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Full Length Research Paper

Determinants of Net Savings Deposits held in Savings and Credit Cooperatives (SACCO's) in Uganda

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Savings mobilization is important for rural households in Uganda. This study looked at household net savings deposits in Savings and credit cooperatives (SACCO's) from individual's passbooks. Net savings were then measured as the difference between deposits and withdrawals. Weighted least squares were used to determine the factors influencing net deposits. Results indicate that deposits decreased with increase in distance to the SACCO, education levels, wealth, trade activities, and having secondary school dependants. Deposits increased with income, access to credit. SACCO's are well suited for poor households in terms of products and services offered. There was a higher propensity to save out of transitory income.

Key words: SACCO's (Savings and Credit Cooperatives), savings.

INTRODUCTION

Background

There has been significant growth of the microfinance sector over the last 10 years, both in numbers of microfinance institutions and the number of clients that they serve. Most of the microfinance institutions are registered as either NGO's with the NGO Board, as companies under the company's act, or as savings and credit cooperatives with the ministry of tourism, trade and industry. In addition, there are numerous non-registered and registered moneylenders and other formal and

informal savings and credit associations. The microfinance sector has been able to grow fast so as to cater for the financial needs of micro enterprises that the larger financial institutions have traditionally failed to address. This sector is characterized by smaller loans with very short repayment cycles, and most of its services are concentrated in urban and peri-urban centers with limited penetration into the rural areas (MFPED, 2000).

Traditional banks have an urban bias due to the high costs of rural intermediation arising from small transactions with dispersed clientele and poor infrastructure.

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The microfinance sector in Uganda has evolved to provide a savings facility that is convenient for rural financial intermediation in terms of accessibility and nature of services offered. (MicroSave Africa Report, 2000).

Due to the rationing behavior of traditional formal banks, various Microfinance Institutions (MFI's) have cropped up in Uganda that provide savings and/or credit facilities to micro and small-scale business people whose financial needs are very small. In Uganda these MFI's include Savings and Credit Cooperatives (SACCO's) initiated under the Uganda Cooperative Alliance (UCA) with the aim of providing quality financial services on the basis of self-reliance through mobilization and management of their own financial activities. This was a response to governments call for the strategy of providing affordable financial services to economically poor people living in rural areas. Through member owned and managed institutions where members mobilized own resources through savings, share capital and membership fees. These SACCO's are managed by the board which is led by a chairman and they hire the staff. There several committees within the institution like the loans committee which approves loans to members. This would allow them to create their own resources through savings, start their own financial services institutions operating on cooperative principals and participate in the management of their own local financial markets. UCA was formed in 1961 as the apex of the cooperative movement mandated for advocacy, spokesman ship and member education. Its roles broadened to include catalyst for change and mobiliser of resources. It's mission "The attainment of an economically viable, efficient, sustainable and member sensitive cooperative movement" and many of the services UCA was supposed to provide were provided by government. However in the early 90's, government divested itself from the cooperative movement and stopped providing education, training, audit and other services. It was left with only registration and de-registration of cooperatives and audit as a last resort. Government's withdrawal left a huge vacuum, and UCA was faced with a huge challenge of filling the vacuum.

UCA re-organised its self and the cooperative movement as a whole to meet the challenges arising from government policy. This led to the formation of SACCO's. A government policy was adopted where SACCO's were to be used as conduits for agricultural credit in the coffee and cotton sector. As a result, many SACCO's were formed out of the need to access that money. So the foundation for the growth of strong and self reliant SACCO's did not exist and they received the final blow when government divested its self from them. In 1994, a survey was carried out and it was found out that 70% of these SACCO's were dormant or dead and the apex body, Uganda Cooperative Savings and Credit Union (UCSCU) was equally helpless. Under Community Empowerment through Co-operative Financial Services

(CECFIS) project, UCA has demonstrated that rural communities when properly mobilized, sensitized, guided and supported with the basic startup kit, coupled with capacity building services, can start successful SACCO's and can access affordable financial services on a sustainable basis. The SACCO's also having a big potential of becoming safe, sound and sustainable financial institutions (UCA, 2005).

UCA established SACCO's as a response to Governments call to provide affordable financial services to economically poor people living in rural areas. These SACCO's were established under the (CECFIS) project. Members were able to create their own resources through savings (membership/entrance fees, share capital contributions and voluntary savings deposits), start their own financial institutions operating on cooperative principals and participate in the management of these financial markets. In addition the objective was to increase rural communities' power to create, participate in and manage their own local financial markets.

Tremendous progress was made because the SACCO model was adopted and used by the rural people who needed micro finance services most. Rural people have accessed credit through their SACCO's which provides a forum for mobilization of the rural people for the purpose of education, sensitization on development programmes, identifying their economic needs, developing strategies for meeting them and training and empowerment in leadership and governance issues.

SACCO achievements have been tremendous (UCA, 2005) yet so far no studies have been done in Uganda to quantitatively analyse the factors that influence net savings deposits in the SACCO's.

In most societies, people are highly conscious of money and assets and continually strive to maximize them in one way or the other. One of the means to retain money or to accumulate wealth is through savings. Domestic savings are common around the world. They constitute an important mechanism for basic survival of poor people since they provide security for the family. Savings also provide an important source for a country's future investment, which is essential for its economic development and growth (Surina, 2007). Domestic savings can be considered as whatever people can put away after meeting their basic living expenses, 'Saving is income not spent, or deferred consumption (Dell'Amore, 1983).

People save for different reasons, some save to better their conditions in the future by investing the savings into higher earning assets. It is universally observed that rural households in developing countries depend largely on precautionary saving to insure against various income risks (Lim and Townsend, 1998; Morduch, 2006). Others save in order to deal with unforeseen problems in the future (Rutherford, 1999). Yet others may save so as to meet social obligations, such as weddings, funerals, dowry and/or recurrent cultural festivities and to enhance

their social standing in the community. This is consistent with Platteau (2000), who shows that there exist strong social norms in West Africa which necessitate that an individual provides support to friends and relatives if she is asked for money and has cash on hand. People may also save to start a business venture. It is widely acknowledged that personal savings constitute the major single source of private investment in the informal sector.

People do not necessarily save through the formal financial institutions; they may save money or valuables at home, put them in the custody of friends, relatives, shopkeepers and pawnbrokers. Informal savings are prone to theft, disease and pests (Zeller et al., 1997; Mutenyo, 2005). Cash at hand is divisible and highly liquid but has drawbacks of yielding no interest, easily borrowed by relatives or friends and readily consumed or lost.

Abstaining from consumption or deferring consumption is one way of saving. Savings may be kept in cash or by acquiring and accumulating assets. Such assets can take the form of livestock, grain stores or jewellery. It is not always easy to classify a certain expenditure or non-expenditure as savings, consumption or investment. Gold earrings for instance can be considered simultaneously as savings and consumption. A marginal farmer may save to buy an oxen and a plough, but these savings can at the same time be considered as an investment if he is then in a position to sharecrop more land. These examples demonstrate that the concept of savings cannot be defined unequivocally and can be interpreted in different ways (FACET BV, 2000).

Savings can also be maintained in a groups setting, whereby capital savings are mobilised through deposits in a Savings and Credit Cooperatives (SACCO's). Savings in SACCO's provide an important source of money that can be pooled together and which members can borrow. Members can also save by acquiring assets in form of land, buildings and cash deposits in the SACCO's. However it's not clear what influences members' decisions to save. This study was conducted with the aim of improving credit services within the banana farming system.

This study was undertaken to:

- (i) Determine savings and credit characteristics of participants and non-participants in SACCO programmes
- (ii) Determine the factors that influence household's savings behavior.

METHODOLOGY

Methods

This study was undertaken in the districts of Apac, Mbarara, Rukungiri, Masaka, Kamuli, Tororo in the SACCO's of Chawente, Ebirungi Biruga Omututu, Lwengo microfinance, Kamuli Twisanya and Mukuju, respectively.

Sampling strategy

A list of SACCO's was acquired from the from the umbrella association UCA (Uganda Cooperative Alliance). The SACCO's were clustered into 4 regions (Central, Western, Eastern and Northern); from the list SACCO's that had been in operation for 3 or more years were selected. Two SACCO's were randomly selected from each cluster, a total of 8 SACCO's were selected. However, eighty (80) participants were selected from each area where the SACCO was located including SACCO participants and non participants comprising peasant farmers, teachers, traders/business people, and nurses. During the interviews, the respondents were asked whether they belonged to the SACCO or not and on this basis, respondents were disaggregated into participants involved in SACCO related transactions and non-participants who had not carried out any transactions with SACCO's or any other financial institution. The total sample size of valid questionnaires of the households that responded was 460.

Primary household data was collected using a structured questionnaire, which was pre-tested and administered through direct interviews of the respondents on a range of characteristics. The variables included household head and spouse, age, sex, level of education, work experience, number of dependents, occupations, total assets (physical and financial assets), sources of liquidity (loans taken, gifts in kind or in cash and sales, loans given out, income of the head of household, spouse's gross income) and interaction with informal and formal financial institutions. At the time that this study was done, the exchange rate of the Uganda shilling to the dollar was \$1:Ush1600

Analytical Methods

Level of net savings deposits

A household's level of net savings deposits at a particular institution is a function of several factors. These factors include the household's permanent and transitory incomes, the level of transaction costs (as measured by distance from the residence to the district capital), the household's education level, value of household wealth proxied by the livestock index, a dummy for dependants in secondary schools, occupation dummies and the availability of credit.¹ Thus, the net savings deposit function for the i^{th} head of household can be generally specified as:

$$SD = \alpha_0 + \alpha_1 Y^P + \alpha_2 Y^T + \alpha_3 DIST + \alpha_4 EDUC + \alpha_5 LIVEINDEX + \alpha_6 LOANEE + \alpha_7 SECONDARY + \alpha_8 WAGER + \alpha_9 TRADER + u \quad (1)$$

where SD is net savings deposits in 2005, Y^P is permanent income, α_1 is the marginal propensity to save out of permanent income, Y^T is transitory income,² α_2 is the marginal propensity to save out of transitory income, DIST is the distance in km to the SACCO, EDUC is the number of years of formal education, LIVEINDEX is an index of livestock holdings with livestock holdings summed using a weight of 1, 0.4 and 0.1 for cattle; sheep, goats and pigs; and poultry respectively, LOANEE is a dummy variable (=1 if household has ever received credit from the SACCO and 0 otherwise), WAGER and TRADER are defined as 1 if individual earns any income from wage labour or trade activity respectively and 0 otherwise.

¹ Bhatt (1989) maintains that the attractiveness of a deposit instrument depends among other things, on its degree of liquidity, transaction costs and type or level of risk.

² We assume the permanent and transitory components of income are stochastically independent (i.e., their distributions are uncorrelated).

Following Sandmo (1969, 1970), Cass and Stiglitz (1972), Levhari (1972), Gersovitz (1989), and Kimball (1990), we impose the conditions that $0 \leq \beta_1 \leq 1$; $0 \leq \beta_2 \leq 1$, and that $\beta_1 < \beta_2$, where β_i was Vector of parameters to be estimated.

We observed that the interest rates paid on savings deposits do not vary much in cross-section, so they are not specified as a predictor of the level of household savings deposits. However, it is important to note also that the rates on small deposits in almost all banks have been consistently negative in real terms during this period.³

Net savings function estimation

The net savings deposit function was estimated using Weighted Least Squares (WLS) regression. The dependent variable is the amount of net savings deposits held in the SACCO in 2005. Similarly, households with credit facilities available to them from the institution take the value LOANEE = 1, and others = 0.

Permanent income and transitory incomes are included in the financial savings function. The Permanent income of a household in this study is proxied by the predicted values of a modified earnings function. It is expected that the propensity to save out of long run income is less than that of transitory income. That is, the income of the i^{th} individual

$$Y_t^P = x_t^P b + e_t^P \quad (2)$$

Where x_t^P is a vector of household specific variables (e.g., wealth, gender, level of education, type of occupation, location, work experience or age of the household head).⁴ b is a vector of parameters. A distinction is made also between the error component e_t^P and transitory income. Transitory income is not regarded as the residual (error) term in 2, rather it is obtained separately.⁵ Transitory income is proxied as the income received from relatives and friends in 2005 (remittances). Households are asked about their primary and secondary occupations in terms of steady or reliable income and transient jobs. Permanent income is defined as expected income for the given year. The unobserved component of permanent income (as distinguished from transitory income) is the residual that is obtained by estimating the earnings function as shown in 2. This residual is termed unexplained income. It is not assumed that the residual is transitory income. Moreover, an analysis of the residual indicates that it is not significantly correlated with the measure of transitory income.

RESULTS

Socio-demographic characteristics of participants and non-participants in SACCO programmes. Table 1a and 1b shows the socio-demographic characteristics of

participants and non-participants in SACCO programmes. Results show that about 34% of households in the sample were male with no statistically significant difference in the gender composition of the sample by participation or urban rural divide. On average, 84% of all individuals sampled were married. The results indicate that the average age of the respondents was 40.31 years for the respondents and 37.52 years for the spouses. A further analysis shows that non-participating urban households were significantly younger (33.61) than their rural counterparts (37.67 years) at ($P < 0.05$) and not surprisingly their spouses were significantly much younger than the spouses of the rural respondents.

Total work experience for the respondents on average was 18.28 years. The only deviation from the average was among rural and urban participants. On average rural participants had more total years of work experience (21.39 years) against 18.25 years for the urban respondents. However, this difference was only significant at $p < 0.1$. The respondent's average total work experience was 16.13 years with a statistically significant difference among rural and urban participants. Experience at current job for the spouses on average was 13.25 years. There was no significant difference for the rural and urban non participants well as there was a significant difference for the rural and urban participants at ($P < 0.1$).

The average distance from the residence to the SACCO was 23.33 kms. As expected the distance from residences designated as rural areas to the SACCO were statistically greater than those from urban locations for both participants and non-participants at ($P < 0.05$). The average number of visits to the SACCO for the participants was 4.51. There was a significant difference in the number of visits for the rural and urban participants at ($P < 0.1$).

The total number of dependants was 5.6 closer to the national average of 5 dependants per household. This indicates the data was on average representative at least in terms of dependency. At least two of the dependants were in primary, 1 in nursery, 1 in a secondary school and 2 were either out of school or not yet in school with no significant differences in this composition across households. The mean household expenses were 2,521,925. The urban non-participants spent more than the rural non-participants did at 2,480,909 and 2,043,292 respectively with the difference in expenditure significant at ($P < 0.1$). The expense on education constituted about 47% of all household expenses.

On average, 44% of all those sampled households had received an informal loan amounting to 348,393 shillings in 2005. The urban non-participants received significantly larger loan amounts than the rural non-participants averaging 400,304.30 and 174,069.80 shillings respectively with the difference significant at ($P < 0.05$). Also the urban non participants gave out more amounts of loan than the rural non participants of 222,520 as compared to 89,675.93 respectively with a significant difference at ($P < 0.05$).

³ The average annual rate of inflation for 1992-1998 was 7.4 percent. The average nominal rate of interest paid by commercial banks on savings deposits was 3.24 percent for the same period.

⁴ See Mincer (1974); Musgrove (1979); Bhalla (1980); and Paxson (1990; 1992). Include years of publications

⁵ Musgrove (1979) states that permanent income can be known only with an error that is conceptually different from transitory income. He maintains that the fraction of permanent income that is unexplained, i.e., e_t^P in (2), is consumed exactly like the explained part, and that it has an error component only for the researcher, since the consumer knows what his/her permanent income is. The unexplained income, e_t^P , is just as much a part of permanent income as the explained part. We proxy the explained part of household

Table 1a. Socio-demographic characteristics of sampled households of non-participants

Variable	All Households N=460	Non-Participants		T-Value
		Rural N=166	Urban N=44	
Age of HH	40.31 (12.63)	37.67 (12.26)	33.61 (9.65)	2.03**
Age of spouse	37.52 (12.73)	34.73 (12.57)	28.94 (6.38)	2.67***
Education of household head (years)	8.91 (3.66)	8.41 (3.74)	8.59 (3.84)	-0.26
Education level of the spouse	8.03 (3.30)	7.54 (3.14)	8.30 (3.51)	-1.2
Total experience for the HH	18.28 (11.44)	16.29 (12.07)	13.50 (8.70)	1.34
Experience of HH at current job	12.83 (10.53)	11.64 (10.56)	8.71 (6.88)	1.6
Spouse's total experience (years),	16.13 (10.75)	13.58 (10.59)	10.57 (6.60)	1.61
Spouse's experience at current job	13.25 (10.23)	10.70 (9.07)	8.70 (6.11)	1.19
Distance to SACCO in kms	23.33 (13.15)	25.78 (14.02)	20.11 (12.31)	2.44**
Number of visits made to the district town per month	4.51 (5.64)	4.40 (5.76)	5.97 (7.34)	-1.38
Total number of dependants	5.63 (3.77)	4.70 (3.30)	3.95 (2.87)	1.36
Number of dependants in secondary schools	1.94 (1.28)	1.70 (0.87)	1.92 (0.79)	-0.79
Received informal loan	0.44 (0.50)	0.52 (0.50)	0.52 (0.51)	-0.06
Informal loan size received (ushs),	348,393.30 (1,437,852.00)	174,069.80 (252,094.40)	400,304.30 (472,863.00)	-3.10**
Size of informal loan given out	227,465.40 (767,586.40)	89,675.93 (113,968.40)	222,520.00 (312,094.40)	-2.77**
Total household income	1,989,831 (2,477,845)	6,910,329 (14,400,000)	13,200,000 (29,100,000)	-2.19**
Household assets ushs	14,200,000 (33,100,000)	0.39 (0.49)	0.39 (0.49)	2.01**

Source: Survey data

Figures in parentheses are standard deviations

*, **, *** refers to significance at the 10, 5 and 1 % levels respectively

Table 1b. Socio-demographic characteristics of sampled households participants in SACCO programmes

Variable	All Households N=460	Participants		T-value
		Rural N=158	Urban N=92	
Age of HH	40.31 (12.63)	44.64 (12.82)	40.86 (11.70)	2.32
Age of spouse	37.52 (12.73)	42.59 (13.28)	37.78 (10.75)	2.74
Education of household head (years)	8.91 (3.66)	9.02 (3.80)	9.73 (3.06)	-1.41
Education level of the spouse	8.03 (3.30)	7.78 (3.40)	9.16 (3.08)	-2.78
Total experience for the HH	18.28 (11.44)	21.39 (11.14)	18.52 (10.74)	1.86*
Experience of HH at current job	12.83 (10.53)	14.74 (10.95)	13.87 (10.72)	0.54

Table 1b. cont'd

Spouse's Total experience (years),	16.13 (10.75)	20.02 (10.67)	16.43 (10.57)	2.31**
Spouse's experience at current job	13.25 (10.23)	16.96 (10.97)	13.79 (10.50)	1.92*
Distance to SACCO in kms	23.33 (13.15)	23.46 (12.93)	20.17 (11.36)	2.01**
Number of visits made to the district town per month	4.51 (5.64)	3.78 (4.50)	5.27 (6.14)	-2.02*
Total number of dependants	5.63 (3.77)	6.70 (3.92)	6.28 (4.00)	0.81
Number of dependants in secondary schools	1.94 (1.28)	1.91 (1.23)	2.25 (1.75)	-1.41
Received informal loan	0.44 (0.50)	0.37 (0.48)	0.37 (0.49)	-0.04
Informal loan size received (ushs),	348,393.30(1,437,852.00)	551,897.50(2,622,364.00)	407,058.80(426,085.30)	0.32
Size of informal loan given out	227,465.40 (767,586.40)	311,043.50(1,205,113.00)	276,043.20(373,914.80)	0.17
Total household income	1,989,831.00(2,477,845.00)	1,847,713.00(2,249,786.00)	2,937,752.00(3,072,339.00)	-2.30**
Household assets ushs	14,200,000.00(33,100,000.00)	17,500,000.00(45,900,000.00)	21,900,000.00(30,300,000.00)	-0.82

Source: Survey data

Figures in parentheses are standard deviations

*, **, *** refers to significance at the 10, 5 and 1 % levels respectively

Savings and credit characteristics of participants in SACCO programmes

Participants had held SACCO membership for at least 3 years, and each had purchased an average of 5 shares with no significant difference between rural and urban respondents (Table 2). However, despite the fact that members with the SACCO had access to a savings facility, only 54% of all participants had made any deposits on their accounts since joining the SACCO. Urban dwellers (63%), were more likely to save than rural dwellers (48%) ($p < 0.05$). On average, participants were net de-savers, withdrawing 47,778 shillings more than they had deposited on their accounts in 2005. However, there was no significant difference in the level of savings between locations.

The loans offered had no grace period, loan maturity was at least one month, payback period was six months, and frequency of payback was

monthly with deposits made on ones account and the monthly deductions made automatically by the SACCO.

Of those participating in SACCO'S, only 40% had accessed credit from the SACCO. SACCO'S exhibit credit rationing behavior with participants receiving loan amounts less than what they had applied for. The total average amount of loan applied for and received by the urban and rural participants (1,100,930/= and 925,348/=) and was significantly higher than that applied for and received by the rural participants (569,642.90/=, and 516,410.70) respectively at ($p < 0.05$). On average, the payback period was 6 months. There was no significant difference in payback time because the payback period was fixed by the SACCO'S.

This also applies to the number of sureties who were two and no significant difference between urban and rural participants.

The value of security for rural participants (4,078,182/=), was greater than that of the urban participants (2,742,093/=).

Though this difference was not significant, the high value for the rural participants is explained by the kind of security offered which includes land, plantations and cattle which always have a higher value.

Household income sources

An evaluation of household income shows that non participants have higher incomes than participants (Table 3) in SACCO'S, and that rural households less income than their urban counterparts with mean differences significant at ($P < 0.05$).

Results further show an equal distribution of households across income sources. However,

Table 2. Savings and credit characteristic of SACCO Participants in 2005. Figures shown in parentheses are standard deviations

Characteristic	Rural participants N=158	Urban participants N=92	All participants N=250	T-value
Belongs to a SACCO (%)			0.54(0.50)	
Length of time in SACCO (years)	3.53(1.53)	3.32(1.61)	3.46(1.59)	1.0360
Number of shares held	4.90 (4.21)	5.83 (5.99)	5.30 (5.06)	-0.8970
Holds savings in SACCO (%)	0.48(0.50)	0.63(0.49)	0.54(0.50)	-2.2997**
Opening balance in 2005 (ushs)	166,738.60(311,488.20)	1,049,028.00(4,118,748.00)	674,723.30 (3,126,947.00)	-0.7965
Total deposits made in 2005 (ushs)	1,328,157.00(2,674,721.00)	2,219,361.00(4,887,853.00)	1,707,118.00(3,790,515.00)	-1.3479
Total withdraws in 2005	1,269,564.00(2,557,869.00)	2,010,156.00(3,905,137.00)	1,571,506.00(3,178,355.00)	-1.3364
Total net deposits (ushs)	-35,657.08(94,927.04)	-65,125.83(106,292.50)	-47,778.98(144,200.50)	0.2044
Borrowed from SACCO in 2005 (%)	0.35(0.48)	0.47(0.50)	0.40(0.49)	-1.7651
Amount of loan applied for (ushs)	569,642.90(577,332.30)	1,100,930.00(1,658,596.00)	800,404.00(1,198,372.00)	-2.2304**
Amount of loan received (ushs)	516,410.70(532,728.10)	925,348.80(1,247,430.00)	694,030.30(931,490.00)	-2.2075**
Number of times borrowed	1.20(0.40)	1.30(0.46)	1.24(0.43)	1.2155
Payback period (months)	5.76(1.96)	5.55(2.01)	5.67(1.98)	0.5376
Number of sureties	2.36(1.48)	2.16(1.00)	2.28(1.29)	0.7629
Value of securities (ushs)	4,078,182.00(14,100,000.00)	2,742,093.00(3,286,528.00)	3,491,939.00(10,800,000.00)	0.6059

*, **, *** refers to significance at the 10, 5 and 1 % levels respectively

Table 3. Household income sources figures in parentheses are standard deviations

Factor	All households (n=460)	Non-participants			Participants		
		Rural (n=166)	Urban (n=44)	T-value	Rural (n=158)	Urban (n=92)	T-value
Salary	0.39 (0.49)	0.10 (0.30)	0.16 (0.37)	-0.01	0.39(0.49)	0.42(0.50)	-0.59
Spouse earns	0.12 (0.33)	0.83 (0.38)	0.73 (0.45)	-1.05	0.12(0.33)	0.15(0.36)	-0.72
Agriculture	0.83 (0.37)	0.19 (0.40)	0.18 (0.39)	1.46	0.89(0.32)	0.80(0.40)	1.78*
Wage labour	0.14 (0.35)	0.52 (0.50)	0.70 (0.46)	0.16	0.11(0.32)	0.08(0.27)	0.96
Trade	0.60 (0.49)	0.16 (0.36)	0.23 (0.42)	-2.23**	0.61(0.49)	0.71(0.46)	-1.58
Rent	0.20 (0.40)	0.11 (0.31)	0.14 (0.35)	-1.10	0.18(0.38)	0.30(0.46)	-2.34**
Remittances	0.12 (0.33)	0.00 (0.00)	0.00 (0.00)	-0.52	0.16(0.37)	0.09(0.28)	1.61
Donations	0.0	0.00 (0.00)	0.00 (0.00)	-	0.01(0.11)	0.00(0.00)	1.08

*, **, *** refers to significance at the 10, 5 and 1 % levels respectively

Table 4. Benefits from SACCO Membership

Factor	Overall sample n=250		Rural households n=158		Urban households n=92	
	Freq	%	Freq	%	Freq	%
	Get loans	163	65.0	106	67	57
Savings facility	140	56.0	88	56	52	56.0
Access to the SACCO	45	18.0	17	16	19	21.0
Social interaction	38	15.0	32	20	7	8.0
Earn interest on savings	8	3.0	5	3.0	2	2.0
Learn new ideas	3	1.0	2	1.0	1	1.0
Creates employment	3	1.0	2	1.0	2	2.0

non-participating urban households were more likely to engage in trade than their rural counterparts.

Benefits from SACCO Membership

All SACCO's included in this survey were under the SACCO's Umbrella organization, UCA and hence the minimum requirements for eligibility to access credit were similar (Table 4). The major conditions to be fulfilled included having security that was offered as collateral, sureties, an LC1 letter confirming residential status. Furthermore, in order to qualify for a loan, one had to have paid up membership fees since these SACCO's only serve members. In order to access the loan a member was expected to apply for it using official application forms. Loan approval would be done by the loans committee which on average would sit once a month. A member also had to have savings on his account (forced savings) equivalent to 5% of the loan amount required. These loans acquired by the members had no grace period whoever borrowed money had to begin paying back immediately after one month from the time the loan was acquired. It always took a member one month to access the loan from the time it was approved by the loans committee. Other conditions included having paid up the previous loan and having a clean record of not defaulting (only for members that had acquired loans before from the SACCO). In comparison with the Micro Finance institutions (MFI's) there was no need to pay membership fees, buying shares but loan repayment was immediately after one week from getting the loan there after deductions for both the principal and interest being paid on a weekly basis.

Despite the challenges faced by members in the SACCO's (like high interest rates) their participation in SACCO programmes had accrued benefits. Members indicated that they had benefited mainly by having access to loans (65%) and a savings facility (56%). 15% of the participants indicated that they were able to interact socially, especially the rural participants. These social gatherings included the annual general meetings

and other routine meetings as members. This was also supported by the fact that some of the SACCO staff were friendly this in the long run encouraged member participation in the programmes.

Determinants of net savings deposits

Results in Table 5 shows that the level of net savings deposits in a SACCO is affected negatively with each unit increase in the distance from the residence to the district capital; by a household's education and wealth holdings level; engaging in trade activity and by having dependants in secondary schools. Conversely, net savings deposits increase with the level of permanent and transitory incomes of the household, increase in access to credit and involvement in wage income activities.

Permanent income plays a positive role in the determination of the level of net savings deposits held by households at financial institutions; and it is highly significant. The estimated coefficient indicates that the marginal propensity to save out of permanent income (in the form of savings deposits) is quite low at 0.018.

The distance to district capital variable explains a significant proportion of the variation in the level of net savings deposits across households.

Households are likely to increase their deposits with a particular financial institution if it offers facilities to borrow that are attractive to them. Households with credit facilities available to them consistently held higher net savings deposits than those which did not have credit facilities.

The effect of education on net savings was negative and highly significant at ($P < 0.01$), implying that as participants become more educated, the less they were likely to save with the SACCO. They end up requiring more credit for bigger investments and transferring their accounts to bigger financial institutions that could offer more credit than SACCO's with limited funds.

Having dependants in secondary schools in relation to no secondary school dependants decreased the level of household net deposits by 60,000 Ushs. Net savings

Table 5. Estimated Net Savings (both forced and voluntary savings) Deposit Function for Households with Savings Deposit Accounts

Factor	Net savings deposits (Ushs)	
	Coefficient	T-value
Predicted income (Ushs)	0.018***	3.14
Transitory Income (Ushs)	0.052***	3.19
Unexplained income (Ushs)	0.006	1.49
Education level (years)	-11,811.400***	-3.84
Livestock index	-3,191.847**	-2.03
Distance to district capital (km)	-3,252.285***	-2.77
Has Secondary school dependants(dummy)	-60,602.480***	-2.79
Earns wage income (wager dummy)	111,991.900**	2.43
Earns trade income (trader dummy)	-36,246.580*	-1.73
Accessed credit (loanee)	51,585.710***	2.80
Mbarara district dummy	-49,834.770	-1.21
Tororo district dummy	-66,524.320**	-2.07
Kamuli district dummy	-88,851.470***	-2.88
Masaka district dummy	11,001.880	0.23
_cons	197,925.500***	4.42
n	94	
F(14, 79)	6.34***	
Adj R2	0.4458	

*, **, *** Significant at 10, 5 and 1% respectively

deposits were affected negatively by increasing the distance away from the SACCO to the household. Being a trader negatively affected household net savings.

Savings deposits decreased by 36,246 Shillings as households engaged in business related activities.

DISCUSSION

In this study household income shows that non participants had higher incomes than participants in SACCO'S and that rural household were significantly poorer than their urban counterparts. This finding may indicate that SACCO'S are a significant poverty outreach tool with participation in SACCO'S highest amongst the poor than the rich. Furthermore, national statistics also indicate that low income levels generally plague rural areas with close to 96% of the chronically poor living in rural areas.

Members in the SACCO's have accrued benefits in terms of improved access to loans and savings. This also supports the fact that some of the major reasons why they participated were to save and borrow. Zeller et al. (2001) has shown that placement of traditional financial institutions and microfinance institutions follow an urban bias which increases transaction costs for rural households and reduces their integration into the monetary economy. SACCO'S hence provide a means to fill a gap in financial services accessibility.

Permanent income plays a positive role in the

determination of the level of net savings deposits held by households at financial institutions, this was also found out by (Wang, 1995). The estimated coefficient indicates that the marginal propensity, of the studied population, to save out of permanent income is quite low. The implication is that permanent income has not played an important role in the formation of household net savings deposits in Uganda. This could be due to the fact that these deposit accounts have earned relatively low rates of return in the past. Dynan et al (2004) finds a strong positive relationship between saving rates and lifetime income and a weaker but still positive relationship between the marginal propensity to save and lifetime income. As a consequence, most households are not driven by the desire to earn interest on these deposits. Rather, they use them for safekeeping, to manage their money prudentially, and where possible to obtain credit. In contrast, the marginal propensity to save in the form of savings deposits out of transitory income is 0.052. When taken together, the coefficients on the permanent and transitory income variables suggest that households will increase their savings if either their permanent or transitory incomes increase. Based on Dynan et al (2004) evidence suggests that the *marginal* propensity to save is greater for higher-income households than for lower-income households yet, those savings will not necessarily translate into investments in financial assets.⁶

⁶ The marginal propensity to save out of permanent income in all assets (physical

The distance to district capital variable explains a significant proportion of the variation in the level of net savings deposits across households. Individuals who reside close to district capitals consistently hold higher net savings deposits than those who are not in close proximity. Thus, transaction costs play a role in the level of net savings deposits held by households. The lower the transaction costs involved, the higher is the level of net savings deposits held by households. Muhumuza (2007) in his study amongst other reasons for failure of credit programmes were high transaction costs.

Households are likely to increase their deposits with a particular financial institution if it offers facilities to borrow that are attractive to them. The coefficient on the loan (LOANEE) variable indicates that households with credit facilities available to them consistently hold higher net savings deposits than those who do not have credit facilities available. Thomas (2012) his study states that saving is the key benefit that a member gets from the organization because a member is enabled to get a loan.

The effect of education on net savings was negative and highly significant. As the participants become more educated the less they save as they end up requiring more credit for bigger investments hence transfer their accounts to bigger financial institutions which can offer more in terms of credit than the SACCO with limited funds. Many of the educated in the rural areas were salary earners or public servants who normally get their salaries from the bigger micro finance institutions hence they tend to shift their savings elsewhere. Furthermore, members participated to earn interest and dividends and yet some SACCO'S were not offering interest on savings and dividends on shares. The more educated are also more likely to expect a return on their savings and will consequently save less in an institution where the benefits are not tangible. The effect of a rise in education level is similar to that of an increase in the index of livestock holdings. Net savings deposits in SACCO'S decrease with a rise in a household's wealth. Wealthier households also need access to more financial instruments that may not be available in a SACCO.

Having dependants in secondary schools in relation to no secondary school dependants decreased the level of household net deposits by 60,000 Ushs and the effect is significant at $P < 0.01$. It appears that, the more the dependants in secondary level, the less the net deposits because much of the savings are used for paying fees. Hence although households with secondary school dependants are more likely to participate and save in SACCO'S, their participation and savings behavior may be driven by a desire to access credit to meet school expenses rather than the need to access a facility to grow

their savings. The kind of savings made in the SACCO involves both voluntary and forced savings and the members hold one account in the SACCO that caters for both the loan acquired and the savings made. In the process members are forced to deposit a given amount in the bank before they access the loan. The voluntary savings keep on being drained as its being used to offset the loan to cater for the money borrowed leading to the negative sign.

Net savings deposits were affected negatively by increasing the distance away from the SACCO to the household and was significant at ($P < 0.05$). This was attributed to the fact that as the distance from the capital increased, the level of savings reduces, because this increased the cost of savings through increased transport costs, it also requires time to move from farm to the SACCO and since the distance would be grate members would be hesitant to move to the institution.

Being a trader negatively affected the household net savings. Savings deposits decrease by 36,246 Shillings as households engage in business related activities. The reason is that being business oriented, the more they became deeply involved in business the more they ploughed back the money into the trade hence having less savings. Mutenyo (2005), shows that traders save a significant amount of money in form of business items consequently reducing on the level of financial deposits held.

CONCLUSIONS AND RECOMMENDATIONS

Institutional access is related to the availability of credit facilities to depositors. We find that access to credit has a positive and significant influence on the level of net savings deposits held by households. Households with credit facilities available to them are more inclined to save than those without. We attribute this to a combination of a voluntary increase in the level of savings (given the lending institution offers facilities to borrow that are attractive to them) and arrangements whereby a lender requires savings as a form of collateral.

We find that household income is a significant determinant of the level of household net savings deposits in SACCO'S. While the rates of return paid on savings deposits in Uganda have been negative in real terms for quite some time, households continue to hold savings deposits for the purpose of keeping their money safe and to exercise prudent management of their finances, rather than to earn interest. Due to the low marginal propensities to save out of permanent and transitory incomes in the form of net savings deposits (0.02 and 0.05, respectively), increases in household income alone are not likely to increase the level of financial assets held by households. Rather, savings deposits will be more effectively increased by efforts to increase financial intermediation by offering savings instruments that bear positive real rates of return, keep the deposits safe, and do so at

and financial) was estimated to be 0.43 to 0.48 for urban households, 0.20 to 0.27 for rural households. The marginal propensity to save out of transitory income in all assets has been estimated to be 0.68 to 0.72 for urban households, 0.38 to 0.42 for rural households. Urban households include middle income merchants (Kiiza, 1999).

relatively low cost to the depositor. There is also a need to determine how SACCO'S can be empowered to develop and provide products that suit agricultural purposes at a profit as these remains a gap in rural financial intermediation.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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Full Length Research Paper

Calendar Anomalies, reality or an illusion? KSE-Pakistan

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This paper investigates the calendar anomalies in Karachi Stock Exchange (KSE) of Pakistan, during 2002-04 periods. The data for this study was taken from KSE 100, involving the daily stock exchange and were tested for turn of the month and time of the month effects. The results, regarding mean returns showed the presence of both effects. Results after regression analysis didn't show the presence of Turn of the Month (TOM) effect in KSE. Slight evidence was witnessed regarding the time of the month effect in KSE, which confirmed the presence of anomalies and proved the market inefficiency. Limitations to this study are the time period, which was short. Future studies may consider a longer period of time for testing KSE, regarding the calendar anomalies.

Key words: Turn of the Month (TOM), Karachi Stock Exchange (KSE), Calendar Anomalies, Pakistan, KSE-100 index, Investor's psychology in Pakistan.

INTRODUCTION

Efficient market hypothesis postulates that all information should be correctly reflected in the prices of securities and if the markets are efficient abnormal profits are not possible. According to the hypothesis, prices of securities cannot be predicted as they follow random walk pattern (Malkiel, 2003). If there are opportunities to make abnormal profit in the equity markets, it refers to the market inefficiency and existence of some anomalies in the market because the concept of efficient market was established on the idea that no individual has the ability to have or gain profits by beating the market and in excess of market. Anomaly refers to any deviation from

efficient market hypothesis. A variety of anomalies may be witnessed in the stock market. Calendar anomalies refer to the existence of any irregularities, fluctuations, or the specific pattern, occurring in a recurring manner during a definite time within a year. These types of anomalies prove out to be a severe threat to the market efficiency as the patterns become predictable making the abnormal profits possible.

Calendar anomaly may have different effects such as weekend effect, day of the week effect, time of the month effect, turn of the month effect and January effect. In turn of the month effect, average returns on securities are

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higher on last and first three days of a month due to the investor's behaviors. In the same way, in time of the month effect, returns are different at some points in time during a month (Chandra, 2009). Due to these patterns of average returns, prices are predictable which reflect the market inefficiency and reveal some pattern in security prices which may be exploited by the investors to make abnormal returns.

Therefore, the concept of calendar anomalies explains the fluctuations in the stock prices, based on a specific trend. This concept of calendar anomalies goes against the concept of the efficiency of market where prices cannot be predicted due to the incorporation of all relevant information. There has been evidence for the existence of calendar anomalies in different stock markets of the world. Initial studies include the study of Ariel (1987), who found out the existence of anomalies in the end and beginning of month, with his research study involving US stock prices. Therefore, this study aims at exploring the efficiency of Karachi Stock exchange (KSE) by testing the effect of two calendar anomalies including Turn of the Month (TOM) effect and time of the month effect. The rest of the paper is organized as explained. Literature review summarizes the relevant literature, methodology and results explain the models and the results from the test and then conclusion is given at the end.

LITERATURE REVIEW

Calendar anomalies have been tested in the literature to test the efficient market hypothesis in different stock markets of the world. Different studies have tried to explain the anomalies and have found the existence of these anomalies in real world stock prices. Haugen and Jorion (1996), consider the calendar effects, as short timed, or short lived, because the members of market might learn from past experiences. Similarly, the calendar effect, i.e. the weekend effect was witnessed and supported by Cross (1973), in his studies. Other studies, for calendar anomalies, included the, Day of Week effect (DOW), by Gibbons et al. (1981), whereby they proved the inconsistency in returns. DOW effect was also studied by Poshakwale (1996), involving the Indian stock market.

One reason for the existence of anomalies is that, the returns especially of positive nature, in the beginning of month, generate a positive effect in market. Thus, positive news of this nature brings up certain and positive returns, especially in first part of month (Penman, 1987). One such example is TOM.

Anomaly of TOM explains the pattern observed in the prices during the specific time period (-1, +4), the last working day of the preceding month and similarly the first 4 working days of current month (Ariel, 1987). His studies supported the concept, by proving the elevated returns in the specific period. Whereas, other researchers,

Lakoniskok and Smidt (1998), came up with the idea that the working days event window, should be as (-1, +3), the final working day of previous month and similarly, the first 3 working days of the current month. Later on, the studies conducted by Hansel & Ziemba (1996), came up with idea of using five days for event window, i.e. (-2, +3), which meant the last two working days from the preceding month, and similarly 3 working days from the recent month. Their results proved significant and supported their event window, in their study of US stock market.

There are few specific reasons for the presence of TOM, such as at the ending time of the month, cash is required for interest or dividends, therefore the money is taken out from market, by the investors. Whereas, when the subsequent month begins, the investors restart and buy the stocks, giving a boost to the stock prices (Bahadur and Joshi, 2005; Ogden and Joseph, 1990).

Research studies conducted, testing the TOM, in different setups, i.e. US, Canada, UK and few other states, supported the concept and verified the presence of this effect (Cadsby and Ratner, 1992), whereas, no support has been witnessed in studies involving Japan, Hong Kong, Italy and even France.

Evidence for the occurrence of time of the month effect has also been found in the literature. Initial studies regarding this effect include Kohers and Patel (1999), who tested this effect. Their results supported the effect, as significant differences were noticed in the first segment and the other two segments taken from the month's time. Similarly, time of the month effect was also witnessed in studies involving Australia, Hong Kong and few other states, i.e. Malaysia, Singapore (Lian, 2002).

Thus, the literature reveals the existence of calendar anomalies and market inefficiency in the various stock markets of the world; it is worthwhile to study these effects in KSE to test the market efficiency.

METHODOLOGY

The data for this study has been taken from, KSE 100, involving the daily stock index, starting from January 2002, till December 2004, covering up a period of three years. Working days only, were considered for this study, as the public or official holidays were not considered.

Returns were calculated by the formula;

$$R_t = 100 * \ln (p_t / p_{t-1})$$

where \ln =natural logarithm, p_t and p_{t-1} = KSE 100 index prices at time period t and $t-1$ respectively.

Turn of the month

Now to calculate for finding out the TOM effect, the last working day from previous month and similarly the first 3 working days from subsequent month have been taken. In this way, the remaining days were considered as Rest of the Month (ROM), based on the

Table 1. Descriptive statistics for the TOM effect from year (2002-04)

Periods	Turn of month	Rest of month
2002		
Mean	0.445	0.244
Median	0.504	0.220
Std. Deviation	1.271	1.651
Observation	45	199
2003		
Mean	0.420	0.158
Median	0.403	0.324
Std. Deviation	1.662	1.604
Observation	47	197
2004		
Mean	0.233	0.108
Median	0.299	0.183
Std. Deviation	0.936	0.944
Observation	47	199

concepts put forward by Lakonishkok and Smidt (1988), by applying the regression equation.

$$R_t = \beta_0 + \beta_1 d_{it} + \epsilon$$

Where R_t refers to daily returns, β_i refers to coefficient for the means, and d_{it} is basically the dummy variable. Additionally, ϵ is for the error term.

Only one independent dummy variable has been taken, the value assigned to the period for turn of the month is 1, where as, ROM period is assigned a value of zero. The positive value for β_i is for the TOM, effect.

Time of the month

Using the concepts, put forward by Kohers and Patel (1999), the time of the month effect was tested, by splitting the period of a month in 3 segments, whereby the 28th trading day from previous month till 7th trading day in the subsequent month as first period of month, from 8th trading day to 17th as 2nd segment, and finally the last segment as third of the third, starting from 18th trading day till the 27th of the same month. Formula used for regression involved two variables as dummy variables.

$$R_t = \beta_0 + \beta_1 d_{1t} + \beta_2 d_{2t} + \epsilon_t$$

Where R_t refers to mean of stock for period t , d_{1t} refers to dummy variable, ϵ_t captures the error term.

Dummy variables were valued zero and one, depending on the first or second third of the month, d_{2t} explained the dummy variable for the first-third of month. Similarly, for the second-third of the month, the dummy variable is d_{3t} . The coefficient for difference is β_1 , regarding the 1st-third of month and the third-third of month. In the same way, β_2 , explained the difference of 2nd and third-third of the month. The null hypotheses may be stated as, $H_0 = \beta_1 = \beta_2 = 0$,

whereby the empirical analysis was done.

RESULTS

Descriptive statistics

Descriptive statistics explain the basic characteristics of the data such as mean, median, mode, and standard deviation etc. Statistical results given in Table 1 explain the difference between the mean values of returns for TOM and ROM involving the period from year 2002-04. The mean of returns for TOM is high in all the periods than mean for ROM. The mean of returns for the turn of the month (TOM) in year 2002 was (0.445), more than returns for ROM which was (0.244). Similarly, the mean of returns for TOM, for year 2003 and 2004 were (0.420) and (0.233) respectively, which were slightly more than mean value of returns from ROM, as for 2003, the mean value for ROM, was (0.158) and for 2004 it was (0.108). The difference was witnessed among the mean returns for TOM and ROM period. However, the standard deviation is quite high for ROM during 2002 that is 1.651 than 1.271 of TOM. Whereas, in 2003 standard deviation is high for TOM and again in 2004 standard deviation is high for ROM with a slight difference from TOM as explained in Table 1.

Results for descriptive statistics of the variables of time period effects are given in Table 3. Three time periods have been taken with period 1, period 2 and period 3. Descriptive statistics explains the mean, median and standard deviation for the three time periods during each year separately. Statistical results show that the mean value for the returns from the period 1, were more than the mean values of returns for the other two periods. The mean value for the first-third of the month for the year 2002 was 0.402 and the mean value for the 2nd-third of month was 0.220, whereas, for the third-third of the month the mean value came out to be 0.251, showing a significant difference, as compared to the period 1, of the month. Similarly, mean of returns for the first-third of month was 0.214, for the year 2003, was closer to the value of second-third value of mean of returns as 0.235. Whereas; the mean value of returns of the first period of the three periods of month, was high, 0.245, as compared to the second-third, i.e. 0.109 and the mean for returns for the last period was 0.045 and for the year 2004. So, as a whole, a trend has been witnessed, in the mean values, that is the first-third mean values are higher, with a decreasing trend towards the second-third and third-third period.

The standard deviation for the three periods indicates that standard deviation is same during first third and third-third whereas it is high in second third with a slight difference in 2002 which means dispersion in data is high during the second third. In 2003, standard deviation is highest in period 1 at 97, then it is higher in period 3 with 82 and lastly it is 77 in period 2. Highest dispersion

Table 2. Analysis through regression coefficients TOM effect for year (2002-04)

Periods	β_0	β_1	R ²	F-value
2002	0.248 (2.215)*	0.219 (0.854)	0.029	0.729
2003	0.161 (1.406)	0.259 (0.990)	0.040	0.680
2004	0.110 (1.652)	0.0712 (0.607)	0.012	0.351

 β_0 =coefficient for ROM β_1 = coefficient for (TOM)

* = significant 95% ** = significant 90%

t-values = in parenthesis

Descriptive statistics explaining Time of the month for year (2002-04), KSE- 100 index

Table 3. Descriptive statistics for the year (2002-04), KSE-100 index (time of month)

Time period	Period 1 First-third	Period 2 Second-third	Period 3 Third-third
2002			
Mean	0.402	0.220	0.251
Median	0.506	0.140	0.284
Standard Deviation	1.327	1.575	1.813
No of observations	82	83	82
2003			
Mean	0.214	0.235	0.163
Median	0.310	0.303	0.405
Standard Deviation	1.566	1.492	1.775
No of observations	97	77	82
2004			
Mean	0.245	0.109	0.045
Median	0.289	0.257	0.095
Standard Deviation	0.925	0.867	1.016
No of observations	83	81	84

in data is found in period 3 during 2004 with standard deviation of 84. In rest of the periods it is 83 in period 1 and 81 in period 2. The standard deviations during all the periods show that there are many fluctuations in the prices during the sample period.

Analyses of data

Regression analysis showed that there exists, almost a similar pattern, in the context of turn of the month, with an

Table 4. Analysis through regression for the year (2002-04), KSE-100 index (time of month)

Periods	β_0	β_1	β_2	R ²	F-value
2002	0.225 (1.726)*	0.140 (0.518)	0.0298 0.115	0.023	0.286
2003	0.109 (0.699)	0.064 (0.250)	0.127 (0.430)	0.0042	0.101
2004	0.0650 (0.718)	0.149 (1.012)	0.0332 (0.215)	0.075	0.930

 β_0 =coefficient for period 3 β_1 and β_2 refers to coefficient for period 2 and period 3 respectively.

* = significant 95%

** = significant 90%

t-values = in parenthesis

exception for the year 2002, where the coefficient for rest of the month ROM is significant i.e. ($\beta=0.248$, $t\text{-stat} = 2.215^*$) whereas, the turn of the month (TOM) has been witnessed, to be positively insignificant for the same year (Table 2). For the year 2003 and 2004, no significant evidence has been seen, to exist (TOM), and similar pattern is there. The t-stat value for TOM, throughout the period of time selected for the study, remained insignificant, but positive with values as (0.854) for 2002, (0.990) for 2003 and (0.607) for the year 2004 respectively. This explains that the variable of TOM has been positively insignificant during the all three years in the sample. R² explains that how much variation in the dependent variable is being explained by the independent variable. R² is highest in 2003 where it is 40%, while in 2002 and 2004 it is 29% and 12% respectively. It means that largest part is being played in the returns by TOM and ROM during 2003. However, as TOM has been found positively insignificant, the results didn't support the findings of Lakoniskok and Smidt (1988), for the TOM effect.

Regression analysis has been used to test the time of the month effect in KSE during the sample period. Results after the analysis, showed no significant anomalous behavior, except for the year 2002, where the effect regarding time of month has been witnessed, as third-third of the month effect has been witnessed, with the β_0 , giving positive results and $t\text{-stat} = (1.726)^*$ confirming the presence of anomaly in the third-third period in the year 2002. Whereas, in the year 2003 and 2004, no significant evidence has been found to enlighten the time of month effect (Table 4). In this context, year 2002 remained an exception as compared to the year 2003 and 2004, regarding the presence of effect of time of the month, in the results. Similarly, results from the study have revealed the presence of time of month effect, in the KSE, in the sample period of three years (2002-04). R² of the model also reveal an upward trend and in 2004 it is 75% which means that the explanatory power of the variables is good. The results supported the findings of

Kohers and Patel (1999), but the difference in our results was that of the third-third period of the month, for the year 2002, showed significant results, whereas in their study, they proved the first-third period of the month, as with significant results. Results also supported the findings of Zafar et al. (2009), who proved the existence of anomalies in KSE 100.

Thus, after testing for the calendar anomaly in KSE including two effects time of the month and turn of the month effect it might be extracted that the market is not efficient as it does not follow a random walk model. Although the variable of TOM has been found to be insignificant, there has been evidence for time of the month effect. The occurrence of this anomaly in the market reveals that KSE is not efficient and there are opportunities for investors to earn the abnormal profits. One reason for this market inefficiency may be that the economy is emerging and stock market is on its way of development (Guidi et al., 2010). Moreover the results are consistent with those of Gupta and Yang (2011) who found that stock markets of emerging economies are not efficient.

Conclusion

The primary objective of the study was to check for existence of efficiency of KSE, by studying it for the existence of anomalies. As efficient market hypothesis has attracted the attention of many academicians, practitioners and policy makers, it is worthy to explore the behavior and movements of stock market prices. Existence of efficiency in the stock market is now doubted in the stock markets in the world overall, so is the case with KSE. Therefore, the concept of anomaly has also been tested, as whether the anomalies are real or merely an illusion, by studying the Pakistani stock market. For the purpose, a period of three years (2002-04) was selected for the study, and Karachi Stock Exchange (KSE-100 index) was selected for the analysis. Descriptive statistics results supported the presence of anomalies. The mean returns, showed the presence of both effects. Though the Turn of the month effect was not significantly witnessed in our results after regressing it, but the Time of the month effect was witnessed. These results confirmed the presence of anomalies in the KSE 100. Such type of anomalies proves the market inefficiency, and is largely due to the investor's psychology and investing behavior.

The market inefficiency is in accordance with many stock markets of the world which have been found to be inefficient. It is because of certain biases reflected in investor's behavior. Another reason for inefficiency is that the economy is developing.

The results have implications for the investors as well as policy makers. The investors need to know about the efficiency of market to make profitable decisions for their portfolios (Gupta and Yang, 2011). In the same way,

it has implications for policy makers in order to attract investments and development of stock markets. The existence of these anomalies should be checked and proper policies must be devised by the government authorities, to reduce the anomalies by putting forward some effective strategies, for the enhancement of market efficiency.

There are few limitations to the study, which may be considered for future studies. The first limitations are the sample size, regarding the time period selected for the study, which was three years. Secondly, the study involved Pakistani stock market (KSE) only, whereas, future studies may check the existence of anomalies in other stock markets of other countries and nations.

Conflict of Interests

The author(s) have not declared any conflict of interests.

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Full Length Research Paper

Analysis of competitiveness of lowland rice farming in Indonesia: Case study of Bolaang Mongondow District, North Sulawesi Province

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Further development through the application of technological innovations may result to rice export in North Sulawesi. It is necessary to do a study on the competitiveness level of this commodity, especially if there is a local policy to export rice. The aims of this research are: (1) to analyze the profitability of rice farming in Bolaang Mongondow District; (2) to analyze the comparative and competitive advantages of rice farming in Bolaang Mongondow District; (3) to analyze the impact of government policy on competitiveness of rice farming in Bolaang Mongondow District. Primary data were collected from 100 rice farmers. Data obtained was analyzed using policy analysis matrix (PAM). The results revealed that private and social profitability of rice farming are IDR 3,870,106 and IDR 3,493,646, respectively. Private cost ratio of rice farming was 0.69. Domestic resources cost ratio of rice farming was 0.68. The output transfer and nominal protection coefficient output indicated that the total value of input was 7% higher than the social price. The transfer input, nominal protection coefficient on input and transfer factor indicated that there is a protective policy to input tradable and non tradable producers. The results of effective protection coefficient, net transfer, profitability coefficient and subsidy ratio to producers of rice were 1.16, IDR 376,460.51, 1.11 and 0.03. Conclusively, rice commodities in Bolaang Mongondow have comparative and competitive advantages. In addition, the government policies of rice were protecting and beneficial to farmers in Bolaang Mongondow District of North Sulawesi Province.

Key words: Comparative and competitive advantages, rice farming, policy analysis matrix (PAM).

INTRODUCTION

Indonesia is a country with a large population in the world. Indonesia's population in 2011 is estimated to be 241 million people. The level of rice consumption was up

to 139 kg per capita higher than Malaysia and Thailand which was only 65 to 70 kg per capita per year (Indonesia Finance Auditor Agency, 2012). This condition made rice

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to be the main agricultural commodity in Indonesia. The government has always issued a policy of national rice management.

The rice policy in Indonesia was radically changed after the reformation movements (Yao, 1997). In the monetary crisis period (1997 to 1999), the government liberalizes the trade of rice. The policy cut most of the National Logistic Agency (BULOG) roles, especially for monopoly import of rice. Beginning in year 2000, market and trade liberalization was corrected. Although the government presently excludes the private sector from importing rice, it still controls tariff and non tariff policy. Since 2004, importation of rice was restricted. First, rice importation was banned at the harvest seasons but was later permitted for import after the harvest season. Secondly, rice import quota was only given to the importer. The policy of rice was corrected again and then importation of rice was banned over the year. The reason being the government believes that national production of rice is still sufficient for domestic demands. Since 2007, rice importation has been monopolized by BULOG (Sawit and Halid, 2010).

In 2008, price crisis of rice occurred in abroad, rice marketers became worried. The instability of global rice price was not explained by supply and demand theory, but was predominantly determined by fear and political decisions of each importer and exporter countries (Sawit and Halid, 2010). Indonesia implemented policies to increase rice production for the anticipation of rice price crisis. The national budget (APBN) was allocated to subsidize the use of fertilizers, seeds and credits for rice farming. The impacts made the production of paddy-rice increase to (5.4% per year) in the period 2007 to 2009; 2.9% harvested area growth and 2.5% productivity growth. The price of rice become attractive for the farmer than the price of other commodity such as soybean, maize and cane (Sawit and Halid, 2010). Also, rice was more competitive than other commodities.

The change for free market regime from controlled-market to free-market resulted to rice price in domestic market which was increasingly exposed to the market fluctuation, that is influenced directly to the competitiveness of domestic rice farming system. The fluctuation of rice price can be caused by domestic production, international price and exchange rate fluctuation. Transmission rates tend to be symmetrical from exchange rate volatility and agriculture product price on world markets; in the dynamics of domestic price of agriculture products. It indicates the strong correlation of the three dimensions of market (Rachman et al., 2004).

Although North Sulawesi Province is not included in the Indonesia's top ten rice producer, but it has one district that become a granary for North Sulawesi and Gorontalo, namely Bolaang Mongondow district. Based on the research of North Sulawesi AIAT in 1999, the rice commodity in Bolaang Mongondow has a comparative advantage with The Domestic Resources Cost Ratio

(DRCR) of 0.61 (Zulkifli and dan Aryanto, 2000). Meanwhile, for the last 10 years much was not found about the new information on the comparative and competitive advantage of rice farming in this region. It could be increased or even decreased, because comparative advantage is a dynamic value and sometimes these advantages can be taken over by other commodities. In fact, the information and data of competitiveness are very important for local government as a reference to decide the policy or intervention. Mainly, if rice is expected to be an export commodity in North Sulawesi Province.

The study aims to: (1) Analyze the profitability aspects of rice farming in Bolaang Mongondow District, (2) Analyze the comparative and competitive advantage of rice farming in Bolaang Mongondow District and (3) Analyze the impact of government policies on competitiveness of rice farming in Bolaang Mongondow District.

METHODOLOGY

Study area and data sources

The study was conducted in five sub districts at Bolaang Mongondow District of North Sulawesi Province. It was decided by a purposive method. The places of study were Nonapan I village at Poigar Sub-district, Bolaang village at East Bolaang Sub-district, Langagon village at Bolaang Sub-district, Lolayan village at Lolayan Sub-district and Lolak II village at Lolak Sub-district. Primary data were obtained from interviews with the farmers, traders at villages and Sub-districts level, while the secondary data were obtained from BPS office of North Sulawesi and Bolaang Mongondow, office of Agriculture and Livestock in Bolaang Mongondow, office of Trades and Industry, Customs office, PELINDO and data searching via internet.

Research procedure and sampling method

The formal survey was undertaken by interviewing 100 purposively selected farm household using a structured questionnaire. Random sampling method was employed for the selection of rural farmer for this study. The purposive method was employed for the selection of secondary informants such as agriculture extension agents, village officials and community leaders. Each village consist of 20 respondents \times 5 sub districts = 100 respondents of farm household.

Analysis method

Tsakok (1990) argued that there are two methods use in measuring the comparative advantage, namely: *Domestic Resources Cost Ratio (RBSD)* and *Net Economic Benefit Ratio (NEBR)*. The other method or tools use were *Revealed Comparative Advantage (RCA)*. Pearson et al. (2005) argued that Policy Analysis Matrix (PAM) was more comprehensive than the other methods use in measuring the competitiveness. The construction of PAM for an agricultural system allows one to calculate private profitability – a measure of the competitiveness of the system at actual market prices. Similar analysis of other systems permits ranking of the competitiveness of agricultural systems at market prices. The calculation of private profitability or competitiveness is carried out in the first (top) row of the PAM matrix. This result serves as the baseline for benefit-cost

Table 1. Policy analysis matrix.

	Revenues	Costs		Profits
		Tradable inputs	Domestic factors	
Private price	A	B	C	$D = A - B - C$
Social price	E	F	G	$H = E - F - G$
Effects of divergences and efficient policy	(OT) $I = A - E$ NPCO = A/E	(IT) $J = B - F$ NPCI = B/F	(FT) $K = C - G$	(NT) $L = D - H = I - J - K$; PC = D/H

Source: Monke and Pearson (1989).

Notes: D = Private profitability; H = social profitability; I (OT) = output transfer; NPCO = Nominal Protection Coefficient on Output; (IT) J = transfer input; NPCI = Nominal Protection Coefficient on Input; (FT) K = factor transfer; (NT) L = Net Transfer; PC = Profitability Coefficient.

analysis in the actual market (private) prices.

The second purpose of the PAM approach is to estimate the agricultural system's social profitability – the result products produced and inputs used are valued in efficiency prices (social opportunity costs). Complementary analyses of other systems permit ranking of the efficiency of agricultural systems. The calculation of social profitability is carried out in the second (middle) row of the PAM matrix. This outcome provides baseline information for social benefit-cost analysis, using efficiency prices.

The third purpose of PAM analysis is to measure the transfer effects of policies. By contrasting revenues and costs before and after the imposition of a policy, one can determine the impact of that policy. The PAM method captures the effects of policies influencing both products and factors of production (land, labor and capital). The measurement of the transfer effects of policies is carried out in the third (bottom) row of the PAM matrix, as demonstrated in Table 1 (Pearson et al., 2005). According to the explanation, this research used *policy* PAM as an analysis method (Table 1). Several indicators analysis of PAM are:

Profitability analysis

Private Profitability (PP): $D = A - (B+C)$ (all the value of A, B, C, D, E, F, G sign according to the PAM Table) Private profitability is an indicator for competitiveness based on private price (actual price) of output. If $D > 0$, the system profit gain for commodity normal costs that have implications, is that commodity is capable of expansion, unless the limited resources or commodities is a more profitable alternative.

Social Profitability (SP): $H = E - (F+G)$ Social profitability is an indicator of comparative advantage of the commodity on the condition of no divergence in the system either due to government policies and market distortions. If $H > 0$, this means the system of commodity gain profit at the expense of normal social cost and can be given priority in development.

Financial and economy efficiency (Competitive and Comparative advantages)

Private Cost Ratio (PCR) = $C/(A-B)$: the private profitability indicator shows the system's ability to pay the cost of commodities from local resources and remain competitive. If the PCR < 1 , it means that the system studied commodities have a competitive advantage and also vice versa.

Domestic Resource Cost Ratio (DRCR) = $G/(E-F)$ is a

comparative advantage indicator. The system has a comparative advantage if $DRC < 1$ and also vice versa.

The impact of government policy

Output Policy

Output Transfer: OT = A-E: Transfer output is the difference between the revenue which was calculated on private price (financial price) with revenues which was calculated on the social price or shadow prices. If the value of $OT > 0$ indicates a transfer from the consumers to producers and also vice versa.

Nominal Protection Coefficient on Output (NPCO) = A/E: NPCO is an indicator that shows the level of government protection of domestic agricultural output. Protective policy on output if the value $NPCO > 1$ and vice versa if the policy is a disincentive $NPCO < 1$.

Input Policy

Transfer Input: IT = B - F. If the value of $IT > 0$, indicates the transfer from farmers to the producers of tradable inputs and also vice versa.

Nominal Protection Coefficient on Input (NPCI) = B/F: Policies are protective of the input if the value of $NPCI < 1$. It means that there is a subsidy policy on tradable inputs and vice versa.

Factor Transfer: FT = C - G: The value of $FT > 0$, implying that there is a transfer from farmer to the producer of non tradable inputs and vice versa.

Input-output policy

Effective Protection Coefficient (EPC) = $(A-B)/(E-F)$: Policy is still protective if the value of $EPC > 1$. The greater EPC value means that there is a higher level of government protection on domestic agricultural commodities.

Net Transfer: NT = D - H: Value of $NT > 0$, showing that the additional producer surplus caused by government policies that is applied to the input and output and vice versa.

Profitability Coefficient: PC = D/H. If the $PC > 0$, means that the overall government policy provides incentives to producers and vice

Table 2. Policy analysis matrix result of rice farming in Bolaang Mongondow District (IDR)

	Revenues	Tradable inputs	Domestic Factors Non Tradable		Profits
			Labor	Land and Capital	
a.Private	13 705 580.09	1 268 151.97	5 434 977	3 132 345	3 870 106
b.Social	12 810 066.64	2 055 111.34	4 706 137	2 555 173	3 493 646
c.Divergence	895 513.44	-786 959.38	728 840	577 172	376 461

versa.

Subsidy Ratio to Producer (SRP) = L/E = (D-H)/E: is an indicator that shows the proportion of revenues to the necessary social price, if subsidies or tax used as a substitute for policy.

RESULTS AND DISCUSSION

Private and social profitability

Based on financial and economic analysis results, the net financial income earned (excluding the land component) of IDR 5,587,634 / year with RC-ratio of 1.69. If the land component includes, the net income earned was IDR 3,870,106 / year and the RC-ratio was 1.39, while the economic net income of IDR 5,164,095 / year and the RC-ratio was 1.68 (outside the land component). Meanwhile, if it includes land component, net profit was IDR 3,446,567 / year and the RC-ratio was 1.37. This implies that rice farming is financially better off than economically. It means that the rice farming was profitable for the farmer individually. In other words, the production costs incurred by each farmer for two seasons can be covered by the sale price of rice.

Table 2 shows that the private profitability of rice farming has a higher value than its social profitability. This is an early indication that there is competitive advantage of rice farming. The dominant crop cultivated in Bolaang Mongondow is paddy-rice, because of areas known as the rice granary of North Sulawesi Province. Rusastra et al. (2004) found out in their research about competitiveness of soybean that financially, soybean farming does not have competitive advantage and inefficient in resource utilization. This commodity will experience difficulty in its development when there is other commodity which would turn out to have a higher competitiveness financially. Similarly, the rice farming in Bolmong will experience the same thing (difficulty in its development) if it decreased level of benefit financially.

Social profitability indicates a comparative advantage of commodity in the utilization of scarce resources in the country. Commodity systems with higher level of social profitability (economic) showed that the level of comparative advantage is growing. The PAM analysis in Table 2 shows the social profitability is quiet high. It is indicated in the beginning that rice farming in Bolaang Mongondow also has a comparative advantage.

According to the table, the divergence occurs only in tradable input components. Pearson et al. (2005) suggested that the first cause of divergence is market failure. There are three types of market failure that causes divergence, that is: (1) monopoly (which controls the seller about the market price) or monopsony (buyer's market control), (2) the cost is negative externality where there is no cost charge for the person or company that incurred the cost. The benefits is positive externalities where there's no compensation for the person or company that may result to benefits, (3) domestic factor markets are not perfect, where there is no institution that can provide competitive services and comprehensive information. The second cause of divergence is distortive government policy, which is applied to achieve non-efficiency (or distribution of food security) that will inhibit the efficient allocation of resources and may result to divergence.

Competitive and comparative advantages

The value of PCR and DRPCR of rice farming based on PAM analysis are 0.69 and 0.68, respectively. These results indicate that the rice farming in Bolaang Mongondow has comparative and competitive advantage. So it is likely to be developed as an export commodity. PCR value 0.69 means that to obtain value-added output by one unit at the private price of rice farming in the region, requires additional domestic factor costs of 0.69 or less than one unit. So it can be argued that production costs may be covered with the actual sale price obtained by farmers.

DRC value 0.68 means that to produce paddy (rice) in the region, Bolaang Mongondow only need the domestic resource costs as a 68% to save US\$ 1 foreign exchange, if produced in the region than import it. So there are opportunities to exports goods to other regions or countries and rice agroindustry.

The rice industry is related to the development of upstream and downstream industries. The upstream industry consists of seed, fertilizer, agriculture tools and pesticides industries. The downstream industry consists of rice milling, hotel/food stall/restaurant, flour, food industries and the feed industry as well (Sawit and Lokollo, 2007). Rachman et al. (2004) found out that PCR value in Sidrap (South Sulawesi) was 0.55 to 0.58 at irrigation area. DRPCR value was 0.68 to 0.57 at irrigation

Table 3. An average price of subsidized fertilizer in five sub-district at Bolaang Mongondow District

Fertilizer Type	Fertilizer Price in Research Sites (IDR/kg)				
	Poigar	Bolaang	Bolaang Timur	Lolayan	Lolak
Urea	1,463	1,373	1,571	1,433	1,592
Phonska	2,641	2,306	2,890	2,181	2,583

area. These results seem the same with PCR and DRCR value in Bolaang Mongondow District. It is possibly because there is the same agro climate factor between North Sulawesi (Bolmong) and South Sulawesi (Sidrap). Rachman et al. (2004) argued that several technical factors which influence the comparative and competitive advantage were: (1) Climate. It influences the availability and farmer access to water resource; (2) Irrigation infrastructure. It influences the availability, access and control of water resource; (3) Accessibility of economy tools, (4) adoption of technology level. In addition, several economy factors which influence were input and output price, interest rate, exchange rate and wage level. These factors have a relationship with market mechanism of input, employment and capital in the rural area.

The impact analysis on government policy

Output policy

The result on output transfer (OT) and nominal protection coefficient of output (NPCO) were IDR 895,513.44 and 1.07, respectively. It is indicated that the total value of output was 7% higher than the social price. This is caused by the importation tariff policy on output (rice) by the government. In addition, it shows that there is a protective policy on the price of domestic rice (output). So that the farmers can accept the output price higher than international price.

Similar from that result, Anapu et al. (2005) found out that importation tariff policy of rice can protect the rice farming system in Minahasa District of North Sulawesi Province. The research found the average of output divergence was 39%, where 30% comes from import tariff policy. The private profitability will be negative without protection. In addition, Hadi and Wiryono (2005) concluded that the protection policy (a combination of tariff and non tariff) successfully increased producer prices, the amount of production, producer surplus and farmers' income and also reduce the amount of rice importation significantly. Non-tariff policy has a greater effect than tariff policy. But it does not mean that one policy can be eliminated because they both reinforce each other.

Input policy

The results on transfer input (TI), nominal protection

coefficient of input (NPCI) and transfer factor (TF) were IDR -786,959.38, 0.62 and IDR 1306012.31, respectively. It means that the value of input subsidy in rice farming was IDR 785,522.96, with ratio 62% from social price. The subsidy prepared by government for domestic factors (labor, capital and land) was IDR 1,306,012/two seasons. It showed that there is protective policy for input tradable and non tradable producers. The finding showed that the price of subsidized fertilizer in each Sub-district was more expensive than government price (HET) (Table 3). Whereas according to government regulations, the subsidized price of urea fertilizer is IDR 1,200/kg and phonska fertilizers is IDR 1,700/kg. Since the private cost is higher than the social cost, then there is no subsidy.

Darwis and Nurmanaf (2004), in their study suggested some strategic policies which consider government to solve the fertilizer problem at the farm level, namely: (1) rationalization of fertilizer use at farm level; (2) fertilizer recommendations based on site-specific soil analysis; (3) the increase in effectiveness of the use of inorganic fertilizers which complemented with the use of organic fertilizers; (4) improvement in the implementation of standardization and certification of fertilizers and (5) the implementation of export and import policies which is a support to the continuity on fertilizer and fertilizer prices at farm level.

Nuryanti (2005) in her research conclusion suggested that the policy in the input prices (urea) and output prices (grain) will not cause any market stability disturbance because supply and demand of rice is relatively stable; hence the input subsidies or protection policy on output price as found in the study is sufficiently safe and very helpful for the farmers, especially in the terms of output price stability.

Input-output policy

The value of effective protection coefficient (EPC), net transfer (NT), profitability coefficient (PC) and subsidy ratio to producers (SRP) on paddy farming were 1.16, IDR 376,460.51, 1.11 and 0.03, respectively. This shows that in general there is a protection on output and input rice farming, so the overall general government policy could benefit farmers and reduce the cost of production. On EPC, Suprpto (2006) found out that the maize (hybrid and composite) will be protected by government if it is used as an export commodity ($EPC > 1$). Whereas, the maize that is use for import substitution and

regional trade did not get protections on its output price, but have subsidy in farming inputs. The different case in this paper is when rice is an important food commodity that always get protection from government although it is not an export commodity or import substitution. Associated with the aspect on commodity protection policy, Hadi and Nuryanti (2005) found out that the protection strategy is the strategy that was pursued by the Indonesian government to protect the sugar industry in Indonesia. The government use two policy instruments: (1) Imposition of ad-valorem tariff rate of 20% for raw sugar and 35% for white sugar (2000 to 2001), then since 2002, it has been converted into specific tariff of IDR 550/kg for raw sugar and IDR 700/kg for white sugar; (2) non-tariff policies such as regulation, supervision and restriction on sugar importation which have an impact rise for domestic prices.

Associated with the results of this paper, it can be argued that the EPC value indicates a protection policy on output and input of rice farming. This means that domestic price are above pursued efficiency price (world price), so hopefully this can inhibit the activities of illegal exportation. The protection policy on output and input has increased the farmers' surplus (NT value). While based on PC and SRP values, overall government policy on rice farming is generally profitable to the farmers (producers) and leads to the production cost can be reduced.

Ilham and Rusastra (2009) found out that in the period of 1986 to 2001 there was a decline in the competitiveness of paddy (rice). It was responded by government with protection policy on output, in a way that the commodity is totally protected by the government ($EPC > 1.0$). It is relevant to the result in this paper, where there has been a decline in comparative advantage of rice in Bolaang Mongondow District. In 1999, DRC value is 0.61, while in 2009, DRC value is 0.68. So, it seems reasonable that if the government do the protection on this commodity.

CONCLUSION

Generally, rice farming in Bolaang Mongondow is feasible both financially and economically, indicated by the private profitability ($D > 1$) and social profitability ($H > 1$) and also 0 have the RC-ratio greater than one. Rice farming in Bolaang Mongondow has competitive and comparative advantages and is still able to finance domestic inputs. The local government policies on rice farming (such as input-output protection and price policy) was giving more benefits to the farmers and to the competitiveness of this commodity at Bolaang Mongondow district (local specific).

Conflict of Interests

The author(s) have not declared any conflict of interests.

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