Growth of Agro-processing Firms and Labour Productivity in Tanzania: Opportunities and Limiting Factors

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Day 2 Paper ***ID6***

Presented at REPOA's 21st Annual Research Workshop
held at the Ledger Plaza Bahari Beach Hotel, Dar es Salaam, Tanzania;
April 6-7, 2016

21 ANNUAL RESEARCH WORKSHOP

The Status, Growth and Labor Productivity of Agro-processing Firms in Tanzania: Opportunities and Limiting Factors

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Importance

- **Agro-process firms are important :-**
  - -Agriculture remains dominant sector
  - Generates employment and Income,
  - Forward and backward linkages
    - Markets for agricultural raw materials
    - More employment in other sectors
  - Promotes productivity and production of the agricultural goods
  - Has been base for industrialization in many countries

Past Efforts..

- Previous industrialization initiatives:

  Immediately after independence

  - Establishment of the National Milling cooperation (NMC) in 1968.
  - Establishment of Small Industries Development Industries.
  - Vertical integration of many agricultural sub-sectors (dairy, sisal, tea, etc)
  - Basic Industries Strategy (BIS) 1996 – roadmap for industrialization
- Recorded some initial gains

Past Efforts

- **Failed ; Many challenges**
  - Protectionism, by which the state subsidies public firms to sustain underperforming ones
  - Inefficiency in resource allocation throughout the economy.
  - Policies rather hostile or at least ambiguous towards the private sector were introduced.

Policy reversal.

Market led economy

- 1990s; turning point to market led industrial growth
- Positive response from privates sector
- E.g. By 2001,over 95% milling by private firms
- Many firms established but also many collapsed
- Currently the manufacturing sector accounts for 8% of the Gross Domestic Product (GDP), growing at 4%,

Current Policies & Strategies

- To realize vision 2025; Semi – industrial economy; Next 9 years!
- Need to experiential learning from past to inform and guide future initiatives
- The study an effort to provide such learning
- Study examined the performance of selected agro-processing firms in Mbeya and Morogoro regions (2002 – 2011),
- Focusing on trends of firm growth and the productivity of labor;
- key component of industrial growth

Study Objectives

- Establish the trends of small agro-processing firms over the period from 2002 to 2011 in terms of new firms that were established or collapsed per year,
- Compare the performance of selected small agro-processing firms between Mbeya and Morogoro regions in terms of employment
- Analyse the performance of small agro-processing firms in terms of labour productivity
- Determine factors which have accounted for variation in the growth of small agro-processing firms

Methodology

- Mbeya and Morogoro region sampled purposively
- 2 urban districts; (Mbeya, Morogoro); 2 rural districts (Mbeya rural & Kilombero)
- Primary cross sectional data were collected from from 107 agro-processing; firms in Mbeya and Morogoro regions; during 2011
- Secondary data collected over a longer period, 860 firms
- Time series data & cross sectional data from TRA, SIDO and Local government offices to assess the trend of growth in terms of the number of firms, employment creation and the value of output produced
- Data were compiled, summarized and analyzed using Excel software and the Statistical Package for Social Sciences (SPSS).

Findings

- Findings based on 860 firms registered in the four districts; 107 firms where primary & secondary data were collected

Table 1: Composition of firms according to products processed (%)

	Firm						
District	**Milk (n=9; 1%)**	**Oil extraction (n=65; 7.6%)**	**Animal feeds (n=19; 2.2%)**	**Maize flour (n=507 59%)**	**Rice (n=247 ; 28.7%)**	**Bakeries (n=13; 1.5%)**	**Total (n=860 ; 100%)**
Mbeya (c)	56	49.2	52.6	50.7	20.2	38.5	41.7
Mbeya (r)	0	33.8	31.6	22.5	22.7	0	23.0
Morogoro (m)	44	16.9	15.8	13.8	16.2	46.2	15.6
Kilombero	0	0	0	13.0	40.9	15.4	19.6
Total percent	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Type of Firm

Types of firms	District									
	Mbeya city		Mbeya rural		Morogoro municipality		Kilombero		Total	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Registered private Company	5	11.1	0	0	8	25.8	2	10.5	15	14.0
Registered private non Company	40	88.9	11	91.7	23	74.2	16	84.2	90	84.0
Un registered firms	0	0	1	2.2	0	0	1	5.3	2	1.8
Total	**45**	**100**	**12**	**100**	**31**	**100**	**19**	**100**	**107**	**100**

Type of Technology

Type or Machinery	Machines currently used for processing		Machines required for processing	
	N	%	N	%
Locally made machines	8	8.5	1	1.2
Improved machines	68	72.3	28	33.7
Modern machines	18	19.1	54	65.1
Total	**94**	**100**	**83**	**100**

Compliance of products to TFDA and TBS standards

Types of Approval	District				Total (n = 107)
	Mbeya city (n = 45)	Mbeya rural (n= 23)	Morogoro municipality (n = 30)	Kilombero (n = 9)	
TFDA and TBS approval	37.8	13	36.7	22.2	30.8
No TFDA and TBS approval	62.2	87	63.3	77.8	69.8
Total (%)	**100**	**100**	**100**	**100**	**100**

Factors hindering compliance to TFDA and TBS standards

Reason	District				
	Mbeya city (n= 45)	**Mbeya rural** (n= 20)	**Morogoro municipality** (n = 19)	**Kilombero** (n = 23)	**Total** (n=107)
Knows importance **but costly to** implement	53.3	65.2	50	42.1	53.3
Knows importance **but does not know how to get the** service	28.9	21.7	20	42.1	28
Sub-total %	**82.2**	**87**	**70**	**84.2**	**81.3**
Does not know importance of standards	17.8	13	30	15.8	18.7

Table 6: Processing capacity and capacity utilization of small agro-processing firms

Types of firms	Average installed processing capacity (Tones)/year	Actual capacity utilization (Tones)/year	Percentage of capacity utilization (Tones)/year
Animal feeds	3220	131	4.1
Milk	1680	241	14.7
Bakeries	196.4	88.9	45
Flour	1850	533	29
Rice	2881	1005	35
Cooking oil	1055	308	29
Average for all firms	**10882.4**	**2306.9**	**21.2**

Table 7: Operation status of small agro- processing firms

Operation status	District				
	Mbeya city (n = 45)	Mbeya rural (n = 23)	Morogoro municipal (n = 30)	Kilombero (n = 9)	Total (n=107)
Frequently operated	31.1	34.8	46.7	33.3	36.4
Infrequently operated	68.9	65.2	53.3	66.7	63.6
Total	**100**	**100**	**100**	**8.5**	**100**

Processing Capacity Utilization

- All agro-processing firms studied were operating below their capacity utilization
- About 63.6% of firms operated infrequently due to low availability of raw-materials and electricity, leading to capacity under-utilization.

Trends of Firm Growth

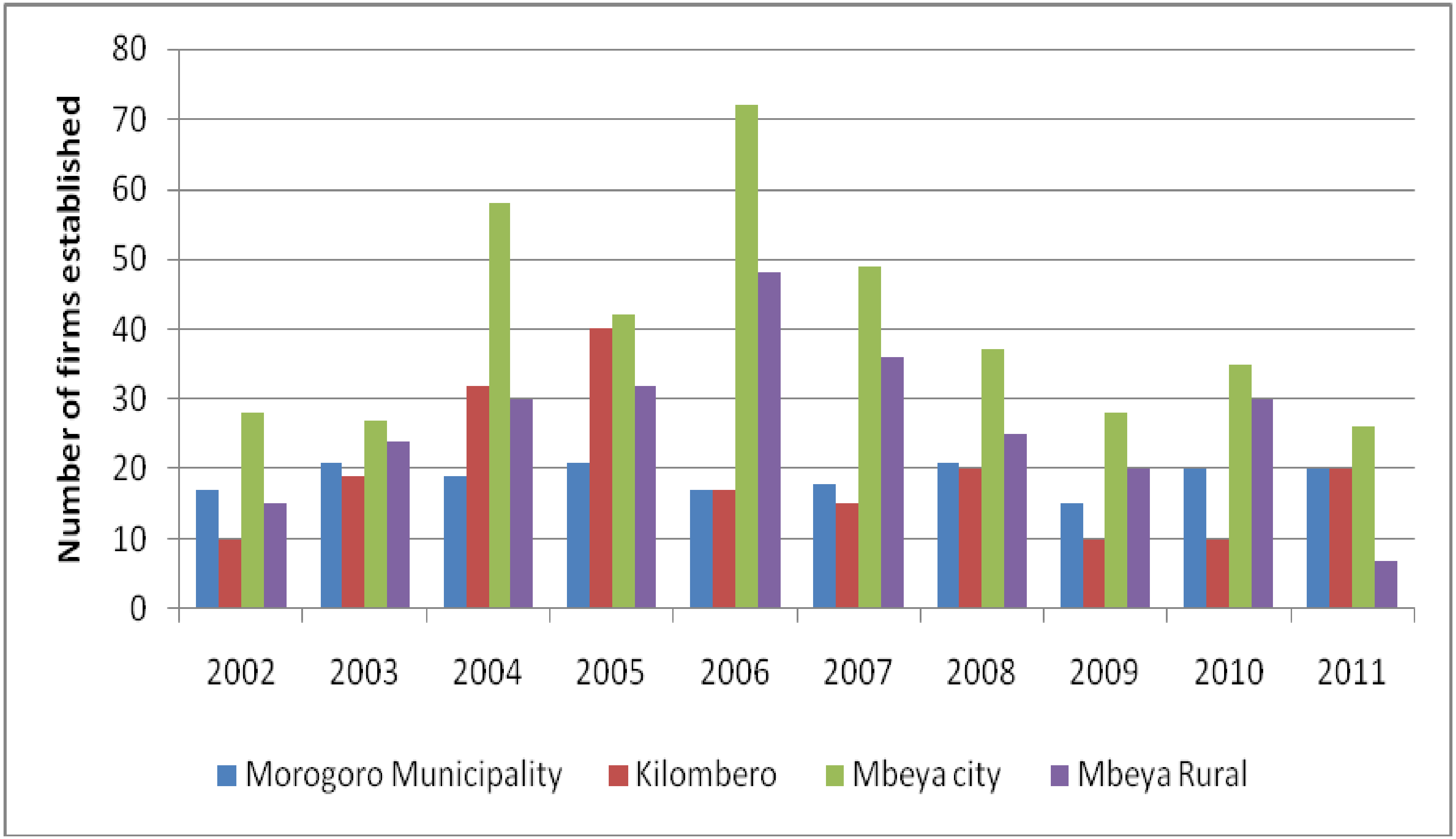


Figure 1: Number of new established agro-processing firms per year

Trends of Firm Growth

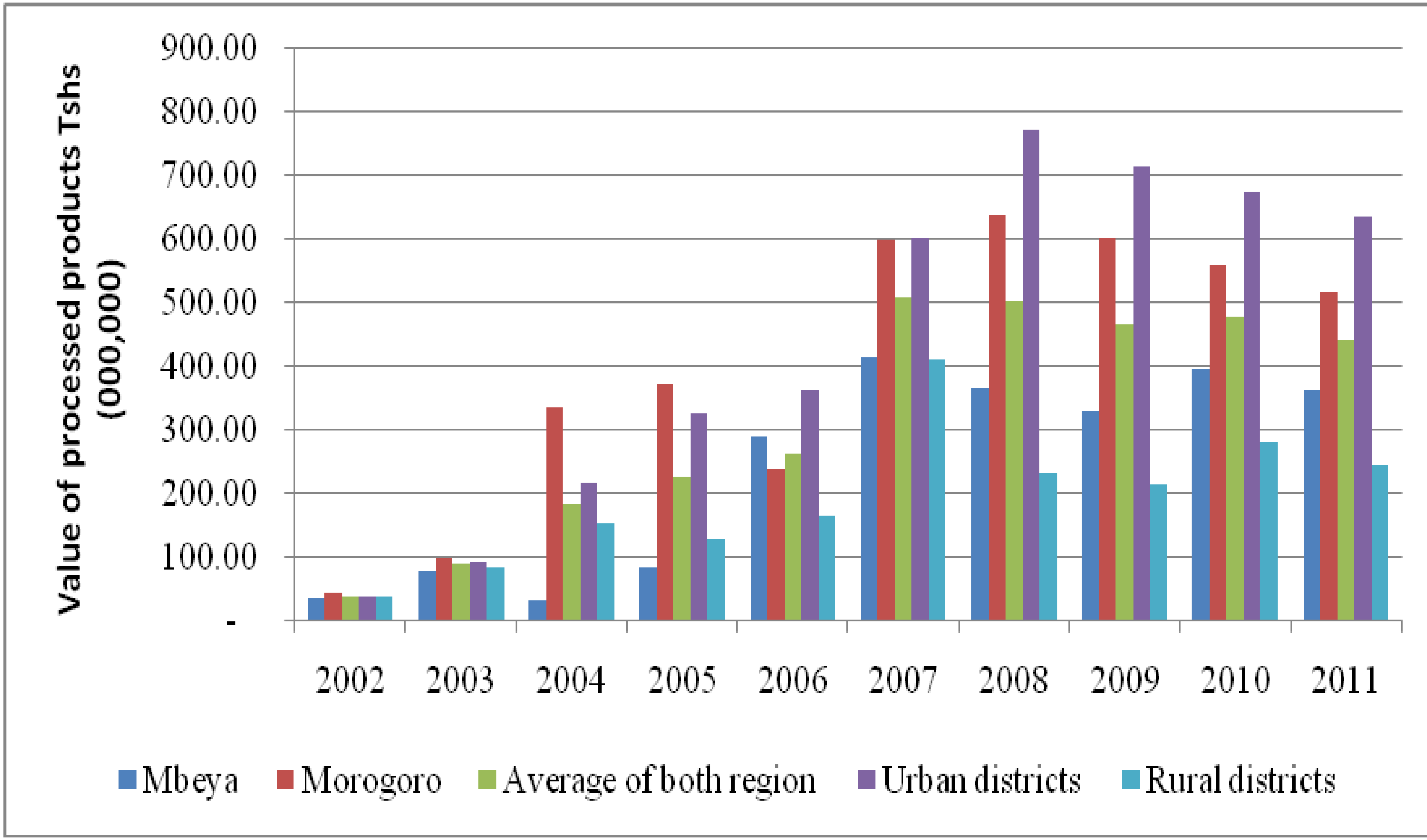


Figure 2: Aaverage value of product per firm per year

Table 8: Persistence of small agro-processing firms 2002-2011

District	Total New firms established (2002/11)	Percentage of new firms established (N=1050)	Average No. firms established per annum	Number of firms survived by 2011	Percent of surviving firms per district	Overall (%) of survived firms by 2011 (N=860)
Morogoro Municipal	189	18	19	134	70.9	15.6
Kilombero	193	18.4	19	169	87.6	19.7
Mbeya city	401	38.2	40	359	89.5	41.7
Mbeya Rural	267	25.4	27	198	74.2	23
Overall number	**1050**	100	**105**	**860**	81.9	100

Table 9: Number of collapsed small agro-processing firms 2002-2011

District	Total number new firms	Percent new firms (N=1050)	Number new firms per annum	Total No. collapsed firms	Percent collapsed firms per district	Proportion of collapsed firms (N=190)	No. firms collapsed per annum
Morogoro Municipality	189	18	19	55	29.1	28.9	6
Kilombero	193	18.4	19	24	12.4	12.6	2
Mbeya city	401	38.2	40	42	10.5	22.1	4
Mbeya Rural	267	25.4	27	69	25.8	36.3	7
Overall Sample	**1050**	**100**	**105**	**190**	**18.1**	**100**	**19**

Table 10: Reasons for collapse of small agro-processing firms

Types of firms	Number Respondents per Firm Type	Percent Respondents per Firm type	Reasons for Collapse of Firms Within Category (%)					
			Poor Market for Products	Poor Access to capital	Human capital	Poor technology	Poor availability raw-materials	High Energy cost
Rice mills	114	40.4	14	19.3	1.8	4.4	49.1	11.4
Maize flour mills	72	25.5	11.1	33.3	0	1.4	44.4	9.7
Animal feeds	6	2.1	16.7	16.7	0	0	33.3	33.3
Milk processing	12	4.3	8.3	8.3	0	33.3	41.7	8.3
Overall Sample Total (N))	282	100	11 (31)	24 (68)	4 (10)	5 (13)	46 (131)	10 (29)

Employment Creation Trends

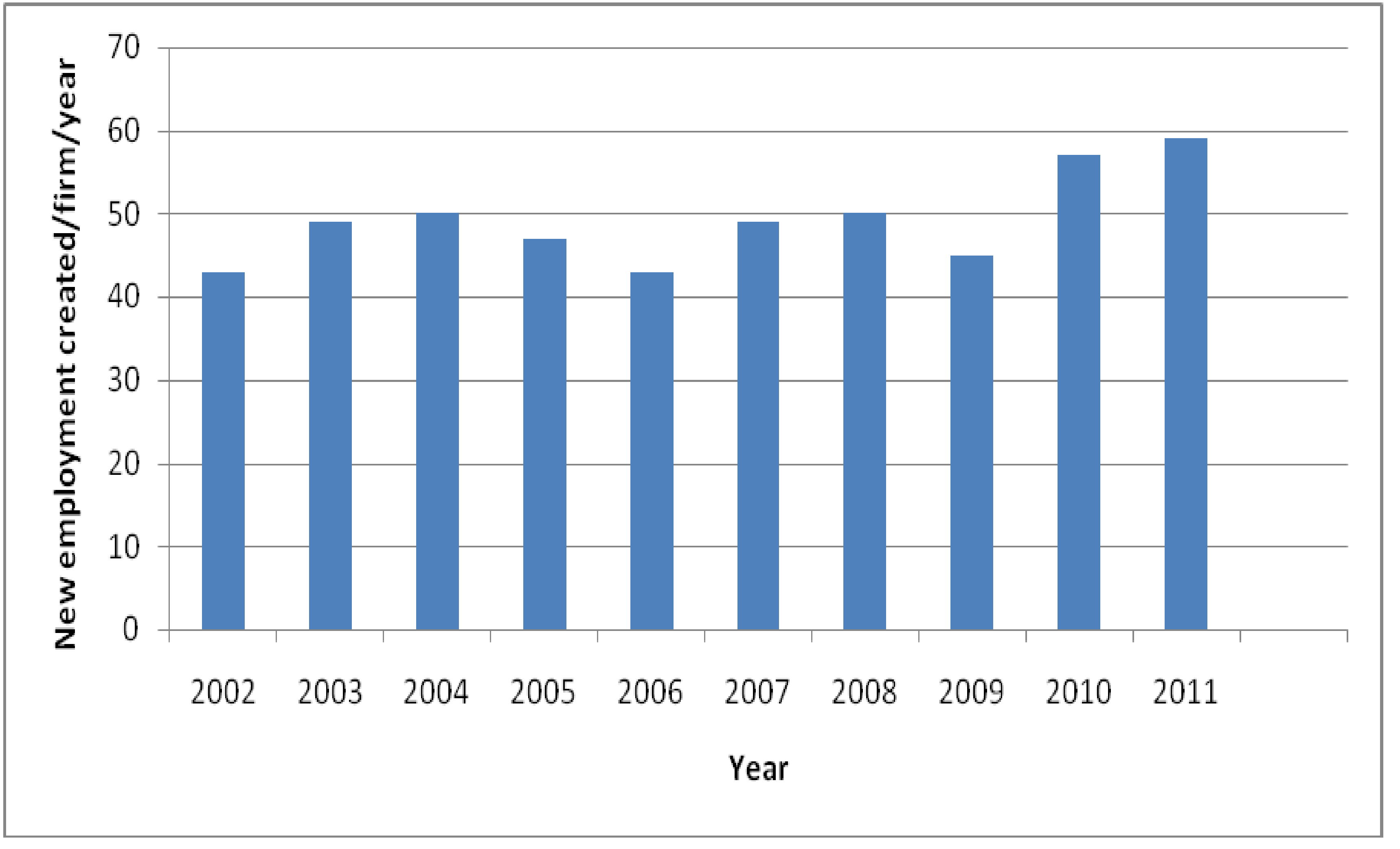


Table 11 Number of new jobs created per year by type and by sex

Item	Number of New Jobs			
	Male workers	Female Workers	Permanent Workers	Temporary Workers
Total No. new workers	229	473	254	448
New workers/Year	23	47	25	44
% New workers/Year	32.6	67.4	36.2	63.8

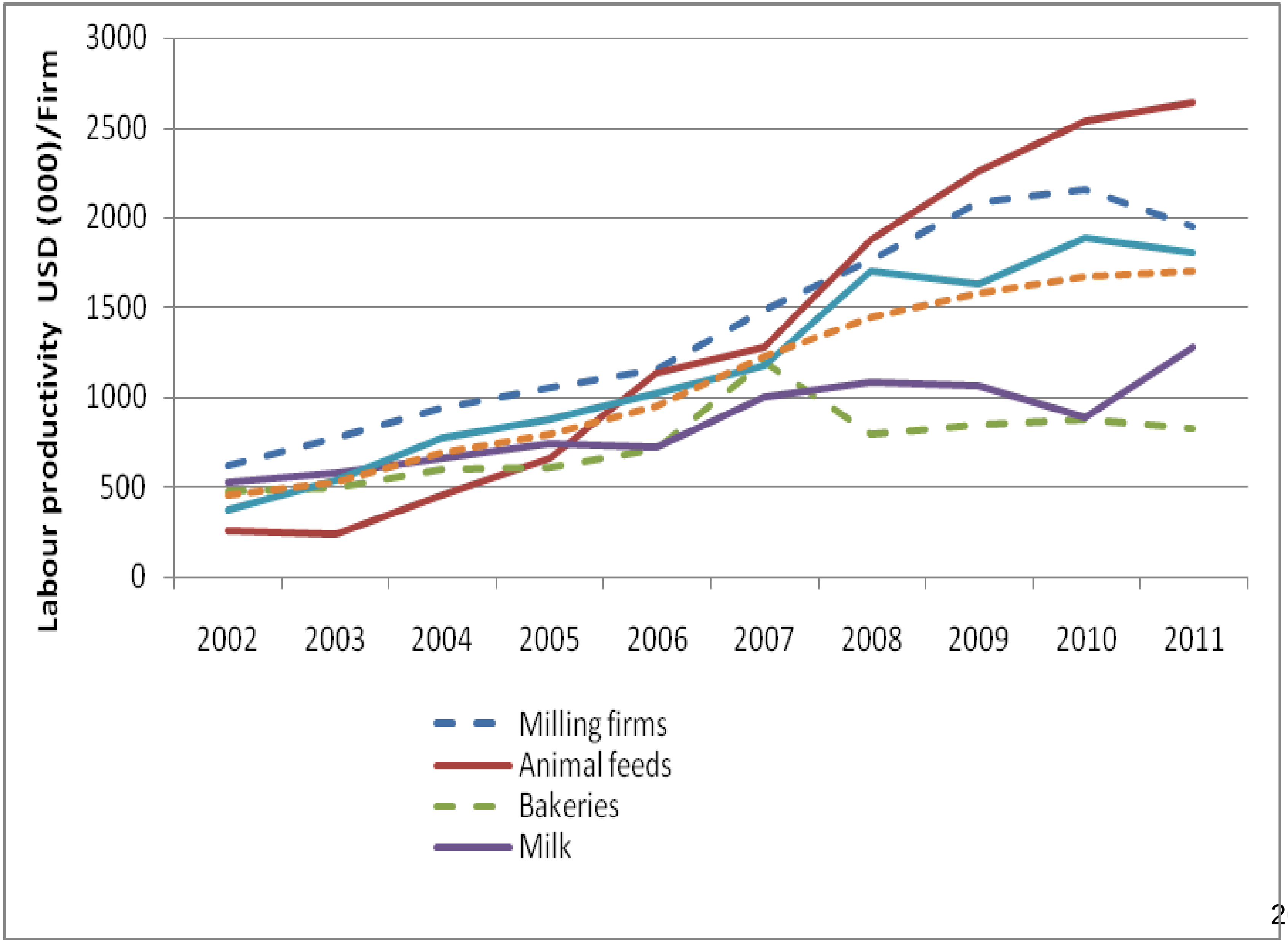
Table 12: Percent of new workers by level of education

Region (n)	Below standard 7 (11)	Standard 7 (362)	Form 4 (98)	Workers with Form 6 and above (21)	Total (492)
Mbeya	1.4	30.3	12.8	3.1	47.6
Morogoro	0.8	43.3	7.1	1.2	52.4
Total	**2.2**	**73.6**	**19.9**	**4.3**	**100**

Employment creation trends

- During the study interval, the firms under study created 492 new jobs, being 49 per firm per year.
- Agro-processing firms created more temporally jobs which accommodated more female workers.
- Majority (75.8%) of the new workers also had standard seven level of education or below.

Figure 4: Labour productivity trend in relation to types of firms



Growth of firms and Labour productivity trends

- Labour productivity showed an increasing trend up to 2008, but reflect a decreasing rate from 2008.
- The labour productivity was affected by several factors including education, training, experience and capital.
- The growth value of processed products was affected by value of raw materials, labour productivity, energy and experience of workers.

Table 13: The effect of human capital factors in labour productivity (2002-2011)

Variable	Expected Sign	Coefficient.	t	P>	VIF
Constant	(+)	7.338**	2.237	0.028	
Location of a firm (1 if urban)	(+)	0.089	1.087	0.280	1.152
Manager's educ. above F4	(+)	0.076	0.927	0.356	1.185
Managers trained on agro-processing	(+)	0.173**	2.014	0.047	1.271
Number workers with experience< 1yr	(-)	0.012	0.120	0.905	1.829
Number workers with experience > 1 yr	(+)	0.457***	4.758	0.000	1.570
Average wage per worker	(+)	0.042	0.505	0.615	1.194
Number workers educ <. F4	(-)	-0.282***	-2.795	0.006	1.737
Number workers educ > F4.	(+)	0.243***	2.828	0.006	1.277
Ratio of capital added per worker	(+)	0.275***	3.089	0.003	1.378
Manager's experience above 1 yr	(+)	0.119	1.469	0.145	1.129
Dummy (1 if firm manager male)	(+)	0.032	0.394	0.694	1.140

Number of observation = 105
R2 = Adjusted R = 0.383
F-value = 5.96
Prob > F = 0.000
Model VIF = 1.4
Condition Index = 3.71
Durbin-Watson statistic = 2.121

R^2

Table 14: Factors affecting growth of small agro-processing firms (2011-2012)

Explanatory variables	Expected Sign	Coefficient	T test	P>(t)
Constant	(+/-)	-5.915***	5.307	0.000
Labor productivity	(+)	0.522***	8.811	0.000
Value of raw-materials	(+)	0.308***	5.221	0.000
Number of years in operation	(+)	0.313***	5.264	0.000
Capital invested per firm	(+)	0.011	0.190	0.850
Cost of energy per firm	(-)	-0.167***	-2.751	0.007
Firm operated infrequently (weekly)	(-)	-0.006	-0..100	0.921
Firm was not managed by owner	(+)	0.062	1.098	0.275
N	106			
Adjusted	0.68			
Compute F-values	33.794***			
Durbin-Watson	2.589			
VIF	1.13			
Condition Index	2.3			

Factors limiting firm growth (Constraints)

- Experience
- Processing skills
- Availability of high quality of raw materials
- Poor processed products
- Energy cost
- Education

Opportunities for Agro-processing development

- Market for agro-processed products is still available within and outside the country.
- There is an opportunity of industries for agro-processing packing materials.
- Improvement of agro-processed products hence capturing wider market
- Investment in modern technology for agro-products

Opportunities for Agro-processing development

- Improving agricultural products to supply high value of raw-materials to agro-processing firms
- Existence of rivers, lakes and other sources of water could be used to produce agro-products through out the year hence satisfying agro-processing firms.
- There is also an opportunity for graduates to use the skills in agro-processing firms

Summary of Findings

- Less than 50% of agric produce processed (28% in EA); Lower in Tanzania
- Sub-sector dominated by small manufacturing firms
- Characterised by poor physical infrastructure, limited human capital endowment and unskilled labour with low levels of education.
- Very few of large agro-processing firms exist,
- Few firms focus on regional and international markets.

Lessons

- Facilitate sustenance of established firms
  - Technology
  - Capital
  - Target wider markets
- Improve quality of products; promote adherence to standards
- Productivity of labour through education, training, skills is important

THANK YOU FOR YOUR ATTENTION