

# Production and Revenue of Pigs to Reduce Poverty and to Support Food Security of Papuan Farmers in Manokwari

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## **Production and Revenue of Pigs to Reduce Poverty and to Support Food Security of Papuan Farmers in Manokwari**

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### **ABSTRACT**

Pigs are a favorite animal for the Papuan because they are very valuable in social, cultural and economic status of the community. In order to support food security and poverty alleviation for the people of Papua, the relationship among pig production, revenues, poverty reduction and food security were analyzed. The study aimed at determining the factors that influence production and pig revenue to reduce poverty and to support food security of farmers in Manokwari. Data were taken from 36 farmers in Manokwari. Pig production, pig revenues, poverty gap and food security were analyzed simultaneously by Two Stage Least Squares regression. The results showed that feeding of pigs (source of protein), land area, and body weight of sows had significant and positive impact on the pig production (CI 95%). Price of rice bran, banana, stall waste, and costs of transportation were negatively significant effect on revenue of pigs. The revenues of pig and farmer education had positive effect on poverty gap (CI 90% and 95%). Farmer education had positively significant effect on food security while kerosene prices had negatively significant effect on food security. However revenue of pigs did not have yet any effect on food security.

**Key Words:** Pig, Production, Revenue, Food security, Poverty

### **INTRODUCTION**

Poverty in Indonesia and other some developing countries in Asia are still being a leading issue that need creative and strategic solution. Papua and West Papua are areas in Indonesia with high number of poor people. Data showed that the number of poor households in Papua was 391,767 from the total of 480,578 households or approximately 81.52% (Suebu,2007), while for West Papua was 128,156 from the total of 170,049 households or approximately 75.36% (BPS West Papua 2005). Information on the spread of poor people was is not only exist either in the city areas or in urban areas.

Generally, Papua is believed to be an area with huge potential for the development of animal husbandry due to its abundance natural resources. According to statistics of the province of West Papua (2005) and the Monitoring and Evaluation Team of livestock of West Papua Province (2007), the production of forage and agricultural waste/estate plantation in West Papua was about 42,442,750 tons readily accessed from the total area of 4,244,275 ha as a source of animal feeds. In general, the kind of livestock kept by the Papuan were beef cattle, chickens, goats and pigs. But pigs are the most popular livestock for the Papuan, whose population currently was about 546,696, it ranked as the sixth of the national pigs population (BPS, 2010).

Development of livestock sector became strategic if it is based on local demand and needs. Although the national programs on beef self-sufficiency through P2SDS was done, but local strategic commodities such as pigs continued to be a regional priority to support local markets and demand for food in Papua.

## MATERIALS AND METHODS

The study was carried out using data which were taken from 36 farmers in Manokwari. Pig production, household revenues from pig keeping, poverty gap and food security status were analyzed simultaneously by Two Stage Least Squares regression (Widarjono. 2007)

Regression equation of production, pigs revenue, poverty gap and food security were described in Table 1.

**Table 1.** Regression Equation of Production, Pigs Revenue, Poverty Gap and Food Security

Item	Equation
1. Production	$\text{Ln PROD} = \ln a_0 + a_1 \ln \text{Feed Energi} + a_2 \ln \text{Feed Protein} + a_3 \ln \text{Land} + a_4 \ln \text{Sow} + a_5 \ln \text{Labour} + a_6 \ln \text{labour times} + a_7 \ln \text{Age of Farmer} + a_8 \ln \text{Experience} + a_9 \ln \text{Body size} + a_{10} \ln \text{Farmers Education} + \varepsilon_1$
2. Revenue of Pigs	$\text{Ln PUPB}^* = \ln b_0 + b_1 \ln \text{Rice price}^* + b_2 \ln \text{Cassava price}^* + b_3 \ln \text{taro}^* + b_4 \ln \text{rice bran price}^* + b_5 \ln \text{banana price}^* + b_6 \ln \text{sweet potato}^* + b_7 \ln \text{waste of restaurant}^* + b_8 \ln \text{soy curd byproduct}^* + b_9 \ln \text{sow price}^* + b_{10} \ln \text{Transportation}^* + \varepsilon_2$
3. Poverty Gap	$\text{Ln POV} = \ln c_0 + c_1 \ln \text{Family Dependency} + c_2 \ln \text{Education cost} + c_3 \ln \text{Pigs revenue} + c_4 \ln \text{Source of income} + c_5 \ln \text{Member of Family} + c_6 \ln \text{Market accessibility} + c_7 \ln \text{Farmers Education} + c_8 \ln \text{Transportation} + c_9 \ln \text{Pigs revenue} + \varepsilon_3$
4. Food Security	$\text{Ln FC} = \ln d_0 + d_1 \ln \text{Rice price} + d_2 \ln \text{Fish price} + d_3 \ln \text{Kerosene price} + d_4 \ln \text{Oil price} + d_5 \ln \text{Revenue of pigs} + d_6 \ln \text{Other income} + d_7 \ln \text{Farmer Education} + \varepsilon_4$

Poverty Gap was measured by the distance between family income per capita and poor line (Prayitno and Arsyad. 1997)

Food security was calculated by ratio of total family expense for food and total family expenses (Ilham and Sinaga. 2007)

\*) normalized price. Each price was normalized by sales pig price.

## RESULT AND DISCUSSION

The results of the analysis of the relationship between production, income, poverties and food security were presented in Table 2. Production was measured by summing up the total body weight of weaning piglets produced by pigs breeding livestock. By the regression on factors that influence the production, it was found that the protein source of feed, land and body size of dam affected the production. Therefore, it is important to improve knowledge on the feed availability as source of protein categories to the Papuan. Land which was utilized for sows has positively impact on the household production. Therefore, improvement in the knowledge of efficient land management will help the papuan to contribute to the availability of feeds for their pigs. The body size of sow described the genetic merit of the next generation (Lasley, 1978).

Pig revenues were obtained from sales of weaned pigs. Factors that significantly influenced to the revenues were feed prices which include the price of rice bran, potato kitchen and restaurant refusals. In Manokwari fluctuation was closely related to the scarcity and competition of feed utilization. Rice bran prices were more expensive when as more businessmen looking for the especially during the period of festivity. Moreover, the cost of transportation also affected household revenue. This included the cost for routine feed purchasing as well as marketing of the product. As expected, those farmers who already have regular customers in the markets were enjoying advantages from this relation than the other who have to fight for their their market opportunity.

**Table 2.** Determinan Factor of Production, Pigs Revenue, Poverty gap and Food Security of Farmer Household in Manokwari District

PRODUCTION							
Variable	Coefficient	Prob.	Sig.	Variable	Coefficient	Prob.	Sig.
Feed Source of Energy	-0.387759	0.3956	NS	labor times	3.367951	0.2554	NS
Feed Source of Protein	1.464118	0.0002	***	Age of Farmer	-0.144102	0.6586	NS
Land	0.000915	0.0165	**	Experience	-0.282513	0.7445	NS
Sow	3.476383	0.5901	NS	Body weight	1.27065	0.0136	**
Labor	4.881758	0.2549	NS	Farmers Education	-0.901217	0.4027	NS
				C	-64.58726	0.1171	
R-squared	0.890956			Adjusted R-squared	0.845521		
REVENUE OF PIGS							
Variable	Coefficient	Prob.	Sig.	Variable	Coefficient	Prob.	Sig.
Rice price	-963.8321	0.4439	NS	Sweet potato	-589.3484	0.0984	*
Cassava price	-86.45931	0.7339	NS	Waste of restaurant	-419.4725	0.0984	*
Taro	0.526219	0.9988	NS	Soy curd byproduct	-81.27912	0.8505	NS
Rice bran price	-3850.676	0.0933	*	Sow price	0.763905	0.1597	NS
Banana price	-760.1221	0.0457	NS	Transportation	-1875.646	0.0001	***
				C	74957861	0.0001	
R-squared	0.744707	0.638335		Adjusted R-squared	0.63834		
POVERTY GAP							
Variable	Coefficient	Prob.	Sig.	Variable	Coefficient	Prob.	Sig.
Family Dependency	-11434428	0.2148	NS	Market accessibility	-616619.2	0.8205	NS
Education cost	-2.173996	0.6743	NS	Farmers Education	1506849	0.0160	**
Source of income	2263031	0.7546	NS	Transportation	1330.283	0.2931	NS
Member of Family	11985824	0.1875	NS	Revenue of pigs	1.250501	0.0217	**
				C	-35503613	0.0825	
R-squared	0.509199			Adjusted R-squared	0.35818		
FOOD SECURITY							
Variable	Coefficient	Prob.	Sig.	Variable	Coefficient	Prob.	Sig.
Rice price	-7.76E-06	0.6906	NS	Revenue of pigs	-1.85E-09	0.3534	NS
Fish price	1.75E-07	0.9422	NS	Other income	1.91E-09	0.1658	NS
Kerosene price	-0.000164	0.0119	**	Farmer Education	0.007723	0.0926	*
Oil price	0.0000168	0.3364	NS	C	1.331689	0.0030	
R-squared	0.4632			Adjusted R-squared	0.32403		

\*: significant in Confident Interval 90%, \*\*: significant in Confident Interval 95%, \*\*\*: significant in Confident Interval 99%, NS: Non Significant.

The poverty level was measured by the difference between income per capita of farmer and the poverty line. The results of the regression analysis of poverty in relation to pigs keeping by the households showed that pig revenues were significantly influenced to the level of poverty. It can therefore be concluded that pigs business can be used as an optional solution to solve poverty problems in Papua, although the revenue did not influence their status of food security.

Food security was calculated by the ratio between the total household expenditure on food and the total expenses of family farmer. The result indicated that pig revenue could alleviate

poverty level of the Papuan, even it did not yet have an impact on the society food security status. The high price of food in Papua was suspected to be the cause of the difficulty of the community to enter the food secure status.

### **CONCLUSION**

1. Household's pig production was positively influenced by the source of protein feed, land, and sow body size.
2. Pigs Revenue was significantly influenced by the prices of rice bran, sweet potatoes, the restaurant refusal as well as transportation costs.
3. Revenue pigs had positive effect on narrowing the poverty gap (PG), although it had no effect as yet on the food security status.

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