

THE TRANSITION PROCESS IN MODERNISATION AND DEVELOPMENT OF A TRADITIONAL SOCIETY IN INDONESIA

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ABSTRACT

This paper presents a model of the behaviour of a traditional society in responding to development efforts implemented by the government, and in its interaction with migrant activities. The model consists of six major submodels, i.e., native population, migrant population, land and agriculture, non-agriculture, education and technology. The model explores the critical paths of the transition process of the traditional society from rural agrarian into urban industrial cultures. Policies on technology introduction, education improvement, and native's land-sale control to migrant would increase the native's life quality and prevent from the long stagnation when the natives leave their farm to work at non-agricultural sector.

Modernisation in Traditional Community of the Dani Speaking Tribe

Modernisation, and by implication development, is a revolutionary process, in which its technological and cultural consequences are as significant as those of the Neolithic Revolution which turned food gathering and hunting nomads into settled agriculturalists [1]. Efforts in modernisation are now being focused on transformation from rural agrarian cultures into urban industrial cultures. This revolutionary process has been taking place in the traditional society of the Dani speaking tribes, living in Baliem Valley of Irian Jaya Province of Indonesia. They have lived primitively, long before they accidentally acquainted with the outside world, that was when the Valley was discovered in 1938 [2]. Majority of this community still live in subsistence and practise barter trade in the economic activities. The Dani have practised a primitive form of shifting agriculture and usually plant sweet potatoes for staple food. The fallow period of the mechanism has been shortened from 15 years into 5 years, as the consequences of increase in food needed and decrease in land availability.

After the discovery, strangers came to this Valley were continued by missionaries, internal and local migrants, and government intervention. Years after the migration flow started, a new civilisation

began to show up. Their traditional manners have been changed to be more industrial. The modernisation has really occurred after the government intervention implementing numbers of sectoral and regional development programmes. Development activities and migrant existence in the Valley have brought good influences as well as unexpected effects. The impact of development could be seen from the interaction between natives and migration people in economic activities. The interaction has made the natives exposed to market economy. Since rice is the staple food of migrants, thus, it has high commercial value and become the main cash-crops for native.

However, the natives must deal with land problems. Firstly, land ownership of natives have been gradually decreased since they have released the ownership and sell the land to migrant. This will reduce land availability of natives to farm consequently requiring more frequent cultivation. Secondly, increase in intensity of cultivation will accelerate land degradation which then lower productivity. This paper explores the effect of modernisation and development, focusing on the interaction between natives and migrant in market activities. It is intended to obtain the understanding of this traditional community system in responding to development intervention.

THE MODEL

Figure 1 shows the main causal loop used to develop the model. The model consists of six major sub-models, i.e., native population, migrant population, land and agriculture, non-agriculture, education and technology. Agriculture sector includes two activities, traditional agriculture producing sweet potatoes and commercial agriculture for generating income. Commercial agriculture consists of wet-land agriculture for rice-planting, and dry-land agriculture mostly for horticulture planting. Dry-land agriculture have similar methods of cultivation with the traditional planting.

One crucial thing obtained from the interaction with the migrant is that income generating activities by planting various kind of food needed by migrant. The main source of native cash-income is from rice-planting. Other commercial food, such as horticulture, are introduced by migrant diversifying their planting activities. All these new food have also influenced native' consumption pattern. Most of them have consumed the food supposedly planted for market.

Increase in income have changed the consumption pattern and native' life styles indicating process of modernisation. New life styles and consumption pattern has created new demand which more income requiring them to increase their farm activity. Increase in income will also give more access for skill and education and increase their level of utility. Better skill and education with supports of better income will

improve the adoption of technology. Technology introduced is agricultural technology which is treated as policy variable. Technology adopted is 'measured' by perception delay which is influenced by income and education level. Policy on education involves capacity of accepting students. Infrastructure sector is focused on road access which influence prices of the farm-products. Migrant economic status is simply determined by the non-agricultural activities, which is considered as exogenous variable. Native labour work at both farm and non-farm activities. It is assumed that the labour demand would be absolutely satisfied at any circumstances.

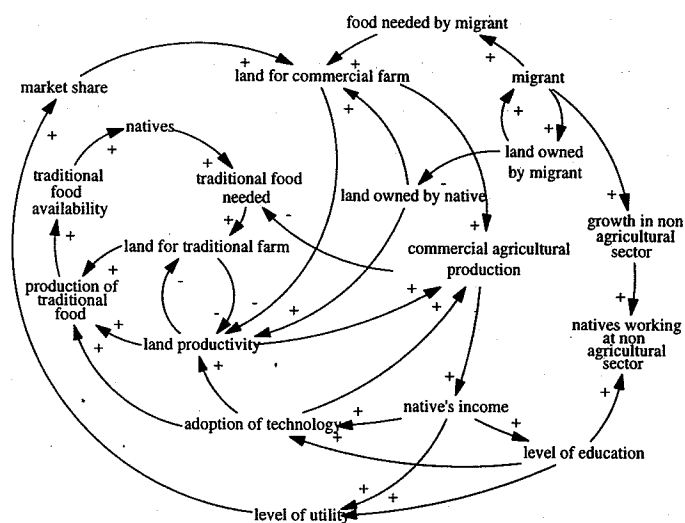


Figure 1. Main causal-loop of the model.

BASE-RUN SIMULATION AND POLICY-SCENARIOS

Model is simulated from 1970, that was after the government intervention started. Technology was firstly introduced in 1980 including land-conservation, and mixed-planting system. The base-run simulation apply the current condition, by including development intervention and the adoption of technology. The model explores the critical paths of transition process of the traditional society. Policy analysis is designated to find the recovery mechanism with minimum stagnation. Three policy-scenarios are applied in simulation, i.e., 1) policy on extension of education, 2) policy on land-sale control, 3) combination of policy 1 and 2. The results are shown in Figure 2 to Figure 5.

Figure 2 shows pattern of the native's income from agricultural sector. As an effect of modernisation, commercial-farm activities, both wet-land and dry-land, are continuously increased which result in more intensified use of land. The model would experience long stagnation due to lack of land-availability and lower productivity. Policy on land-sale control would give the chance for native to survive in agriculture sector, and maintain their land ownership, which in turn would improve their income. However, policy on education would provide opportunities to work on non-agriculture sector and attract the native to enter this sector and leave their farm.

Tendency of natives to maintain their farm as the result of land-sale control is also shown in Figure 3. As policy on education eventually attract the native to leave their farm, it would make the native gradually release their land ownership. Figure 4 also demonstrates similar pattern of the implication of land-sale control policy. Unlike policy on education improvement, land policy seems to provide desiring condition for native. However, better education would make the native more prepared to enter non-agriculture sector whenever their farm is no longer interesting and significantly benefiting them. Education policy would result in the increase in income from non-agriculture sector, which attract the native to work in this sector. The combination of both policies would provide the best implication to the increase in native income as shown in Figure 5. The combination policy would accelerate the recovery process, so that the native' income would be augmented sooner after experiencing stagnation. Some policy scenarios of the model is shown in Table 1.

CONCLUSION

1. Modernisation has been taking place in the traditional society of Dani tribe. It is indicated by the interaction of native with migrant which have influenced the native' life styles and exposed the native to market economy.
2. Increase in migrant population would decrease land availability to cultivate which then would reduce native's income, and cause the native to leave their farm and enter non-agricultural sector.
3. Imposing agricultural technology would reduce land degradation; policy on education extension will give them other opportunities to work on non-agriculture sector; policy on land-sale control will retain the ownership of native's land. Education improvement which provide them opportunities to work at non-agricultural sector as the consequences of leaving their farm would be critical path in the development process.

4. Combination of both policies would result in increase in income, along with the increase in human resources quality. These policies could prevent the system from a long stagnation and provide the relatively smooth transition, especially when the agricultural sector is left and become not the only income-generating activities for native.

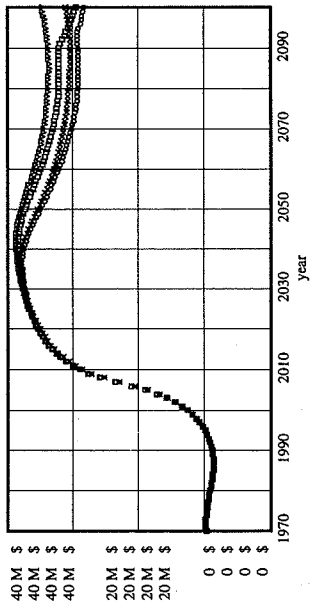
Table 1. Some policy scenarios

Parameter	Base scenario without technology input	Base scenario	Scenario 1 Education	Scenario 2 Land-sale control	Scenario 3 combine
1. Productivity : - wet land - dry land	rapidly decline rapidly decline	asymptotic decline asymptotic decline	same as base same as base	same as base same as base	same as base same as base
2. Commercial-land - wet-land - dry-land	same as base same as base	saturated growth saturated growth	same as base early saturated	same as base lately saturated	same as base early saturated
3. Land owned by - migrant	accelerated	exponential growth	same as base	slower growth	slower growth
4. Education	saturated growth	saturated growth	lately saturated	saturated growth	lately saturated
5. Labour at : - agricultural - non-agricultural	more less constant exponential growth	tend to increase exponential growth	same as base less constant accelerated	tend to increase slower	same as base exponential growth

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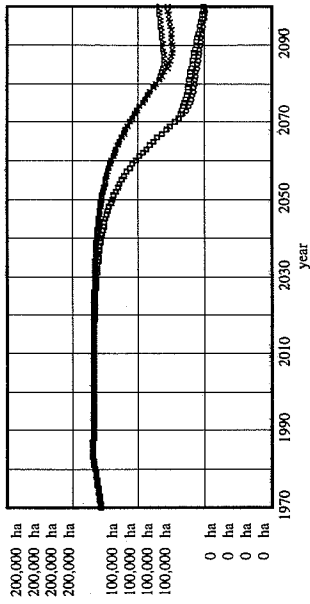
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Figure 2. INCOME FROM AGRICULTURE SECTOR



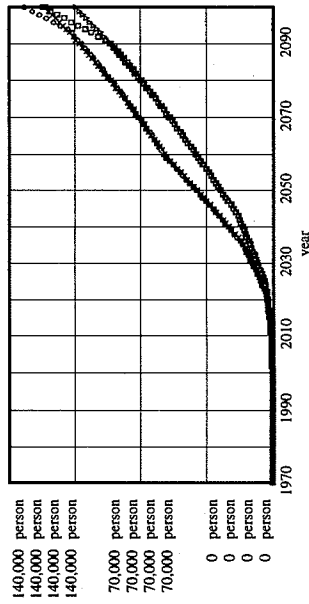
base ha
scenario 1: education ha
scenario 2: land-sale control ha
scenario 3: combined ha

Figure 3. ARABLE LAND OF NATIVE



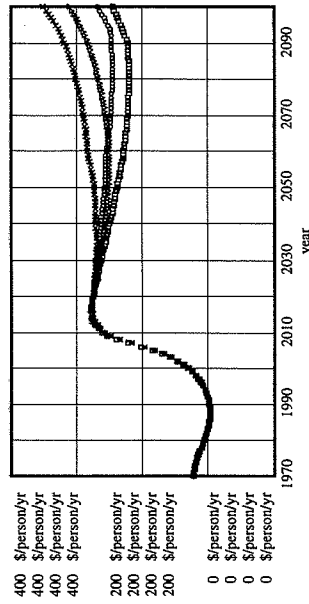
base ha
scenario 1: education ha
scenario 2: land-sale control ha
scenario 3: combined ha

Figure 4. LABOUR AT NON-AGRICULTURE SECTOR



base person
scenario 1: education person
scenario 2: land-sale control person
scenario 3: combined person

Figure 5. NATIVE'S INCOME



base \$/person/yr
scenario 1: education \$/person/yr
scenario 2: land-sale control \$/person/yr
scenario 3: combined \$/person/yr