PRISMA
Promoting Rural Income through Support for Markets in Agriculture

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Australian Aid

Longitudinal Livelihood Study (LLS)

Baseline Report on Pig Sub-Sector in Ngada and Nagekeo

January 2016

PRISMA

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List of Abbreviation and Expressions

SD   Sekolah Dasar (Primary School)

SMP   Sekolah Menengah Pertama (Junior High School)

SMA   Sekolah Menengah Atas, (Senior High School),

SMK   Sekolah Menengah Kejuruan (Vocational High School)

UBSP   Unit Bersama Simpan Pinjam (Small Savings and Borrowings Group)

UPK   Unit Pengelola Kagiatan ((Government) Activity Managing Units)

YMTM   Yayasan Mitra Tani Mandiri

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1   Introduction

This baseline report is part of a study, which aims to gain a deeper understanding on how targeted households use their additional income. It focuses on one intervention under PRISMA in Nusa Tenggara Timor (NTT), one of five provinces targeted by the program to alleviate poverty. The intervention seeks to increase the income of rural farmers by increasing the productivity of pig production. The study concentrates on the districts of Ngada and Nagekeo, while other districts on the island of Flores are also involved in the intervention. The intervention promotes the use of healthier piglets, improved feed, pig pens and veterinary services which helps increasing the productivity of pig fattening as an economic activity. Selected households will be interviewed regularly over subsequent years until the end of the program to see, how their livelihood situation has changed over time and how it might relate to the intervention. Such a study is important for PRISMA because it helps assess whether targets selected for raising rural income are reasonable and how it can affect rural livelihoods.

The focus of this baseline report is to give an overview over the current livelihood situation with a special focus on income generation, expenditure and the use of income. In later rounds of data collection, the program will be able to assess how the livelihood situation has changed for rural pig farmers in Ngada and Nagekeo. The study used a mixed method approach, with quantitative and qualitative data collected. Pig farmers interviewed whom may be potential or actual users of the inputs and technologies proposed under the intervention. A questionnaire was developed which was then used to interview 197 households. This contained questions on livelihood aspects including specific questions about the intervention itself. In addition to those households, eleven households were interviewed through semi-structured interviews to gain a deeper understanding on the situation of rural livelihoods of pig farmers in Flores. The interviewees will be tracked in the years to come for both quantitative and qualitative data collection.

The baseline report initially provides a short overview over the intervention (Section 2); with the frame sampling for the study discussed in Section 3; the five assets of the sustainable livelihood framework are described in Section 4; with a discussion of income generation discussed in Section 5). Section 6 describes expenditure; while Section 7 focuses on use of income generated by pig earnings. Section 8 discusses seasonality and vulnerability of the households, with conclusions provided in Section 9.

2   Short Description Intervention

2.1   Nusa Tenggara Timor (NTT)

In 2014, 991'880 people (or 19.6%) were classified as poor in Nusa Tenggara Timor [NTT]. With a Human Development Index score of 62.26, NTT ranks number 31 out of 34 provinces in Indonesia, and is . therefore is one of the poorest provinces in the country. The average number of years of schooling in NTT is only 6.9 years while the illiteracy rate is 13.5%. Life expectancy is 65.9 years. (BPS, 2015) In 2013, 33% of the under-five year old children in NTT were reported to be undernourished based on weight per age, which is the highest rate in Indonesia. Also the highest prevalence of stunting of under-five year old children was found in NTT with 51.7% (Indonesia Health Profile, 2013)

2.2   Intervention Summary

Context

Globally, pig meat production has steadily been increasing and also pig meat production in Indonesia has been going up. (FAO 2015; Statistics Centre Agency 2015). In 2014 7.8 million pigs lived in Indonesia. Indonesia, however, remains a small player in pig meat trading. (Ministry of Agriculture of Republic of Indonesia, 2014).   Consumption of pig per-capita in Indonesia is around 0.16 kg per year. This is a relatively small amount compared for instance with China which has a 32 kg per capita per year consumption (OECD, 2015).   This can be explained largely due to dietary restrictions related to local customs and practices. While the country is predominantly Muslim (where the consumption of pork meat is prohibited), NTT is overwhelmingly Christian (Catholic (57.6%) and Protestant (32.8%)) (NTT Dalam Anka). As such, the largest pig population in Indonesia is in NTT (Statistical centre agency, 2015) with 1.7 Million in 2014 while pig meat production of NTT was around 32'000 MT (Statistical Centre Agency, 2015).

Pig fattening business in NTT is a traditional practice, with around 80% of the population engaging in pig raising (Sub-sector Report - PRISMA). However, production is characterized by low productivity with the use of local breeds and home-prepared pig fodder (uses agricultural or food waist or collects the fodder in the near forest). Pigs are often held outside, while they can walk around freely or are tied up. Due to this form of holding the pigs are often unhealthy and pig mortality is high, with the pig meat often of low quality. In addition to this, the pig market is relatively underdeveloped in rural areas with farmers generally selling their pigs to neighbours or in local markets, and with meat processing services lacking in Ngada and Nagekeo.

Intervention

For traditional piglets it takes up to two years to fatten the pigs to around 100 kg. When using improved piglets and improved feed, pigs reach this size in around 6 months. However, also local pigs grow faster when given improved feed (reaching fully grown size in around 10 months). Both, the use of improved piglets and improved feed are promoted by the intervention to increase the productivity of the pig fattening business for rural farmers. Also pig pens with cement floor and veterinary services are promoted to keep the pigs healthy, improve meat quality and reduce pig mortality.

Together with other districts, the intervention targets the districts Ngada and Nagekeo. The intervention is mainly operated by HIVOS and YMTM (co-facilitator and co-co-facilitator). At farmer level YMTM selects intervention villages and tries to promote improved pigs, improved fodder, pig pens and veterinary services. To reach the farmers, YMTM organises socialisation events, in which they try to connect farmers with different actors such as improved pig breeders and pig feed seller. The farmers learn about the benefits of using improved piglets and feed and are encouraged to engage in this business. Discussions with YMTM revealed that in most villages one or two farmers act as first movers, encouraging other farmers to imitate their behaviour once they see the results of the intervention. Therefore, all villagers who raise pigs in a target village are considered as potential users.

3   Sampling

3.1   Quantitative Sampling

The number of beneficiaries is estimated to be 1440 pig farmers in mid-2016 and 6720 pig farmers by mid-2018, the sub-sector team provided a list of pig farmers for a sub-sample which might be potential

beneficiaries. This list contains the names of farmers which are considered potential beneficiaries. This data was collected at socialisation programmes as well as collected through local government. The list contains names of 737 pig farmers in Kabupaten Ende, Kabupaten Ngada and Kabupaten Nagekeo. Those three Kabupaten are considered for the survey. This list was then pared down to final sample list. Firstly, since some observations did not contain proper addresses (name of Kecamatan or the village) they were dropped leaving the dataset with 723 observations. Secondly, observations were only kept if they reported to have a pig in the household. For reasons of time and budget efficiency during data collection, villages were only be considered if they contain at least 20 farmer names in the list. This reduces the data set further which finally leaves **401 observations and 15 villages in the dataset**. All the villages are in Ngada and Nagekeo.

Using this data as a sample frame required the use of certain assumptions. The first assumption is that the farmers on this list are not different from other farmers where no data was collected. The second assumption is that the villages which contained only small numbers of observations might not be different than the other villages, where more observations were available. This data-set described was used as sample frame and in each village 12-13 households per village were randomly selected to be interviewed for the quantitative data collection. Using 12-13 households per village allows for variation within and across villages.

If after a reasonable amount of effort, the farmer was not found or the farmer refused to participate in the interview, another household from list from the same village was chosen randomly. Also, in the field it was found that the list sometimes contained different persons from the same household. Each household, however, was interviewed only once. In certain villages the number of actual households available and willing to answer the questionnaire for the study was less than the target number of respondents. In these cases, a snow ball technique was used to find some further households in the same village who have pigs and might become potential beneficiaries in the future. This method, however, was only used in some villages and in a minority of observations.

Another complication in the field was that some households on the list went to the socialisation program in the villages where they work but do not live. If the village was close, we interviewed those people even though they were not part of those initially determined 15 villages. Data was collected from 4-14 of October. Some of the interviews had also to be dropped because of insufficient quality. The above sampling method then yielded this sample:

Table 1: Sampling

Village	Nr of HH
Danga	5
Gerodhere	14
Kelimado	1
Lape	8
Mulakoli	7
Nageoga	17
Nagerawe	13
Nagespadhi	14
Natanage	8
Pagomogo	13
Penginanga	1
Radabata	13

Raja	12
Rigi	12
Rowa	1
Tengatiba	14
Totomala	14
Ulupulu	15
Were	14
Wolopogo	1
Total	197

3.2 Qualitative Sampling

Also for the qualitative data collection households from the list were chosen. They were chosen randomly within the villages. Some of the villages where chose randomly while other were chosen depending on time limitations in the field. The data was collected from the 1st -8 of October 2015. Table 2 shows the result of this sampling.

Table 2: Sampling of Qualitative Data Collection

Village	Nr Respondant
Radabata (Ngada)	1
Were (Ngada)	1
Gerodhere (Nagakeo)	1
Pagomogo (Nagakeo)	2
Raja (Nagakeo)	2
Tengatiba (Nagakeo)	3
Totomala (Nagakeo)	1

3.3 Intervention Status in the Villages

Since some villages are more advanced in the intervention than others, table 3 shall give an overview, of the situation in the villages at the time when data was collected.

Table 3: Current Status of the Intervention per Village

Village	Current status of intervention		
	Socialisation	Nr of household that received improved pigs	Nr. of household that Sold improved pigs
Radabata (Ngada)	Yes	0	0
Were (Ngada)	Yes	0	0
Boawae (Nagakeo)	Yes	0	0
Danga (Nagakeo)	Yes	0	0
Gerodhere (Nagakeo)	Yes	0	0
Mulakoli (Nagakeo)	No	0	0
Nageoga (Nagakeo)	No	0	0
Nagerawe (Nagakeo)	Yes	0	0
Nagesapadhi (Nagakeo)	Yes	0	0
Pagomogo (Nagakeo)	Yes	0	0

Raja (Nagakeo)	Yes	27	5
Rigi (Nagakeo)	Yes	0	0
Tengatiba (Nagakeo)	Yes	0	0
Totomala (Nagakeo)	Yes	0	0
Ulupulu (Nagakeo)	Yes	3	0
Kelimando (Nagakeo)	Yes	2	0
Lape (Nagakeo)	Yes	19	0
Natanage (Nagakeo)	Yes	3	0
Natanage Timur (Nagakeo)	Yes	0	0

Source: Sub-Sector Team

In the data collected the majority of people are not yet involved in the intervention. For the quantitative 4 households reported having improved pigs while 190 reported not having improved pigs (see table 4). During qualitative data collection, nine farmers were interviewed which did not have improved pigs and two farmers which had been raising improved pigs. One of those two already sold improved pigs while the other was still raising them.

Table 4: HH with Improved Pigs

	Nr of HH
No Improved Pigs	190
Improved Pigs	4

3.4   Poverty Rate of Households using PPI

The Poverty Rate of Households using PPI is given below.

Table 5: Poverty Rate of Households using PPI

	Nr. Obs	mean
100% National Poverty Rate	182.00	24.49
150% National Poverty Rate	182.00	65.90
$2.5 2005 PPP Poverty Rate	182.00	88.38

4   Five Livelihood Assets

In a first step it might be useful to discuss the assets that the households have. For this purpose the five assets of the sustainable livelihood framework are used (DFID, 1999). This will help to understand the livelihood situation of the households. Those assets are human, physical, natural, social and financial assets.

To see how different households with different wealth levels relate to those five assets, a wealth variable was constructed based on total expenditure per capita. Data on different expenditure items was collected (see questionnaire in Annex). This data then was used to calculate total expenditure per household member. This variable then was split into quintiles which shall give an indication of the wealth status of the household.

Table 5 shows the division of total expenditure per capita into quintiles. As can be see the lowest expenditure quintile has on average 238'457 Rp. expenditure per capita and month while the households in the highest expenditure quintile have an average expenditure per-capita and month of 1'693'618 Rp.

Table 6: Per Capita Expenditure per Quintile in Rp. per Month

	Nr. Obs	mean	sd	min	max
Q1	36.00	238,456.83	60,750.42	79,760.42	326,599.97
Q2	35.00	389,801.23	35,632.98	326,750.00	444,291.69
Q3	35.00	508,123.63	30,531.16	446,119.03	557,916.63
Q4	35.00	684,409.45	84,973.48	567,041.69	812,875.00
Q5	35.00	1,693,617.50	1,184,219.65	839,516.69	6,931,291.50

4.1   Human Assets

The first types of assets considered are human assets. Human assets are skills, knowledge and health that enable the household members to pursue their livelihood strategies (see DFID, 1999). This section specially focuses on household characteristics and education. Those human assets might contribute to pursue their livelihood strategies.

4.1.1   Household Characteristics

Each household member might be an asset to generate income. The average household in the sample has 5.3 household members while each household has two children on average (defined as persons less than 18 years of age). The average number of elderly people living in a household is 0.3 (elderly defined as people 65+ years of age). Note that there is large variation within the households which can be seen looking at the maximum and minimum values in table 7. While some households are one person households, other households contain up to thirteen members. The maximum of elderly people in a household is as high as six and the maximum of children in a household is 8. Note that depending on the number of elderly and children in the household, the burden on household members active in the labour market might increase.

Table 7: Household Characteristics

	Nr. Obs	mean	sd	min	max
hh size	197.00	5.34	1.95	1.00	13.00
Nr children	197.00	1.98	1.53	0.00	8.00
Nr elderly	197.00	0.29	0.68	0.00	6.00

A look at tables 8 and 9 reveals that male and female household members are equally present in the dataset and average age is 29.44 years. Most households are male headed and only 1, 2 percent of the households are female headed.

Table 8: HH Member Characteristics

	Nr. Obs	mean
Female Dummy	1,034.00	0.50
Age	1,045.00	29.44

Table 9: Female-headed households

	Nr. Obs	percent
female headed	162.00	1.23

4.1.2 Education

Generally, education was considered to be very important by the interviewed households because it is a door to a better future and development (qualitative data collection). Most of the respondent went to school and report being able to read and write. 7.6 % of the people report however, that they cannot read or write and 6.5% report that they never went to school.

Table 10: Education of People 15 Years or Older

	Nr. Obs	mean
Can Read and Write	736.00	92.39
Ever Went to School	720.00	93.47

For younger age groups, this pattern seems to have changed. 100% of children between seven and fifteen years are reported to be enrolled in school. There are relatively high literacy rates with 98.3% of boys and 94% of girls reported to be able to read and write (Table 10).

Table 11: Education of Children 7-15 Years

	Nr. Obs Boys	mean Boys	Nr. Obs Girls	mean Girls
Can Read and Write	115.00	98.26	115.00	94.78
Ever Went to School	108.00	100.00	110.00	100.00

School enrolment depends on school age. As can be seen in Table 11, 95% of the children between 9 and 11 years are enrolled in school (which is even 100% for male children). For this age group school enrolment is highest. Younger children are less likely to be enrolled in school while reasons might be that they are not yet in school age or have experienced late enrolment. Older children are less likely to go to school and the decrease continues to reach 47.3% for the 19-22 age group.

During qualitative data collection it was found that some households postpone education because of financial constraints. They claim that education can be postponed while other expenditure cannot be postponed.

Table 12: School Enrolment by Age Group

|	ALL		Male		Female	
	mean	Nr. Obs.	mean	Nr. Obs.	mean	Nr. Obs.
age 6-8	92.3	65.0	91.4	35.0	93.3	30.0
age 9-11	95.8	72.0	100.0	32.0	91.9	37.0
age 12-14	92.0	87.0	92.7	41.0	90.7	43.0
age 15-18	84.4	96.0	88.2	51.0	79.5	44.0
age 19-22	47.3	74.0	36.8	38.0	57.1	35.0

Table 12 shows school enrolment for different expenditure quintiles for the children between seven and eighteen years. Even though not continuous, households in higher expenditure quintiles appear to enrol their children more often in schooling. While 93.2% of the children from the lowest expenditure quintile are enrolled in schooling 97.7% of the highest expenditure quintile children are in school.

Figure 1: School enrolment of children 7-18 years by quintile
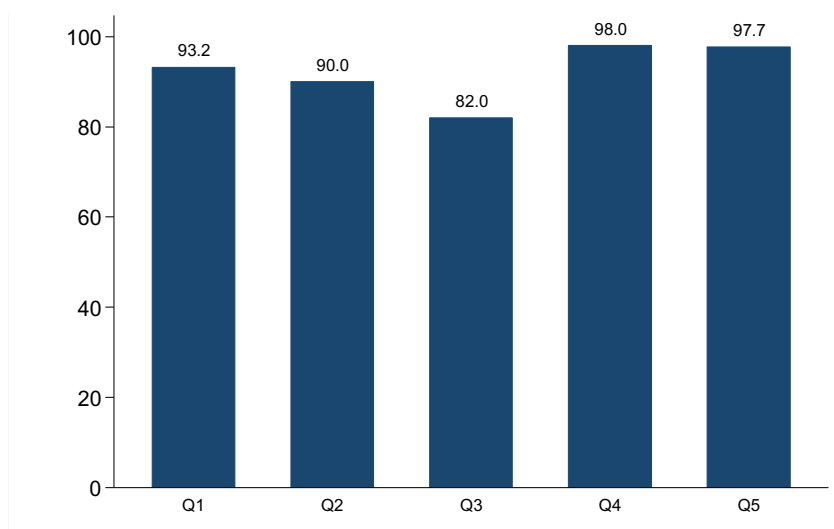
The highest educational attainment for most people aged 25 years or more is primary school (SD) which is true for men (44.9%) and women (53.1%). Also not finishing primary school is common (16% resp. 15.1 %). Note that this not necessarily means that those people were never enrolled in school but they did not finish primary school. For men the level of highest education is continuously decreasing with the years of schooling required for a degree. For women, the numbers for highest education are also decreasing with the number of years required for a degree. This, however, is not continuous and 5.8% of the women report having a degree higher than senior high school (SMA).

Figure 2: Highest educational attainment for persons over 25 years of age
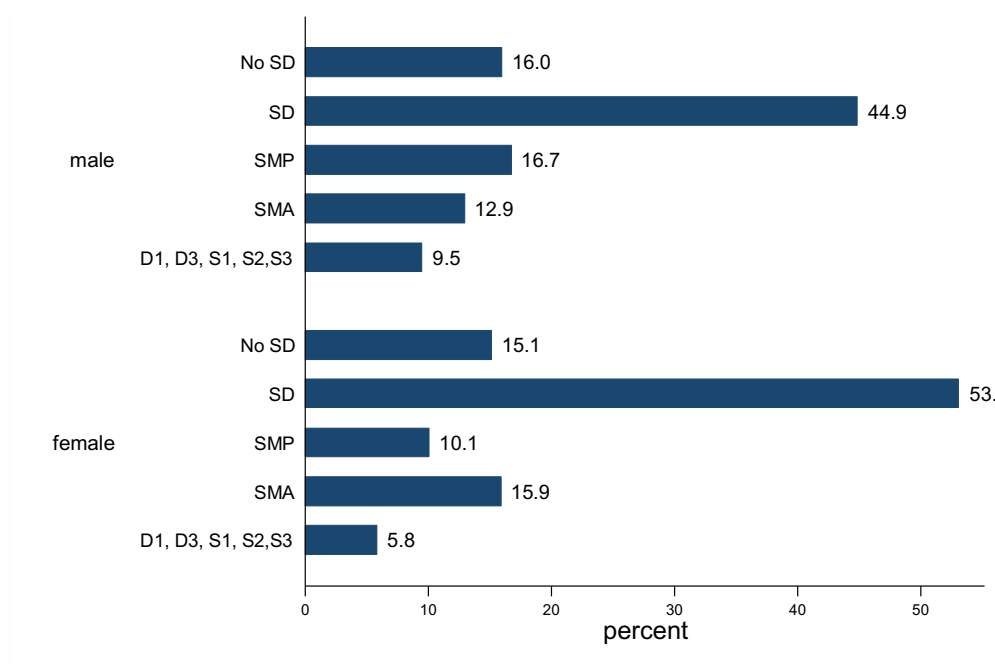
A look on the disaggregated gender data on Figure 2, shows that women are more likely to have low educational attainment. Adding the number for no education and primary education reveals that 68.2% of the women reached at most primary education while this percentage for men is lower with 60.9%. Women, however, are less likely to finish schooling after junior high school (SMP) but more likely to reach senior high school (SMA). Higher education is more likely for men than for women.

4.2   Physical Assets

Physical assets comprise the basic infrastructure and producer goods needed to support household members to pursue their livelihood strategies (see DFID, 1999). These can include: infrastructure, the physical environment that help people to meet their basic needs and to be more productive; and producer goods, the tools and equipment that people use to function more productively. The following components of infrastructure are usually essential for sustainable livelihoods: affordable transport; secure shelter and buildings; adequate water supply and sanitation; clean, affordable energy; and access to information (communications).

### 4.2.1   Housing, WC, Electricity and Water

During qualitative data collection most people explained that their house is the most important asset they possess. It provides a space for living and security. As can be seen in Figure 3 most people possess a house independently on their expenditure quintile. Also, more than 90% of the households possess agricultural land. Households in the first expenditure quintile are more likely to have other houses or buildings. This might be explained by the fact that also barn and garden houses were counted as other buildings.

Figure 3: Houses and land ownership by quintile
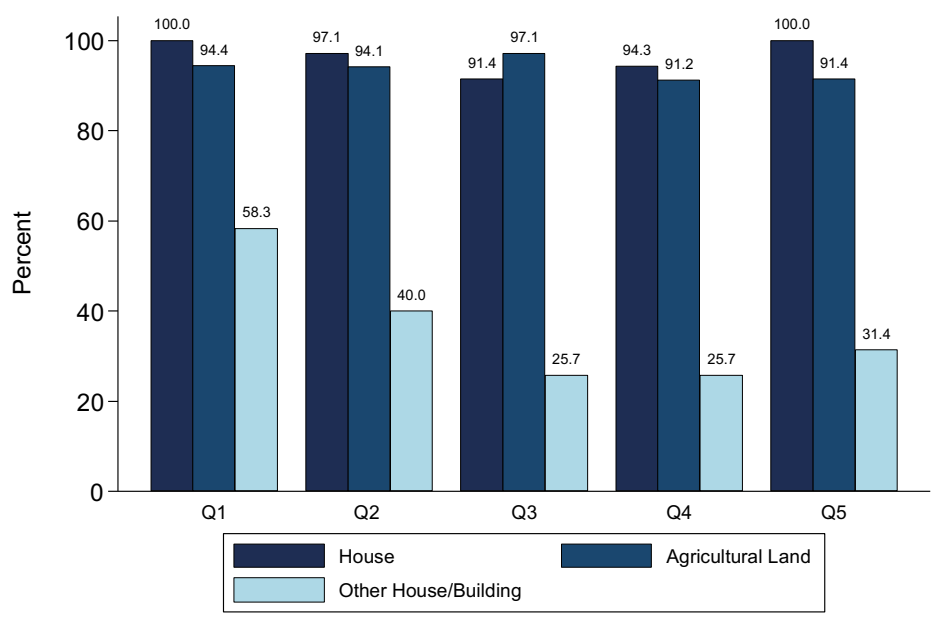
75% of the lowest expenditure quintiles have electricity while the percentage for higher expenditure quintiles is higher. However, also in the highest expenditure quintile 17.1% report not having electricity. 61.1 % of the households in the lowest expenditure quintile report not having earth or bamboo as floor material. This percentage is higher for people in the highest expenditure quintile. Also, a minority of households report not having a toilet or pit latrine arrangement at their disposal. The possession of wells/ tube wells is higher for higher expenditure quintiles. However, the average remains low at 8.6%. It is likely that this number is low because the households do not have their own well but used shared facilities with the neighbourhood. From the observations in the field most people get their water from rivers or wells around their neighbourhood. Some report long walking distance to the nearest water source.

Figure 4: Ownership of electricity supply, WC, and water source by quintile
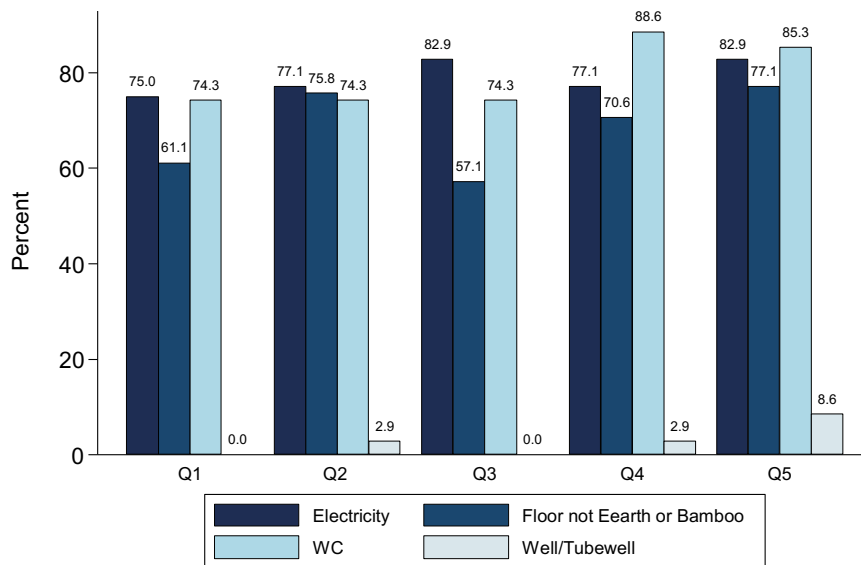
4.2.2 Transport

The motorcycle is by far the most used means of transportation in Flores. However, people in higher expenditure quintiles are more likely to have a motorbike. Far less people possess bicycles and cars and trucks are relatively uncommon in lower quintiles whereas 11.4% in the highest expenditure quintile report having a car. A car is also considered a status symbol. The findings during qualitative data collection showed that the motorcycle is also considered an important asset by the households because it facilitates mobility. If a motorcycle is not available local taxis (motorcycle or car) are often used for transport.

Figure 5: Ownership of transport type by quintile
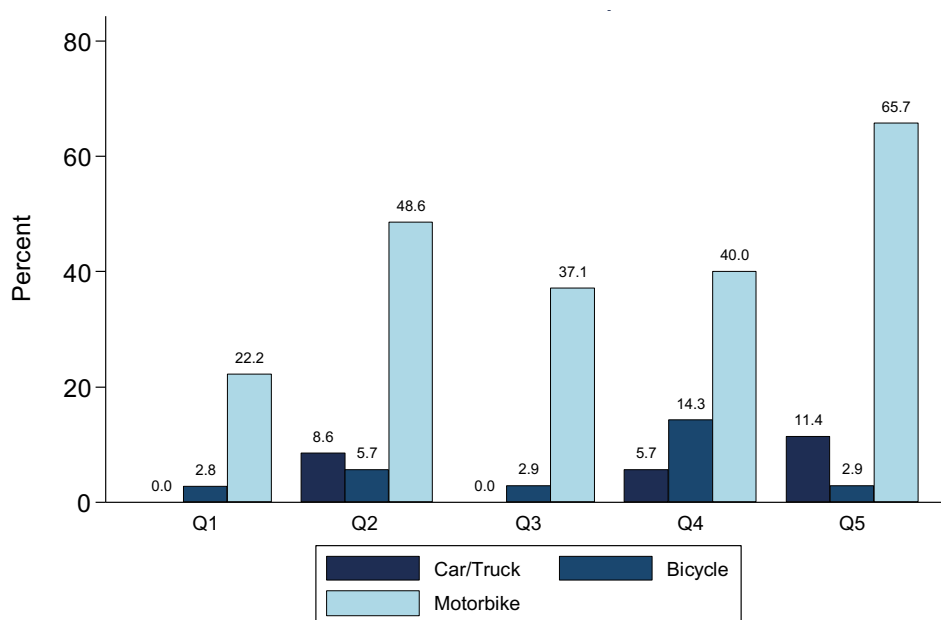
4.2.3   Communications

As can be seen in Figure 6 below, radio, computers and landlines are not commonly used by surveyed households in NTT. Television is used more commonly while the variation between the expenditure quintile is large. While only 22.2% of the people have television in the first expenditure quintile 71.4% of the people have a television in the fifth expenditure quintile. To the question why the television is important most respondents reported that it is both a source of information and a source of entertainment. When households do not have a television they explain that they go the neighbours to watch television sometimes.

Figure 6: Types of communication forms by quintile
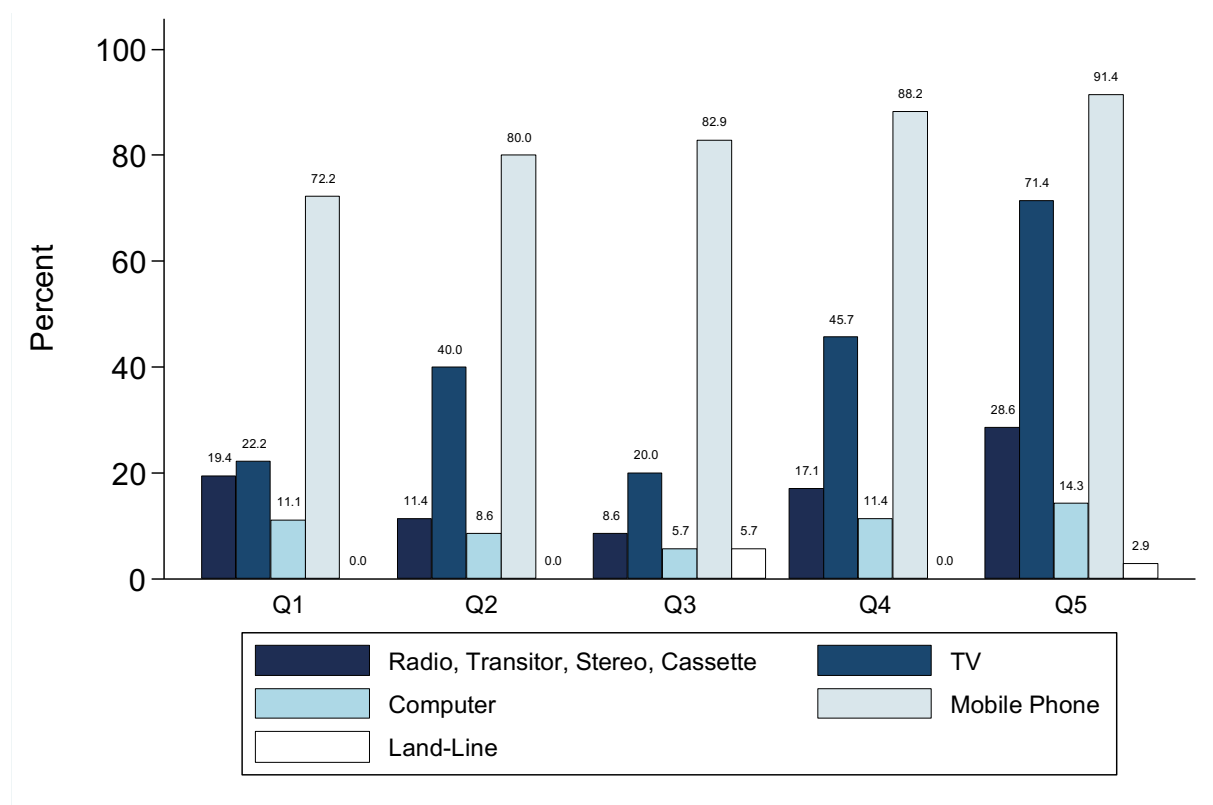
4.2.4   Storing and Kitchen Assets

Possession of a stove is also highly stratified by expenditure quintile. While 60% report having a stove in the fifth quintile, this is only 27.8% in the first. Most households cook with firewood, charcoal, or coal while only 2.6 % report using Gas/LPG, kerosene, electricity, others, or do not cook. Also, the large majority of households do report not to have a gas cylinder of 12kg or more. This might be related to the fact that 3kg cylinders are heavily subsidized by the government and buying larger cylinders often does not make economic sense. Also larger cylinders are considered to be only used in restaurants or for commercial use. Grain storage is most common among the households in the third quintile (28.6%). In all the quintiles having a fridge or a freezer is not common and less than 15% of the interviewed reported having those items.

Figure 7: Kitchen and storage ownership by quintile
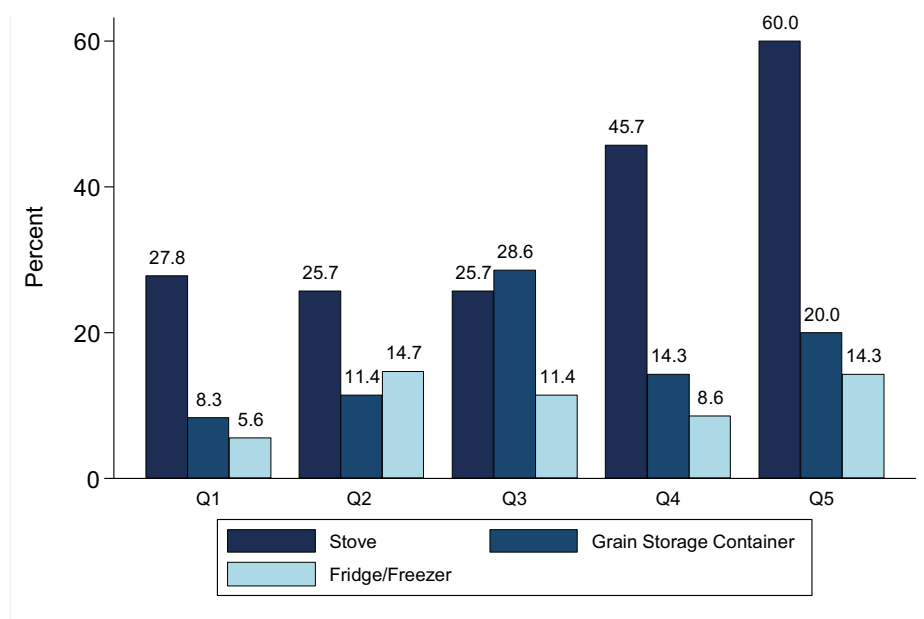
4.2.5   Other Household Assets

Sewing machine, washing machine, jewellery and VCR/VCP/CD/DVD are also not very common in our sample. However, in Figure 8 is visible that those items are more common among the people in the highest expenditure quintile. This might be related to the fact that those items might be considered as luxurious goods which are not essential for survival.

Figure 8: Other household assets by quintile
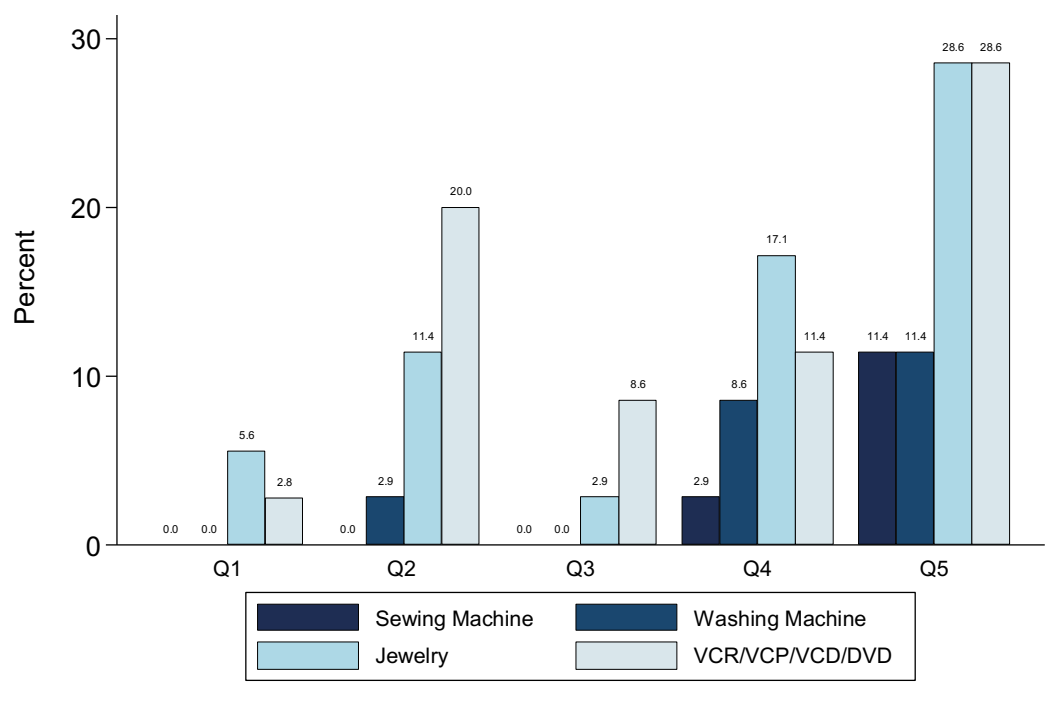

4.2.6   Agricultural Assets

While small tolls are common in all expenditure quintiles, tractors, heavy farming equipment and irrigation equipment are quite rare. However, the trend is increasing with higher expenditure quintile.

Poor households often use animals to replace a tractor. Some might also be able to borrow tractors from farmer groups or neighbours.

Figure 9: Agricultural assets by quintile
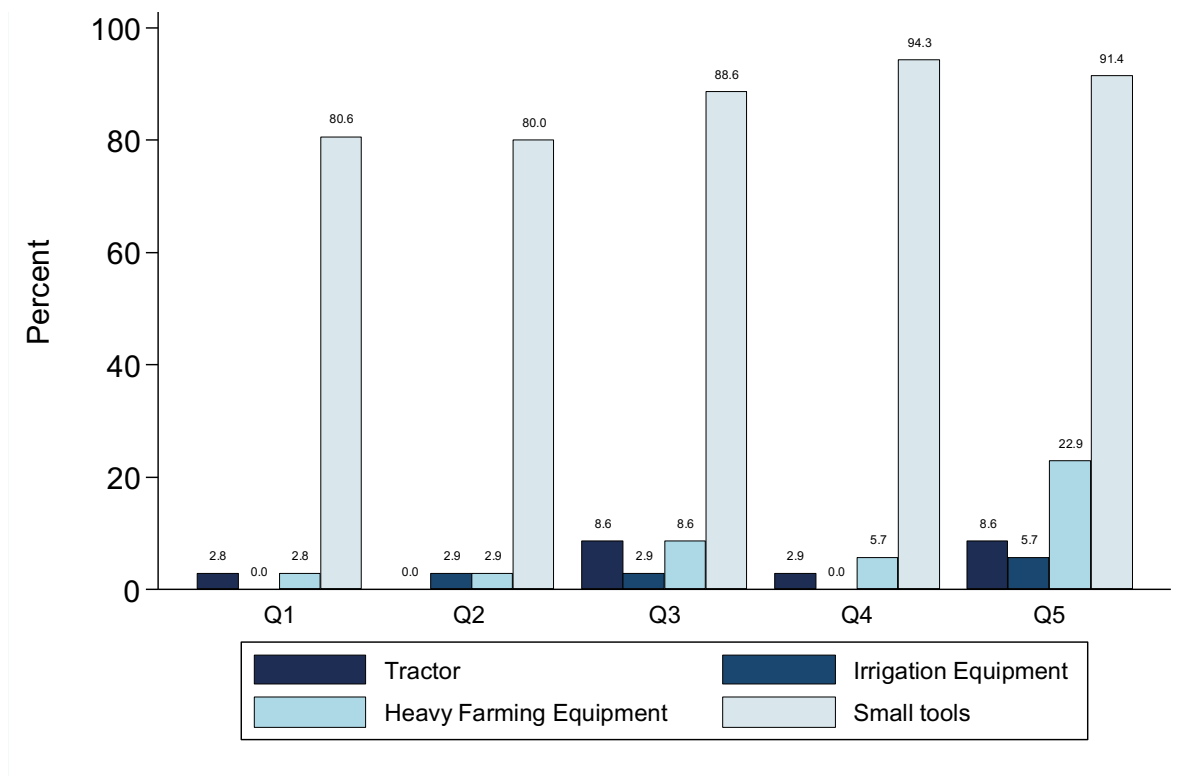
4.2.7   Livestock

The majority of households have cows while buffalos and horses are less common. Chicken are the most common animal to hold with rates between 69-80%. Goat or sheep and ducks are less common. As per the filters applied in selection, all the households in the sample have pigs. As can be seen in Figure 10 people in higher expenditure quintiles tend to have more pigs. This generally also holds true for the amount of cows, horses and buffalos.

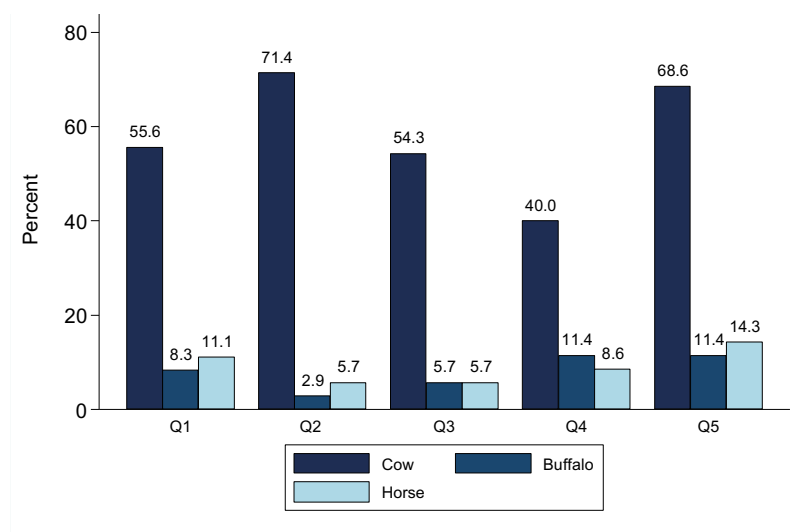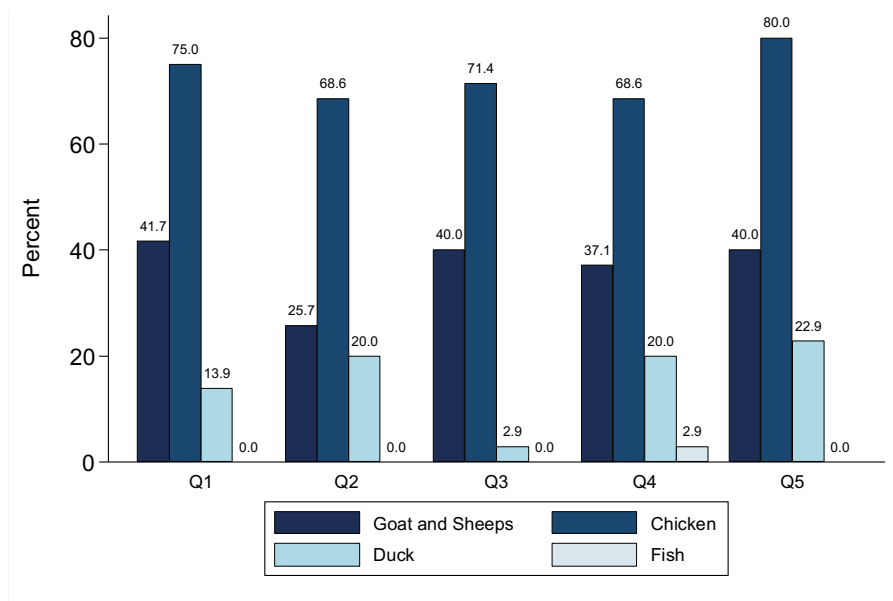**Figure 10: Livestock ownership by quintile (cows, horses, buffalos)**

Figure 11: Livestock ownership by quintile (goat/ sheep, ducks, chicken, fish)

Since most of the households are not yet part of the intervention pigs are still mainly raised in a traditional way. This means that often they are tied to a tree (especially if the pig is already large) or can run around freely around the house. Other pigs are held in pig pens with bamboo or earth as the floor material. Fodder is collected around the house or in the near forest. Also food waste is given to the pigs.
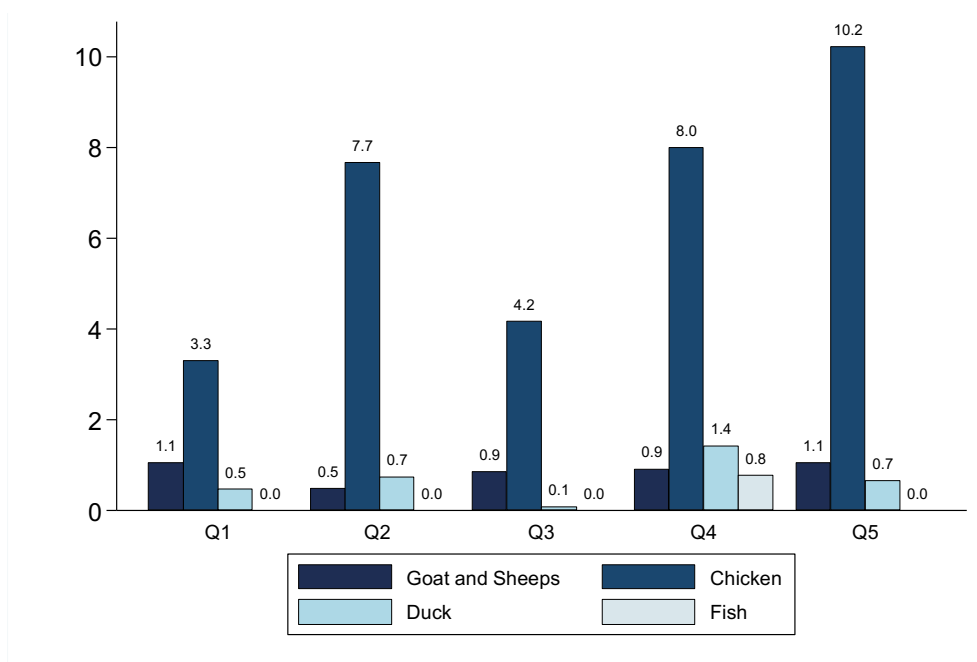
Figure 12: Amount of livestock by quintile (cows, horses, buffalos, pigs)
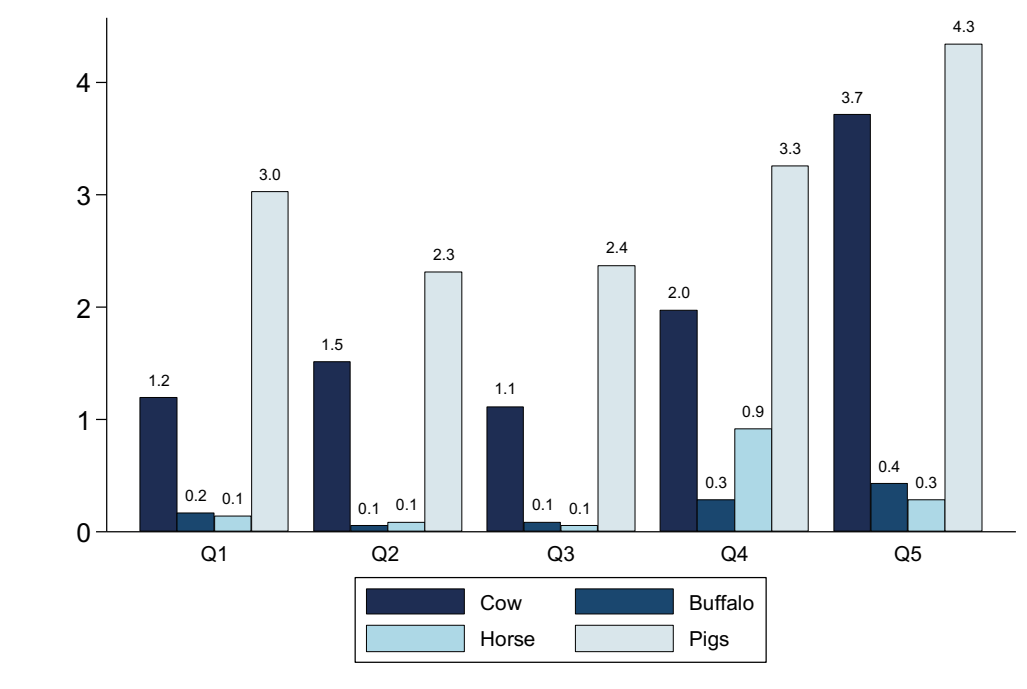
As can be seen in Figure 13[1] also small animals are more likely to be held in higher expenditure quintiles.

[1] One outlier was removed for chicken holdings

Figure 13: Amount of livestock by quintile (Goat and sheep, ducks, chicken, fish)

4.3 Natural Assets

As was seen in Figure 3 agricultural land holdings are very common in the sample. The amount of hectares owned by the different quintiles is shown in figure 14[2] (only for those who reported having land). Apart from the first quintile, land holdings are increasing with expenditure quintile. As shown in Figure 15 between 23 and 32% of the food consumed by household is either own production or received by other people. This leads to the conclusion that the households are heavily dependent on own harvest and meat production. As will be discussed later the population not only uses its natural assets for self-consumption but also relies on income from cash-crops.

Figure 14: Land holdings in ha by quintile

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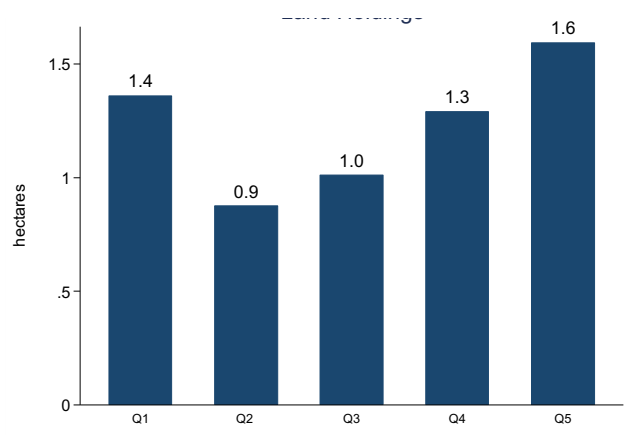
[2] One outlier was removed from Q4.

Figure 15: Own food production/ received food as percentage of total consumption
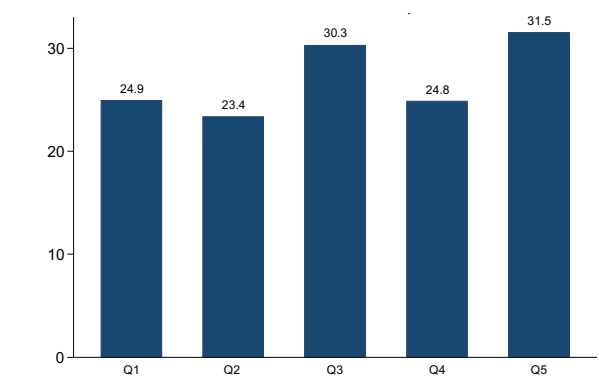
4.4   Social Assets

Village and family members in Flores are often very inter-connected and this inter-dependence plays an important role in daily life. Membership in institutions such as farmer groups further facilitate coordination. Arisan, UBSP (small Savings and Borrowing Group), *Koperasi* (cooperative) is common which is a form of group saving and borrowing. However, as it would go beyond the scope of this study, more detailed data on group membership could was not collected.

Social connection and interdependence however are demonstrated in the example of *Adat* celebrations (local rituals/ norms), which are common traditional village celebrations. Because the majority of the population in Flores is Catholic, many celebrations often have a religious background. *Adat* season falls between June to September when most celebrations are held.

Usually *Adat* is not only financed by the household doing the celebration. The social network as neighbours, family and friends are expected to help financing this celebration. Therefore, *Adat* expenditure are often due even if the household itself is not celebrating. If the event owner previously helped other households, there is strong social pressure for those households to help finance this event as well. The amount expected depends on their social status and economic situation.

For all *Adat* celebrations it is traditional to eat pigs. The amount of pigs needed depends on the event, though marriage is generally the largest event. The size of the feast depends on the wealth of the household, if the household has an important position in the community or the household is known to be wealthy, the celebration is also expected to be larger to fit the social status. The local custom is that the community is expected to help finance the *Adat* celebration of others but people must not ask for help to finance their own celebrations. For more information on *Adat* see annex.

4.5   Financial Assets

UBSP, *Koperasi* (cooperative) and local banks were mentioned as formal institutions, which are used to save money. Keeping money at home was considered to be less safe by some respondents. UBSP are small saving groups in *dusun* (sub-village) which usually have 10-20 members. They have mandatory and optional savings plans. UBSP is considered to have few procedures compared to a bank where it is more difficult to save. Some people also report having savings to strengthen the relationship between them and the institution (UBSP, *Koperasi* (cooperative), bank) so that they can borrow money from those institutions if they need the money. Also, it is common to have savings and borrowings at the same time.

For most households holding livestock is considered to be a form of saving. Livestock can be sold when money is needed. Especially for large expenditure as educational payments those savings than can be drawn upon. In the case of pigs, many respondents claimed that pigs are easy to sell and if necessary the

pig can be sold quickly. In this, the characteristics of holding pigs and other livestock was considered to be similar to cash savings. The importance of pigs therefore also lies in the fact that pigs are seen as a form of financial security and can be sold when the household are in need.

Another financial asset is the possibility to borrow money (access to finance). Friends, neighbours, farmer groups, UBSP, *Koperasi* (cooperative) and UPK (a government program that gives farmer's credits with low interest rates) were mentioned as institutions where farmers can borrow money. A range of different interest rates were reported, with some mentioning credits with 2% interest rates, while others need to pay double the amount of debt after only one year. When and how farmers borrow depends on their needs. Some explain that they need to borrow money to buy livestock such as pigs or to finance pig feed. *Adat* ceremonies such as weddings, graduation costs, college expenditure, investment in trees and lack of money were mentioned as reasons to borrow.

As can be seen in figure 16[3] households in higher expenditure quintiles are more likely to save and borrow. This might be related to the fact that those households might have more credibility including collateral to borrow money and have more money to save. Since their amount of saving and borrowing is also higher in absolute values as can be seen in figure 17 the administration costs might be smaller in relative terms.

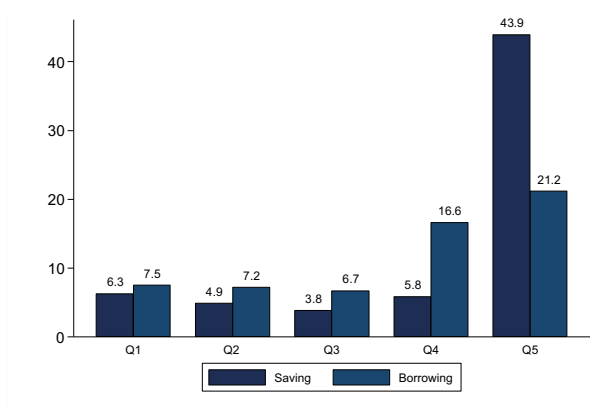**Figure 16: Saving and borrowing by quintile (percentage)**
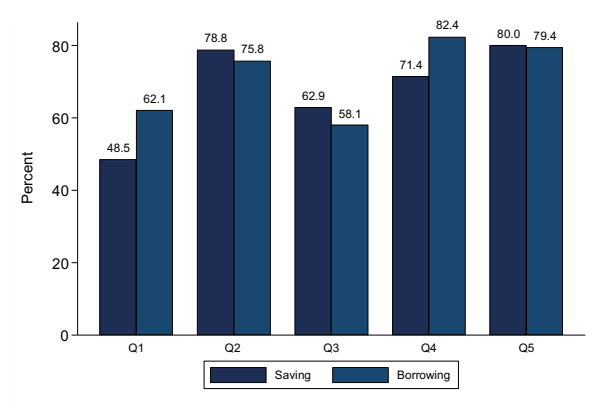

**Figure 17: Relative administration costs by quintile (percentage)**

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[3] Data of savings and borrowings was not always conclusive due to many contradictory reports. Therefore, results here should be interpreted with caution.

5   Income Generation

After having discussed the five assets proposed by the Sustainable Livelihood Framework the focus now lies on income generation. As can be seen in figure 18, 38.3 % of the people earn less than 50% of their income with agricultural and livestock activities. 35.8% report that around half of their income comes from those sources while 25.9% of the households earn more than 50% of their income with livestock and agricultural activities.

Figure 18: Income generation from agriculture and livestock
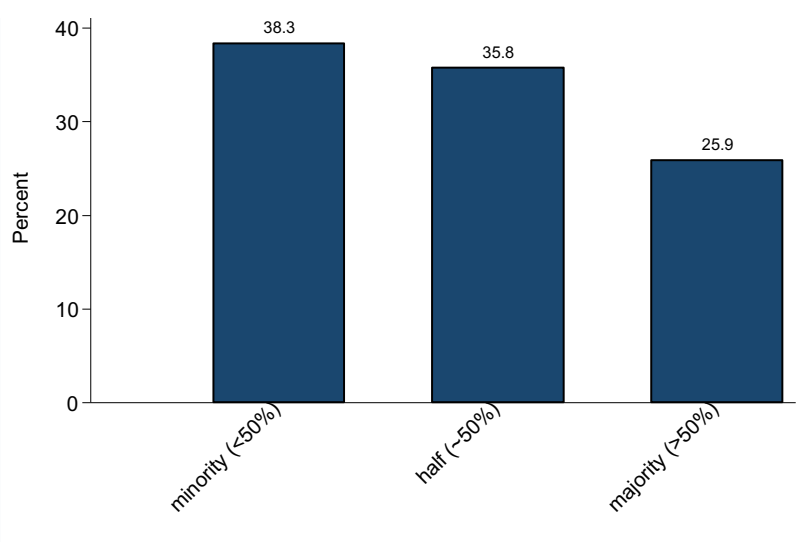

During qualitative data collection income from different labour activities were mentioned. Working as a driver, casual work on construction sites and field governmental employment as well as others were mentioned. Also, some villages appear to be strongly connected to weaving production. Women often have weaving instruments in their houses and produce items for sale. Most households considered in this sample have varied sources of income with households reporting having different crops, different livestock as well as different non-agriculture income sources.

5.1   Agricultural Activity

In the interviewed villages cashew (103 households), rice (86 households) and candlenut (58 households) are reported to be planted very often, also coffee (31 households) and maize (59 households) where mentioned frequently (see figure 19)[4].

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[4] The Data is not always conclusive since people report selling without planting, selling month without selling and selling but 0% selling and similar issues. Even though not perfect, the relations should still apply.

Figure 19: Frequency of crops mentioned as three most important in terms of income
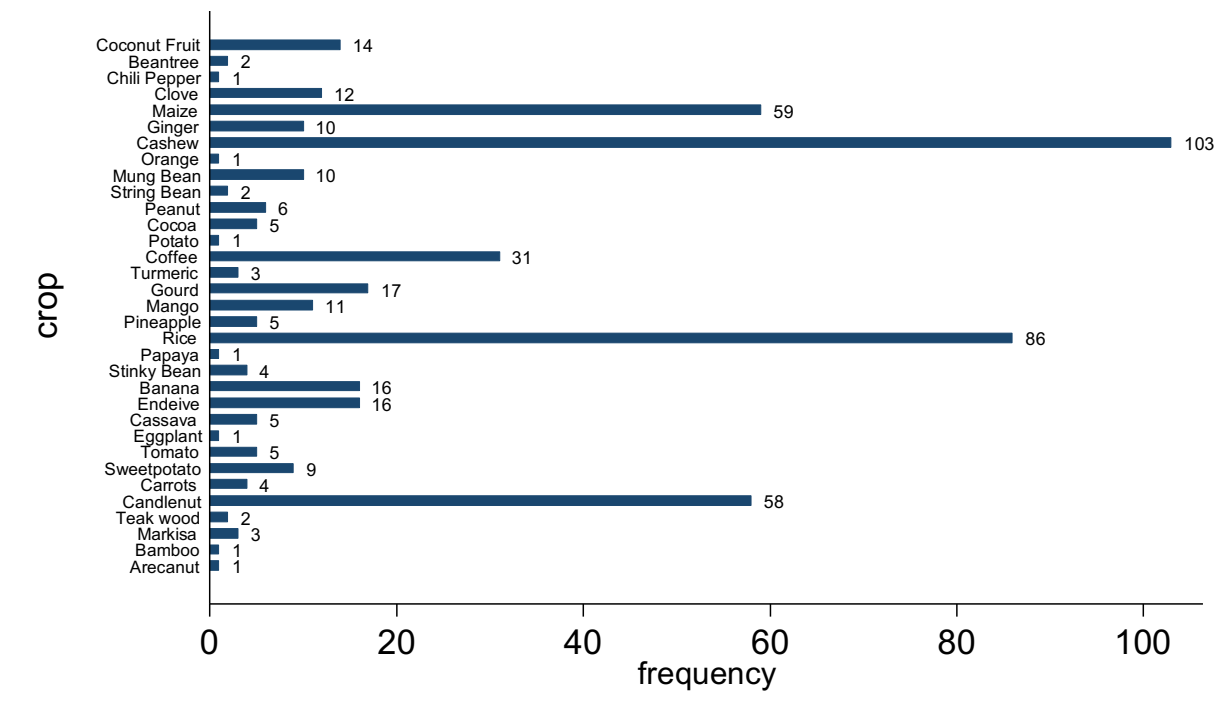
The reasons why farmers plant those products varies. Farmers have two possibilities to use the agricultural yield – for sale or self-consumption. As can be seen in figure 19 candle nut, cashew and coffee are main cash crops, while rice, maize, different vegetables, potatoes and banana are planted for self-consumption.

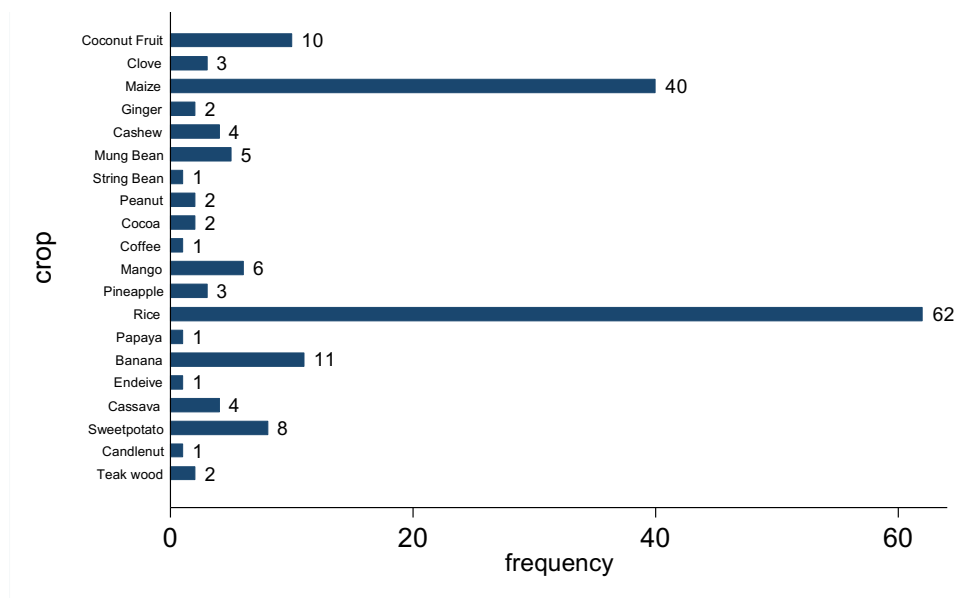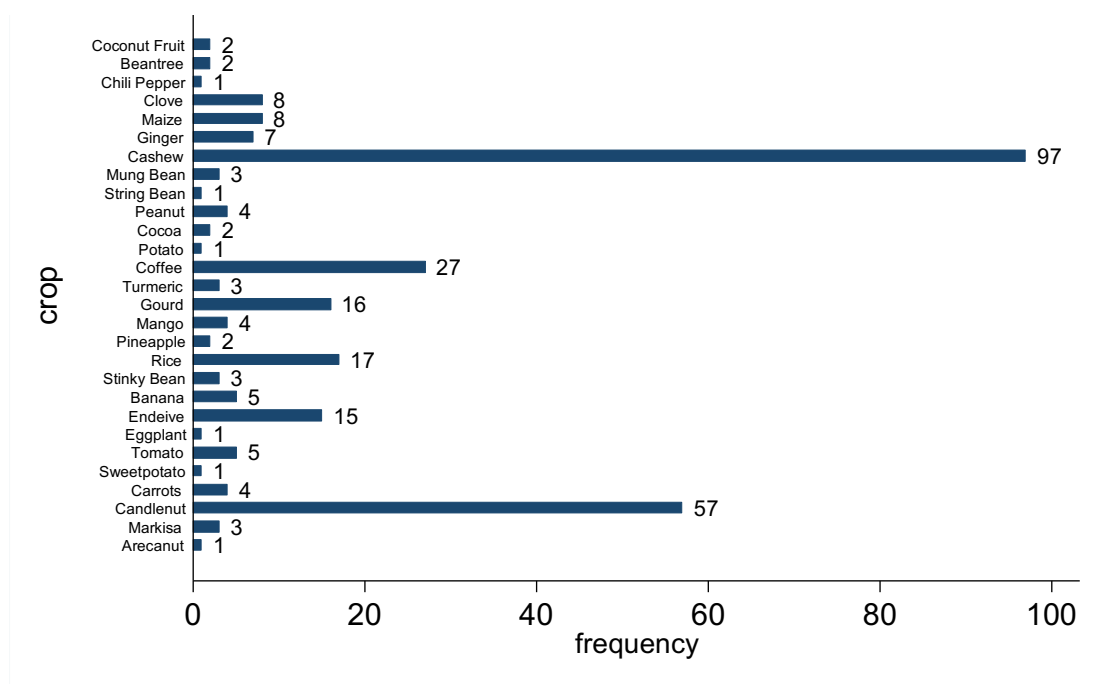**Figure 20: Crops for self-consumption (no reported sales)**

Figure 21: Crops which are mainly sold (respondents sell more than 50%)

As can be seen in figure 22, July until November are the months when most agricultural products can be sold which corresponds with the end of the dry season. The rainy season instead is less productive and farmers tend to sell less crops.

Figure 22: Sales season for crops by month
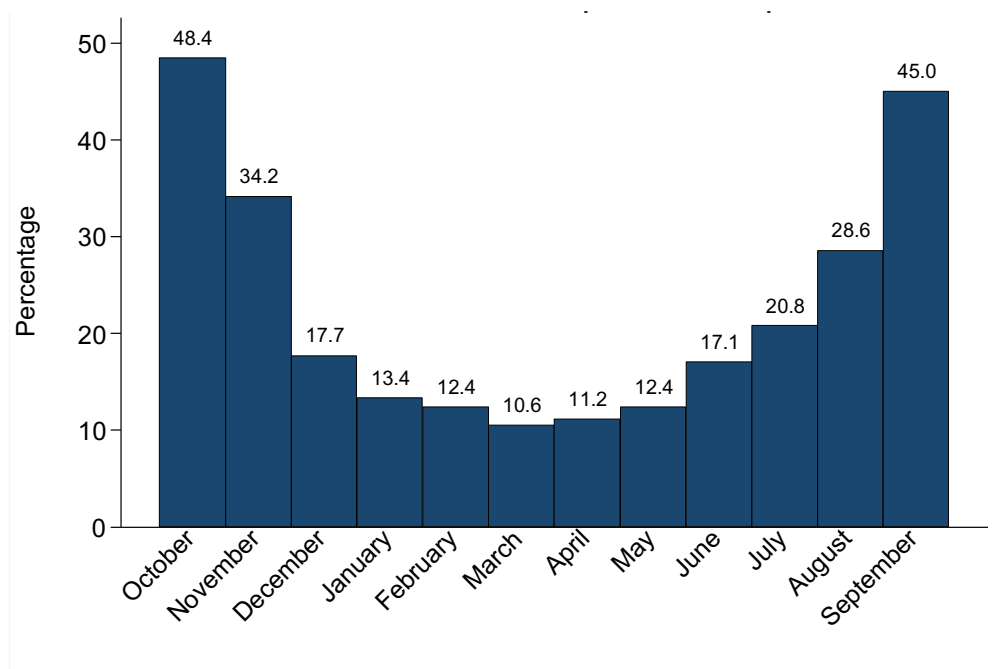
5.2   Livestock Activities with focus on Pigs

Pigs, cows, goat, chicken and the other livestock discussed in section 4 are common livestock which contribute to household income. As shows figure 23 June until July are month were most livestock are sold.

Figure 23: Sales season for livestock by month

Figure 24: Sales season for pigs by month
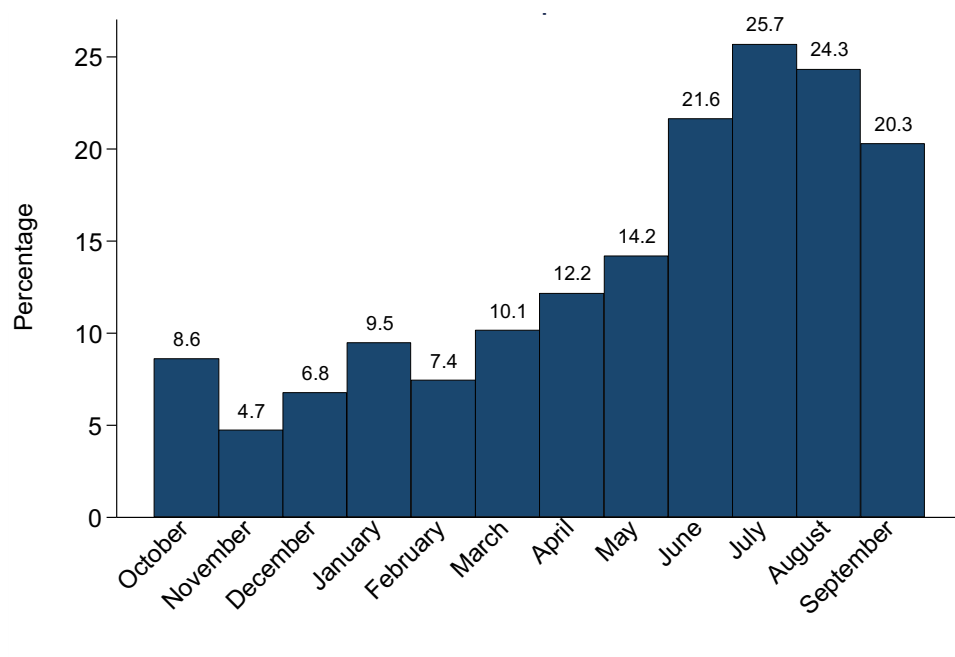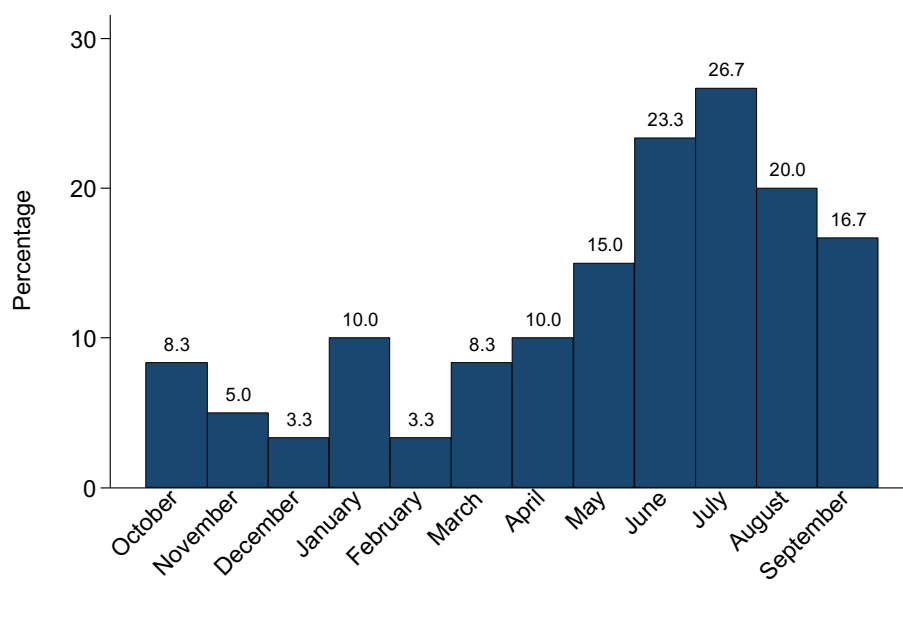

As pigs are the main interest of the intervention, figure 24 shows the month when most pigs are sold. As was seen before pigs are often used for *Adat*. As the *Adat* season is around June and September this indicates that this may contribute to more pigs being sold around this season (when the price is also the highest).

Most households report selling pigs on an irregular basis. They reported that the moment and the amount of sales depends on household needs, and on the size and age of the pig. While some fatten the pig themselves (sometimes for up to 2-3 years) other farmers prefer breeding piglets and selling them while they are still small. For those who fatten the pig, it was reported that keeping the pig once it is grown is costly because this can reduce returns and increase the risk of losing the pig (e.g. death). Also opportunities like a trader coming to the village and offering a good price might lead the household to sell

their pigs. For most, however, household needs are the driving force to sell a pig. While a daughter's graduation or wedding might be a reason to sell, also other large expenditure such as education were mentioned. The needs the household often determines how many the household sells. Households mainly sell pigs as live animals and the buyer decides whether the pig gets slaughtered or fattened further.

The pig price is mainly determined by checking the size of the pig (rather than by weight). Prices are however not always consistent and are susceptible to fluctuations. Farmers are well aware of this, explaining that during *Adat* season (June-September) prices for pigs are generally higher. Also during Christmas and Easter pigs can be more expensive. While some of the farmers interviewed can wait until pig prices rise, other farmers report that they do not have an ability to wait. They generally sell their pigs once they urgently need money, even though they are aware that they are not going to achieve the best price. Generally, households prefer waiting until prices rise if the financial situation allows it as the price is important because it directly influences their income.

As can been in Table 12, in general some 7% of the total household income is earned through pigs. For those who earned money with pigs the average is much higher 27%. Since some household do not sell pigs every year, their income from pigs varies a lot across years. For the pig breeders which sell the piglets the yearly income from pigs heavily depends on the productivity of the sow.

Table 13: Importance of Pigs Income

	Nr. Obs	%
Percent of Total HH Income Earned with Pigs	188.00	7.04
Percent of Total HH Income Earned with Pigs if >0	49.00	27.02

As can be seen in table 14 the right to sell a pig generally lies with the man within a household. Only 24% of households reported that the most important decision maker is female (independently whether wife or daughter) or other female household members. The second most important decision maker however is highly likely to be female. The same pattern applies for market negotiation where men tend to be the most important decision maker within a household while women are the second most important decision maker. Qualitative data analyses revealed that most decisions tend to be discussed within the household where husband and wife jointly agree to a decision. Where opinions diverge, the husband mostly makes the final decision.

On the other hand, women are highly responsible for pig herding and feeding. Generally, as pigs are fed and cleaned by the person at home, responsibility for this task lies mainly the wife. This task, however, can be taken over by the men or children if the wife is not around.

Table 14: Female Decision Making Power and Engagement in Pig Activities

	Nr. Obs	mean
Most important decision maker in HH is female: Right to Sell or Slaughter	57.00	24.56
Second important decision maker in HH is female: Right to Sell or Slaughter	49.00	79.59
Most responsible person in HH is female: Market Negotiation	54.00	16.67
Second most responsible person in HH is female: Market	47.00	85.11

Negotiation		
Most responsible person in HH is female: Herding & Feeding	188.00	52.66
Second most responsible person in HH is female: Herding & Feeding	178.00	50.56

6   Expenditure and Financing Expenditure

After having discussed how the income flows into the household, now in a next step is to look at the expenditure side. The households were asked whether they considered some types of expenditure as significant expenditure during the last 12 months. As visible in figure 25 education expenditure are considered to be significant by 79.4% of the households. Also replaying debt, *Adat* and health expenditure are a significant expenditure for the households. As those expenditure are considered important they will be discussed more as follows.

Figure 25: Significant Expenditure
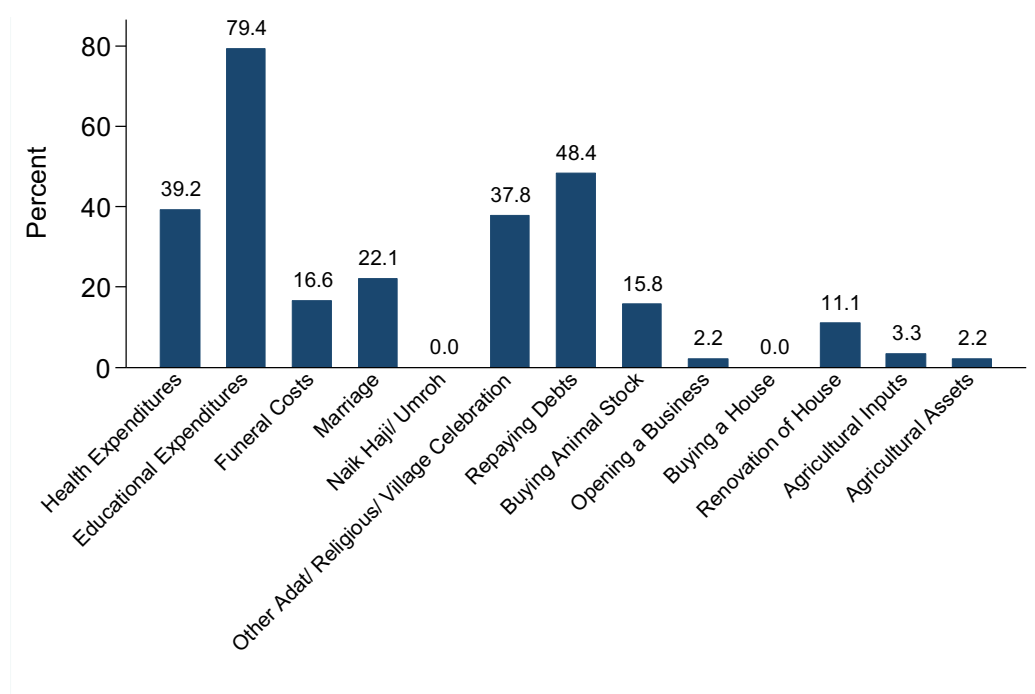
During qualitative data collection households stated that education and food expenditure is considered as most important expenditure. Education enables to have a better live in the future and may improve the children's livelihood situation. Food expenditure are considered to be important because it enables the household to continue their lives. Also, it was mentioned that food is needed to get energy which increases productivity and enables the household members to generate income.

6.1   Education Expenditure

Even though total expenditure are higher in higher expenditure quintiles, the share of education expenditure of total expenditure is decreasing with higher expenditure quintile. For all expenditure quintiles, however, the share of education expenditure is high. As seen above, this is reflected by the fact that almost 80% of the households considered education expenditure to be significant.

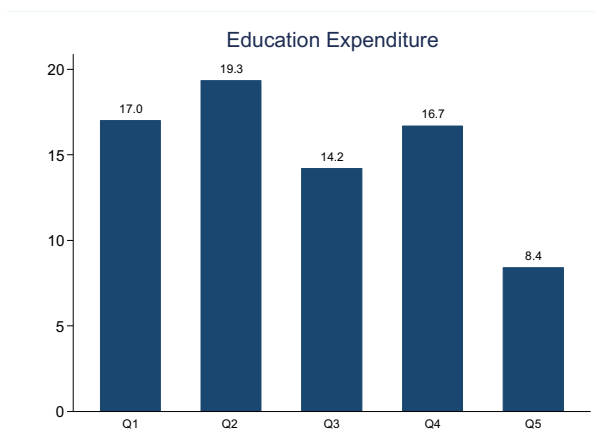**Figure 26: Education Expenditure by Quintile (percentage)**

Education Expenditure

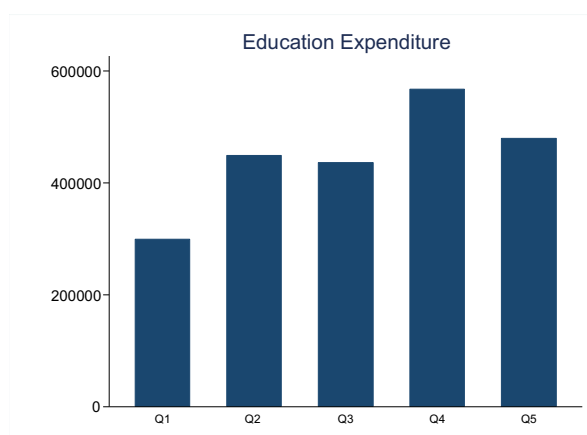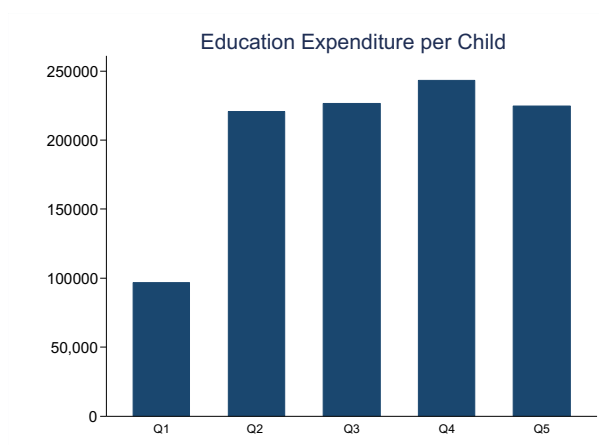**Figure 27: Education Expenditure by Quintile (IDR)**

Education Expenditure

Figure 28: Education expenditure by child by Quintile (IDR)

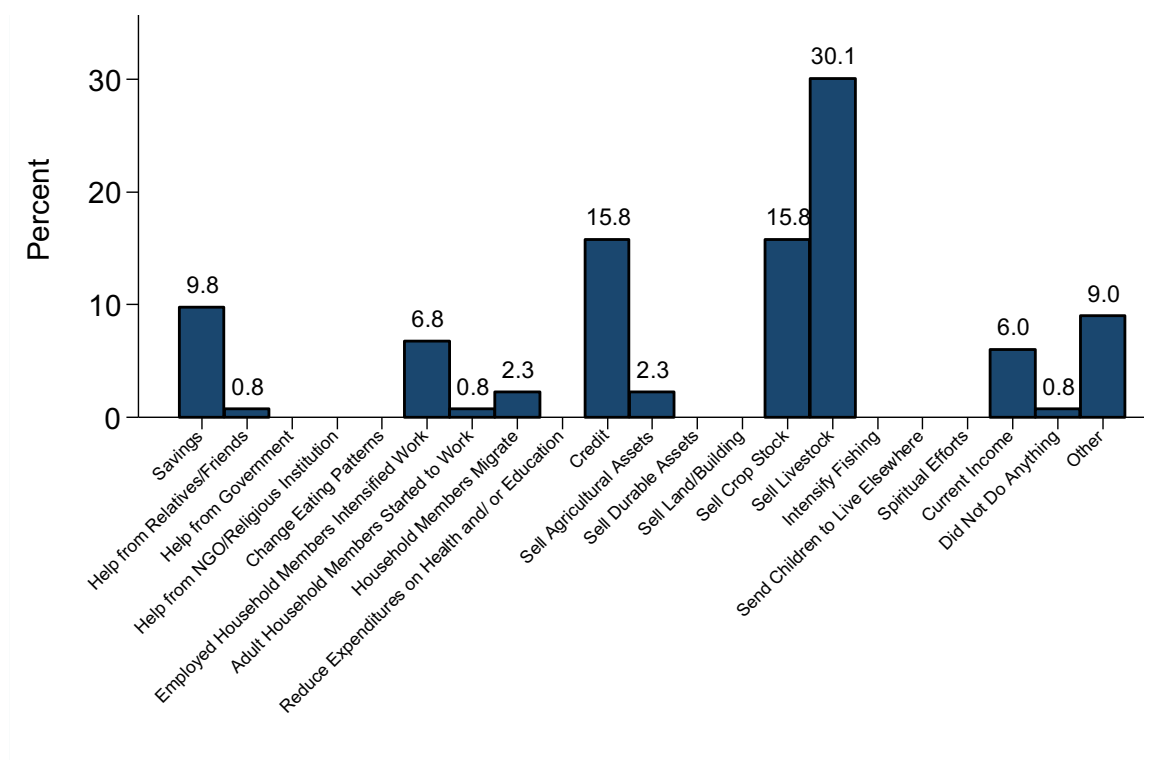**Education Expenditure per Child**

This is also reflected in the qualitative data where most household stated that perceived education expenditure as a large expenditure. Farmers try to prepare before the payments are due. If they do not have enough savings or available daily income in cash it is usual to sell a pigs (or other livestock) or to take borrowings to finance education. One household mentioned they would sell everything they had if necessary to give the children the opportunity to go to school, since they consider education crucial for development. Figure 29 shows that selling livestock is the most common way to finance expenditure followed by taking credits and selling crop stock.

Figure 29: Financing Education (percentage)

Most education expenditure fall during June, July and August. This is when the school year starts and school uniforms, books etc. need to be paid.

Figure 30: Timing of Significant Expenditure - Education
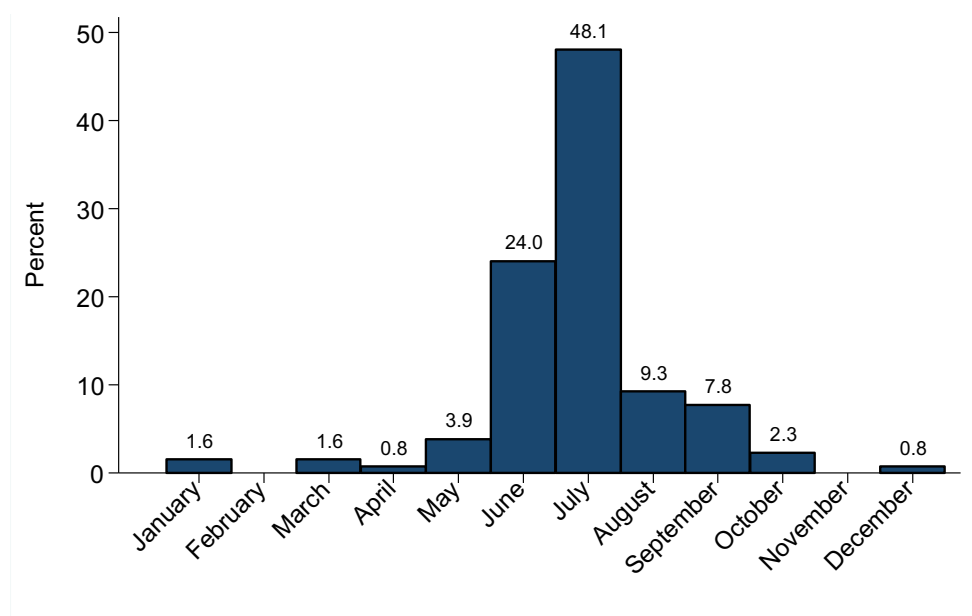
6.2   Social Expenditure

Social expenditure might be expenditure for smoking, drinking alcohol, celebrations, recreation and entertainment as well as food consumed outside the house. Smoking, drinking alcohol and coffee are often used for social gathering with friends and family. It is custom to offer cigarettes. Expenditure for alcohol and tobacco are between 4.6 and 7.7 % for all expenditure quintile. Smoking is often used for

social gathering with friends and family. It is custom to offer cigarettes to guests. Smoking is only for men, while it is not common and scorned for woman to smoke. Expenditure for recreation and Food consumed outside of the house which might also be considered as social expenditure are rather small. They are larger for higher expenditure quintiles.

Figure 31: Social Expenditure
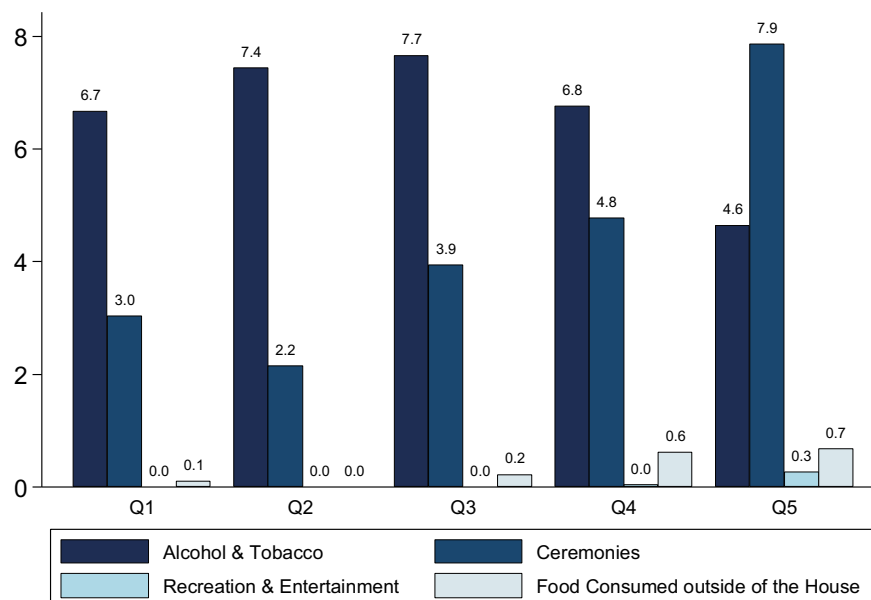
When people were asked what they should stop spending money on, they answered mostly that they should reduce costs for smoking (mostly men) and betel nut (mostly women) consumption. Especially smoking is considered as a large expenditure point for the households which they considered unnecessary and not important. Some also say that smoking is not healthy and a waste of money.

Almost all household during qualitative data collection explained that *Adat* is a large expenditure as well. Especially wedding and first communion are important celebrations that were mentioned while wedding is the more expensive event. Those events are paid by saving, borrowing, selling livestock and crops, help from neighbours and current income as presented in figure 32 and 33. Some, however, also report selling agricultural assets, intensify work and new engagement of work to finance the *Adat* expenditure.
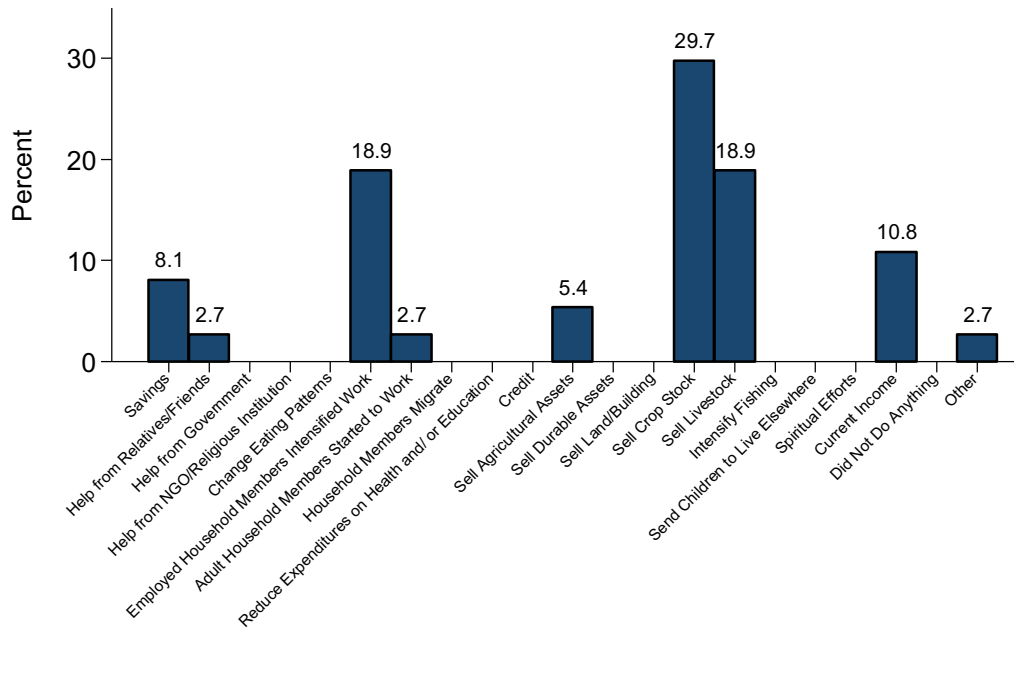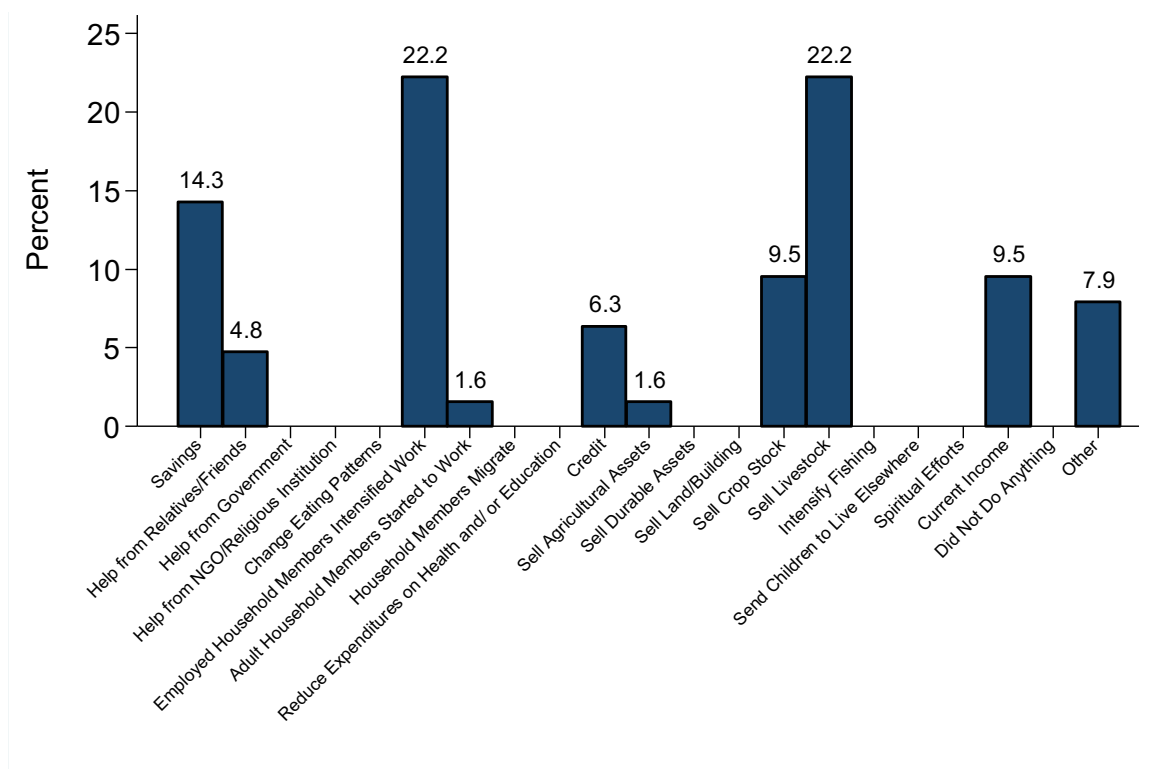
Figure 32: Financial Marriage

Figure 33: Financing other Adat

As can be seen in the figure 34 during June until September are the month, were most *Adat* celebration are held, which was already described as *Adat* season.

Figure 34: Timing of Significant Expenditure – Other Adat/ Religious/ Village celebration
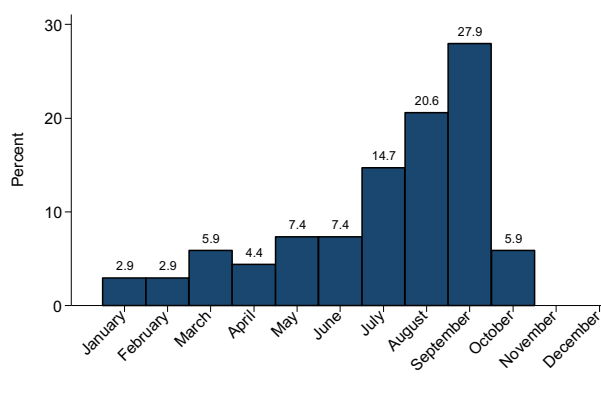
Figure 35: Timing of Significant Expenditure – Marriage
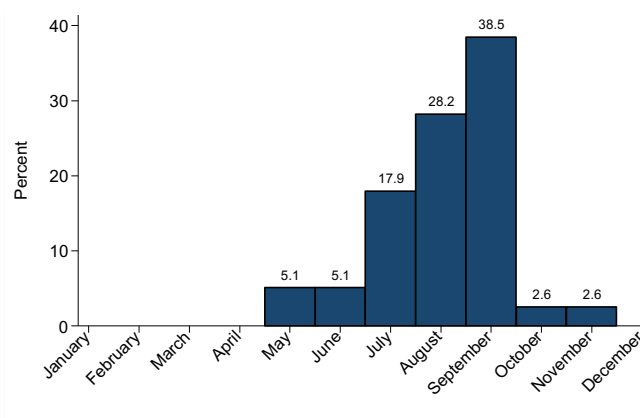
Some households explained during qualitative data collection that if the household was to have less money, that they would reduce *Adat* spending. Friends, family and neighbours tolerate it when the family has less money to finance *Adat*. Also, *Adat* celebrations as for instance wedding can be postponed, while other expenditure like schooling cannot. A person also said that *Adat* did not have an effect on their lives.

6.3 Livestock Expenditure

As per figure 36, the timing of livestock sales occurs mainly in the second semester of the calendar year (particularly in August and September). This suggests a strong correlation with marriage and other *Adat* expenditure as per figures 34 and 35.

Figure 36: Timing of Significant Expenditure – Buying Animal Stock
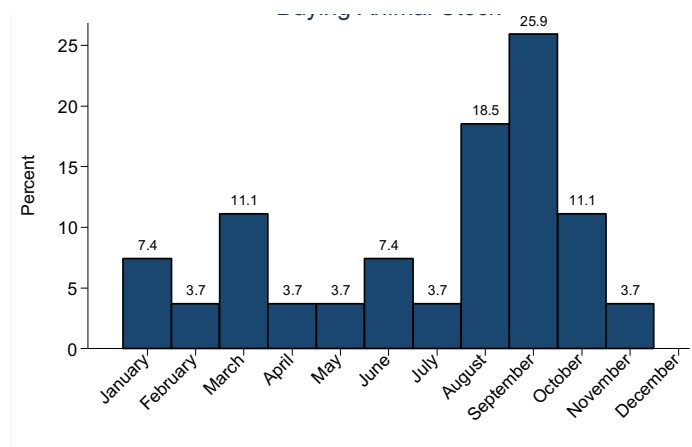
More detailed data on pig expenditure was collected during qualitative data collection. Most farmers do not buy piglets themselves. They breed piglets themselves. The first piglet some bought a long time ago or received it from a neighbour in exchange for fattening their pig. They let the piglet grow and then use it as sow to breed more piglets. Also fodder is not a huge expenditure since they collect fodder in the near forest of feed the pigs with food waste. The two farmers which are already part of the intervention reported buying piglets and fodder while taking a credit and financing it with daily income form labour income.

6.4   Agricultural Assets

Agricultural assets are not considered to be a large expenditure. Land is mainly heritage and no personal investment is needed. Agricultural assets are considered to be small expenditure and financed with daily income. Only one person explained that household bought land because they conserved this good investment since land prices are always increasing. This person financed buying land while selling cows and pigs and using his savings.

Also agricultural inputs as seeds are not considered to large an investment. Seeds from the last harvest are used or are provided by governmental programs so that no income has to be spending on seeds. Fertilizer is either not used, received through government, produced with own livestock waste or is bought by daily income. One household reported buying trees as long term investment. They financed this with borrowing form *koperasi* (cooperative).

6.5   Repaying Debt

Usually the farmers agree on paying back the debts and interest on a monthly rate. Depending on how they borrow money they can also postpone paying back if the lender agrees (e.g. neighbour or farmer group). In case they pay most of the debt back when they harvest crops or they sell livestock. As can see in figure 37 significant expenditure in debt repayment of is done from August to October.

Figure 37: Timing of Specific Expenditure - Repaying Debt
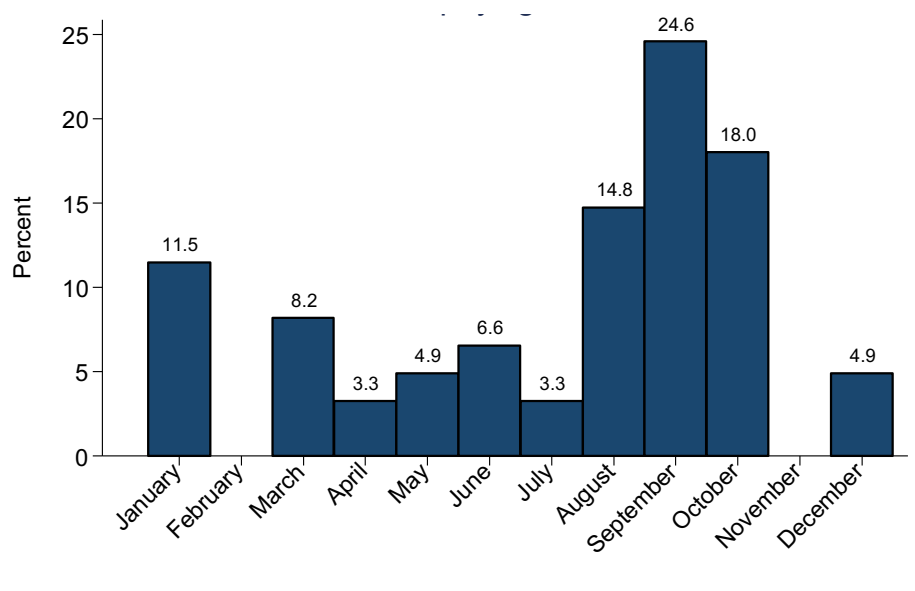
6.6   Food Expenditure

As already mentioned food expenditure are considered important because they are needed to survive and generate income but cannot be postponed.

Figure 38: Food Expenditure by Quintile
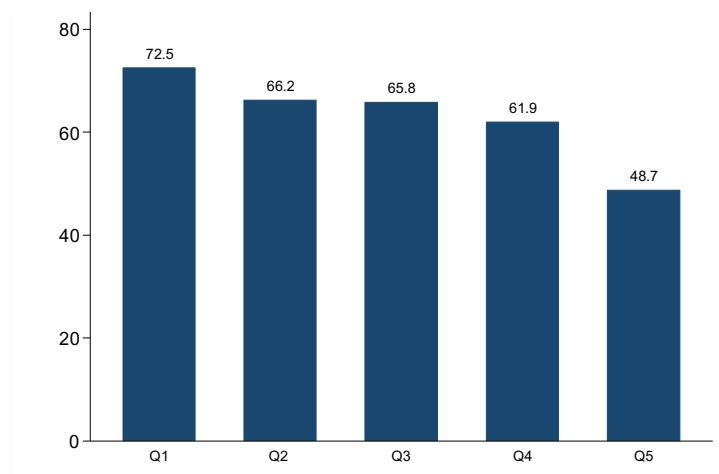
People in the lowest expenditure quintile use 72.5% of their income for food expenditure. This share is decreasing with expenditure quintile. Therefore, alone the food consumption takes the majority of total expenditure. The total amount of IDR spend for food is higher in the higher expenditure quintiles (see figure 39).

Figure 39: Total food and non-food Expenditure
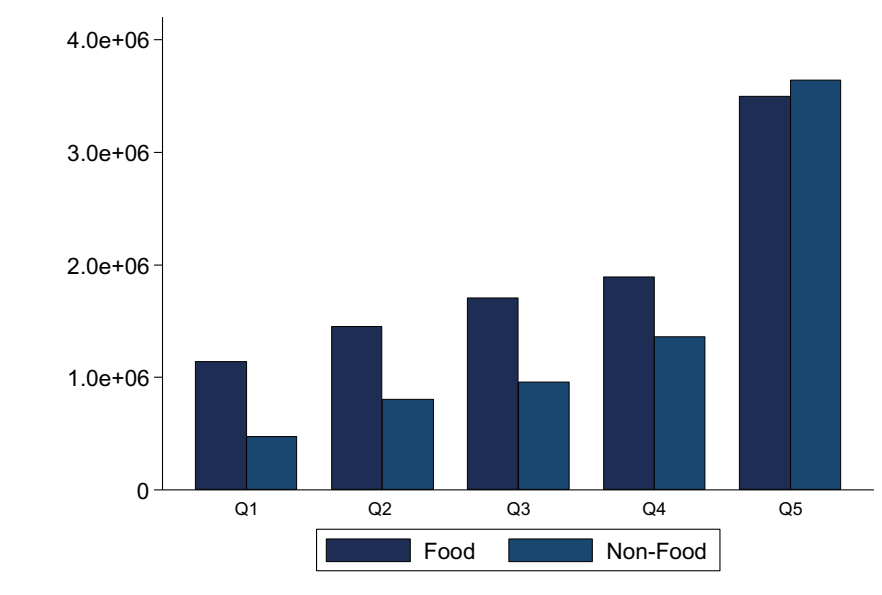
As can be seen in figure 40 the share of expenditure for staple food and rice is larger for low expenditure quintiles while the share becomes smaller for higher expenditure quintiles. Contrarily consumption of meat, is higher for higher expenditure quintiles. Given the high level of under nutrition (especially for children) and anaemia, meat and egg consumption might indicate more nourishing consumption.

Figure 40: Type of Food Expenditure by Quintile (percentage)

Figure 41: Type of Food Expenditure by Quintile (IDR)
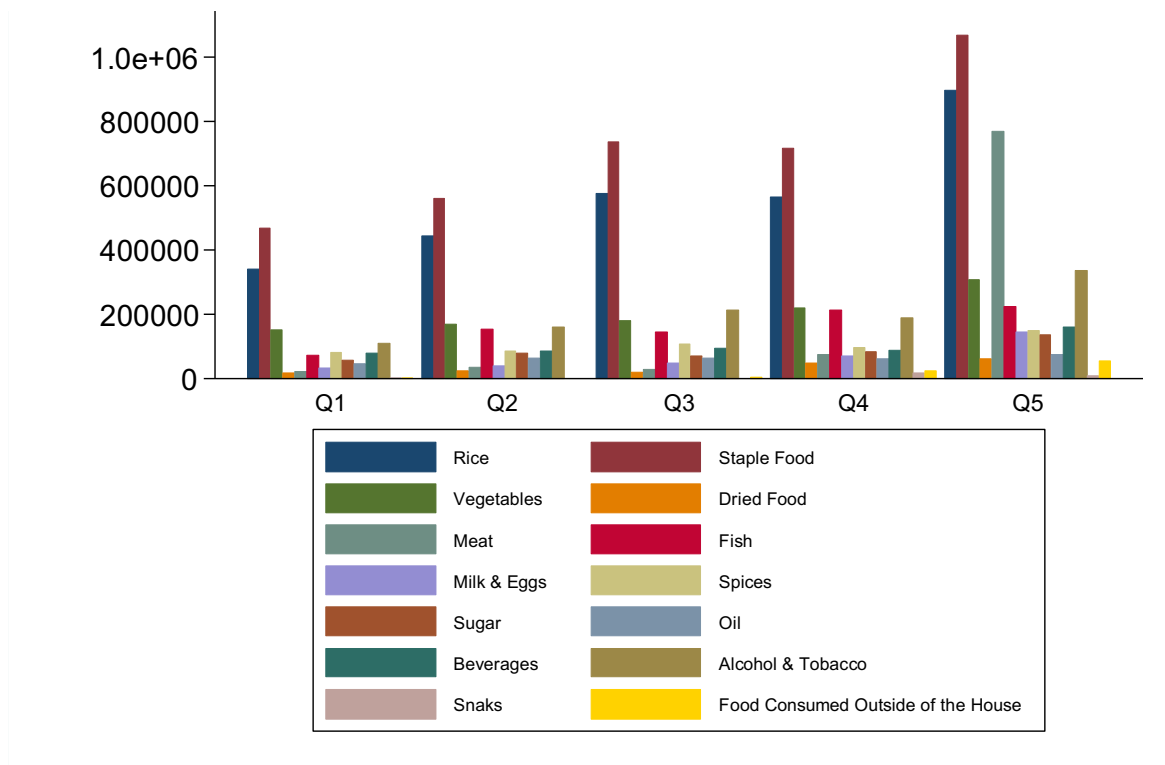
7   Income Use of Pig Earnings

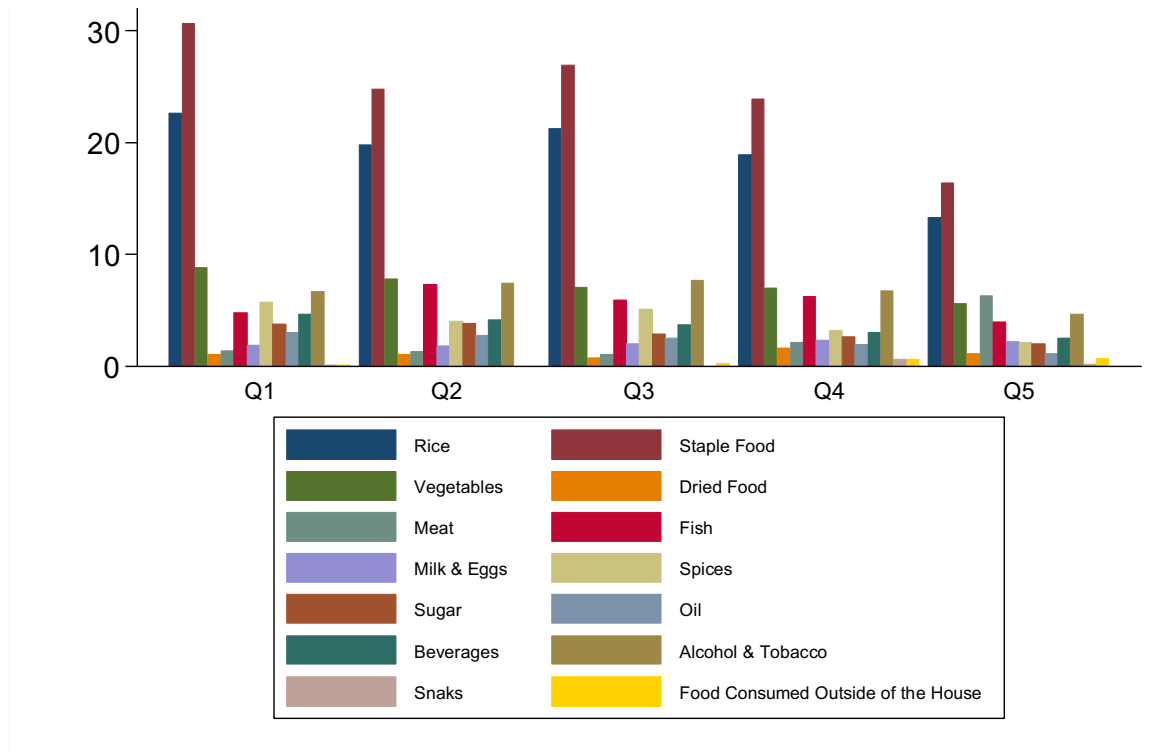In terms of income use, the focus lies on the same issue as before but seen from another perspective. Now the question is how income from pig earnings is used rather than how expenditure are financed. As can be recognised those are the two sides of the same coin. Together those answers should give an understanding on cash flows.

Figure 42: Most important use of income derived from pigs
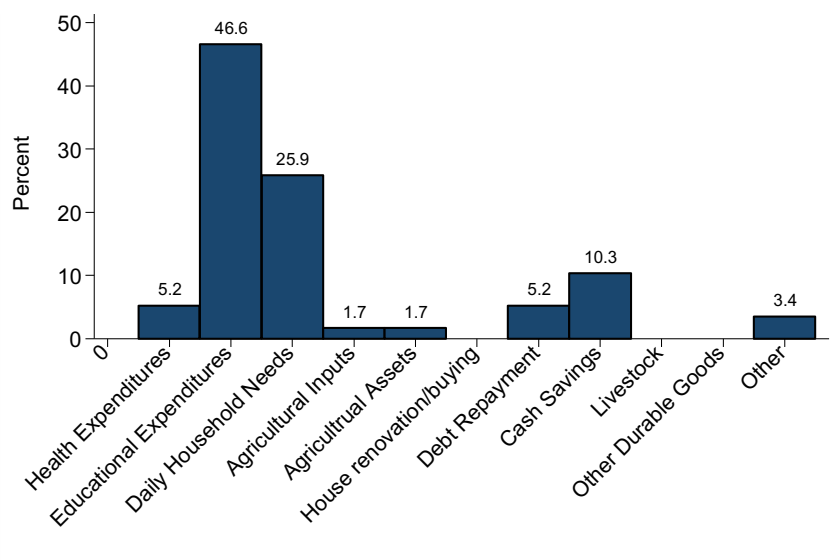
Figure 43: Second most important use of income derived from pigs
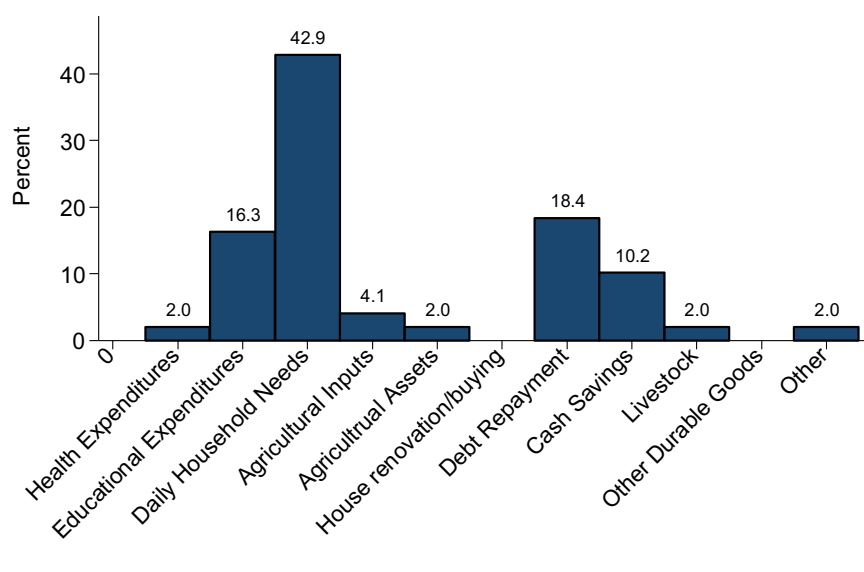
When selling pigs the farmers get a lot of money at once as discussed with the farmers. That is why income form pigs is often used to finance large expenditure due at once. Other households however argue that they use the pigs for daily household expenditure.

As presented in figure 42, 46.6% argue that most important used of income coming from pig earnings is used to finance education. This was also discussed during qualitative data collection. Pigs are used in form of savings and once school payments are due they sell the pigs. Timing is convenient, because large school payments are due during *Adat* season, were the price of pigs is especially high and pigs are used for

celebrations. Some other said they sell pigs for education purpose if they do not have enough savings to pay the educational payments. Please note, that for the income coming from crops and livestock in general the household also report using the majority of income for education purpose. This might be related to the fact that when education expenditure are due, it corresponds to harvest season (see appendix).

Also, pig earnings are used to finance daily household needs which were also mentioned the most as second most important use of income earned by pig business. If there is money left over debts are repaid and savings are done. One person reported that she sold pigs to buy land and other respondents explained that they use to buy small piglets when they sell large pigs during qualitative data collection.

Overall, the answers given at this questions on use of income and the once given at the questions about financing expenditure seem to match which gives some confidence about the robustness of the answers with this respect.

Important might also be who does the decision how to spend the money coming from pig earnings within the household. Household decision making within the household seems to be diverse across the households. Some mentioned that the husband takes decision what to spend the income from pigs for. Because the husband is considered the household head, it is also his decision what to use the money for. The wife is not household head and must follow the husband's ideas on how to use the money. Other household explain that they share the workload and it is the wife's task to do handle financial issues and is responsible for financial management. Where the grandparents still live in the household they mostly also have the right to say what the household uses the income for. Children have to respect the decision of the parents even if the children are adults and have their own families. Table 15 shows, that man end women are more or less equally mentioned with regard to decisions making power coming from pigs.

Table 15: Control and Decision Power of Earnings from Pigs

	Nr. Obs	%
Most important decision maker in HH is female	56.00	48.21
Second important decision maker in HH is female	50.00	52.00

8 Seasonality and Vulnerability

The household reported to have most money between May and October which is the harvesting season for most crop. During this season *Adat* celebrations are held, debts are repaid and animal stock is bought as was already discussed. Therefore, the season when people earn most money they also spend most money. Most households during qualitative data collection report that the amount of available income directly influences their expenditure. Some household explained that it is no coincidence that *Adat* season when people use to get married and celebrate is also the season were farmers have most income and money. Other farmers explained, that they can buy their children more things during the month they have most income. Contrarily farmer report to eat cheaper food, if they have less money. Investment and buying new livestock is done during the harvest season while credits are taking during planting season.

The months December, January, February and March are the economically difficult months for the farmers. This is wet season were no crops can be harvested, crop stocks are used up and people run out

of food supply. During this month it is planting season and expenditure for seeds and pesticides have to be paid. Also, labour needs to be hired to plant the crops which are considered as expensive. During this season pig prices are low, and the farmers know that they will get only low prices for their livestock.

Figure 44: Month of reported food shortages for Household needs
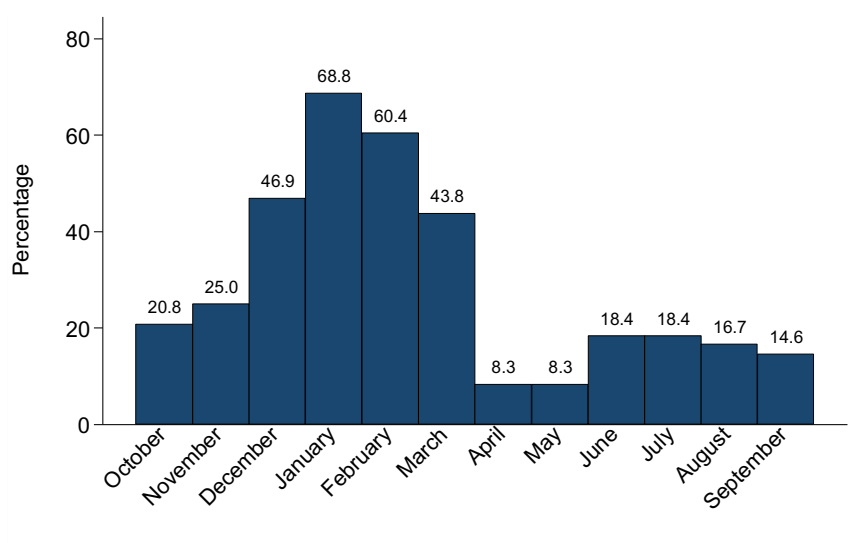
As seen in figure 44 the December to March are also the month when the households do not have always enough food to eat. Vulnerability depends on the level of expenditure quintile. In the lowest expenditure quintile 64% of the households were worried that they did not have enough food to eat during the last seven days while 40% reported that they did not have enough food to eat during the last 12 months. For the highest expenditure quintile this numbers are lower with 23.5 resp. 24.2 %.

Figure 45: Months of concern over Food Security
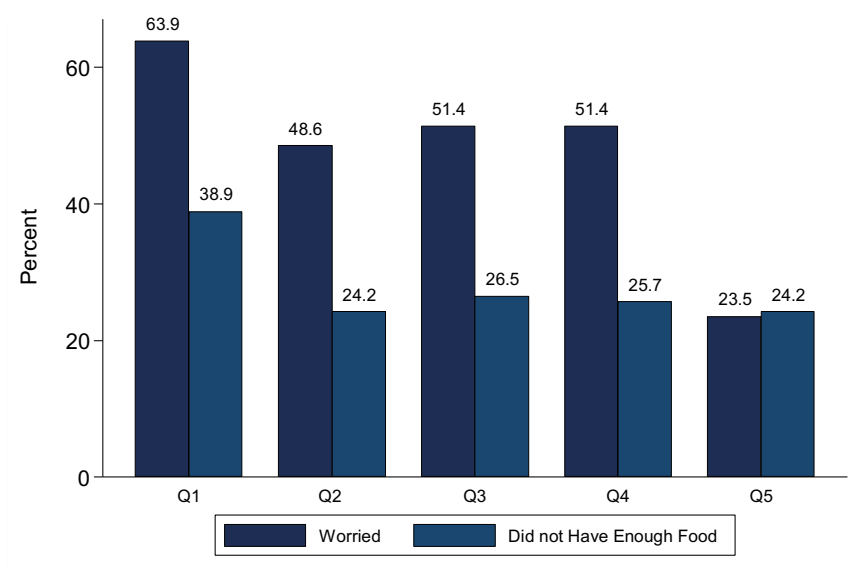
Those who worried that they did not have enough food to eat during the last seven days also reported their coping strategy with food insecurity. Common strategies are restricting consumption by adults for small children to eat, limit the size of meal eaten, limit food variety and rely on less preferred food.

Figure 46: Coping with Food Security
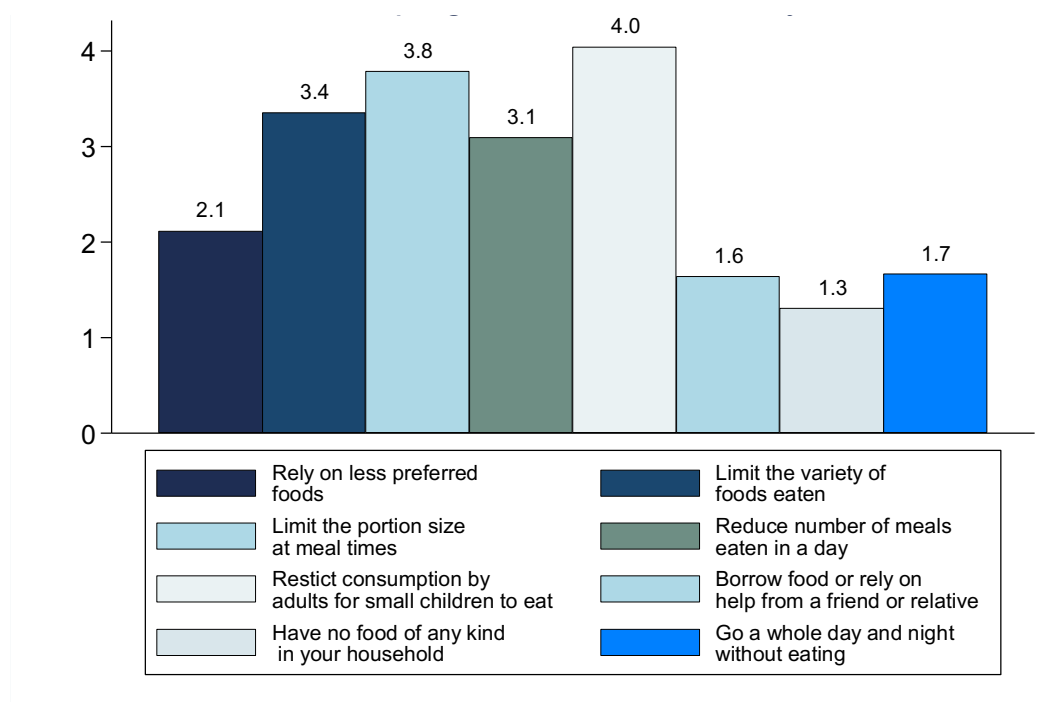
The question what people would stop buying if they have less money was answered differently by the households during qualitative data collection. Some argue that they would reduce *Adat* spending. They would also reduce cloth spending and would buy cheaper food. Also paying back borrowings might be postponed. Another option is to stop mobile phone payments. Also smoking is a large expenditure and one person said the household reduces smoking when it has less money.

9 Conclusion and Recommendation for Future Waves

The households generally have very different sources of income. Important cash crops are cashew and candle nut while other crops as for instance rice or maize are mainly produced for self-consumption. Yearly income from selling pigs is very volatile for the farmers and heavily depends on whether they sold a pig during the last year. Yearly income from selling pigs might be around 7% on average.

A characteristic of income earned while selling pigs is that the large amounts of money flow in at once. Households report that educational expenditure are financed by income earned by pigs because they fit the timing and are also large in amount and comparable to savings. Also financing daily household needs, repaying debts and savings are common ways to use income from selling pigs. It will be task of the next waves, to see how this income allocation changes if income from selling pig increases. While it is possible that people invest more in those items, it might also be that they choose to use additional pig income very differently.

During qualitative data collection we asked the question, what people would buy if they had more money. People were full of ideas what they would do with more money. While some claimed that they would renovate their house, others explained that they would spend it on education, paying back debts, invest in pigs or other livestock, invest in trees or simply buy new cloths. As income from pig is large in amount and comes all together, it might offer an opportunity for investment. Whether this is the case cannot be answered at this stage but will have to be analysed during further waves.

Another question was what large expenditure are planned for the future. Some argue that they would buy more piglets. Some household said that pigs are very profitable (those respondent were already part of the intervention). They said they want to buy piglets because they believe they are more profitable and because they want to be an example for the whole village. Other households plan to invest in livestock, trees, household renovation, education, or simply accumulate savings for future education costs. One household even mentioned that it plans to open a business once accumulated enough money. The household head hopes to generate larger profits if he has his own business. He plans to open the business next year. For this purpose he is saving to buy a truck. Whether all those plans were put into action and how they were financed will be an interesting discussion for further waves.

Children living in households with higher expenditure quintile are more likely to be enrolled in school. Those households also tend to have more physical assets as better housing conditions (e.g. WC, floor material), more means of transportation (e.g. motorcycles), communication facilities (e.g. computer and TV) and kitchen, storing material (e.g. grain storage container) and agricultural assets (e.g. irrigation equipment and heavy farming equipment). They also tend to have more livestock, savings and borrowings. As those households with higher expenditure quintile might be considered as wealthier households, comparing those quintiles might give a hint how additional income be used. Again, this needs to be discussed in the following waves.

The importance for households that have pigs not only lies in the financial returns when selling pigs. Households also consider pigs as financial security and savings which they can access once they have household needs. This might be especially important during dry season when the households report having least money since pig production does not follow the yearly seasonality. This might also smooth income generation within a year and reduce vulnerability. For this, pig demand, however, must not only exist during *Adat* season but also other periods.

Future waves might also need to consider, that the additional income not necessarily be the same for all pig holders. This might depend on the purpose why farmers hold pigs. Some households reported that they only breed pigs and that they got the first piglet as payment for taking care of their neighbours' pig. If and how those farmers will experience additional income will depend on how they will be integrated during the implementation of the intervention.

Also the intervention reduces the time spend to hold pigs since the fodder has no longer have to be collected nor cooked (which often includes not having to have to find firewood in the forest) and cleaning cement floor pig pan is easier and takes less time. However, they need to take care of the pigs more regularly. This reduction of time needed might be important, because it enables household members to pursue other productive activities. Therefore, it would be misleading to only consider the earnings from pig income as additional income but the whole income needs to be considered.

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11 Appendix

11.1 Data Collection Tools

<from Rofi>

11.2 Adat and Pig Consumption

In Nagekeo and Ngada there are five main adat celebrations which shall be described shortly: Birth and Baptism, first communion, celebration for young adults, marriage and funeral.
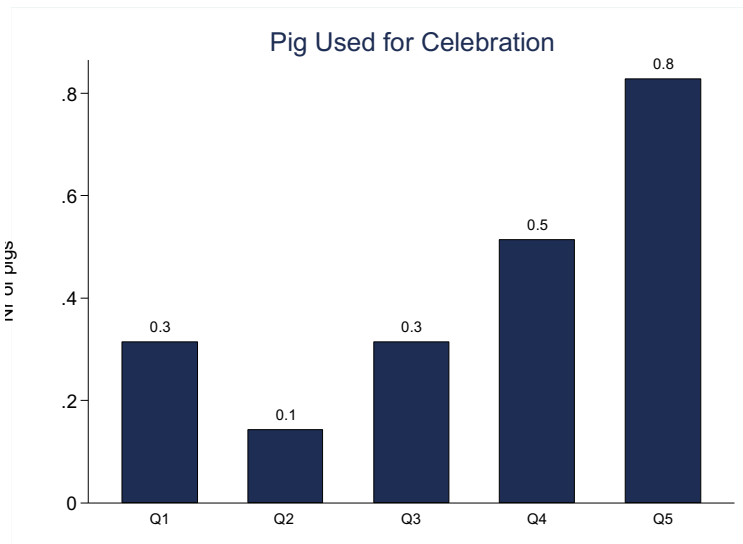
Birth and Baptism are celebrated to welcome the new-born in the catholic society. For both this events a small or medium sized pig is consumed.

First communion is also an important celebration in Flores. When children are around ten years old they get the first communion in a church and celebrate after with close friends, neighbours and families. The household usually slaughters one pig for this celebration.

To celebrate adulthood there is celebration in the villages. This celebration is a village celebration and is usually not organised for individual village members but a group of villagers. There are two different celebrations while one is for boys (Taunua) while the other is for girls (Potong gigi). During Taunua celebration the boys become full members of the village and after that their opinion will be taken into consideration during suku and village meetings. Those celebrations can take up to a week. In the village Tengatiba the families of the boys are expected to give a total of five pigs for this celebration. Moreover, the feast is complemented with cows, buffaloes and local alcoholic drinks. The celebration for girls (Potong Gigi) is smaller and the households are expected to offer at least one pig for the village celebration. After this celebration the girls are allowed to get engaged and married.

For the wedding celebration, it is tradition that the family of the bride provides the food and the place for the reception. Two households in our qualitative interview reported that they payed 50 million Rupiah for the wedding reception. The groom instead is expected to pay a so called "belis" to the bride's family for marrying the daughter. This is considered the largest adat expenditure. The family of the groom and the bride together discuss the belis to pay and depends on the social status. In one of our qualitative interviews, the household got two cows, one buffalo and two horses for giving away the daughter. Also before the wedding celebration the bride is engagement celebration where the family of the bride is expected to offer a pig.

During funerals, the household of the deceased person is expected to provide food for family and friends who go to the funeral. Also for this celebration it is tradition to eat pig, while the amount of food provided depends on the social status of the household.

Pig Used for Celebration

11.3 Use of Income

Most Important Income Use of Agriculture

Sectond Most Important Income Use of Agriculture

Most Important Income Use of Livestock

Second Most Important Income Use of Livestock