POLICY MODEL DESIGN IN LEVERAGING PARTICIPATION OF BREEDERS IN DAIRY COW MILK INDUSTRY

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ABSTRACT

The exertion to develop local community economy should start with developing local superior commodities which are considered able to bring about the expected effects on economic activities most widely, reaching second level government. It is dairy cow milk for West Java province.

Considering the above condition, the government should take a set of policy which enables develop animal husbandry with the hope to encourage and motivate breeder community to participate. As the result, it is hoped that it will increase the economic prosperity level of community involved.

By referring existing policies, this research attempts a study to examine whether such effects to increase the participation can be expected.

The study concludes that such existing policies have not been functioning as expected to increase the participation of breeder. For this reason, it is considered important to design other scenario which induces breeder are participation.

A scenario which combines community learning with woof technology is infecting, able to lever up demand and to absorb workers. The scenario is considered to the most effective. The policy can be applied by providing education to the community in filing their nutrient and health. Considering the shift in consumption pattern increasing, it is possible to be applied.

The study, finally suggests investment action on leveraging participation of the breeder communities, and it can be done in the form of capital enlargement, where virtual capital can create added value or wealth of society.

Keywords: policy, dynamics model, breeder participation

1. Introduction

Economic expansion of society area which started with development of commodities indigenous to its local community with comparative advantage is expected to bring impact development of economic sub-province. For the area of West Java, one of its superior products is dairy milk.

Selection of this commodity is based by its multiplier impacts on economic development of the local community.

Such as commodities with comparative advantage should satisfy the following criteria;

(i) Existence of request potency outside area.
(ii) Have potency to growth to next periods.
(iii) To take part in small scale farmer and non agriculture, improving earnings and also create employment to family of pra-prosperous.
(iv) Increase of earnings sales revenue.

Although milk commodity considered to be superior commodity of West Java, but this commodity were difficult to become the main product in our country.

At this moment to accomplishment of domestic requirement milk, they conduct by import (milk powder import and dairy cattle).

Effort accomplishment of fresh milk from domestic breeder, have been started in 1979, with amount of milk Co-Operative only one, it accomplishment of request equal to 5%, while rest of request fulfilled by milk powder with material import to 95%. In the year 1992 with 203 of milk Co-Operative, sufficiency of domestic product milk represent 38% from accomplishment of milk consumption. Increase of accomplishment of the fresh milk in the year, obtained by not merely from local dairy cattle, but also obtained by almost entirely of import dairy cattle (*Report Center Asian Pasific Study,2000*). Dairy cattle from United State, Australian or Europe have added the number of dairy cattle population become 350.000, with totally reached production equal to 412.500 ton (*Wiryo Suhanto,1994*).

Population dairy cattle in milk Co-Operative region West Java in the year 1998 reported equal to 68.282 with average milk production per day equal to 368.848 litre (*Livestock Departement of West Java, 1998*). By that production, in the reality, livestock in West Java not yet earned to fulfill requirement of domestic request.

This condition also complex progressively with existence of policy from government concerning import cost of fresh milk which abolished. As a result, many milk industry use import milk, because besides cheaper, they have better quality too.

Based upon this condition, government make a policy to develop of livestock effort. Development of livestock aim to increase earnings, increase production, increase quality of food, extension of employment and optimalization of natural resources.

Expectation of their policy, it would improve prosperity of society economics by striving the make-up of earnings of breeder. The policy of abolishing fresh milk import

cost, yield the price of import product so predominate in domestic market.

By referring to existing policies, in this research will study impact policy of the government to product increase, extending employment and increase earnings of breeder.

Approach performed within this research by Dynamic System.

Target of this research are:

(i) Developing dynamics model agriculture of livestock sector as a simple framework, to comprehending interaction of livestock sector and government's policy in supporting development.

(ii) Comprehending behavior of modeled dynamics traced and understanding structural mechanism which can depict long-range changes.

(iii) Analyzing policy of government to development of livestock sector to look impact that happened at supply and demand of milk product.

(iv) Giving alternative policies which could be applied at livestock in the effort to make-up of breeder participation in milk industry in West Java.

Assumption

There are some assumption were needed in development a dynamic model. Assumptions were covering the time horizon and system boundaries with an approach of system.

Horizon Time:

As reference for the validation of model used by period of time start in year 1994 until 1999. Policy simulation will include period of time start in year 1999 until year 2015.

Limitation of Model:

Some arrangements are made for more facilitating model definition in studied system development, such as:

(i) Development of model taken from model of livestock of dairy cattle in West Java Co-Operative unit.

(ii) Change of request will have an effect on requirement of labour. More greater of product request will increase requirement of labour.

(iii) Changes of labour requirement have an effect on investment action. Greater of requirement of labour will increase investment.

(iv) Education sector having an effect on the problem of labour and in production efficiency.

(v) Interrelationship between technologies with education. Greater of usage of technology, will increase usage of expert and trained labour.

2. Concept Development of Rural Society

As generally that happened in developing countries, many resident hang up them self to agricultural sector were resident with lower income. It could be seen from added value agricultural sector which smaller if compared to the resident in the agricultural sector.

In spite of growth of economics aggregately expressed was high, it could not be powered some of traditional worker in agricultural sector. Core of appearance problems such as wide-spreading of poorness, lame growth, quickly growth of resident, and increasing of unemployment, begin from economic retreating and stagnation rural region. So, if development will be executed and expected to increase their life level, development has to start from rural region, especially agricultural sector.

Paradigm of continuation development start to expand as reaction of negative influences from development stream which only making account of high economics growth, which have resulted decrease of natural resources, widening social difference and making strong depended. In this group, two concepts such as Neo-Malthusian of Club of Rome (1975) and development paradigm which societies centre of Korten (1986).

Neo-Malthusian theory intrinsically proposes about long-range integration between resident, economic system and source of nature. Core of it idea shall be as follows:

(i) First, exponential growth represents the nature of coherent at capital system population. Resident and capital material grow by exponential through process reproduce and production;

(ii) Second, there is limitation of earth potency, which can concluded from four elementary assumption those are : the limited reserve of source which cannot renew (*non resources renewable*) which can exploited; the limited ability of environment able to permeate pollution, the limited farm able to cultivate; and the limited production of farm; in another word, there is physical boundary to growth population and capital;

(iii) Third, the long delaying feed back, which controlling growth of world system physical. Existing social institutes only give respond to situation where they have information. Because if information which they earn

overdue and incomplete, so that the feed back also overdue too;

(iv) Fourth, two alternative of response able to be given, such as eliminating symptom of limitation pursuing growth, or get strength pushing growth;

(v) Fifth, the option shall be passed to equilibrium state those are at one situation where condition of population have reached degree of stability which desired, and where requirement of material made to exploit *non resources renewable* and generating pollution minimally.

Motivation to obtaine high economics many times neglect construction of institutes and capacities. Executed development through centrally-imposed blueprint (*Korten, 1986*) formulated by allocation source of development and technocrat which centralist is tending to minimize society potency. Development model such this one intrinsically represent style development by from the top. It implication tend to grow depend on between development project and people or between bureaucrat and people. It character depress ability of society for actualization their potency.

Relationship with depended such like that will seen with continuous requirement of development input from the top of or from outside. Project with that relationship would tend to disintegration and stagnation if support from source discontinued.

3. Development of Model

Development of model in this research taken from livestock of dairy cattle in West Java. Milk commodity represent one of the superior commodity from West Java, besides fruits commodity. This commodity was expected as impeller of economic expansion of area society. Therefore, the target to be reached is the make-up of participation breeder of dairy cattle and in this case presented by demand level and absorbtion of labour, and net profit.

To description concerning livestock of dairy cattle in West Java, there are some parameter presented, based upon data from Departement of Livestock, Milk Co-Operative and Statistical Institute, in period of year 1990 - 1998 as follows:

3.1 Production

Development of livestock in West Java has potency. It seen from the aspect of marketing and production (Departement of Livestock of West Java 1998).

From the aspect of production :

(i) Fertile land and availability of water.

(ii) Skillful human resource.

(iii) Adequate supporter facility.

From marketing aspect :

(i) Population with many young age.

(ii) Existence of student.

(iii) Close to entertaint area.

(iv) Adequate transportation.

(v) Close to industry processing of milk.

(vi) Close to plantation.

The production of milk during 1994 until 1998, showed in Table 1.

Table1 **Milk Production in West Java**

Year	*Production (Kg)*
1994	215.638.000
1995	118.824.511
1996	94.727.000
1997	107.631.797
1998	145.848.910

Source : Annual Report Production of Milk Co-Operative West Java and Banten (1994 –1998).

3.2 Population And Labour

In the year 1998, West Java density 7.205 people of per-kilometre square. Municipality of Bandung is dense area, that is equal to 14.780 people per square kilometre, while Lebak which is smallest Sub-Province of only equal to 315 people per kilo metre square. From number of resident of West Java 40.90 million consisting of 32.50 million (79.5 %) representing productive age. From a number of the productive age 16.94 million (52.11 %) representing labour force and 15.56 million (47.89 %) is not labour force. Most resident have especial work type as worker agriculture (31.97 %) while labour as to administrator is 1.15 %. Agricultural sector still play a part important in absorption of labour in West Java. In the year 1998, agricultural sector can enter in labour equal to 32.19 %, then followed by commercial sector, restaurant and hotel equal to 22.43 %, and the rest mining sector equal to 0.69 %. The number of breeder of dairy cattle in West Java showed at Table 2.

Tabel 2 Number of Breeder in West Java

Year	***Breeder (man)***
1994	10.151
1995	11.271
1996	12.563
1997	14.700
1998	16.076

Source : Annual Report Production of Milk Co-Operative West Java and Banten (1994 – 1998).

With large number of resident, so that consumption of milk also in large

number. Average consumption percapita in West Java, showed in Table 3.

Tabel3. Average consumption milk in West Java

Year	*Consumption /Capita (litre)*
1994	5.08
1995	5.16
1996	5.20
1997	4.46
1998	3.25

📖 *Source* : Annual Report of Departement of Livestock (1994 – 1998).

4. Structure of Model

Study area modeled by this research, is livestock of dairy cattle system with covering group breeders of dairy cattle or conceived by co-operative breeder of milk.

This co-operative milk represents a network start from yield of livestock (fresh milk), then come to industry processor or big scale milk co-operative. To depict the condition of system development of milk commodity in this time, model taken from livestock of dairy cattle with pursuant to Global Model (*Forrester, 1980*). This model showed interaction between subsystems of model. Flow diagram is presented in Figure 1.

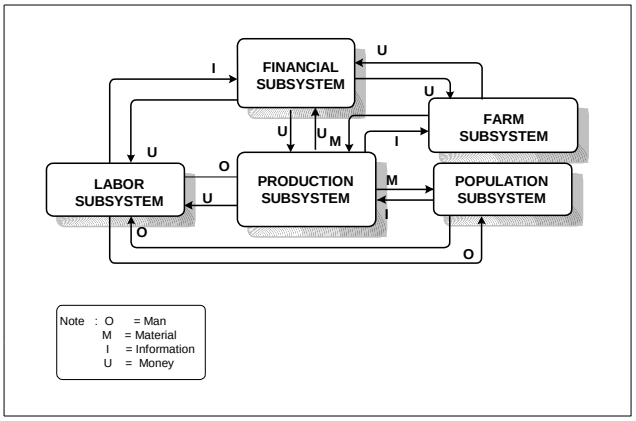

Figure 1. Flow Diagram of Livestock of Dairy Cattle System

Description about the diagram is presented as follows:

(i) Function of production subsystem as providing yield product to accomplishment the requirement. To yield the product, production subsystem requires production factors input. Requirement of production factors in this model are limited by labour, farm and financial. To fulfill requirement, production subsystem of production need request to subsystem of labour, farm, and financial subsystem. Activator production subsystem is level of output livestock to level production to costumer.

(ii) Function of labour subsystem as stock of labour required by production subsystem. This subsystem accommodates the number of labour force to work in livestock. Labour in

livestock increase according to number of labour requirement and decrease with existence of desisting or move to another sector.

(iii) Function of farm subsystem as supporter production process by providing place to production subsystem.

(iv) Function of financial subsystem as subsystem with arranging money stream that happened in livestock. From available fund, this subsystem determine loan rate of interest level. This loan is given for the production subsystem, farm and labour in the form of productive capital or investment. This financial subsystem gets cash in from product sales revenue and cash out from labour cost, expense of livestock, and expense of investment.

(v) Function of population subsystem as stock of labour. Lacking of labour force can be taken from the availability of labour at subsystem of population.

4.1 Production Subsystem

Production subsystem depicts production process circuity conducted by co-operative. This subsystem has interaction with another subsystems which are farm, labour and financial to activity production. Demand level from costumer movement production subsystem, and that demand level has to fulfill. Demand level depends on market level and persentage of market share. It will be determined production level. Then, realization of level production depends on availibility of livestock output and labour and farm capacities.

Livestock output has yielded from number of livestock in production subsystem. Amount of livestock output, in this model referred as availability product. It will increase of production level, and it will decrease because effect of product delivery to costumer. In causal diagram represented interaction between request and production. Feed back production to request expressed with variable of the effect of the delivery time to market share, and also effect to variable of price to market share. Price effect to market share determined by price, which level of influenced by costs factor at finansial subsystem. Causal diagram is illustrated in Figure 2.

Delay delivery effect to market determined by variable of time postponement of delivery, it influenced delivery of production subsystem. If delivery progressively lower, so that delay delivery will take more time. Long of time of delay delivery will generate effect postponement of delivery competitor. With

assumed costumer rather buy product from competitor, so that will decrease of market share.

Variable effect of delay delivery, and effect of price, with request level, production level and delivery level, to form a negative loop which express mechanism of market-clearing. When request increasing, production level will be difficult to progressively fulfill request because limitation of production capacities. Then time postponement of delivery will increase, and generate effect in the form of reduction market share or request.

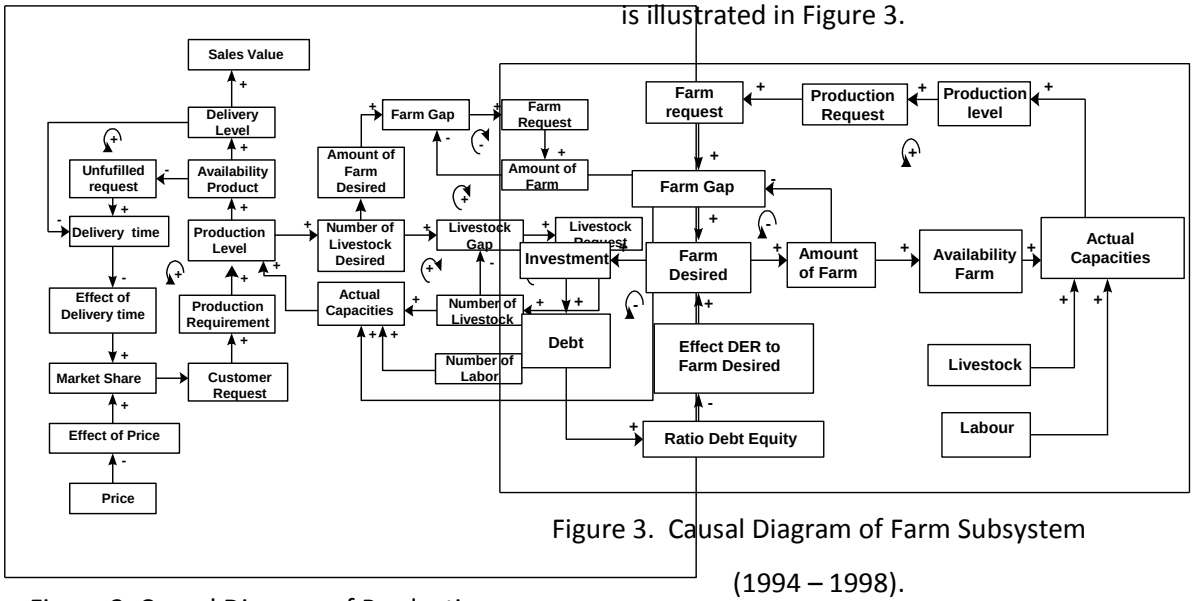

Figure 2. Causal Diagram of Production Subsystem (1994–1998).

4.2 Farm Subsystem

Make-Up of production requirement will addition of livestock number, it will cause farm decrease. If level requirement of farm exceeds existing farm, hence breeder will invest to add farm to add production capacities, it expressed at indication of variable farm request.

Besides factor requirement of production, another factor which influence farm is the transfer of farm function become settlement farm. Investment in livestock will be counted in debt at financial subsystem, it increase obligation of livestock and finally enlarge debt ratio of equities (DER). If DER ever greater, the investment will be smaller to be done by breeder. This condition generate negative loop at subsystem of Farm. Causal diagram is illustrated in Figure 3.

Figure 3. Causal Diagram of Farm Subsystem (1994 – 1998).

4.3 Labour Subsystem

Labour subsystem as labour supply for the livestock. Livestock labour influenced by level absorbtion and decrease

because desist or move to another sector. Causal diagram is illustrated in Figure 4.

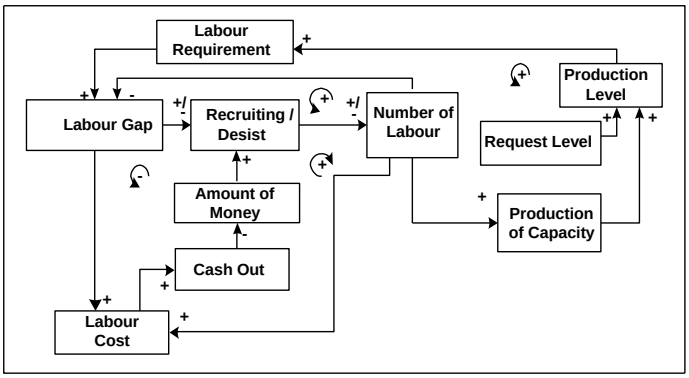

Figure 4. Causal Diagram of Labour Subsystem (1994 – 1998).

Production level will generate requirement of labour. If labour availability not yet corresponds to demand of requirement of labour, hence arising indication of recruiting new labour. Recruitment is also influenced by number of secretory labour. Many labour which recruited limited by condition of finance, which is expressed in percentage of excess of cash at finansial subsystem.

4.4 Financial Subsystem

Financial subsystem depicts stream of financial that happened at Livestock and activity support labour subsystem and farm subsystem, and also production subsystem with availability fund. Causal diagram is illustrated in Figure 5.

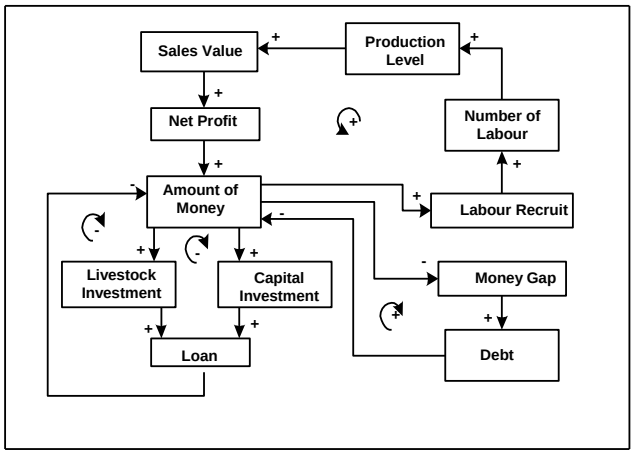

Figure 5. Causal Diagram of Financial Subsystem (1994 – 1998).

Input to financial system is sales revenue of production subsystem to generate the net profit and earnings. Amount of money will become constraint to production level, through order of farm, livestock, and labour recruitment. Lacking of earnings can fulfill by financial subsystem through loan short-range. Loan short-range generate lacking of amount of money. Earnings are shown by variable of net profit.

4.5 Population Subsystem

Population subsystem depicts growth of resident which then moves to subsystem of labour and subsystem of farm. Subsystem of population also generates requirement of milk. Effect of this requirement will make production subsystem require number of productivity labour and livestock.

5. Model Formulation

After developing model structure, the next step is development of system dynamics model. Translate logical construction posed at by causal diagram of subsystems into mathematical formulation, then simulation is attempted computer. Appliance assist software used for this model is POWERSIM 2.5 having the character of object of oriented.

6. Validation of Model

Test according to structure done by suggested by the following literature. Structure of modeling this livestock system has build of elementary model literature study:

(1) Corporate Planning and Policy Design: A system Dynamics Approach by James M. Lyneis (1988).

Study scheme of policy at corporate level or company, Lyneis have identified especial factors which generate feed back dynamics in company, that is:

(i) Dynamics generated by production system
(ii) Dynamics generated by interaction with labour
(iii) Dynamics generated by interaction with competitor and costumer
(iv) Dynamics generated by monetary operation
(v) Dynamics generated by development of capacities.

(2) Society Purchasing by Samuelson, Paul A. (1995).

Samuelson has identified tax instrument and tariff influence society purchasing power, so that can influence request level to goods.

(3) A System Dynamics Approach to the Structure and Economy of Fur Farming and Trading by Pal I. Davidsen and Asheim (1993).

This model is to analyze policy of commerce and livestock. In this model, Ratch I. Davidsen and Asheim have identified the following relationship between variable which is used in built up model :

(i) Positive relation between capacities with production level
(ii) Positive relation between livestock amount and request
(iii) Positive relation between adjustment of capacities with production capacities
(iv) Negative relation between long-range loan with advantage.

(4) Analysis Efficacy of Effort Dairy Cattle in Region Sub-Province of Bandung by Dyahrini, Wien (1996).

Dyahrini (1996) has identified variables having an effect on in

efficacy of dairy cattle effort including:

(i) Number of livestock
(ii) Number of labour
(iii) Operating expenses
(iv) Prices of goods
(v) Capital employed
(vi) Advantage
(vii) Number of product demand.

In addition to the foregoing structure has tests, another test Dimension Consistency test is conducted. After validation has done, the next step is verification test which is covering reproduction behavior test, prediction behavior test, and statistic test

7. Analysis Affect gone into Effect Policy.

Livestock, as part of agriculture area, have policy in determining vision and mission. It's very influenced by policy specified by government. At this part, this study will be analyzed by last policy impact released by government. To behavior base model, used policy applied in the early year 1999. Policy of year 1999 is abolition of import cost to elementary product fresh milk. This policy has executed in the year 1999.

This policy representing from effect of policy government change in the case of arranging vanished milk commercial in the year 1998 as consequence of LOI (Letter Of Intent) namely agreement of government of RI and IMF (International Monetary Fund).

Thereby planned milk commodity, starting free trade for Asean 2003 and 2010, while to Asian Pacific have been done very early in year 1999. This means fresh milk and milk product free overseas come into country and only hit by import cost is milk product ready to consume equal to 5%, and fresh milk 0%.

From that reason, policy perceived by it influence is import cost. Import cost is imposed by tariff from government to import product or component. Import cost used by government as protection product domestic, with a purpose to push the growing of domestic product and industry.

This analysis, will perceive influence of policy of domestic fresh milk, with abolition of import cost fresh milk from 10% becoming 0%. After the policy has applied, milk industry management makes a decision to lessen milk quota coming from breeder. Industry has opinions that import fresh milk has better content than domestic fresh milk.

Policy of degradation of import cost gives influence to livestock. The result of a simulation is illustrated in Figure 6.

From Figure 6, we note that the abolition of fresh milk import cost degradation is requested. Go down this request, showing company competitiveness has gone down too, in the form of degradation market share. Minimize of livestock market, will make the level request of market degradation of request ever greater too.

Degradation of Livestock market share because price sell higher while competitor price going to degradation to come to cheaper production cost. Result of this simulation indicates that, in a long term, policy 1999 resulting degradation larger of request. It's also influencing labour.

Figure 7 shows that an application of policy 1999, has been influencing labour too. This condition happened because policy 1999 gone into effect, it's going down of request. Beside that, the effect made production level down and finally causing decreasing number of labour to be able permeated.

7.1 Elementary of Policy

Condition of livestock as well as result of previous simulation show that main problem faced by company of livestock is difficulty in determining competitive price sell. Policy of livestock to overcome the constraint shall be as follows:

1. Scenario I

Growth pattern defended like previous period

(i) There no change to elementary parameters, like investment pattern at product sector

(ii) There no effort to apply efficiency from each product sector

(iii) Request pattern follow pattern growth of previous period

(iv) Monetary crisis impact by the end of 1997 and take place until 1999 causing degradation of request until year 2000.

2. Scenario 2

Improving earnings of breeder with focus at livestock sector investment to self sufficiency in food through technological intensification.

(i) Change of labour quality in the case of improving technological ability. Technological ability interpreted as ability of breeder to accept to displace technology, apply technology, and develop technology.

(ii) Technological level of livestock assumed to grow by exponential. New Zealand taken as proxy of forward countries and ahead time in development of technology livestock of dairy cattle milk

(iii) Usage of technology as one of the step capable to lessen depended on only relying on industry request and also lessen depended to woof industry.

(iv) Technological taken away from Cobb Douglas by comparing output value of go forward countries with Indonesia.

3. Scenario 3

Improving earnings of breeder with focus at investment to two sectors, that is Livestock sector through technological intensification and sector construction of society through study of society.

(i) Investment more emphasized at sector healthy life pattern at society

(ii) Role of education which is influence bothering about of accomplishment of good food to society

(iii) By using role of technology will facilitate Livestock in process the woof by they self.

(iv) Lessening decrease and damage of milk content.

4. Scenario 4

Improving earnings of breeder by limiting role of Co-Operative in arranging fresh milk in price of marketing and market.

(i) Price determined by market mechanism

(ii) Marketing done by breeder self. Thereby breeder is entitled to sell directly to consumer without through co-operative.

5. Scenario V

Improving earnings level by take care of continuity of natural resources.

(i) Lessening the transfer of farm by industry and settlement

(ii) Growth of livestock sector by multiply livestock investment.

7.2 Parameter Policy

To see result applying of each policy, hence compiled by policy scenario with a

few parameters showed at tables as following:

Table 4 Change of parameter value from various scenarios.

No	Parameter	Scenario				
		1	2	3	4	5
1.	Import cost (%)	0	0	0	0	0
2.	Industry Quota (%)	50	50	50	50	50
3.	Decrease of Farm Livestock	-1.5	-1.5	-1.5	-1.5	0
4.	Technological Intensification	0	1.2	1.2	0	0
5.	Tax (%)	10	5	5	5	10
6.	Production efficiency	0.5	0.7	0.7	0.5	0.7
7.	Growth of consumption livestock	1	1.25	1.25	1	1

7.3 Analysis Applying of Device Policy

To see effectiveness of designed policy to give result, then scenario which have been specified before, measured by performance such as have been specified previously. It cover market share, ability of labour absorption and also obtained net earning.

From figure 8, showed, if policy pattern which in this time defended such as showed by scenario 1, it will implication to degradation of request level. This implication will bother stability of levying of domestic fresh milk. Although showed condition immanently accretion of request level but accretion very tardy compared to result showed by scenario 2 and scenario 3.

Scenario 2 and scenario 3 showed recovery quickly if it compared to another scenarios, it cause of existence of effect efficiency factor production of emphasis usage technology at society.

Scenario 4 and scenario 5 have not having an effect on to condition of impact policy 1999. So that scenario 4 and scenario 5 cannot be considered to be one of the alternatives in overcoming policy impact 1999.

Condition of scenario 1, will cause degradation to market share. Domestic market become especial goals in fulfilling requirement of food, cannot predominate entirely by domestic breeder. To overcome this condition, breeders have to make-up of quality of product through technology. Pattern of scenario 2 and scenario 3 showing usage of technology stimulate increase of Livestock productivity. For another scenario, scenario 4 and scenario 5 have not showed existence of influence to increase market share.

In production level, result of scenario 2 and scenario 3 showing higher production level behavior if compared to scenario 1, 4 and 5. Implication of this improvement is the make-up of requirement of farm for Livestock which more highly. Request level as showed previously, racing Livestock productivity to fulfill request of costumer. Production level showed by scenario 1, 4

and 5 also increase but for reach the condition like previous, need longer time.

In net profit, result of simulation all scenarios, showing the make-up of net profit accepted by breeder. Policy 1999 showing there has not significant influence of acquirement of net profit of breeder. From overall of yielded scenario, result of scenario 4 showed make-up of higher level net profit than all scenarios.

In labour, from result of simulation, behavior of number of labour showed growth similar to request, where make-up of high market, then absorption of labour will large too. Increasing level request causing Livestock improves production quickly to fulfill request, then its will required new labours.

High productivity of labour showed by technological intensification scenario and scenario technological intensification and learning of society. For the scenario of technological intensification combination and learning of society in the reality give higher productivity to be compared to another scenario. Number of labour at combination this scenario show high absorption level.

8. Analysis Implementation Policy

Peripherals of policy which have been studied have constraint and opportunity in its implementation. It will generate various implications in the world of reality, following are policy implementation analysis for the peripheral of Livestock policy.

Opportunity and growth pattern constraint defended remain to like previous period

If compared to between Livestockes in go forward countries and Livestock in developing countries, will seen gap such productivity difference. In go forward countries, Livestock sector have reached high efficiency level, where there are capacities production and output of labour with high activity, so that with small number of breeder can answer the demand of all requirement for the capacities of production. On the contrary at developing countries which generally still conduct Livestock traditionally, having low productivity efficiency, where in many Livestock sector matter cannot sustain the overall of requirement of request of food, though most labour work in Livestock sector. Lacking of innovation in Livestock will cause applying of this policy will degrade productivity and opportunity of breeder in participating in milk industry.

Opportunity and constraint improve earnings of breeder with focus at Livestock sector investment to self sufficiency in food through technological intensification.

Progress of technology believed to represent the source of growth of top-drawer economics. Progress of technology can create new technique nor improve the way of the solving of traditional duty. Progress of technology can be classified in three type that is economical technology of labour (saving labour), economical of capital (saving capital), and neutral technology. Technologies also give influence as accelerator of productivity. Policy by using technological intensification can be done with condition of integrated between breeder society to other development agent or government.

Opportunity and constraint improve earnings of breeder with focus at investment to two sectors that is Livestock sector through technological intensification and sector construction of society through study of society.

Efficacy of effort of transformation traditional Livestock not merely depend on ability and skill of breeder in improving its just productivity, but more depend on condition of social, condition of institute and market. Relationship between education and growth of economics presumably cannot be hesitated again. Pursuant to statistical fact, growth of economics in go forward nations can be proved that is not growth of physical capital causing growth of economics, however exactly growth of human being capital (capital human) representing important source of nations economic growth go forward.

Some direct relationship between education and growth of economics aggregately can be mentioned as follows:

(i) Education creates more productive labour force and supplies them with better knowledge and membership
(ii) Education create human being natural resources capable to replace foreign energy
(iii) Education gives basic skill and push modern behavioral pattern.

Opportunity and constraint improve earnings of breeder by limiting role of Co-Operative in arranging fresh milk price of marketing and market.

Approach of development from the top to down is development which is initiative and executed by external (by other development agents or government).

Approach of this development generally has not consider or integrate real requirements which faced by society. If this project or program has executed by them, it will show the difference between what society want and what must be done by society in its bearing with such programs. If

society development which only learning by from the top to down, generally fail to be powered society although seen efficacies of reached physical.

This policy can be considered as one to effort society and race society initiative.

Opportunity and constraint maintain earnings level by take care of continuity of natural resources.

Interaction human being with nature to take care of the continuity of its life is marked by changing farm function or arranges to utilize farm. Change arrange to utilize farm can push annoyed of existing ecosystem. Pressure to provide requirement of life because of the increasing of population make tendency lessen agriculture farm or Livestock caused by it used as dwelling farm. This policy can only be done if accretion of population can be depressed.

9. CONCLUSION

From research which have been done, henceforth can be pulled by the following conclusion:

(i) Livestock sector, as part of agriculture area, very influenced by policy specified by government. Applying of abolition of fresh milk import cost result degradation of request. It is show how to company competitiveness go down, in the form of degradation of market share. Caused by that, Livestock market going to minimize, ever greater of level request of market, degradation of request will be greater too. Result of simulation indicates that on a long term, policy 1999 resulting greater degradation of request to Livestock. Applying of policy 1999 which is applied in the reality also have an in with labour. By decreasing of amount of request, hence labour to be able permeated lower too.

(ii) From all scenarios, which most giving of best contribution in overcoming the existence of policy 1999, is scenario number 3. With policy improve earnings of breeder with focus at investment to two sectors. Those are Livestock sector through technological intensification and construction sector of society through study of society.

(iii) Executions for each scenario have constraint and opportunity. Development of education has to pay attention aspect generalization of education, because if otherwise, it will be make worse earnings distribution. It relate to the existence of correlation which are positive between education level and accepted earnings. So that if impecunious group have not get the opportunity higher education, then education system exactly will be permanent and widen earnings difference. Role of technology could be able applied to breeder society but, it is not discharged from absorption contribution education by society itself. It can be done in the form of capital enlargement, where virtual capital can create added value or wealth of society.

10. SUGGESTION

(i). Influence of policy with degradation import cost 1999, generating degradation to market share. It's caused by the Livestockes not ready yet to competition in price sell. For that, it is suggested to make-up of partner pattern with industry processor of milk utilize to get trust and major usage of domestic milk for their product base.

(ii). This research not covering some variables, like level quality of yielded by product from livestock, aspect earnings of resident, and also technology. For next research expected used the quality of product, earnings of resident and also technology as the variable.

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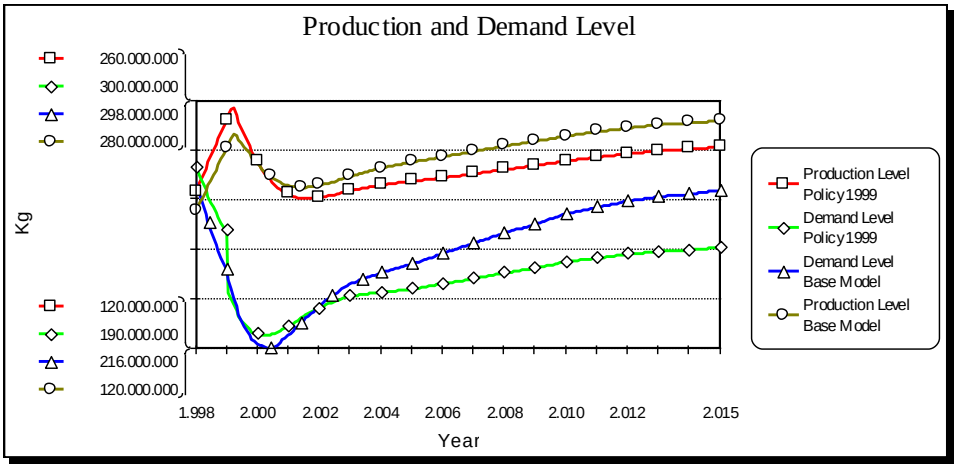

Figure 6. Behavior of base model compares with behavior of policy 1999 model pursuant production and demand level (1998 - 2015).

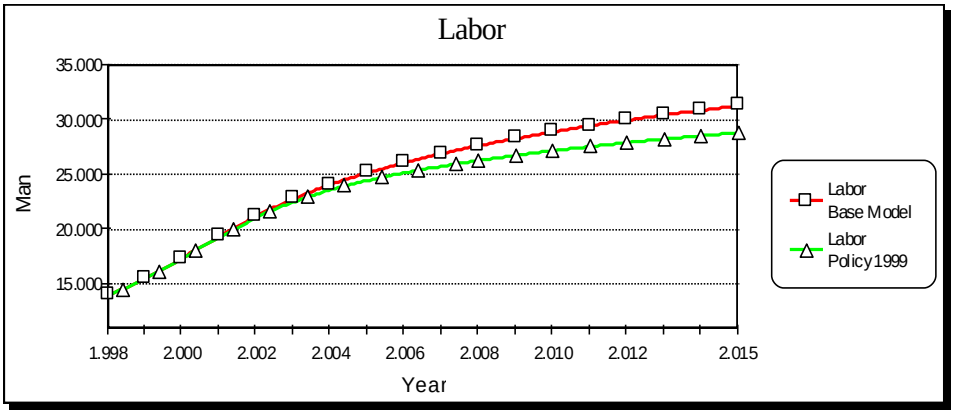

Figure 7. Behavior of base model and policy 1999 pursuant to labour (1998 – 2015)

Figure 8. Graph Result of Simulation from All Scenario pursuant to Request level (1998 – 2015)