for women consumption*
 - *Being an upgraded value chain it may be that men appropriate the benefits*
- Other factor also play a role:
 - *Education of the household head has positive influence*
 - *Larger landholdings has negative effect*

Table 1: Impact of dairy business hubs on women dietary diversity (IV)

	Coefficient	SE
Household participation in dairy hubs	-1.494**	0.714
Age of household head (years)	0.001	0.007
Education of household head (years of schooling)	0.126***	0.031
Education of female spouse (years of schooling)	-0.021	0.029
Household member of Christian religion ^a	-0.379*	0.214
Household member of other religion ^a	0.335	0.490
Land area owned (acres)	-0.012**	0.005
Access to tap (piped) water	0.380*	0.207
Distance to market centre (kms)	-0.001	0.005
Intensive livestock system ^b	-0.045	0.232
Women empowerment index	1.805	1.322
Household expenditure on staples (USD)	-0.000	0.000
Household expenditure on non-staples (USD)	0.001**	0.000
Constant	2.740***	0.617
<i>Number of observations</i>		296
<i>Hansen J statistics (H₀ = instruments are valid)</i>	4.597 (p-value = 0.204)	
<i>Kleibergen-Paap LM statistics (H₀ equations under-identified)</i>	38.718 (p-value = 0.000)	

Results: Impact pathways

$$N = \alpha_0 + \alpha_1 HFEXP + \alpha_2 X_2 + \varepsilon_2 \quad (1)$$

$$HFEXP = \gamma_0 + \beta_1 DBH + \beta_2 X_3 + \beta_3 WELI + \varepsilon_3 \quad (2)$$

$$WELI = \gamma_0 + \gamma_1 DBH + \gamma_2 AGE_gap + \gamma_3 X_4 + \varepsilon_4 \quad (3)$$

$$DBH = \sigma_0 + \sigma_1 HUB_DEV + \sigma_2 X_5 + \varepsilon_5 \quad (4)$$

- Food expenditure has a positive influence on WDDS
 - *Women are generally in charge of household food decision*
- However, hub participation still has a negative influence on WDDS
 - *It is likely that women are excluded from benefits of VC upgrading*
 - *Indeed hub participation has negative influence on women empowerment*

	Women DDS	Food expenditure	Women empowerment	Hub participation
Household participation in dairy hubs		-2.397*** (0.390)	-0.044 (0.054)	
Log of household food expenditure	0.337** (0.165)			
Household milk consumption per capita	-0.227*** (0.088)			
Intensive livestock system ^a	-0.211 (0.234)	0.486 (0.312)	0.060** (0.027)	-0.031 (0.201)
Non-farm income (USD)	0.000 (0.000)	0.000* (0.000)		
Women empowerment index		1.232 (1.458)		
Number of lactating cows per household				0.025*** (0.006)
Hub has two linkages ^c				0.912*** (0.225)
Hub has three linkages ^c				0.882*** (0.245)
Constant	1.428 (1.148)	5.938*** (0.835)	0.130** (0.064)	-1.969*** (0.437)
Number of observations	404	404	404	404

Conclusion

- It appears women are excluded from benefits of VC upgrading
- Yet women are generally in charge of household food decision
- Given the negative consequences of VC upgrading for WDDS:
 - *There is need to device mechanism for enhanced participation by women in the upgraded VCs*
 - *Adaptation of hub approaches should therefore be nutrition sensitive*
 - *Outlets dominated by women such as sales to milk traders should be targeted in this initiative*
 - *Work with women milk traders to support women producers*
 - *Target both male and female for nutrition education*