

Economic Development with the Tribal Maroons in BovenSuriname

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Abstract

The main analysis of this study is how economic development in a rural area inhabited by tribal maroons (i.e. indigenous peoples) can be analysed. Measuring the economy of such a society may need resourceful methods, as GDP generally measures macroeconomic development. Measuring with money variables gives a bias due to the fact that barter exchange is very common in these societies and money is not used a medium of exchange.

Microeconomic level results show that the tribal maroons in BovenSuriname have experienced economic growth, whereas other studies (e.g. Sobhie [2012], Menke, Schalkwijk, Schalkwijk and Seligson [2012]) argue this area was and still is far poorest of Suriname.

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PREFACE

The master thesis in front of you is the result of three months research at the Utrecht School of Economics (USE) and the Institute for Graduate Studies and Research (IGSR) at the Anton de Kom Universiteit of Suriname.

The writing of this report has known some rough ups and downs. Especially in the period after I got back from Suriname I experienced some troubles in defining the actual topic of my thesis and how to cope with the lack of certain data. I have been able to collect several data, however some records which I expected to use in my analyses are still not received. This paper is definitely the most interesting paper I have written in my time at the Utrecht School of Economics. I got the opportunity to genuinely experience what I have been writing my thesis about, instead of merely take on the subject and write an analysis about it. I received the opportunity to visit the interior of Suriname and literally collect my own data there. This brings me to another “true experience” concerning my thesis: Collecting information and data in Suriname. I noticed that the ease to get access to data on the World Wide Web during my study, especially on macroeconomic level, was not applicable for this research. The lack of data in Suriname brings not only complications for the data analysis, but also needs a different view on the literature study. Overall I am glad with the final product, especially with the results, keeping in mind this is a start for further research in the BovenSuriname area.

Now I would like to go back to the start of this research – the moment my supervisor Y. Grift introduced this topic to our master group. It is important to me to write about a subject that truly has my interest. This topic immediately drew my attention and luckily did not leave my mind anymore. My first word of thanks therefore goes out to Yolanda Grift, professor at USE. Not only for the introductory of this topic, guidance before, in and after Suriname, the access she provided me to her network and her enthusiasm and commitment to Suriname, but also for the careful reading and advise in necessary matters concerning the thesis.

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Furthermore I specifically thank Menno Marrenga, a Dutch engineer who lives in BovenSuriname for about 25 years and provided me with much information I used in my research. Especially during the field-research Menno Marrenga has been of great help. I spend three days in his

presence, in which we discussed many research techniques possible (or rather: not possible) in BovenSuriname. He also told many stories and anecdotes about his experiences and living in BovenSuriname which gave me a kind of framework about the exceptional culture of the Saramaccaners. While conducting the field-research, he acted as my guide for the first two days. Furthermore he gave me guidance and safety in the area, which to me was very comforting. Without help of Menno Marrenga I would probably not have been able to go to BovenSuriname, especially not on such short notice.

Next to Menno Marrenga, Doris has given me great guidance in the last two days of my stay in BovenSuriname. With Doris I visited Adawai and Gengeston 1 & 2, where he interpreted during the interviews and while walking through the villages to count the houses. In Gengeston he also introduced me to his family. We often had talks about the differences here and in Paramaribo or the Netherlands, both he as myself were curious about each other's way of living.

I would also like to thank the employees of the Anton de Kom university. Special thanks goes out to professor Caram, whom was as kind to share his view on my concept thesis while visiting the Netherlands and provided me with some very useful feedback, especially concerning the structure of my thesis. Furthermore I would like to thank Mr Schalkwijk and Tina Dullem for their suggestions on data collection and Jantine Geerdink and Sabine Roelofsen for their feedback on the grammar and content of my thesis.

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I. INTRODUCTION

BovenSuriname is an area in the interior of Suriname and is merely inhabited by tribal maroons. This area is part of Sipaliwini, the district with the highest poverty rate of whole Suriname of 96 percent. With an average of Suriname in total of 29 percent, this is very high (Sobhie, 2012). It is also argued that income inequality increased in Suriname since the eighties (Menke, Schalkwijk, Schalkwijk and Seligson, 2012). These analyses however are conducted on macroeconomic level. There are several developments in BovenSuriname on microeconomic level that might dispute otherwise. The main issue in this paper is how economic development in a rural area inhabited by tribal maroons can be analysed. Measuring this economic development on macroeconomic level in terms of GDP or GNP can give an invalid outcome as other aspects than money may affect economic development.

Present day, global wealth and poverty are still unequal distributed. As Gallup, Sachs and Mellinger (1999) argue, several welfares have been beneficial on global level, although still large differences remain, particularly an increase in life expectancy and a decrease in infant mortality. Material wealth, measure in gross domestic product (GDP) seems only to convergence little. Measuring economic development in an area inhabited by tribal maroons¹ money seems to be a biased method. In such a community, barter exchange is still very common and money is simply used as a use of account, and not a medium of exchange Sahlins (1972). In this research, aspects to measure economic development other indicators than money (i.e. GDP) are examined and used to analyse the economic development in BovenSuriname.

The study of Demmer and Overman (2001) analyses the economic behaviour of the Tawhaka indigenous peoples in Honduras. The final conclusion of their research is that there are differences between sectors the households of the indigenous peoples are active in. The least wealthy households are active in forestry, while wealthier households participate in agriculture. The wealthiest households take part in other economic activities, such as gold panning and shops.

Kranton (1996) describes that tribes whom were used to reciprocal exchange get in contact with market systems, have access to other ways of exchange. The study of Demmer and Overman (2001) also shows that access to new markets increases wealth. There are many studies that argue infrastructure has a positive effect on economic developme (among others Aschauer (1989), Fox and Smith (1990), Andrews and Swanson (1995), Sanchez-Robles (1998) and Teruel and Kuroda, (2005)).

¹ The Saamaka is not a part of the indigenous peoples in Suriname, although many circumstances (especially in terms of legal provisions) are similar for the tribal maroons and the indigenous peoples (Natural Justice, 2012). For that reason, when referred to indigenous peoples in this study, also the situation for the tribal maroons is meant.

For BovenSuriname the paving of the Tjongalangapassi, the road that connects BovenSuriname to Paramaribo, the most populated area of Suriname, creates possibilities to access market exchange.

There are several reasons that make this research relevant. First there are not many studies about the economic behaviour of indigenous peoples. One of the largest studies in this area is conducted by Demmer and Overman (2001). Most research focusses on social, anthropological or cultural development (Radcliffe and Laurie, 2006). Specifically the location in which economic research is conducted is new. Eduards (1996) analysed the economic behaviour in two villages in BovenSuriname as well, however focussed more on individual level. This brings me to another aspect of importance. The field-research, existing of counting the materials of which houses and a questionnaire on economic activities in a village, is designed to be able to reproduce the research and minimize dependency of the respondent. Furthermore the effect of infrastructure on BovenSuriname is analysed. Central with this analysis is the switch from an economy that is used to barter exchange to a system in which market exchange becomes more important.

This paper is structured as follows. The literature study is split into two chapters. Chapter two will focus on the historical, demographical, geographical and economic design of Suriname as well as BovenSuriname. Chapter three analyses the economic situation in BovenSuriname, where the barter versus market exchange is analysed and what aspects are involved when looking at the economic development of indigenous peoples. The following chapter describes the data used as well as the methodology applied to analyse the economic development of BovenSuriname. Data available and used are educational records, election numbers in relation with distance till Atjoni, the end point of the Tjongalangapassi and records from field-research conducted by Marrenga (1989-2012) and myself (2013). Chapter five analyses the results of all data collected concerning the economic development in BovenSuriname. Finally a conclusion of the research is given, followed by several recommendations for follow up research.

II. A CLOSER LOOK AT BOVENSURINAME

BovenSuriname is an area located in the South interior of Suriname. In multiple ways this interior area, which includes BovenSuriname, differs from the largest part of Suriname. In order to understand the origin and development of BovenSuriname and its inhabitants, several important aspects of Suriname and what this means for BovenSuriname are discussed. First the historical background of Suriname and the influences this had on the development of BovenSuriname is described. This is followed by an analysis of the demographical situation as well as the geographical position of BovenSuriname in this country. Last the macroeconomic features will be covered.

History

In this section the history and economy of Suriname and the tribal maroons is discussed. Suriname is the smallest, independent country of South-America. It knows a history of colonialism, slavery and war. In the beginning of the 16th century, it was a colony of Great-Britain. In this period, also slavery at plantations started. In 1667 Suriname became a Dutch colony. At this time, Suriname counted 175 plantations and more than 4000 colonists and slaves. The plantations were used for, among other things, coffee and sugar export. Around 1800, the number of slaves whom were forced to work on those plantations was estimated around 50,000. Several slaves attempted flee into the forest and start their own settlements. These former slaves from African origin received the name “bosnegers” (i.e. Bush Negros). In 1863 slavery was abolished and in 1873 all the slaves were officially free. To cover for the loss of work-force, 30,000 British-Indian and 33,000 Javanese people migrated to Suriname, until the government of India hindered this in 1916. For the former slaves, the Bush Negros, there were not many job opportunities left as they did not want to work on the plantations any longer. They worked mainly in forestry and mining, or in the service sector (Landenweb, n.d.).

In 1954, after the Second World War, the Netherlands granted Suriname to a large extend self-governance. This is recoreded in the Statuut voor het Koninkrijk der Nederlanden. There was a push from several political parties to aim for complete independence. In 1975 Suriname became independent (Landenweb, n.d.).

From 1986 till 1991 the Domestic War was fought in Suriname. This is one of the darkest episodes in the history of Suriname. This war was mainly fought in the Eastern part of Suriname, the interior area. The battle was between the regime of Desi Bouterse, whom is the current president of Suriname but also former leader in the eighties, and Ronnie Brunswijk, former bodyguard of Desi Bouterse and a Bush Negro. Brunswijk formed an army with other Bush Negros, called the “Junglecommando” (Jungle Command). During the war, several Bush Negro villages were destroyed

and many Bush Negros were killed. It was not possible for Desi Bouterse to destroy the army of Brunswijk, but for Brunswijk impossible to overrule the regime of Desi Bouterse.²

Demography and Geography

In Table 2.1, demographical numbers of the CBB (2011) of Suriname show that there were 501,623 citizens. Many cultures and religions are living together, for instance Afro-Suriname, Hindustan, Javanese and Chinese people (CBB, 2011). This is partly due to the history of plantations. The geographical landscape of Suriname is split into ten districts, among which Marowijne, Paramaribo and Sipaliwini. In Table 2.1 an overview of the population of all districts is given.

TABLE 2.1 Total population of Suriname in 2011, per district

	Total population	% of total population	Land area in km²	% of total land area	Population density per km²
Paramaribo	226888	45.2%	182	0.1%	1246.64
Wanica	108384	21.6%	443	0.3%	244.66
Nickerie	31741	6.3%	5353	3.3%	5.93
Coronie	2694	0.5%	3902	2.4%	0.69
Saramacca	15562	3.1%	3636	2.2%	4.28
Para	23579	4.7%	5393	3.3%	4.37
Commewijne	27538	5.5%	2353	1.4%	11.70
Marowijne	18238	3.6%	4627	2.8%	3.94
Brokopondo	12744	2.5%	7364	4.5%	1.73
Sipaliwini	34255	6.8%	130567	79.7%	0.26
Total	501623	100.0%	163820	100.0%	3.06

	Total population	% of Sipaliwini	Land area in km²	% of Sipaliwini	Population density per km²
BovenSuriname	19035	55.6%	7512	5.8%	2.53

Source: CBB (2011)

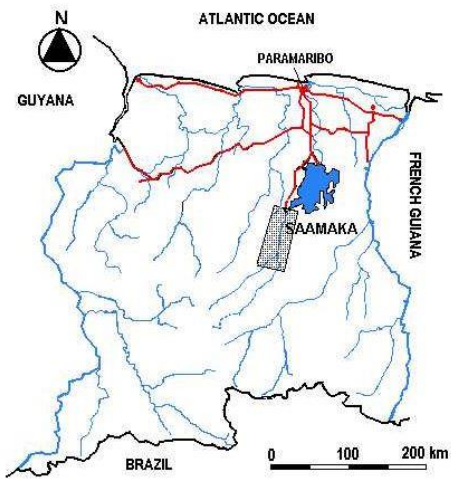
BovenSuriname is located in district Sipaliwini, which is covering the south of Suriname. As Table 2.1 shows, Sipaliwini is by far the largest district of Suriname in terms of land area, with approximately 80 percent of total land area of Suriname. The geological conditions in Sipaliwini differ with the rest of Suriname and the area is often referred to as the “inlands”. There are many mountains and the landscape is rough, rivers are wild and the ground possesses much potential for natural resources. (Anda Suriname, 2013). Table 2.1 also shows Sipaliwini had 34,255 residents and

² For more detailed political background information and the effects on the social and economic development of Suriname, see Landenweb (n.d.) and Suriname Webquest (n.d.).

by far the largest land area. As a result population density was the smallest of all districts in Suriname, with 0.3 persons per square kilometre. Many places are inaccessible and uninhabitable and people live mainly near the rivers in tribal societies (Anda Suriname, 2013).

The district Sipaliwini is divided in several resorts, comparable with the municipal level. In this research, the development of resort BovenSuriname is analysed. Another name for BovenSuriname is Saamaka, which can refer to both the residents and the resort (Buanda, 2007). In Figure 2.1 the area of BovenSuriname (on the map referred to as Saamaka) is shown. In Appendix I a detailed map of all villages in BovenSuriname is included. Table 2.1 shows that in 2011 there were 19,053 people living in BovenSuriname, meaning more than half the population (56 percent) of Sipaliwini lives in BovenSuriname. Population density is still below the average of Suriname, but much higher than the average of Sipaliwini, with 2.5 persons per square kilometre. This is probably due to the fact the people in Sipaliwini mostly live next to the river, and the distance from the most populated area Paramaribo and the coast, is not too far away.

FIGURE 2.1 Map Suriname



Source: Buanda (n.d.)

The interior of BovenSuriname is connected to the most populated area Paramaribo by one single road. This road follows the route Paramaribo-Paranam-Brownsweg-Atjoni. The last part of the road, running from Brownsweg to Atjoni, is called the Tjongalangapassi and ends in Atjoni. This is a village located at the top of the BovenSuriname River shown on the map in Appendix I. The Tjongalangapassi is constructed in the eighties (Eduards, 1996) and has been paved in 2011. This development decreased travelling time substantially from about approximately seven hours, depending on the weather conditions, to approximately three and a half hours (Knini Paati, 2013). As Atjoni is the end point of the road, travelling to any village located at the BovenSuriname River must be preceded by canoe. The travel time by canoe takes longer when the village is located further from Atjoni. The BovenSuriname river of which one must travel has some dangerous waterfalls and streams, especially if the boatman is not experienced or familiar with the streams (Marrenga and Ruleman, 2011). Another mean of transport is by plane, as there are four airstrips in this area. Locations of these airstrips are also included on the map in Appendix I.

Economic Development Suriname

Van Dijck (2001) reasons Suriname has experienced a shift of the structure and composition of the economy. First there was a focus on mainly export of agricultural goods, which developed during the colonial time. This focus shifted to the use of Suriname's natural resources toward the mining economy. The Ministry of Labour, Technological Development and Environment (2006) state the Suriname economy is characterised by an income dependency on export revenues, particularly from bauxite, petroleum and gold. In total these natural resources provide 72 percent of total export revenues. There is also a dependency on foreign raw materials in domestic production sectors (e.g. tobacco and agriculture). Of total import expenses, 62 percent is determined by the national production sectors. As a consequence of these economical characteristics, Suriname is sensitive for external developments. Van Dijck (2001) argues that the small size of the economy and the impact of alumina exports (bauxite) cause external shocks, from among others the price of alumina, to affect the Suriname economy extraordinarily fierce.³

Concerning the interior of Suriname, not much research is carried out about the economic development. There are two studies which analyse the poverty (Sobhie, 2012) and income inequality (Menke et al., 2012) in Suriname which are discussed below.

In the multidimensional approach from Sobhie (2012), poverty rates in Suriname are analysed. Instead of merely focussing on the income distribution, Sobhie uses multiple indicators to analyse poverty: financial status (GDP), living comfort, education and water and sanitary facilities.

TABLE 2.2 Poverty rates in Suriname in 2012, per district

Percentage per stratum		Percentage per district	
Urban	24%	Paramaribo	27%
		Wanica	27%
Rural	19%	Para	19%
		Nickerie	28%
		Coronie	32%
		Saramacca	34%
		Commewijne	35%
Interior	67%	Marowijne	43%
		Brokopondo	50%
		Sipaliwini	96%
Average Suriname			29%

Source: Sobhie (2012, p.42)

³ For more information about the long-term economic development of Suriname, I would suggest to read Van Dijck (2001), page 9 till 39. In this section, Van Dijck explains the causes and consequences of developments on the Suriname economy.

The average poverty rate for Suriname, including the urban, rural and interior areas, is 29 percent according to the study of Sobhie (2012). There is however a large discrepancy between the three stratum areas within Suriname. Looking at the poverty rate of the urban and rural area, they are both relatively close to each other with 24 and 19 percent respectively. The interior area shows a much higher poverty rate with 67 percent. On district level there are also large differences shown. The lowest poverty rate is in the rural area Para, with only 19 percent. The poorest district appears to be Sipaliwini, with a poverty rate of 96 percent.

The view that the rural/interior areas, being Marowijne, Brokopoondo and Sipaliwini, are poorest compared to the urban area is shared by Menke et al. (2012). They also analyse the income inequality in Suriname. There are several measure methods that can be used to analyse the income inequality. One of the most used indexes to analyse this is the Gini-coefficient. The Gini-coefficient ranges from 0 to 1 and the closer to 1 the coefficient reaches, the higher income inequality measured. Menke et al. (2012) use different sources for the measurement of the Gini-coefficient, as can be seen in Table 2.3.

TABLE 2.3 The Gini-coefficient for Suriname

	1980	1993	1999	2000	2004
ABS (census)*	0.41				0.55
Neri and Menke		0.61		0.62	
World Bank			0.53		
SEDLAC**			0.62		

* *Algemeen Bureau Statistiek*
 ** *Socio-Economic Database for Latin America and the Caribbean*

Source: Menke, Schalkwijk, Schalkwijk and Seligson (2012)

From the period 1980 till 2004 the Gini-coefficient increased. This would suggest that since the eighties income inequality increased over the years. Table 2.3 also shows that in the period 1993 till 2000 the Gini-coefficient peaked (this depends however at which source is looked at) and dropped slightly in 2004 again. Menke et al. argue income inequality increased due to policy measures taken in 1993 and 1994, resulting in hyperinflation and declined the purchasing power of the poor specifically. Finally, Menke et al. show in their study the Gini-coefficient of Suriname is, compared to other countries in the world, but also in Latin-America, is relatively still very high.

III. ECONOMIC DEVELOPMENT IN A DEVELOPING AREA

The study of Sobhie (2012) shows that the poorest district in Suriname is Sipaliwini, while the study of Menke et al. (2012) shows the discrepancies between incomes in Suriname increased since the 1980's. Moreover compared to other countries, Suriname has a very high Gini-coefficient. These studies are based on macro-economic analyses. In this chapter the meaning of economic development and how to measure this is analysed, especially when this is studied in a rural area inhabited by indigenous peoples.

First the definition and indicators of economic development are discussed, in order to give a clear understanding of this matter. This is specified for rural areas where barter exchange, instead of market exchange, is customary. Additionally the impact of access to new markets on barter exchange is analysed, where this access is created by construction of infrastructure.

Defining Economic Development

Economic development can be measured in multiple ways. In this section an analysis of the difference between developed and developing countries is made clear, where especially economic development in rural areas which are inhabited by indigenous peoples are considered. There are several indicators by which this development in rural areas can be measured, without analysing this development in terms of money.

There are many different definitions for economic development. One of these definitional is from The World Bank Group (2004): "Qualitative change and restructuring in a country's economy in connection with technological and social progress. The main indicator of economic development is increasing GNP per capita (or GDP per capita), reflecting an increase in the economic productivity and average material wellbeing of a country's population. Economic development is closely linked with economic growth." In many scholars (among many others, Gallup, Sachs and Mellinger, 1999) GDP is indeed used as a measurement for economic development. In the book of Todares (1985) economic development in the Third World is analysed. Todares shows that in the 1950's and 1960's GNP in many Third World countries has increased however he argues that quality of life however did not change. Therefore he questions the meaning of 'development' and argues economist should have a more suitable definition for development. He redefines development as "a multidimensional process involving major changes in social structures, popular attitudes and national institutions as well as the acceleration of economic growth, the reduction of inequality and the eradication of absolute poverty. Development, in its essence, must represent the entire gamut of change by which an entire social system, tuned to the diverse basic needs and desires of individuals and social groups within that system, moves away from a condition of life widely perceived as 'unsatisfactory' and

towards a situation or condition of life widely regarded as materially and spiritually 'better.'" (Todaro, 1985, p. 62). Following the view of Todaro (1985), there are many aspects of importance with economic development in developing countries.

Economic Development with the Indigenous Peoples

Looking at the economic development of rural areas inhabited by indigenous peoples, the definition of Todaro (1985) covers many aspects of importance and looks beyond the economic analysis of GDP. This is an important issue to emphasize, as Sahlins (1972) argues gift exchange, or reciprocal exchange, is common in tribal societies. Although these societies are usually relative small settlements, they are characterized by their self-governance and autonomies. In primitive societies, money refers to objects that mark value rather than to use it as a medium of exchange. Sahlins refers to this sort of money as "primitive money". So in a barter economy money serves essentially as a unit of account, and not a medium of exchange. To analyse the economic development communities (i.e. indigenous peoples) that are characterized by this "primitive money", different indicators than money are necessary. For this analysis, the study of Demmer and Overman (2001) is comprehensively analysed. Demmer and Overmans' research investigates the economic development among indigenous peoples in Honduras, called Tawahka Amerindians. In an extended quantitative research Demmer and Overman have been analysing the economic behaviour of the Tawahka. This research is one of a kind, since not much research has been conducted among indigenous people in the area of economics. For this reason, this study will be analysed thoroughly to see what aspects should be focussed on when analysing economic development in an area that is inhabited by indigenous people.

Outside the scope of the research of Demmer and Overman (2001) is the determination of factors that are significantly associated with the wealth of households. Their goal is generally to analyse the quality of life among the Tawahka Amerindians and thereby "determine the effects of economic development on various aspects of indigenous economic behaviour" (Demmer and Overman, 2001, p. 146). No study yet has analysed what aspects influence economic development among indigenous peoples. There is one determinant of economic wealth Demmer and Overman analysed briefly. This is the life cycle of the household. In their analysis, it shows that highest incomes are located in households were:

- The age of the oldest child in the household is between 6 and 10 years.
- The age of the head of household is between 25 and 35 years.
- The residence duration of the head of the household in present village is between 21 and 30 years.

Unfortunately, they do not give an explanation for this outcome as it is outside the scope of their research and no other study about this matter is available

Demmer and Overmann (2011) argue that education is another important indicator that may impact economic development. Hall and Patrinos (2006) analyse the educational level among indigenous peoples in different countries in Latin America. Their analysis shows that, non-indigenous peoples have finished more schooling compared to indigenous peoples. One of the examples in the paper of Hall and Patrinos (as referred in Hernandez, 1988), shows the educational situation in Argentina. Results show 44 percent of Mapuche people finished at least one year of schooling, compared to 93 percent of the of the non-indigenous peoples. Hall and Patrinos (2006) also argue, based on previous research among several studies, the gap between schooling of indigenous and non-indigenous peoples remains large. In some Latin American countries there also appears to be more likeliness to repeat a grade and to be older than the appropriate age for their grade for indigenous peoples than non-indigenous peoples. In the research of Demmer and Overman (2001), several advantages of education for indigenous people are given. It increases their confidence in dealing with people from outside their culture. Also, Demmer and Overman's study (as referenced from Philips, 1994) argues it makes it easier for indigenous peoples to find and use new development in agricultural technologies and (as referenced from Jamison and Lau, 1982) obtain better prices for crops. Demmer and Overman conclude education may raise the productivity per amount of time invested.

Presumably there are several other indicators that are of importance when looking at the economic indicators that influence wealth, however as mentioned before not much research is conducted concerning this matter. However there are studies conducted on single matters that influence the development of indigenous people. These studies however rarely focus on the economic behaviour among these communities, but generally on other development aspects. An example of such a study is Radcliffe and Laurie (2006) studied the cultural development among Andean indigenous peoples.

Yet this analysis is focussed on activities among indigenous peoples that impact economic development. The research of Demmer and Overman (2001) is however created to analyse what the effect of economic development is on several activities of the Tawhaka people. They found several remarkable outcomes concerning this research. Firstly, Demmer and Overman make a distinction between several activities households participate in. Results show poor people are active in forestry, presumably for the reason that they spend a lot of time in the forest to collect goods like food and housing. More wealthy people spend less time in the forest and more time on agriculture or other activities (e.g. shop owners, gold panning) most likely because foraging becomes less favourable.

Concluding wealthier people spend statistically less time in the forest and more time on agriculture or other non-forest/non-agricultural activities. Demmer and Overman do not find a statistical significant relationship between wealth and a reduction in leisure time or increase in total productive time.

Infrastructural Influence: from Barter to Market Exchange

Mentioned in the previous section, Sahlins (1972) argues reciprocal exchange is common for tribal societies. In this section the effect of increasing accessibility to new markets is analysed. Hereby the shift from barter economy to market economy is a main influence. The infrastructural impact on economic development is discussed extensively.

Kranton (1996) describes that tribes whom were used to reciprocal exchange get in contact with market systems, have access to other ways of exchange. Kranton describes the effect of introducing market exchange may destabilize the reciprocal exchange as follows: “opportunities for market exchange reduce the punishment for breaching a reciprocal exchange agreement and provide access to new and different goods” (Kranton, 1996, p.844). This would indicate that the function of money shifts from merely being a unit of account to a medium of exchange. The disadvantage of access to new markets is, as stated by Kranton (1996) is a decrease in reciprocal exchange. The IMF (2012) however argues for an increase in efficiency when money is used as a medium of exchange. It is possible to exchange goods and services for a common medium of exchange – money. If the market grows and more persons become specialized, there is easier access to production of goods, which leads to more demand of these goods (due to higher accessibility and lower prices) and more demand for money.

In the study about the indigenous peoples in Honduras from Demmer and Overman (2001) the differences in economic wealth between households with tight and households with little connection to the outside world are determined. Demmer and Overman find a number of dissimilarities in economic development between both households. When a household is at the beginning of market exchange, working days are longer at the expense of leisure time in the agricultural sector. The same development is observed for households working in the forest sector, but forestry activities decline when the households are at the highest level of integration in the market exchange. The use of industrial food products becomes regularity, as is the purchase of hardware goods. For households that are less involved in market exchange (i.e. still participate actively in barter exchange), difficulties arise to find the money supply for, in particular, buying modern goods. With respect to the wages of the indigenous peoples, there are also changes noticed. Among laborers in the forest and agricultural sectors wage seems to decline, while the wage of

people who are active in other sectors (e.g. shop owners, gold panning) appears to increase. Demmer and Overman (2001) also argue (as cited by Godoy, 1996) '[g]iven the geographic isolation of the community, and the absence of a well-established infrastructure linking the outside world to the community, traders [and therefore local people] will focus on compact high-value goods.' In this citation is referred to the missing construction of proper infrastructure, which is the following subject that is analysed.

Hence one possible solution to gain access to new markets and thereby increase market exchange within a community is by the use of infrastructure. There are several studies conducted all over the world that analyse what the effect of infrastructure on economic development is. The pioneer study on the effect of infrastructure on economic performance is from Aschauer (1989), whom provides empirical evidence on the relationship between infrastructure and productivity growth. Aschauer's results show a 1 per cent increase in public capital stock increases total factor productivity within the United States by 0.40 per cent. Many studies followed this analysis. These studies all analyse this matter using different estimation procedures, but most of them find similar conclusions; public investment in infrastructure has a strong and positive effect on output. Among these studies are Fox and Smith (1990), Andrews and Swanson (1995), Sanchez-Robles (1998) and Teruel and Kuroda (2005). There are several studies analysing the single effect of types of transport, where the effect of road infrastructure always appears to be strongly related to economic growth. For example Hong, Chu and Wang (2011) analyse the effect of transport infrastructure on the regional economic growth in China. They argue that especially land and water transport show strong significant impact on economic growth.

Sanchez-Robles (1998) argues an investment in road infrastructure and its payoff are determined by the size and structure of the network. This payoff is smaller when the network is larger. In a study from Gunasekera, Anderson and Lakshmanan (2008) the effect of adding a highway to the low road density country Sri Lanka is analysed. The findings of this study suggest that after the highway, output of individual firms and household income increased stronger for firms closer to the highway than those further away. The ratio of capital/labor of firms also changed, as the firms closer to the highway have become more capital intensive while those further from the highway have become more labor intensive. Additionally the land and labor-intensive employments shift towards skilled employment. '

Teruel and Kuroda (2005) analysed the effect of public infrastructure on Philippine agricultural productivity. Their estimates show infrastructure reduces costs of production, and in doing so the productivity level increases. On average saving in the agricultural sector is 0.28 per cent. It shows that roads have the highest elasticity of all types of transport analysed. An increase of 1

percent in road infrastructure decreases the cost of agricultural production by 0.71 percent. A smaller effect of public infrastructure is seen with irrigation and rural electrification, which results in a cost reduction of respectively 0.12 per cent and 0.01 per cent.

Conclusion

Sipaliwini, the district BovenSuriname is located in, has with 96 percent by far the highest poverty rate of Suriname (Sobhie, 2012). Another research suggests that income inequality within Suriname has increased from 1980 to 2004 (Menke et al., 2012). These analyses however are performed on macroeconomic level. Measuring the development within BovenSuriname, which is merely inhabited by tribal maroons, research should be implemented on micro level. Due to the fact that BovenSuriname is characterized by barter trade and money is generally used as a use of account and not a medium of exchange, other indicators than GDP or income are necessary. Demmer and Overman (2001) argue education is of importance for development as well as an increase in market exchange. Their study shows that of households differ in income depending on the sector they are active in. Households active in forestry are least wealthy, followed by agricultural households and the wealthiest households are participating in other activities (e.g. shops, gold panning). In the following chapter the hypothesis will be, wherever possible, analysed for BovenSuriname.

IV. DATA DESCRIPTION & METHODOLOGY

There are several data sources used to analyse the economic development of BovenSuriname. Before I will go further into the data description, I would like to emphasize the fact that this research is the first in its type. The goal of this study is to be the first in a series of longitudinal research. At this point, research in BovenSuriname is explorative and descriptive and was limited by the availability of data at this moment.

There are different ways in which data is collected and therefore it will be analysed on different levels. I will start with the macroeconomic analysis and will end with the information on microeconomic analysis. The first analysis is therefore with the official Suriname statistical data from ABS (1996-2012) and measures welfare on macro level. In this research merely educational data from the ABS is used to measure the literacy of the population of BovenSuriname and Sipaliwini. Other records from ABS are not applicable for welfare measurements or not (yet) available on Sipaliwini level. The second data used is the election numbers, collected from on line official public records. This analysis is already more specified to micro level analysis, as the voting behaviour in thirteen villages is measure. Finally the economic development in BovenSuriname is analysed using microeconomic data gathered from research performed by Marrenga and myself. The micro level data is split into two parts. Firstly the type of houses are counted and registered from 1989 till 2013 in several villages. The economic development is analysed looking at the development of the relationship between cement and non-cement houses. Secondly, economic development is analysed by the variation in economic indicators on village level. In this section, the short-term influence of the road is taken into account.

Education

In literature studies, economic growth is frequently measured in terms of GDP (among many others, Gallup, Sachs and Mellinger, 1999). For the district Sipaliwini, Sobhie (2012) showed that this is the poorest district of Suriname with a poverty rate of 96 percent. This method takes into account the GDP of the area, while it shows that many economic trades are indicated by the use of barter economy. Therefore in this section, merely the literacy of the children in BovenSuriname is measured.

Since the number of observations from ABS is low, it is not possible to conduct an empirical research with this information. It is however possible to analyse the numbers by means of descriptive research and consider what the recent developments of several indicators are.

TABLE 3.1 Overview of Educational Data ABS

	BovenSuriname			Sipaliwini		
	Start year	End year	t	Start year	End year	t
Pre-Primary Education	2007	2010	4	2000	2010	11
Primary Education	2007	2010	4	2000	2010	11

Notes: a dot (.) means no information available

Data source: ABS (2000-2012)

Table 3.1 shows which information will be used in the analysis. As shown, numbers on education are solely available for Sipaliwini and not for BovenSuriname, except for the last four years. In 2012, almost half of the population of Sipaliwini lived in BovenSuriname (ABS, 2012). This means the data of Sipaliwini is not fully applicable on the educational situation in BovenSuriname, but this limitation is taken into account. The data is used to analyse the development of children in pre-primary and primary education in Suriname, Sipaliwini and BovenSuriname.

As Hall and Patrinos (2006) state, there is a gap between the numbers of indigenous children whom go to school compared to non-indigenous children, this gap was and still is large. In a benchmark with all nine other districts the difference between indigenous and non-indigenous peoples (or the tribal maroons) in literacy is analysed. The expected outcome of the research is therefore there are fewer children are going to school in the interior district Sipaliwini compared to the urban and rural areas in Suriname and that this gap is present day still large.

There is also information available about the crime rates in Sipaliwini for the last three years. This however will not be analysed. Firstly, the period of three years is too short to make a clear analysis with this data. Secondly, as a news reporter from StarNieuws (2012) informed, the police has not been very active in BovenSuriname till July 2012. After this period the police started to undertake tougher action against criminals. Numbers and plain analysis are however included in Appendix II.

Elections

There are election numbers available per polling station in the area BovenSuriname. Data is available for a period of two years, being 2005 and 2010. Although not complete on microeconomic level, the data is already more focussed per area around a village than the first analysis with the ABS (1996-2012) data.

The year 2005 is analysed using the data source Index Stembureau's (2005) while information from 2010 is analysed using the source Surinaamse Verkiezingen (2010). For the period 2005 there were fourteen villages' one could vote in and for 2010 there were fifteen villages. The extra village with voting possibilities in 2010, Kajapati, is excluded from the analyses as it is not possible to compare with previous numbers. This makes the analyses a total of fourteen villages'. In Appendix III, a complete overview of the absolute number of voters and polling stations is included.

The analysis will focus on the number of voters, being the politic activism of the area, and the distance from Atjoni. Atjoni is a transit point, from there one gets off the vehicle into the boat to finish the trip to the village of destination. As the villages closer to Atjoni are easier accessible, since the trip with the boat is shorter and less water obstacles have to be conquered, politicians are likely to be more active closer to Atjoni. The other way around, it is possible the people closer to Atjoni visit the city more often. Before the Tjonalangapassi was paved, this however was still a very time-consuming trip. The other bias in this theory is that there are four airstrips in the BovenSuriname area, so it is not always necessary to travel by vehicle and boat.

The expected outcome of the comparison of the 2005 and 2010 voters, based on the explanation above, is that distance will have a small, but not significant effect on the voting behaviour. This however may change over the next few elections as the government is actively involved with the development of the Tjongalangapassi and Atjoni as a public centre.

Preferably this research was conducted with data from the Centraal Bureau voor Burengerzaken (CBB) or de Medische Zending about the number of residents, gender, age and migration flows. Especially the effect of paving the Tjongalangapassi may show effects of migration. Using this in an economic model, the trade model of migration would have been applicable.

House Development

The first part of the field-research focusses on the development of types of houses in BovenSuriname and the interpretation of the economic value of these houses. There are three types of houses in BovenSuriname. The first type of house is those made of wooden walls with a roof of palm leaves. Other houses are made of wooden walls with a rooftop of corrugated iron. The last type of house it one made of cement walls and floor, mostly characterized by a rooftop of corrugated iron.

Information on how many houses of which type are present in a village is gathered by previous research conducted by Marrenga (1989-2012) and by own field-research (2013). The preconditions of this field-research are included in Appendix IV. The villages in which houses are counted are:

- Abenaston (2013)
- Adawai (2013)
- Amakakonde (1989, 1992, 1998, 2004 and 2012)
- Begoon (2007)
- Futunabaka (1995)
- Gengeston 1 & Gengeston 2 (2013)
- Ligolio (2007)
- Pikipada (2007)

Except for Amakakonde, there is no base study to analyse the development of the relationship cement and not cement houses. The first analysis is solely focussed on the housing development in Amakakonde. Expected is that from 1989 on proportionally more cement houses are build.

As there are multiple measurements conducted by Marrenga (1989-2012) in other villages than those I measured, it is possible to see if there is overall a development of the relationship cement and not cement houses. This especially is possible for the Begoon, Ligolio and Pikipada, measured in 2007 and Abenaston, Adawai and Gengeston in 2013. The expected outcome of the results is that the three villages in 2013 have proportionally more cement houses than the three villages measured five years ago in 2007. The amount of houses with palm leaves on the other hand is probably decreased in the three villages measured in 2013. This result would indicate BovenSuriname has experienced economic growth over the last five years.

The effect of paving the Tjongalangapassi is most probably not possible to measure yet, as this happen to recently. Therefore in both the analyses for Amakakonde as the analysis of the other villages, this effect will not be taken into account.

Economic activities

The second part of the field-research is a questionnaire about the economic activities in a village. In these interviews, the focus is especially on the effect of paving the Tjongalangapassi on the economic development on micro level.

First the, mainly governmental, development of Atjoni is analysed. In this village the Tjongalangapassi ends, making it a suitable location for a transition point which is more easily reachable for the citizens of BovenSuriname. Second, the information about economic activity is questioned on village level. There is specifically chosen not to analyse the economic indicators on individual level, so follow up research is less affected by bias. In Appendix V, the decision and limitations for the research technique are further explained. There are ten (economic) indicators in the questionnaire:

1. How many shops are there?
2. How many tourist camps are there?
3. How many woodworking places are there?
4. How many brickmaking's are there?
5. How many bread makers are there?
6. How many chicken breeders are there?
7. How many cassava mills are there?
8. How many rice-hulling mills are there?
9. How many tractors are there?
10. How many generators are there?
11. How many outboard engines are there?

For each economic activity the surveyed specified if this already existed before or after the Tjongalangapassi was paved. This gives an indication of the short-term effects of infrastructure on BovenSuriname. The questionnaire is conducted in three villages, being:

- Abenaston
- Adawai
- Gengeston

Hereby Abenaston was the first village and used as experiment village. This is further described in Appendix V. As there are two people questioned for Abenaston, decreasing the bias in the experiment village, this information will be used in the research. As there are multiple interviews conducted in Abenaston and the outcome of the interview sometimes differs, the numbers are rounded.

As travelling time decreased from minimal 8 hours to around 3.5 hours when the road was paved in 2011, transport costs and transport time are both relatively lower. This increases the accessibility of the area around the Tjongalangapassi, so also for BovenSuriname. There is still a part that needs to be travelled by boat that needs to be taken into account. Expected is the number of shops in the villages would increase. Another expectation is that in larger villages, economic activities have higher presence. This is on the one side explained by the demand for goods and services like food or boat travelling and on the other side by the supply of labor in the village.

Before it is possible to present the results, it must be clarified that an increase, decrease or no change in economic activities before or after the Tjongalangapassi was paved, may not only be explained by the effect of infrastructure. It is also possible the government invested in the area, development aid was present at the village or other influences. At this point in research, there is however no information available about other developments and this must be taken into account as a limitation of the research.

V. RESULTS

In this section the results are analysed. First, educational information on macro level from the official ABS (1996-2012) statistics are analysed. This is followed by the election data, resulting in the pattern of voting behaviour of the previous two elections in fourteen polling stations. Lastly the results of Marrenga as well as my own field-research are analysed. First the de change in materials used to build a house in BovenSuriname is analysed. This is followed by an overview of economic activities in three villages and the impact of the pavement of the Tjongalangapassi on these activities.

Education

A benchmark with all nine other districts of Suriname over the period 2000 till 2010 is conducted in order to analyse the difference between indigenous and non-indigenous peoples. First an analysis concerning education in Sipaliwini is conducted. This is followed by an analysis of BovenSuriname in the last four years.

TABLE 5.1 Number of Toddlers in Pre-Primary Education and Pupils in Primary Educational

Area	Measure	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Pre-Primary												
Boven-Suriname	Absolute	.	.	.	.	.	.	.	442	511	535	576
	Growth	.	.	.	.	.	.	.	.	15.6%	4.7%	7.7%
Sipaliwini	Absolute	455	453	457	559	780	829	878	907	959	990	1060
	Growth	.	-0.4%	0.9%	22.3%	39.5%	6.3%	5.9%	3.3%	5.7%	3.2%	7.1%
Suriname	Absolute	15214	15746	17370	16214	16853	15512	16351	17500	16733	15669	16047
	Growth	.	3.5%	10.3%	-6.7%	3.9%	-8.0%	5.4%	7.0%	-4.4%	-6.4%	2.4%
Primary												
Boven-Suriname	Absolute	.	.	.	.	.	.	.	2907	3140	3647	3820
	Growth	.	.	.	.	.	.	.	.	8.0%	16.1%	4.7%
Sipaliwini	Absolute	3706	3760	3787	3118	4834	3776	5383	5313	5774	6346	6489
	Growth	.	1.5%	0.7%	-17.7%	55.0%	-21.9%	42.6%	-1.3%	8.7%	9.9%	2.3%
Suriname	Absolute	61102	64871	63394	62086	65418	65249	65858	68861	69979	71905	70907
	Growth	.	6.2%	-2.3%	-2.1%	5.4%	-0.3%	0.9%	4.6%	1.6%	2.8%	-1.4%

Note: a dot (.) means no information available.

Note: Year indicates the start of a school year, e.g. 2000 is school year 2000/2001.

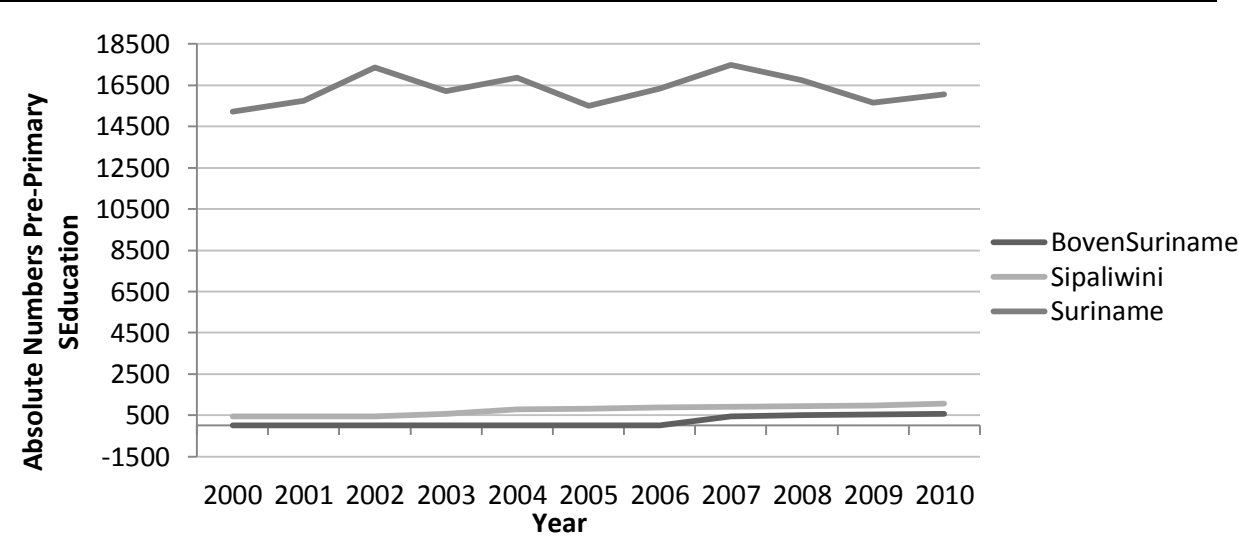
** Pre-Primary Education Sipaliwini, year 2005 is not copied from the statistical yearbook. The official number of toddlers is 261, however this is far out of line with the results from the years before and after that and suggest a mistake. The average of year 2004 and 2006 is used.*

Data Source: ABS (2000-2012)

Information about BovenSuriname is limited. Shown in Table 5.1 there is solely data for a period of four years. It does however show a relative large increase over these few years. Pre-primary education increased from 442 toddlers in 2007 to 576 toddlers in 2011. Primary education increased with almost 1000 pupils, from 2907 pupils in 2007 and 3820 pupils in 2011. Graph 5.1 till

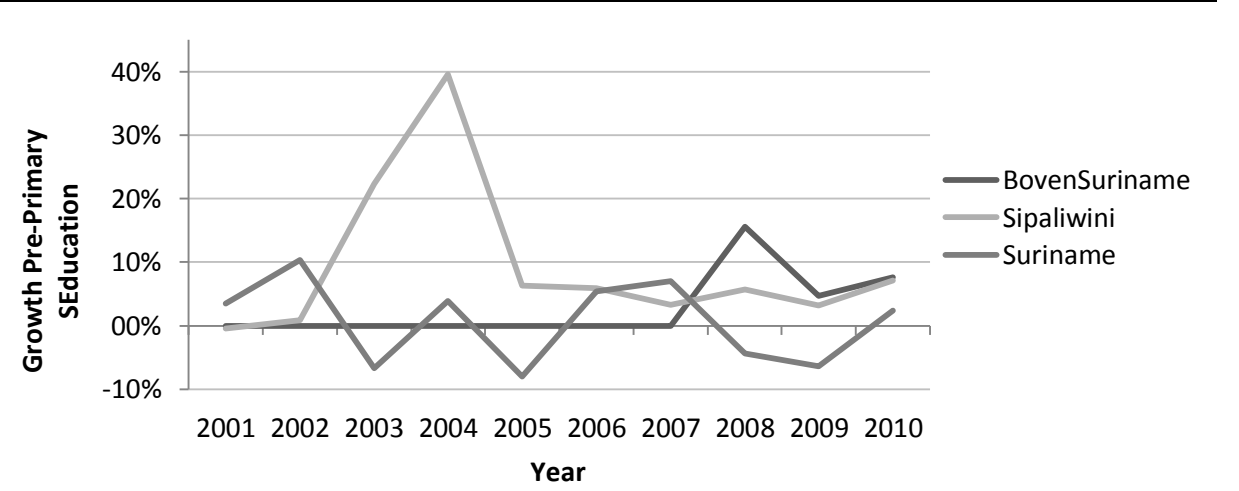
5.4 show the development of Pre-Primary and Primary Education in Suriname, Sipaliwini and BovenSuriname, both in terms of absolute numbers as well as growth rates. The numbers are similar as those presented in Table 5.1, logically the notes of this table continue to apply.

GRAPH 5.1 Absolute Numbers of Toddlers in Pre-Primary Education



Source: ABS (2000-2012)

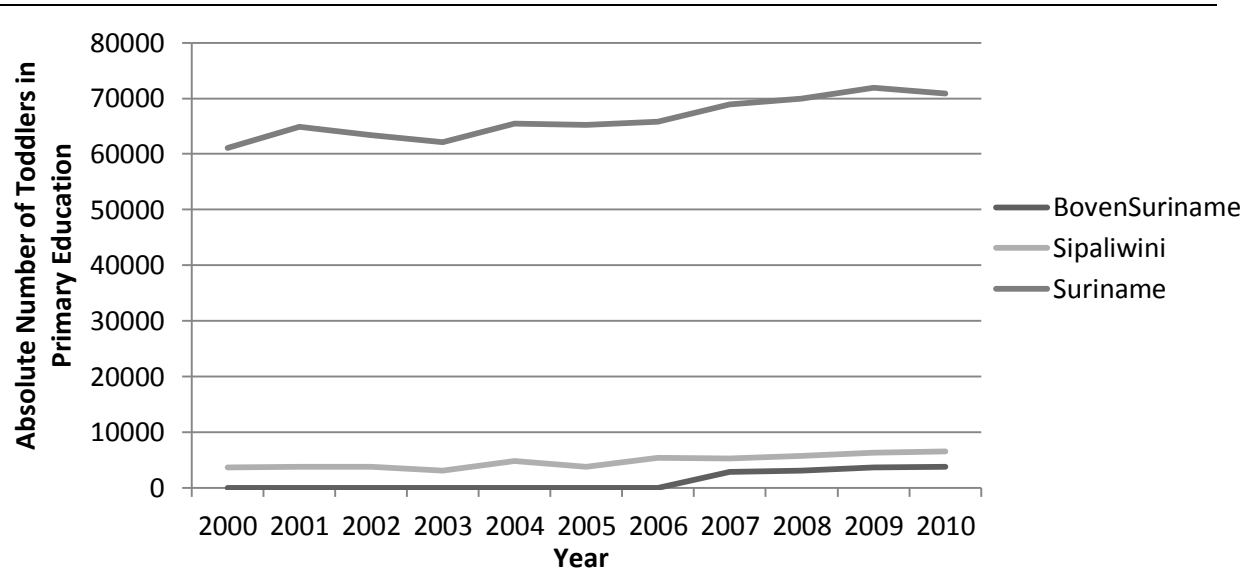
GRAPH 5.2 Growth of Toddlers in Pre-Primary Education



Source: ABS (2000-2012)

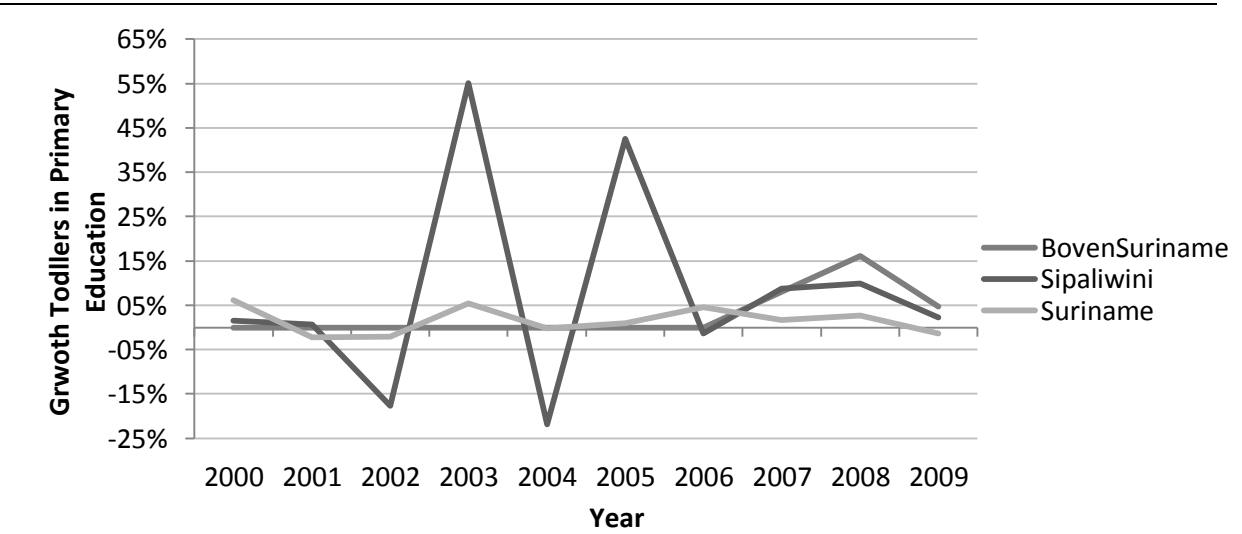
Graph 5.1 and 5.2 are both based on the same numbers of Pre-Primary Education. The only difference is that Graph 5.1 measures in absolute numbers, while Graph 5.2 presents the growth rate of these absolute numbers. As visualized in both graphs, pre-primary education in BovenSuriname grows faster than education in Suriname. In absolute terms is Sipaliwini growth is constant, however in growth rate a large increase in 2004 is visible. There is no argumentative explanation for this growth.

GRAPH 5.3 Absolute Numbers of Pupils in Primary Education



Source: ABS (2000-2012)

GRAPH 5.4 Growth of Pupils in Primary Education



Source: ABS (2000-2012)

The development of Primary Education is presented in Graph 5.3 and 5.4. In absolute numbers, a rise of toddlers in both Sipaliwini and BovenSuriname is visible. In Suriname as a whole it however seems to decrease as presented in Graph 5.3, but growth rates of the number of toddlers do not fluctuate strongly when looking at Graph 5.4. Remarkable for Sipaliwini in Graph 5.4 are the high peaks and low declines between 2002 and 2006. For this change there is no argumentative explanation to clarify the graph. There are only positive growth rates visible in Graph 5.4, so the number of toddlers keeps increasing. Although the period is short, it seems to have the same

fluctuation direction as Sipaliwini. This is not atypical, as 56 percent of Sipaliwini is living in BovenSuriname.

Overall BovenSuriname is growing fast in both pre-primary and primary education, while Suriname as a whole seems to decrease in the last two years. Sipaliwini is following a similar direction as BovenSuriname, but has some inexplicable outliers. Records from the period before 2007 for BovenSuriname would make the analysis more extensive and gives possibilities to really recognize patterns. To date this information is not available.

Next to the analysis within Sipaliwini and BovenSuriname, the district Sipaliwini is compared with the other districts in Suriname using a benchmark.

TABLE 5.2 Absolute Numbers of Toddlers in Pre-Primary Education all Districts

District	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Paramaribo	7391	7689	8368	8101	8131	7570	7068	7918	7556	6937	6735
Wanica	2888	3025	3423	3091	2950	3218	3578	3617	3414	3249	3496
Nickerie	1408	1454	1397	1094	1154	1184	1033	957	1022	934	971
Coronie	122	122	116	87	143	122	126	112	72	78	105
Saramacca	583	583	629	601	597	619	587	608	494	431	407
Commewijne	800	815	958	783	860	914	974	1051	962	890	892
Marowijne	548	559	723	748	816	795	685	632	594	656	701
Para	639	639	755	665	740	829	749	997	966	827	972
Brokopondo	380	407	544	485	714	.	673	701	694	677	708
Sipaliwini	455	453	457	559	780	830	878	907	959	990	1060
Total	15214	15746	17370	16214	16885	16081	16351	17500	16733	15669	16047

Source: ABS (2000-2012)

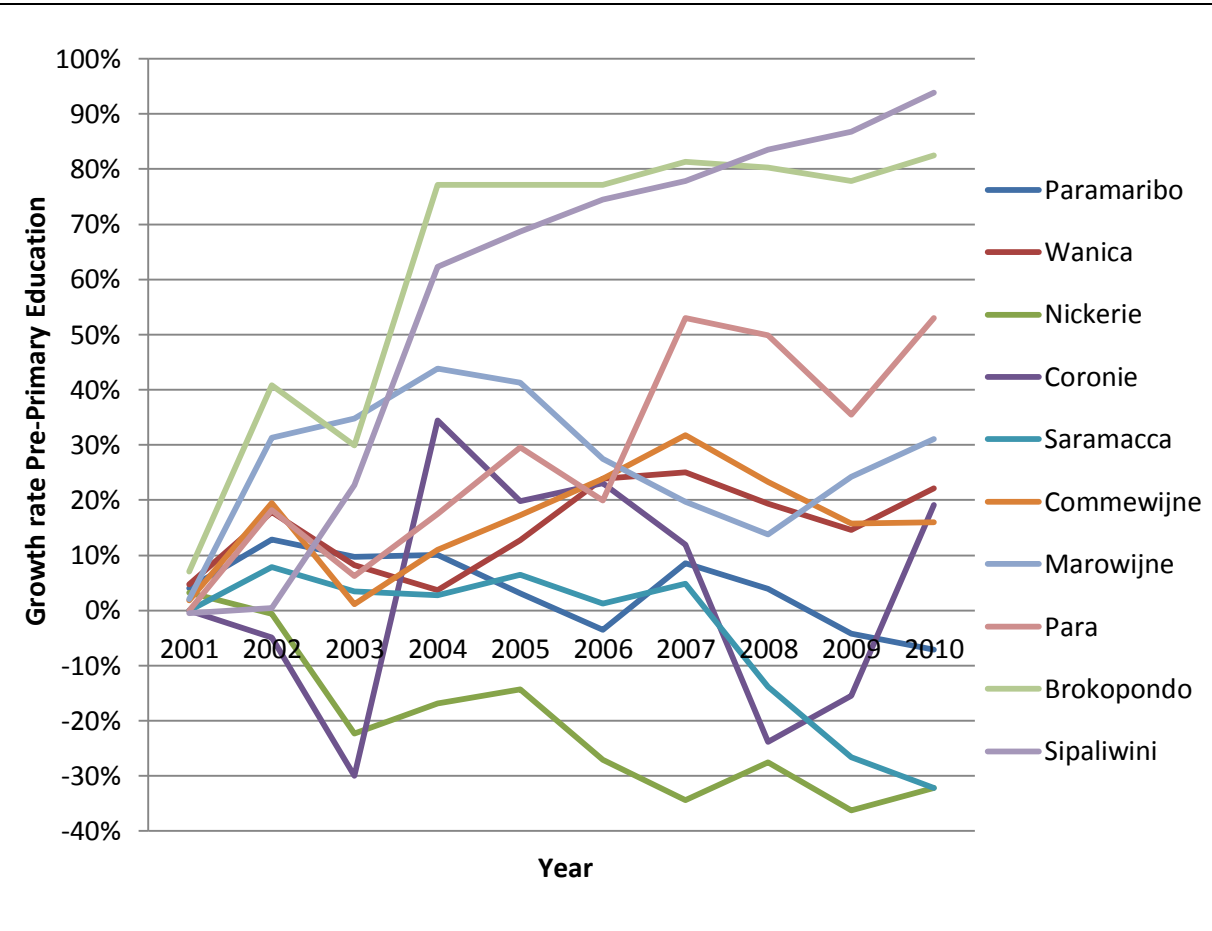
TABLE 5.3 Absolute Numbers of Pupils in Primary Education all Districts

District	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Paramaribo	29496	31023	29418	29808	30286	30202	28211	30082	30656	30586	29452
Wanica	10185	11598	11753	10747	11266	12517	13841	13685	14015	14347	14491
Nickerie	4965	5144	4850	4661	4711	4542	4499	4491	3868	4261	4019
Coronie	511	511	475	466	432	434	430	438	457	466	414
Saramacca	2208	2208	2144	2234	2549	2191	2125	2277	2299	2303	2182
Commewijne	2903	3132	3132	3154	3245	3262	3156	3356	3518	3734	3705
Marowijne	2905	3043	2884	2951	2978	3116	3197	3255	3267	3322	3376
Para	2678	2678	2883	2930	2725	3134	2709	3500	3519	3850	3995
Brokopondo	1545	1774	2068	2017	2392	2075	2307	2464	2606	2690	2784
Sipaliwini	3706	3760	3787	3118	4834	3776	5383	5313	5774	6346	6489
Total	61102	64871	63394	62086	65418	65249	65858	68861	69979	71905	70907

Source: ABS (2000-2012)

Table 5.2 and 5.3 show that the total amount of children following education, both pre-primary as well as primary, increased over the years. Both education levels of Sipaliwini are compared with the other nine districts of Suriname. The tables are converted into Graph 5.5 and 5.6 and analyse merely growth rates, so no absolute numbers are graphical presented.

GRAPH 5.5 Benchmark of Pre-Primary Education in Suriname

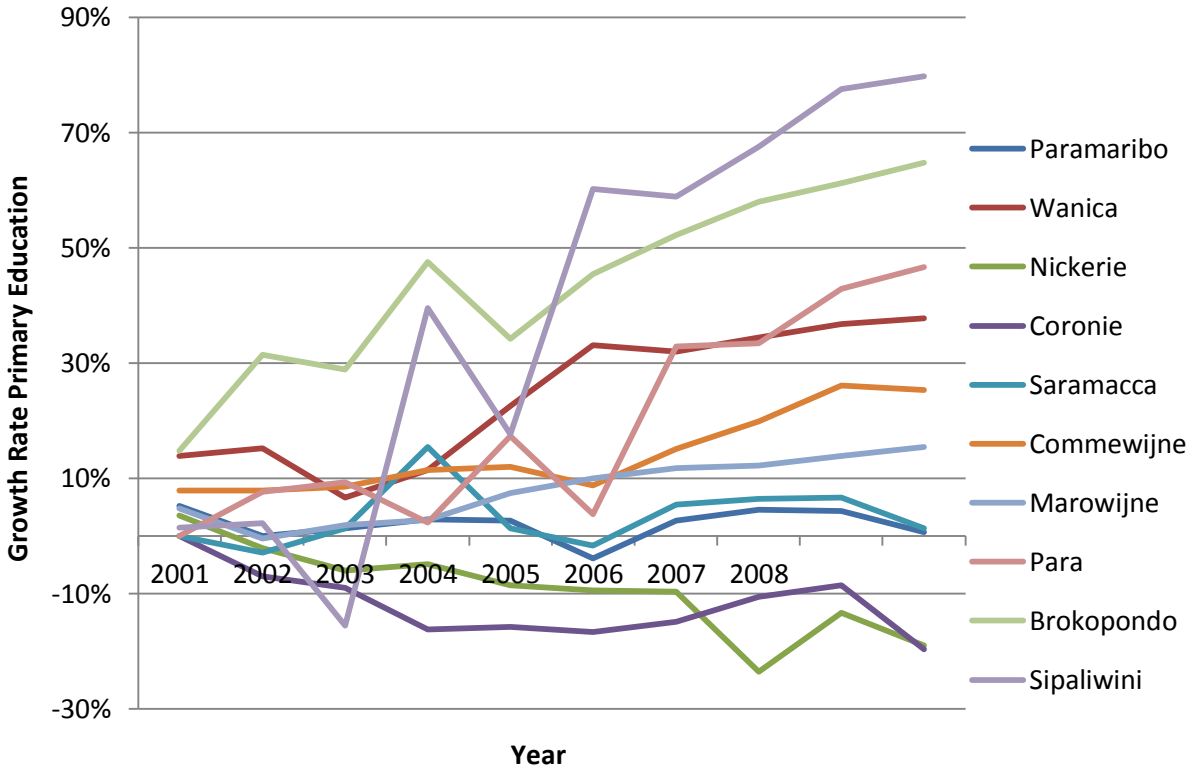


Source: ABS (2000-2011)

The growth in Brokopondo and Sipaliwini, shown in Graph 5.5, is relatively the largest of all districts over the last ten years. These two districts are both located in the interior and characterized by high poverty rates (Sobhie, 2012). Table 5.2 shows the total number of toddlers that follow pre-primary education in Sipaliwini is more than doubled from 455 toddlers in 2000 to 1060 toddlers in 2010.

The development of Primary Education in Suriname is also subjected to a similar benchmark, in which Sipaliwini is compared with the other nine districts.

GRAPH 5.6 Benchmark of Primary Education in Suriname



Source: ABS (2000-2012)

Graph 5.6 shows again that Paramaribo and Brokopondo have the highest growth rate in number of children who follow Primary Education compared to the other districts. Growth in Sipaliwini with primary education is smaller than with the pre-primary education in Graph 5.5, but still increased with 80 percent from 3706 pupils in 2000 to 6480 pupils in 2010.

As Hall and Patrinos (2006) argued, there is a difference among indigenous and non-indigenous peoples following education. They however focus more on finishing school, and the number of repeaters. This information is not available for Sipaliwini or BovenSuriname. Although it is remarkable the amount of children following Pre-Primary Education increased with 100 percent and the children following Primary Education increased with 80 percent, both numbers are by far relatively the highest growth rates of all ten districts of Suriname.

In this analysis education is used as a proxy for welfare. As Demmer and Overman (2001) argue, education has several advantages for indigenous peoples and may raise the productivity per amount of time invested in working. It seems that Sipaliwini is catching up concerning pre-primary and primary education. This is, assuming it was behind in total number of toddlers and pupils following education. It shows the relative largest growth of all districts in Suriname. For the resort BovenSuriname, total growth also shows positive developments, as each year from 2007 on total

children following education has grown. This might suggest the strong growth in Sipaliwini, compared to other districts, is partly due to the relative large growth in BovenSuriname.

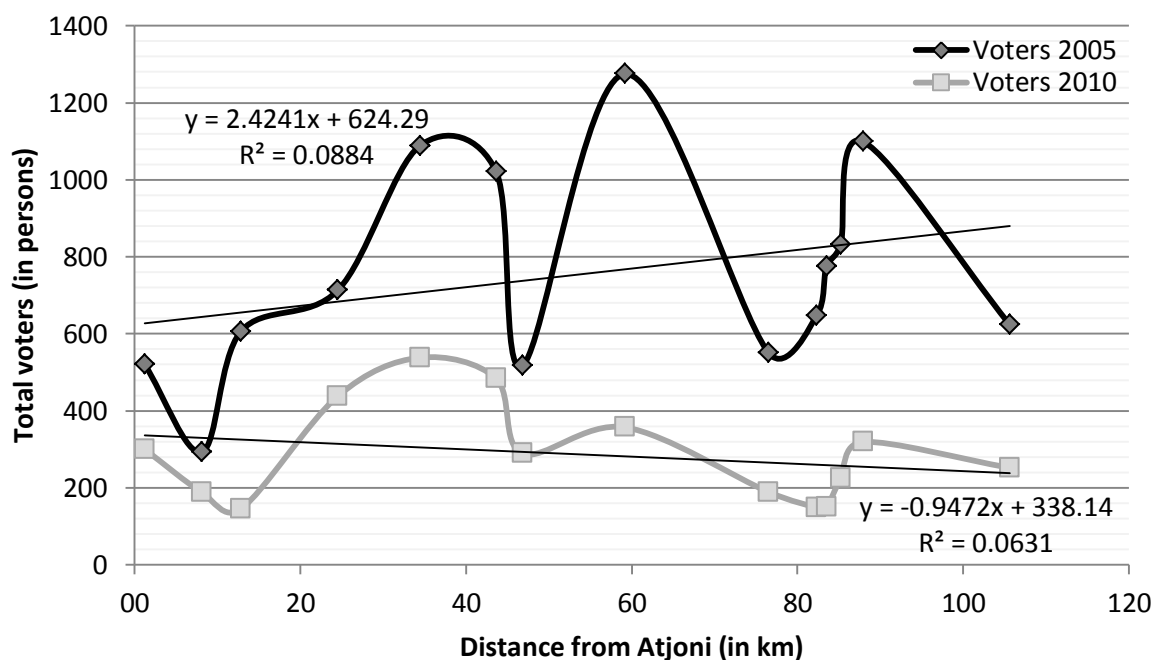
For future research, data from CBB should be accessed to analyse the development of total population compared to educational development. With these data, the development of the total number of children can be compared with the number of children that are following education. This will make a clear and valid analysis. Also merely pre-primary and primary education is analysed at this point. For higher educational levels there is a maximum of three years on information available, and then only on the level of district Sipaliwini.

Elections

There is only limited data available for the election numbers in BovenSuriname. In this analysis, the distance to Atjoni (Pokigron) will be central. This is due to the fact Atjoni is the transition point, where the road from Paramaribo, the Tjongalangapassi, ends. Preferably the trade model of migration was used to analyse the effect of distance from Atjoni on economic development. Information on village level about birth, death, migration and size of villages would be applicable. This information is however not accessible at this moment, but there are records available from the Centraal Bureau of Burgerzaken. The hypothesis tested in this section is if the distance from Atjoni has an impact on the voting behaviour of the residents in BovenSuriname.

The relationship between distance to Atjoni and total voters in the fourteen villages' voted in are separately analysed for the period 2005 and 2010. There is a large difference in the total amount of voters for both periods. In 2005 there were 10562 voters in BovenSuriname, while this decreased more than half to 4022 voters in 2010. Graph 5.7 shows the development of both 2005 and 2010.

GRAPH 5.7 Relationship between the number of voters in 2005 and 2010 and the distance to Atjoni



Source: Stembureau's (2005) and Surinaamse Verkiezingen (2010) and own information on distance.

From Graph 5.7 it seems the relationship between the distance from Atjoni and the amount of residents in BovenSuriname who vote is different for 2005 and 2010. This indicates there is not direct an effect of distance on the voting behaviour visible.

Remarkable, the number of voters decreased substantially. This indicates less politic activism among the tribal maroons that is unexplained. On one side this could indicate politicians became less active in the area or on the other side the residents of BovenSuriname are not that interested in politics in 2010 as they were in 2005. In order to analyse whether this is true, research among the residents of BovenSuriname should be conducted to make clear what causes this decrease in voters.

House Development

The data of the distribution of type of houses, cement or non-cement, is used to analyse the wealth in BovenSuriname. As Demmer and Overman (2001) argued in their research that households that are more wealthy spend less time in the forestry and more time on agriculture or other activities (e.g. shop owners, gold panning). This indicates that households which use solely materials originating from the forest, and thereby use palm-leaves for the rooftop and wood for the walls, are less wealthy than other households. Households which use corrugated iron as a rooftop and wooden walls have obtained the wood for their house from the forest, while the corrugated iron must be purchased with money, hence indicating wealthier households than those with palm leaves rooftops. The wealthiest households build their homes with cement walls and a rooftop of corrugated iron. These households have purchased the largest part of their house.

Using data collected in field-research by Marrenga and myself, the development of type of houses is analysed. In Table 5.4 and Graph 5.8 the development of one village, Amakakonde, is analysed for five periods between 1989 and 2012.

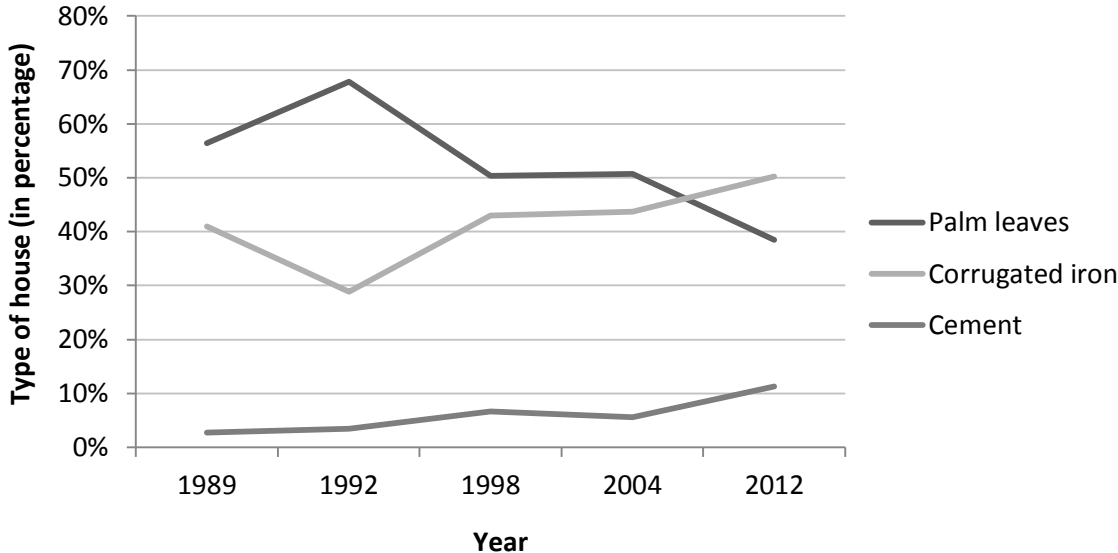
TABLE 5.4 The Development of Materials used for Houses in Amakakonde

Amakakonde										
	1989		1992		1998		2004		2012	
<i>Type of house</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>
Palm leaves	84	56%	120	68%	83	50%	108	51%	68	38%
Corrugated iron	61	41%	51	29%	71	43%	93	44%	89	50%
Cement house	4	3%	6	3%	11	7%	12	6%	20	11%
Total	149	100%	177	100%	165	100%	213	100%	177	100%

Source: Field-research Marrenga (1989-2012)

One of the first things noticeable in Table 5.4 is that over the years, the number of cement houses increased from 4 cemented building in 1989 till 20 cemented buildings in 2012. The development of Table 5.4 is visualised in Graph 5.8 below.

GRAPH 5.8 The Development of Materials used for Houses in Amakakonde



Source: Field-research Marrenga (1989-2012)

Graph 5.8 shows that the relationship between cement and not cement buildings changed over the years. Looking at the growth rates of type of houses in Table 5.4, results show that houses with a rooftop made of palm leaves decreased proportionally from 1992 onwards, which results that of all buildings in Amakakonde only 38 percent are still covered with palm leaves in 2012. Houses with corrugated iron and cement houses on the other side have both grown proportionally but also in absolute numbers. Remarkably, in 1992 the amount of corrugated iron houses decreases by 12 percent and makes place for palm leaves. In 1998 however, the amount of corrugated iron houses is back on the same level as almost a decade ago. As Marrenga noted, this probably is due to the fact Paramaribo, and therefore the place where the residents of BovenSuriname were able to get corrugated iron, was not accessible in 1989 and 1990 due to the Inlands War.

Additionally on the next page the development of types of houses is also analysed in several other villages.

TABLE 5.5 The Development of Materials used for Houses in Diverse Villages BovenSuriname

<i>Village</i>	Futanabaka		Ligolio		Pikipada		Begoon	
<i>Year</i>	1995		2007		2007		2007	
<i>KM from Atjoni</i>	44.9		105.6		-17.5		106.1	
<i>Type of house</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>
Palm leaves	56	56%	155	70%	56	84%	92	70%
corrugated iron	21	21%	57	26%	11	16%	35	27%
Cement house	23	23%	11	5%	0	0%	4	3%
Total	100	100%	223	100%	67	100%	131	100%

<i>Village</i>	Adawai		Abenaston		Gengeston 1 & 2	
<i>Year</i>	2013		2013		2013	
<i>Km from Atjoni</i>	19.5		8.1		2.8	
<i>Type of house</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>	<i>Total</i>	<i>%</i>
Palm leaves	29	35%	97	21%	79	32%
corrugated iron	48	58%	284	61%	148	59%
Cement house	6	7%	81	18%	22	9%
Total	83	100%	462	100%	249	100%

Source: Field-research Marrenga (1995-2012) and own field-research (2013)

Data is merely available for a period of five years in seven different villages, as Table 5.5 shows. All results are measured in just one year, hence it is not possible to compare the numbers within one village over different time periods as with Amakakonde. Therefore one may rather look at this information as a baseline study and due to the differences in villages, time periods and distances merely tentative conclusions can be made from these results.

Due to river transport, there may appear difficulties in transporting materials from Atjoni to the village and thereby the distance from Atjoni may influence the development of types of houses in BovenSuriname. It shows that both Ligolio and Begoon are relatively far from Atjoni (>100 km) and have proportionally few cement houses in 2007. Villages closer to Atjoni, with exception of Pikipada, have proportionally more cement houses. This suggests more wealth is present in villages closer to Atjoni.

In the period 2007 as well as 2013 types of houses in three villages (all different ones) have been counted. The growth from 2007 to 2013 is measure using the average of the three villages for both time periods, as shown in Table 5.6 below.

TABLE 5.6 The Average of the Materials used for Houses in Amakakonde, 2007 and 2010

	Average 2007*	Average 2013**
Palm leaves	74%	29%
Corrugated iron	23%	60%
Cement house	3%	11%
Total	100%	100%

**2007 is the average of Ligolio, Pikipada and Begoon.*

***2013 is the average of Adawai, Abenaston and Gengeston.*

Source: Field-research Marrenga (1995-2012) and own field-research (2013)

There is an interesting development visible in Table 5.6, as the number of palm leaves houses decreased from 74 percent in 2007 to 29 percent in 2013. The number of corrugated iron houses has increased remarkably over a five year period from 23 to 60 percent. Finally the number of cement houses more than tripled from 3 to 11 percent. Looking at the separate villages, this average number in Table 5.6 is not strongly determined by merely one village. In 2007, Pikipada did have a high percentage of palm leaves and no cement houses present in the village, but the other two villages show the same pattern. In 2013, the opposite accounts for Abenaston. A low percentage of houses are made of palm leaves and a high percentage of cement houses is present, but still the other villages have relatively similar values as well. As mentioned in the paragraph before, this result might also be due to an increase in transport time and costs as the village is further away from Atjoni.

Concluding, when looking at the development of houses, distance may influence the types of houses within a village. Another potential outcome of these results is that over time the amount of cement houses increased proportionally, indicating more wealth in BovenSuriname. This microeconomic level analysis is a different outcome when comparing this with the outcome of the analysis on macroeconomic level by other studies. The macroeconomic studies suggest that Sipaliwini experiences a poverty rate of 96 percent (Sobhie, 2012) and income inequality within Suriname increased since 1980 (Menke et al., 2012). The economic development within BovenSuriname however appears to grow positively, indicating wealth increases. Due to a limited data sample, there is more research necessary. Especially in the villages measured before 2013 it is recommendable to analyse the development of types of houses. Whether distance or wealth of a village is of influence is subject to further research.

Economic Activities

This section focusses on the short-term effects of the pavement of the Tjongalangapassi. The analysis is on microeconomic level. The central role of the government in Atjoni is discussed, followed by the field-research in three villages of BovenSuriname.

The last years, the government is working on a central area for residents of BovenSuriname in the area. Atjoni, the end point of the Tjongalangapassi and the place from where travelling is only possible by boat, is starting to function as this location. In an interview with Marrenga (May 16, 2013), it became clear that the following facilities are constructed on Atjoni after the Tjongalangapassi was paved:

- High school
 - Plus a boarding for children who cannot travel by boat every day as travelling time is too long, at the time of the interview this however was not finished yet.
- Central Registry Office
- Police station and a prison
- Barbershop
- Civic centre (already present before the paving of the road, anticipating on this event)
- An extra shop (already two were present before the paving of the road, making it a total of three shops)

This overview of recent developments in Atjoni may be an indicator of an increased governmental participation in the BovenSuriname area. As Marrenga (May 16, 2013) pointed out during the interview, is it now possible to open a high school in the BovenSuriname area and attract licentiate teachers, as they do not have to travel that long and do not have to take the boat in order to get to the school. With an increase in children who follow pre-primary and primary education, shown in Graph 5.1 And Graph 5.3, the new high school at Atjoni may be of influence for further education. There is also one extra commercial shop build on Atjoni, possibly due to an increase in demand for goods from the shops. Both governmental as commercial development may be influenced by the increase of accessibility due to the pavement of the Tjongalangapassi.

During the field-research, a number of residents of BovenSuriname are interviewed. In total I have conducted the questionnaire in three villages. In Appendix VI, all the results of the questionnaire per interview are included. In Table 5.7 the answers of the surveyed are summed up and presented.

TABLE 5.7 Outcome of the Field-research about the Economic Activities in BovenSuriname

	Abenaston			Adawai			Gengeston 1 & 2		
Number of houses	462			83			249		
KM from Atjoni	8			19.5			2.8		
Economic indicator	Before paving	After paving	Total in 2013	Before paving	After paving	Total in 2013	Before paving	After paving	Total in 2013
Shops	3	0	3	0	0	0	1	1	2
Tourist camp	1	1	2	0	0	0	1	0	1
Woodworking side	1	1	2	0	0	0	1	0	1
Brickworks	0	0	0	0	0	0	0	0	0
Baker	3	0	3	0	0	0	1	0	1
Chicken breeder	2	0	2	0	0	0	0	0	0
Cassava mill	3	0	3	0	0	0	1	1	2
Rice-hulling mill	1	0	1	0	0	0	0	0	0
Tractor	1	0	1	0	0	0	1	0	1
Generator	6	2	8	0	1	1	1	0	1
Outboard engine	0	5	5	0	3	3	10	0	10

Note: before paving and after paving indicates the presence of the relevant economic indicator respectively before or after the Tjongalangapassi was paved in 2011. Total in 2013 means all the relevant economic indicators that are present at the time of questioning, where no distinction is made between before or after the Tjongalangapassi was paved.

Data source: Own field-research (2013)

Previous studies shows that infrastructure has a positive effect on the economic development (among others Aschauer (1989), Fox and Smith (1990), Andrews and Swanson (1995), Sanchez-Robles (1998) and Teruel and Kuroda, (2005)). The results in Table 5.5 show the economic development of three villages in BovenSuriname, therefore analysing the impact of the Tjongalangapassi on microeconomic level. The results in Table 5.5 show that in smaller villages less economic capital or labor is present, while in larger villages more economic activities are available when looking at the demand for goods and services as well as the supply of labor. This makes sense, as there are relatively less people living in villages with fewer houses. All three villages are relatively close to each other, therefore it is not possible to analyse the effect of the recent pavement of the Tjongalangapassi on the distance from its end point, Atjoni.

When analysing the economic activities, a distinction between sectors can be made using the study of Demmer and Overman (2001). They distinguish between households that are active in forestry, agriculture and other activities (e.g. shops, gold panning), which respectively realize more wealth.

TABLE 5.8 Sector Distribution of the Economic Activities

Activity	Forestry	Agricultural	Other	Comments
Shops	No	No	Yes	Sells goods
Tourist camp	No	No	Yes	Sells goods and services
Outboard engine	No	No	Yes	Boatmen
Woodworking side	Yes	No	Yes	Collects wood in forest and sells on market
Brickworks	Yes	No	Yes	Collects sand from river (i.e. forest) and sells bricks
Baker	No	Yes	Yes	Collects products for bread and sells
Chicken breeder	No	Yes	Yes	Is cattle and produces eggs/meat for sales
Cassava mill	No	Yes	Yes	Collects cassava and sells
Rice-hulling mill	No	Yes	Yes	Collects rice and sells

Note: two indicators are left out. These are the tractor and generator. Both are machinery and an additional use for goods or labor, but not active in a specific sector.

Note: sell may indicate barter exchange as well as market exchange.

Data source: Own field-research (2013)

Remarkably, all forms of labor questioned in the survey, shown in Table 5.8, are active in at most the sector “other activities”. This is due to the fact all activities sell their own made products or services. There are three activities which are solely active in the sector “other”, so no forestry or agricultural activities. These activities are shops, tourist camps and the outboard engine (boatmen). According to the theory of Demmer and Overman (2001), households that participate in “other” activities are the wealthiest. Woodworking side and brickworks are both active in forestry and “other”. Following the theory of Demmer and Overman, this would indicate these households are least wealthy. The middle group is the agricultural sector, among which the other four activities, baker, chicken breeder, cassava mill and rice-hulling mill, are categorized. This analysis is subjective, as literature does not give a clear cut view on which activities are among which sector, as one could for example also argue the rice or cassava for the mills must be collected from agricultural activities.

The following step in the analysis is to see what the effect of paving the Tjongalangapassi on sector activity per village is. The first village to analyse is Abenaston. This is a village that has a church for a very long time and is also been in touch with the city (i.e. Paramaribo) much, even before the paving of the Tjongalangapassi. Abenaston is the largest village, and most economic activities are available. The results in Table 5.7 show that after the Tjongalangapassi was paved, the amount of economic activities has increased. An extra shop is located in the village as well as an extra woodworking side. Both are categorized in a different sector, so no clear conclusions can be drawn from this village. Remarkable is the increase in outboard engines. There were zero outboard engines present before the road was paved, which increased to five engines after the paving.

In Adawai, the smallest of the three villages, the paving of the Tjongalangapassi seemed to have an impact on the economic development. Before paving, there appeared to be no economic

activities at all. After paving, there was one generator present and three residents of Adawai had an outboard engine. Proportionally there is a large increase in wealth in Adawai, as an increase in outboard engines indicates more boatmen, so more participation in the sector “other”. From the field-research, no other developments came forward.

Gengeston is the only village that has experienced an increase in demand for goods within the city, looking at the increase in shops which is going from one shop to two shops after the paving of the Tjongalangapassi. There is also one extra cassava mill in Gengeston. Overall there is however no substantial change in Gengeston in economic activities after the paving.

Concluding it is not possible to argue for a significant effect of the paving the Tjongalangapassi on the economic development in the three villages of BovenSuriname, but there appears to be more demand for goods and more supply of labor. Taking into account an increase in accessibility to new markets due to the pavement of the Tjongalangapassi, the increase in agricultural activities as Demmer and Overman (2001) analysed in their research, is not possible to observe. As the sample of field-research is too small for significant results and the pavement was only two years ago, the economic development and the impact of infrastructure should be analysed further.

VI. CONCLUSION

Sipaliwini, the district BovenSuriname is located in, has with 96 percent by far the highest poverty rate of Suriname (Sobhie, 2012). Another research suggests that income inequality within Suriname has increased from 1980 to 2004 (Menke et al., 2012). These analyses however are performed on macroeconomic level. Measuring the development within BovenSuriname, which is merely inhabited by tribal maroons, research should be implemented on micro level. Due to the fact that BovenSuriname is characterized by barter trade and money is generally used as a use of account and not a medium of exchange, other indicators than GDP or income are necessary. Demmer and Overman (2001) argue education is of importance for development as well as an increase in market exchange. Their study shows that of households differ in income depending on the sector they are active in. Households active in forestry are least wealthy, followed by agricultural households and the wealthiest households are participating in other activities (e.g. shops, gold panning). In the following chapter the hypothesis will be, wherever possible, analysed for BovenSuriname.

The results of this study show that pre-primary and primary education in the interior of Sipaliwini increased. In the last decade, the growth rate of Sipaliwini in number of toddlers and pupils who go to school was also among the highest of Suriname. In absolute numbers, the development compared to total amount of children was however not possible due to lack of data.

Election numbers analyse the relationship between the distance till the end point of the Tjongalangapassi, Atjoni, to the polling station and the number of voters. Results show the effect for 2005 and 2010 differ. Remarkable however is the amount of voters more than halved, indicating less politic activity.

From field-research there is a development visible among the materials used to build houses from in BovenSuriname. Less forestry materials (i.e. palm leaves on the rooftop) are used, while the houses with corrugated iron rooftops and cement walls are increasing over the years. This indicates the people become wealthier.

Last the field-research in several villages shows no clear short-term effect of paving the Tjongalangapassi among economic activities in villages yet. Where in one village several economic activities have increased, this was not noticeable in another village. The sample used in this research is very small, so evident results are not possible.

Overall the indicators show that there has been economic development in BovenSuriname when measuring on microeconomic level. People who live there seem to become wealthier and with the advent of an increase in market exchange it is expected this wealth will increase further.

VII. RECOMMENDATIONS

As there was, in the scope of time and limitations of this research, no possibility to investigate all aspects of importance for the general and economic development of the BovenSuriname area, I would like to conclude this research with several recommendations for further research. A distinction can be made between data that exists, but must be collected and data from field-research.

First concerning literature review more extensively must be looked for studies among indigenous peoples. Many times these studies have not been published, but do provide useful information for further investigation in BovenSuriname. One of these studies is from Yellen (1990) who conducted research among the !Kung tribe. I have not been able to receive this research yet.

Migration flows within BovenSuriname may be analysed using data from either CBB or de Medische Zending. Further information on where to look and who to contact is included in Appendix VII.

For the field-research, counting houses may be conducted in the villages already available before 2013. For future research, increasing the base-line study with more villages is also a necessity for continuous research.

Along the way there were many suggestions given to me to increase the value research in this area. However, due to time constrains I was not able to use all suggestions in this paper. In Appendix VII I have worked out several of these suggestions and give some background information where possible.

In order to truly understand the economic behaviour of the residents of BovenSuriname, a quantitative research as performed by Demmer and Overman (2001) is recommended. Hereby must be taken into account that there are cultural differences among the Saramaccaners in BovenSuriname and the Honduran Tawahka. This research though took them two and a half years to conduct, so not applicable when the researcher is on a time-constrain.

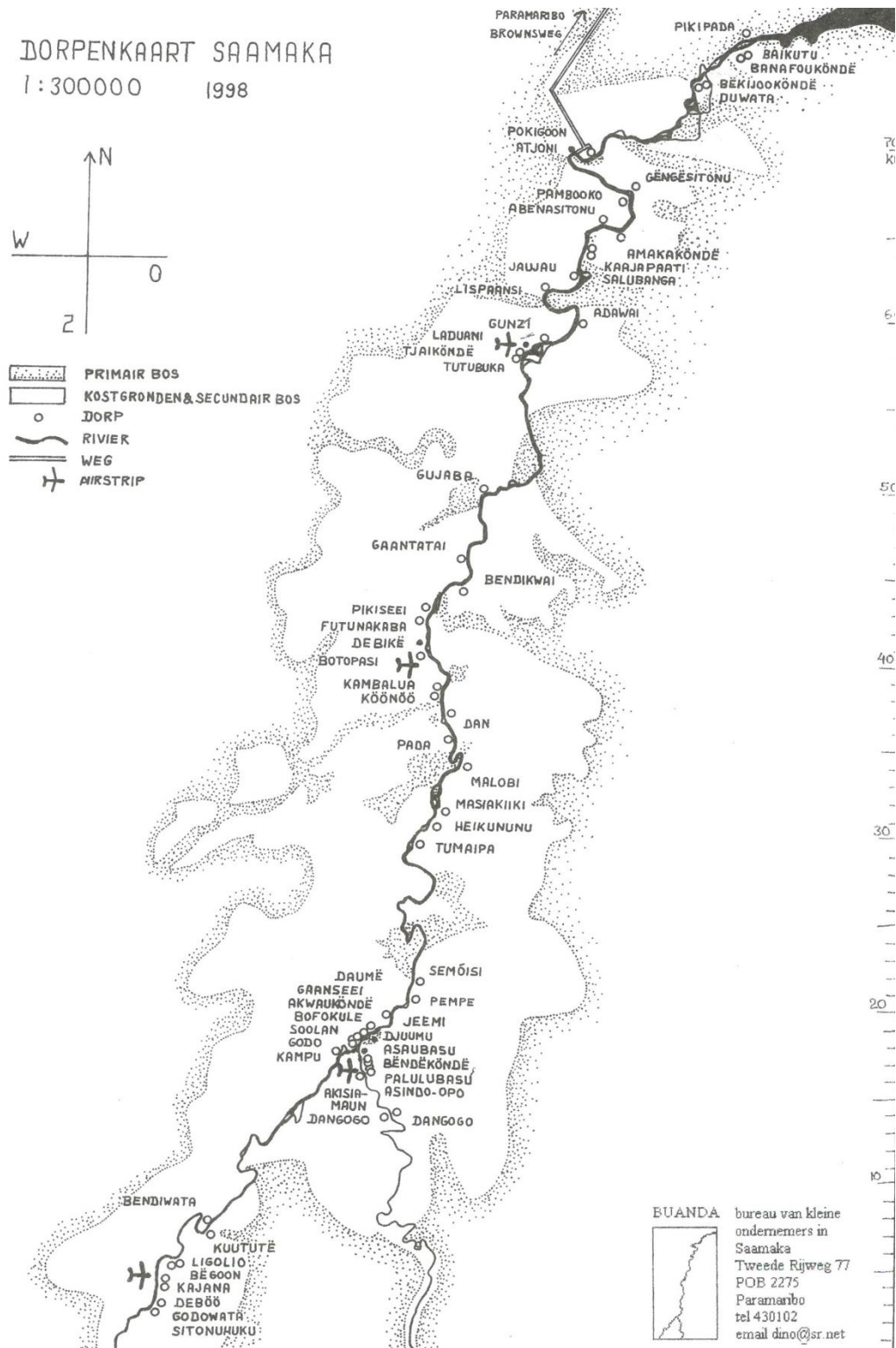
REFERENCES

- ABS (1996-2012). *Statistisch jaarboek, Afdeling Sociaal- Culturele Statistieken*. Paramaribo: Algemeen Bureau voor de Statistiek.
- Anda Suriname (2013). *District Sipaliwini*. Retrieved July 15, 2013 from www.suriname.nu/175alg/sipaliwini01.html
- Andrews, K. & Swanson, J. (1995). Does Public Infrastructure Affect Regional Performance? *Growth and Change* 26 (2): 204–216.
- Aschauer, D. A. (1989). Is public expenditure productive? *Journal of Monetary Economics*, 23, 177-220.
- Buanda (n.d.). *Where Is Saamaka?* Retrieved on April 27, 2013 from: http://www.buanda.org/kaart_suriname.htm
- CBB (2012). *Demografische Data Suriname, 2010 en 2011*. Paramaribo: Centraal Bureau voor Burgerzaken.
- Demmer, J. & Overman, H. (2001). *Indigenous People Conserving the Rain Forest? The Effect of Wealth and Markets on the Economic Behaviour of Tawahka Amerindians in Honduras*. Wageningen: Tropenbos International.
- Eduards, M. (1996). *Geldeconomie en productie voor eigen consumptie (drs. Merina Eduards)*. Retrieved on July 17, 2013 from: www.stuseco.org/
- Fox, W.F. & Smith, T. R. (1990). Public Infrastructure Policy and Economic Development. *Federal Reserve Bank of Kansas City, Economic Review*, 76, 49-59.
- Gallup, J.L., Sachs, J.D. & Mellinger, A.D. (1999). Geography and economic development. *International Regional Science Review*, 22(2), 179-232.
- Gunasekera, K., Anderson, W. & Lakshmanan, T.R. (2008). Highway-Induced Development: Evidence from Sri Lanka. *World Development*, 36(11): 2371-2389.
- Hall, G., & Patrinos, H. A. (Eds.). (2006). *Indigenous peoples, poverty, and human development in Latin America*. New York: Palgrave Macmillan.
- Hernandez, I. (1988). Identidad Indigena y Educacion. *Desarrollo Economico*, 18(109), 121-137.
- Hong, J., Chu, Z. & Wiang, W. (2011). Transport infrastructure and regional economic growth: evidence from China. *Transportation* 38(5), 737-752.
- IMF (2012). *Back to Basic. What Is Money?* Retrieved on July 30, 2013 from: <http://www.imf.org/external/pubs/ft/fandd/2012/09/basics.htm>
- Index Stembureau's (2005). *Index Stembureau's naar stembureaunummer en locatie*. Retrieved on July 4, 2013 from www.elections-suriname.info/nl/verkiezingen2005/verkiezingdata/pdf/Stembureau%20index.pdf
- Knini Paati (2013). Knini Paatie tourprogramma. Retrieved on July 8, 2013 from: knini-paati.com/nl/tours/
- Kranton (1996). Reciprocal Change: A Self-Sustaining System. *The American Economic Review*. 48 (4), 830-851.
- Landenweb (n.d.). SURINAME geschiedenis. Retrieved on July 24, 2013 from: www.landenweb.net/suriname/geschiedenis/
- Marrenga, M. and Ruleman, C. (2011). Rapids in the Suriname River. Paramaribo: Ralicon.
- Menke, J. K, Schalkwijk, J. M. W., Schalkwijk, J. R. V. and Seligson, M. A. (2012). *Political Culture of Democracy in Suriname and in the Americas, 2012: Towards Equality of Opportunity*. USAID.
- Ministrie of Labour, Technological Development and Environment (2006). *Republiek van Suriname*

- Nationaal Werkgelegenheidsrapport, 2006*. Retrieved on May 1, 2013 from: www.ilocarib.org.tt/cef/national%20employment%20reports/Sur%20Werkgelegenheidsrapport_06.pdf
- Natural Justice (2012). *An Analysis of International Law, National Legislation, Judgements, and Institutions as they Interrelate with Territories and Areas Conserved by Indigenous Peoples and Local Communities. Suriname, report No. 11*. Retrieved on June 27, 2013 from: naturaljustice.org/wp-content/uploads/pdf/ICCALegalReviewSURINAME.pdf
- Sahlins, M. (1972). *Stone age economics*. Chicago : Aldine-Atherton.
- Sanchez-Robles, B. (1998). Infrastructure investment and growth: some empirical evidence. *Contemporary Economic Policy*, XVI, 98-108.
- StarNieuws (2012). *Criminaliteit in Boven-Suriname wordt aangepakt*. Retrieved on July 18, 2013 from: www.starnieuws.com/index.php/welcome/index/nieuwsitem/12187
- Surinaamse Verkiezingen (2010). *Surinaamse Verkiezingen, Sipaliwini, no. 4*. Retrieved on July 4, 2013 from: surinaamseverkiezingen.com/uitslagen.aspx?d=10
- Suriname Webquest (n.d.). *1986-1991: de Binnenlandse Oorlog*. Retrieved on July 26, 2013 from: www.surinamewebquest.nl/binnenlandse_oorlog.html
- Teruel, R. G. & Kuroda, Y. (2005). Public infrastructure and productivity growth in Philippine agriculture, 1974-2000. *Journal of Asian Economics*, 16, 555-576.
- The World Bank Group (2004). *Beyond Economic Growth Student Book. Glossary*. Retrieved on July 31, 2013 from: <http://www.worldbank.org/depweb/english/beyond/global/glossary.html>
- Todaro, M. P. (1985). *Economic development in the third world*. New York: Longman.
- Van Dijck, P. (2001). *Suriname, the economy. Prospects for Sustainable Development*. Ian Randle Publishers: Kingston.
- Sobhie, R. (2012). *Afstudeerscriptie voorstel Rosita Sobhie per 27 jan 2012*.

APPENDIX I Map of the Villages in BovenSuriname, 1998

FIGURE A.1 Map of the Villages in BovenSuriname, 1998



Source: Buanda (1998)

APPENDIX II Crime Rates of BovenSuriname

Table A.1 shows the crime numbers of Sipaliwini and Suriname.

TABLE A.1 Crime Rates of BovenSuriname

Area	Year	2007	2008	2009
	Type			
Sipaliwini	Total crimes	82	100	145
	Growth	-	22.0%	45.0%
Suriname	Total crimes	22250	25345	24884
	Growth	-	13.9%	-1.8%
Sipaliwini	Custody	46	56	80
	Growth	-	21.7%	42.9%
Suriname	Custody	4258	4244	4189
	Growth	-	-0.3%	-1.3%

Data source: ABS (2011)

Table A.1 shows data of crime numbers in Sipaliwini over a three year period, information on BovenSuriname level is not available. The outcomes however are remarkable. As total number of crimes in Suriname increased in 2008 with 13.9 percent and decreased in 2009, Sipaliwini shows a much larger increase in total crimes. In 2008 this resulted in an increase of 22 percent, while in 2009 total crimes increased with 45 percent. The same accounts for people taken into custody, this decreased in Suriname but increased relatively high for Sipaliwini.

As mentioned in the data description, there is only recently police activity in the area (StarNieuws, 2012). This may explain the high crime rates in Sipaliwini, as before 2007 this was not registered at all.

APPENDIX III Election Numbers BovenSuriname

The table below shows the village in which the polling stations were located and the number of voters per polling station

TABLE A.2 Election Numbers of BovenSuriname

Polling station	Voters 2005	Voters 2010	Km from Atjoni	Decrease voters
Pokigron	520	300	1.2	-42%
Abenaston	293	188	8.1	-36%
Jaw Jaw	606	145	12.8	-76%
Nieuw Aurora	713	438	24.5	-39%
Goejaba	1088	538	34.4	-51%
Pikienslee	1022	484	43.6	-53%
Botopasie	517	289	46.8	-44%
Masiakriki	1275	357	59.2	-72%
Semoisie	551	189	76.5	-66%
Bofroekoele	647	149	82.3	-77%
Godo	776	150	83.5	-81%
Asidonhopo	831	224	85.2	-73%
Dang	1099	319	87.9	-71%
Ligorio	624	252	105.6	-60%
Total and average km	10562	4022	53.68571429	-62%

Source: Stembureau's (2005) and Surinaamse Verkiezingen (2010).

Shown in Table A.2, total number of voters decreased with more than half of people, from 10562 in 2005 to 4235 in 2010. There are several possibilities for this decrease. The residents of BovenSuriname became less politic active, due to less contact with politicians. Another possible explanation could be the number of residents of (several) villages decreased. However, there are no data available from CBB to control the population number and analyse this remarkable outcome.

APPENDIX IV Type of Houses During Field-Research

In three villages I have conducted field-research by counting the houses and the materials the houses were made of. Marrenga also did the same research in several other villages, in different periods than I did. In this appendix, I would like to give information about the procedure we both have followed. This is necessary, as follow up research does need be analysed in the same way for previous results to be useful.

Preconditions counting the houses

There are three categories in which the houses have been counted:

- Roof is made of palm leaves (wall does not matter, but is mostly wood)
The criterion with this category is there was no economical process when the house is build. All the materials are from nature, as palm leaves are free. But also corrugated iron (mostly rusted) to cover the leaks in the palm leave roofs.
- Roof is made of corrugated iron (wall does not matter)
The owner of the house has purchased the corrugated iron itself and covered the *entire* roof with these plates.
- Wall is made of cement (roof does not matter)
The roof may be made from corrugated iron or palm leaves, although in practice it is mostly corrugated iron. The lower boundary of the cement must be at least half a meter high, so the cement does not stop too far from the windowsill. When this is less than approximately half a meter, it usually just covers the foundation/floor.

This is mainly counted for future purpose. As it is easier to build a house made of cement, as most of the travelling of the villages near Atjoni happens by road instead of water transport, it is possible in the future more cement houses will be build. The reason for this is that it more durable than a house of wood, clay and palm leaves.

For all houses (no matter which category) there are several criteria. These criteria have been used in the research of both Marrenga and me:

- The function of the house does not matter. All houses are taken into account, for example storage places, toilets, houses under construction (with a roof), a school or church, henhouse, kitchens, etcetera.
- When there is no roof on the house, it does not count. For example a house under construction with no roof is no house.
- The roof may not be collapsed.

- The space may be no smaller than approximately 1m².
- In several cases we had no consensus on whether it counted as a house or not. In this case, we used the measurement method: “When looking at an air picture, would this look like a house?”.

APPENDIX V

Questionnaire Field-research

First the original questionnaire is displayed. This is in Dutch and translated in Saamaka by the interpreter, whom always spoke Dutch as well as Saramacaans. I also translated the questionnaire into English. The English version however is not used during this survey.

Vragenlijst (Dutch)

In een aantal dorpen in BovenSuriname is er een aantal vragen gesteld (door middel van een tolk) aan lokale dorpsbestuurders of ondernemers.

1. Hoeveel winkels zijn er?
2. Hoeveel houtbewerkings werkplaatsen zijn er?
3. Hoeveel broodbakkers zijn er?
4. Hoeveel kippenkwekers zijn er?
5. Hoeveel steenmakerijen zijn er?
6. Hoeveel tractoren zijn er aanwezig?
7. Hoeveel generatoren zijn er?

Hierbij wordt gerekend de werkende generatoren en de generatoren die momenteel kapot zijn maar nog gemaakt kunnen worden, dus nog niet zijn afgeschreven.

8. Hoeveel cassavemolens zijn er?
9. Hoeveel rijst pelmolens zijn er?
10. Hoeveel toeristenkampen zijn er?

Hierbij wordt een toeristenkamp mee gerekend zodra het *bij* een dorp hoort (eigenaar woont in ander dorp dan waar het toeristenkamp is gevestigd), het hoeft hierbij niet per se *in* het dorp te staan. Dit omdat de economische waarde van dit kamp (en de koopkracht van de eigenaar) wordt meegenomen naar zijn eigen dorp.

Bij al deze vragen hebben wij gevraagd of het betreffende product/dienst al aanwezig waren voor het asfalteren van de weg of pas daarna zijn gebouwd (hierbij zonder jaartallen gewerkt, omdat dit voor verwarring zorgde).

Questionnaire (English)

In a few villages in BovenSuriname several questions have been asked (by the use of an interpreter) to local village directors or entrepreneur.

1. How many shops are here?
2. How many woodworking places are there?
3. How many bread makers are there?

4. How many chicken breeders are there?
5. How many brickmaking's are there?
6. How many tractors are there?
7. How many generators are there?

The generators that work and the generators that are currently broken but can still be fixed, are taken into account.

8. How many cassava mills are there?
9. How many rice-hulling mills are there?
10. How many tourist camps are there?

A tourist camp is taken into account when it is *with* a village (the owner lives in another village than the tourist camp is settled). It does not necessarily have to be *in* the village itself. This is as the economic value of this camp (and the purchasing power of the owner) is taken into its own village.

With all questions, the interpreter asked if the concerning product/service existed before the road to Atjoni was paved or after the road was paved. We did not use any year numbers, as this caused confusion.

Limitations

In this research, the difference in language is a restriction. In the questionnaire area, they speak Saamaka. As Marrenga (2009) states, it is a complex language as it is developed in an isolated tribe. He lives for many years in the Saamaka area and speaks Saramaccaans. The language limitation has a few drawbacks, namely the interpreter, the respondents and the questionnaire itself.

In Saamaka, the interpretation of one's answer gives a better idea of the answer than the actual translation. Therefore, there is a bias in the questionnaire as there are two different interpreters who guided me.

Besides the interpreter being the limitation in the cultural and language differences, the answers of the respondents is also important to take into account. As the questions are all asked in Saamaka, it was possible for all respondents to answer. However, the question must be formulated very clear and needs good boundaries.

"In Saamaka, one does not ask questions, and doesn't answer questions" (Marrenga, 2009, p.48). This makes it difficult to gain information using a questionnaire. For this reason I decided to conduct the questionnaire on village level (instead of individual level). There are two questions which were initially in the survey, but after several forms of asking were not possible to include without causing a bias. These questions were:

- “Hoeveel kettinzagen zijn er aanwezig in dit dorp?” (Translation: “How many chainsaws are there in this village?”). For the respondents it was difficult to answer, as some only knew how many people can use a chainsaw and others had no idea whether or not they were working. As there was not one measure method, the question is deleted from the questionnaire.
- “Zijn er nog andere manier in dit dorp waarmee geld wordt verdient?” (Translation: “Are there other ways one can make a living in this village?”). Even after several different ways to ask this question, mostly the respondent answered just with no. This did not (always) mean there were actually no other ways, but the respondent did not know how to interpret the question.

Conduction interviews

All interviews were no longer than fifteen minutes, when one takes not into account the introduction and explanation of the visit. The respondents are, where possible, village directors or local entrepreneurs within the village.

- Village chieftain Abenaston
- Entrepreneur Abenaston (shop-owner)
- Entrepreneur Adawai (boatswain Martin)
- Captain Gengeston and a bread maker in Gengeston (whom is also a teacher across the river). We interviewed them together, as the captain preferred this.

APPENDIX VI

Results Field-research Economic Indicators BovenSuriname

The field-research is performed using a Dutch interpreter. The Saamaka language is translated to Dutch and therefore the results are shown in Dutch.

TABLE A.3 **Answers of all Interviews during the Field-Research in BovenSuriname**

ATJONI	
Wie?	Menno Marrenga
Wanneer?	15-mei-13

Economische indicator	Totaal	Voor weg	Na weg	Opmerkingen
Winkels	3	1	2	
School (middelbaar)	1	0	1	Plus internaat, dit is nog niet af. Door komst van de weg willen er ook (goede) leraren deze kant op komen, bereikbaar.
Bestuurscentrum opgericht	1	1	0	Anticiperend op de weg
Bureau Burgerzaken	1	0	1	
Politiepost + gevangenis	1	0	1	
Kapperszaak	1	0	1	

Overige opmerkingen	Er zijn op Atjoni voornamelijk veel overheidsdiensten bijgekomen, nog niet veel commercieel
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ABENASTON	
Waar?	Abenaston
Wie?	Dorpshoofd
Wanneer?	16-mei-13

Economische indicator	Totaal	Voor weg	Na weg	Opmerkingen
Winkels	2	2	0	
Houtbewerkings plaatsen	1	1	0	
Broodbakkers	4	4	0	
Kippenwekers	2	2	0	
Steenmakerijen	nvt	nvt	nvt	Niet gevraagd
Tracktoren	1	1	0	Er staat nog een tractor die eigenlijk van Amakakonde is, niet mee geteld.
Generatoren	8	8	0	Waarvan 1 van de overheid
Buitenboord motoren	nvt	nvt	nvt	Wist de ondervrager niet
Cassavemolens	3	3	0	
Rijst pelmolens	1	1	0	
Toeristenkampen	1	1	0	

ABENASTON	
Waar?	Abenaston
Wie?	Eigenaar supermarkt
Wanneer?	16-mei-13

Economische indicator	Totaal	Voor weg	Na weg	Opmerkingen
Winkels	4	3	1	
Houtbewerkings plaatsen	2	1	1	
Broodbakkers	2	2	0	
Kippenkwekers	2	2	0	
Steenmakerijen	0	0	0	
Tracktoren	nvt	nvt	nvt	
Generatoren	7	4	3	Waarvan 1 van de overheid
Buitenboord motoren	5	0	5	
Cassavemolens	2	2	0	
Rijst pelmolens	1	1	0	Is echter momenteel kapot
Toeristenkampen	2	1	1	Waarvan 1 in Abenaston (net paar maanden open) en 1 in JauJau (Sodoti, eigenaar, woont in Abenaston)

Overige informatie (Anneloes)	De supermarkt eigenaar gaf aan dat direct sinds de komst van de weg zaken slechter gaan. Dit doordat er meerdere supermarkten bij Atjoni zijn en benzine daar goedkoper is. Ook de broodbakkers hebben het lastig.
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ADAWAI	
Waar?	Adawai
Wie?	Bootsman, jonge ondernemer genaamd Martin
Wanneer?	17-mei-13

Economische indicator	Totaal	Voor weg	Na weg	Opmerkingen
Winkels	0	0	0	
Houtbewerkings plaatsen	0	0	0	
Broodbakkers	0	0	0	
Kippenkwekers	0	0	0	
Steenmakerijen	0	0	0	
Tracktoren	0	0	0	
Generatoren	1	0	1	
Buitenboord motoren	3	0	3	
Cassavemolens	0	0	0	
Rijst pelmolens	0	0	0	

Toeristenkampen	0	0	0	
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Overige informatie (Anneloes)	Er waren weinig mensen aanwezig. Dorpshoofd lag in ziekenhuis en vervangend dorpshoofd was hulpzaam, maar wilde liever niet de vragen beantwoorden. Vandaar maar één interview.
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GENGESTON	
Waar?	Gengeston
Wie?	Kapitein van het dorp + leerkracht van de overkant/broodbakker. Samen geïnterviewd.
Wanneer?	18-mei-13

Economische indicator	Totaal	Voor weg	Na weg	Opmerkingen
Winkels	2	1	1	
Houtbewerkings plaatsen	1	1	0	
Broodbakkers	1	1	0	
Kippenwekers	0	0	0	
Steenmakerijen	0	0	0	
Tracktoren	1	1	0	
Generatoren	1	1	0	
Buitenboord motoren	10	10	0	
Cassavemolens	2	1	1	Momenteel één kapot
Rijst pelmolens	0	0	0	
Toeristenkampen	1	1	0	

Source: Own field-research (2013)

APPENDIX VII Informal Recommendations

In this appendix I would like to add some suggestions for follow-up research. These are informal and sometimes recommendations based on a personal opinion, which is the reason this part is put in the appendix. I would like to include this part as it is a fact that gathering these possible measure methods has not been easy and were time-consuming. I made a selection of the most interesting suggestion for BovenSuriname/Sipaliwini/interior Suriname.

The first and probably easiest access is information from the Centraal Bureau van Burgerzaken (CBB). There are two different information pieces that are possible to access. Firstly, the year books of the CBB. Rosita Sobhie already has these books in her possession, however they are not digitalised. In the database of all the information about Suriname, 2011 is present. The second data possible to collect is information on village level. There are about forty villages of which the CBB collects information. They have this information on daily basis and can give you the gender, age and numbers of people that are born, moved or died. There is however one drawback to this measure method, as Menno Marrenga pointed out: “Bedankt voor de informatie (Anneloes: informatie was dat de gegevens van CBB dagelijks gemeten worden. De resultaten weergeven alle geboortes, sterftes en verhuizingen die door de bevolking zelf worden opgegeven), maar het is slecht nieuws. Ik beschouw de CBB informatie als waardeloos. Inschrijven bij CBB is een tijdrovende hobby, tot nu toe alleen mogelijk in Paramaribo. Vermoedelijk heb je een flinke onderregistratie bij mensen die er geen direct nut van hebben. Bovendien is de onderregistratie voor elk bevolkingssegment anders, dus niet onder een globale correctiefactor te vangen: pensioengerechtigden en gesalarieerde landsdienaren zijn vermoedelijk voor 100% geregistreerd in de dorpen, in Paramaribo schoolkinderen zijn vermoedelijk formeel naar Paramaribo verhuisd, niet-schoolgaande jongelui die in Paramaribo werken soms wel soms niet, jongelui die in de illeale goudvelden werken staan in de dorpen geregistreerd, enzovoort. Als illustratie: de verhouding schoolkinderen uit Amakakonde en Abenasitonu schat ik op 1:2 tot 1:3, de inwoneraantallen verhouding volgens CBB is veel groter. Ik vermoed dat het traditioneler dorp Amakakonde minder neiging tot registratie heeft.”

Another possibility, through which it is possible to gather information about the number of residents on village level, is through the Medische Zending. Due to a bug in the software system, they could not help me with this information on time. They are very helpful in providing this information. The present director of the Medische Zending is also familiar with dhr. Schalkwijk, as she graduated on the Anton de Kom university. Information possible to receive is the number of people living in the villages present day, but also information about the past. There is a bias in this information as not every village is correctly registered (for example one of the villages is mostly registered at the French Medische Zending). Also not everyone notifies the Medische Zending when moving. It is however the

case that registering is for free, so most people do so. By counting the houses of several villages, it might be possible to find a factor that gives an idea of the ration houses/people and part of the bias can be overcome.

A completely different way to measure the economic development is using air pictures. This has actually been done in America by Rozenfeld, Rybski, Gabaix, and Mask in the study *The Area and Population of Cities: New Insights from a Different Perspective on Cities* (2011). With this photo's it is possible to look at the village development along the road (so more in Brokopondo area than BovenSuriname), but also at the agricultural development within BovenSuriname. At the end of my research, I heard that Pitou van Dijck has air pictures of the Brokopondo area (not sure if this includes BovenSuriname) and it might be possible to get access to these photos through dhr. Schalkwijk of the IGSR. Menno Marrenga also has a few old air pictures in his possession that might be useful in this analysis.

During the interviews in the field-research, the owner of a supermarket in Abenaston told us that there is a lot of competition from shops in Atjoni. Also bread makers seem to have difficulties selling their bread. In my research, I did not further analyse this comment, but it is an issue Menno Marrenga and I also discussed. Perhaps, when time allows it for follow up research, it is a good idea to measure the effect of paving the Tjongalangapassi on a product (similar to) bread and the local entrepreneurship.

APPENDICES REFERENCES

Buanda (1998). *Dorpenkaart Saamaka*. Retrieved on July 24th, 2013 from:

http://www.buanda.org/images/Dorpenkaart_Saamaka_1998.pdf

Marrenga, M. (2009). *Talking with Saamaka People*. Paramaribo: Ralicon.

StarNieuws (2012). *Criminaliteit in Boven-Suriname wordt aangepakt*. Retrieved on July 18, 2013 from: www.starnieuws.com/index.php/welcome/index/nieuwsitem/12187