The Effects of Growth and Inequality on Poverty in Honduras

Martin Larsson and Sofie Sjöborg

Abstract

This thesis studies and identifies effects of income growth and income inequality on poverty in Honduras. A Poverty Reduction Strategy (PRS) was implemented in Honduras in 2001 with the goal to reduce poverty by half by 2015. Since carrying out of PRS, poverty and inequality has only decreased slightly and growth in income has been small. The effects of growth in income and changes in the income distribution are measured by elasticities, a tool to estimate how growth and inequality affect poverty. The trade-off between growth and inequality is estimated by the inequality-growth trade-off index (IGTI) as a guide to implement appropriate policies. The results of the growth elasticity of poverty suggest growth in income has only had a small effect on poverty reduction. The inequality elasticity of poverty results imply reduction of inequality has had greater poverty reducing effect than growth. The results of the IGTI suggest PRS policies should focus on growth promotion to reduce headcount poverty in rural areas and a combination of growth and inequality policies in urban areas. If focus is on reducing the poverty gap and the severity of poverty, inequality reducing policies will be more beneficial than growth policies.

Keywords: Honduras, poverty, poverty elasticity of growth, poverty elasticity of inequality, inequality-growth trade-off index

Resumen

Esta tesis estudia e identifica los efectos de crecimiento de ingresos y la desigualdad de ingreso de la pobreza en Honduras. La Estrategia de la Reducción de la Pobreza (ERP) fue implementada en Honduras en el 2001 con el propósito de reducir la pobreza por la mitad hasta el 2015. Desde que la ERP se implementó, la pobreza y desigualdad solo se han reducido levemente y el crecimiento de ingresos ha sido poco. Los efectos de crecimiento de ingresos y los cambios en la distribución del ingreso son medidos por elasticidades, una herramienta para calcular como el crecimiento y la desigualdad afecta la pobreza. La compensación entre el crecimiento y la desigualdad se estiman por el índice de la desigualdad hacia de compensación de crecimiento con dirección a implementar políticas apropiadas. Los resultados de la elasticidad de crecimiento de la pobreza sugieren que el crecimiento en el ingreso ha solamente tenido un pequeño efecto en la reducción de la pobreza. Los resultados de la elasticidad de desigualdad de la pobreza implican que la reducción de desigualdad ha tenido mayor efecto en la reducción de la pobreza que crecimiento. Los resultados del índice de la desigualdad hacia de compensación de crecimiento sugieren que las políticas de la ERP deberían enfocarse en promover el crecimiento para reducir la pobreza en áreas rurales y una combinación de políticas de crecimiento y desigualdad en áreas urbanas. Aunque, si el foco está sobre la reducción de la brecha de la pobreza y la severidad de la pobreza, las políticas de la reducción de la desigualdad serán más beneficiosas que las políticas de crecimiento.

Palabras claves: Honduras, pobreza, elasticidad de crecimiento de la pobreza, elasticidad de desigualdad de la pobreza, índice de la desigualdad hacia de compensación de crecimiento

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List of Abbreviations

CABEI	Central American Bank for Economic Integration
CACM	Central American Common Market
EPHPM	Multi Purpose Permanent Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples)
FHIS	Honduran Social Investment Fund (Fondo Hondureño de Inversión Social)
GDP	Gross Domestic Product
HIPC	Heavily Indebted Poor Country
IDB	International Development Bank
IMF	International Monetary Fund
INE	National Institute of Statistics (Instituto Nacional de Estadística)
MDG	Millennium Development Goal
PPP	Purchasing Power Parity
PRAF	Family Allowance Program (Programa de Asignación Familiar)
PRONADERS	National Program for Sustainable Rural Development (Programa Nacional de Desarrollo Rural Sostenible)
PRS	Poverty Reduction Strategy
PRSP	Poverty Reduction Strategy Papers
SAP	Structural Adjustment Program
UN	United Nations
WB	World Bank

Currency equivalents

Currency Unit = Lempira (L)

1 US Dollar = L18.9

1 Lempira = 0.053 US$

(As of March 1, 2010)

1 Introduction

One of the Millennium Development Goals set by the United Nations in 2000 is to reduce extreme poverty by half by the year 2015. A country suffering high poverty rates is Honduras, which is the third poorest country in Central America. 59 percent of the 7.9 million people in Honduras were classified as poor in 2009 and 37 percent of the population were living below the extreme poverty line. In addition to the high poverty, Honduras is one of the most unequal countries in the world. The top 20 percent of the population share 57 percent of the total household income while the lowest 20 percent share only 3 percent of the income.

Poverty reduction strategies have traditionally focused on economic growth as the main policy to reduce poverty. However, according to recent studies the distribution of income is an essential determinant of poverty reduction. Research on the relationship between growth, inequality and poverty on a cross-country basis has failed to give significant results because it neglects country heterogeneity. This implies all countries have different structures and conditions, which need to be taken into account in formulating policies for effective poverty reduction. Therefore we will analyze the effects of inequality and growth on poverty in a country specific context for Honduras.

1.1 Objective

The main purpose of the study is to evaluate the effects of growth in income and changes in income distribution on poverty in Honduras. The time period analyzed will be 2002-2009, when policy efforts for poverty reduction have been made in accordance to the PRS. We intend to answer following questions:

How have income growth, inequality and poverty developed in Honduras?

How has the prevailing structure of growth and inequality affected poverty in Honduras?

Has Honduras PRS served its purpose to reduce poverty and how can the PRS policy approach be improved?

1.2 Data and Method

This is a quantitative study. Different poverty measures and elasticities are calculated and the results will be evaluated and discussed in relation to policy approaches of poverty reduction. To identify the structure of poverty and the effects of growth and inequality in Honduras we will use income data from household surveys, Encuesta Permanente de Hogares de Propósitos Múltiples (EPHPM). The data has been collected by the country's statistical office, Instituto Nacional de Estadística (INE). For further reading about the household surveys see Appendix. The poverty and inequality measures will be calculated with POVCAL, a program developed by the Policy Research Department at the World Bank for calculating poverty measures from grouped distributional data. To get a more comprehensive understanding of the household surveys and the situation in Honduras, interviews have been conducted.

The poverty measures of headcount ratio, poverty gap ratio and severity of poverty recognize different characteristics of poverty. The GINI-coefficient identifies the inequality in terms of income distribution. Growth is measured by changes in income. Poverty elasticities, derived from the poverty measures, identify the respective effect of the changes in growth and inequality on poverty. With the poverty elasticities we will be able to calculate the inequality-growth trade-off index, which give the level of growth needed to offset an increase in inequality at a given level of poverty. The targeting of the PRS policy approaches will be discussed in relation to our findings.

1.3 Delimitations

There is a large literature on the subject of the linkage between poverty, growth and inequality. Methodology and processing the data are based on data pre-requisites and to a large extent the same as in similar studies. This is to make theory and methodology applicable and as relevant as possible to Honduras. According to Bourguignon (2004) the initial level and the distribution of assets is an important determinant of inequality. Son and Kakwani (2004) also argue that the initial level of income inequality has a significant impact in the poverty reduction process. The data provided by INE does not have estimations of initial asset distribution in Honduras, therefore this aspect will be excluded in our study. Even though

assets are not considered in this study, income level can be assumed representative because in the household surveys the high-income quintile also has the highest level of education. Since education needs to be privately financed in Honduras we assume that the high-income quintile also has higher initial assets.[1]

1.4 Outline

Chapter Two introduces the economic development of Honduras and the implementation and the follow-up of the PRSP. Chapter Three explains the different measures of poverty, growth and inequality and the interaction of the three in the theoretical framework of the Poverty-Growth-Inequality Triangle. Chapter Four describes and analyzes the growth, inequality and poverty situation in Honduras. Chapter Five explains and analyzes poverty elasticities of growth and inequality and the inequality-growth trade-off index. The findings in Chapter Four and Chapter Five are discussed in the respective chapters in relation to the Honduras PRS policy approach. Chapter Six summarizes and concludes the study.

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[1] Interview with Horacio Lovo Peralta, 5/2-2010

2 Economic Development of Honduras

Honduras is the third poorest country in Central America. High inequality prevails in the country and the unequal structure has its roots from the Spanish colonization in the 1500s. During this period natural resources, for example silver and primary goods for export, were extracted and the high inequalities in ownership of productive assets were formed. Land is still in the possession of a small elite and the poor small scale farmers and laborers do not benefit from the unequal structure, since they can profit from economic growth only to a lesser extent (Murray, 1999, p. 129). Agricultural land accounts for 28 percent of the land area of Honduras (World Bank, 2010). 1.7 percent of the largest farm producers and multinational companies control more than 39 percent of the land (PRSP, 2001). 54 percent of the population live in rural areas and 46 percent live in urban areas. 6.1 million are of working age and 3.2 million of these are active in the labor market.[2] 47 percent of the economically active are working in urban areas and 53 percent in rural areas (EPHPM).

Honduras is a small open economy, which makes the country vulnerable for external shocks and fluctuations in world market prices. Export accounts for 40 percent of GDP (Gross Domestic Product) and import 50 percent. Export has mainly been dependent on primary goods such as bananas, coffee and shrimps. But the last decade the export sector has become more diversified with value added production. Foreign owned assembly factories, *maquilas*, have been established in free trade zones by the government. The maquilas mainly consist of textile exports to the United States and now represent a higher share of total export than traditional primary exports (World Bank, 2004). The United States is the largest trading partner.

The strongest economic growth in Honduras has occurred in the geographical "T" region of development, which includes the Caribbean coast and the central parts from San Pedro Sula to Tegucigalpa (see Appendix, Figure A.1). These more developed economic regions have received more investments than the countryside outside the "T". The rural poor, mostly resident outside the "T", have been bypassed and inequalities between the regions have

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[2] Working age defined as all people from 10 years old and upwards.

increased because of biased investments.[3] This has created large differences between urban and rural regions and not much has happened in terms of broad based development.

In the 1980s the Honduras economy suffered from a depression. Structural Adjustment Programs (SAPs) of import-substituting industrialization, the international debt crisis and the collapse of Central American Common Market (CACM) meant lower demand for Honduran exports and were the main causes of the depression. In an attempt to manage the crisis, trade liberalization policies were implemented and former high import taxes were lowered, which increased import but lead to trade balance deficits and decreased reserves. The inflation remained high during the 1990s with an average level of 20 percent and the per capita growth averaged -0.1 during the decade (IMF and WB, 2000). Poverty rates remained high since the inflation drove up petroleum and food prices, to which the poor are especially sensitive.

The beginning of a positive economic development experienced by the country during the 1990s was interrupted by the hurricane Mitch in October 1998, which caused devastating consequences for the economy. Large parts of agricultural plantations were destroyed, lives were lost, a fifth of the population lost their assets and a tenth lost wage income, which resulted in a significant poverty increase in rural areas (Morris et al., 2002). Debt cancellations, foreign aid and loans were granted for the reconstruction to rebuild society. The Honduras debt burden remained high, 61 percent of GDP (US$ 4.3 billion) in 1999 (IMF, 2000).

In 2000 Honduras was included in the favorable loan program for Highly Indebted Poor Countries (HIPC) administered by the WB and IMF. Its main multilateral creditors are the International Development Bank (IDB), the World Bank, the Central American Bank for Economic Integration (CABEI) and Japan is the largest bilateral creditor (IMF, 2000). The macroeconomic environment of Honduras was improved by the aid. As a result of reduced government expenditures and increased tax revenues, Honduras reached the HIPC completion point in 2005, which gave full debt relief (IMF, 2006).

A significant contribution to the income increase in the Honduran economy is remittances. Remittances have grown the past years and represented between 8 and 28 percent of GDP in

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[3] Interview with Jan Robberts, 25/1-2010

2009.[4] The level of education is low and there is especially a shortfall of highly educated people. Honduras also suffers from weak institutions, widespread corruption, political instability and badly developed infrastructure (IMF, 2006). The country is ranked 130th out of 180 countries according to Transparency International's Corruption Perceptions Index in 2009. A relatively good political stability since the 1990s has increased the level of investment which is a prerequisite for growth in the economy. The economic elite as well as other powerful economic actors, for example trading partners, have their interests represented in the country's politics. Periods of conflicting interests resulted in 2009 in the first military coup since the cold war which set the democratically elected president Manuel Zelaya out of power. The new election, where the former president was not allowed to participate, in December 2009 was won by Porfirio Lobo Sosa and in January 2010 he took office as the new president of Honduras.

2.1 Poverty Reduction Strategy Papers

2.1.1 Purpose of the PRSP

In 1999 the IMF and the WB initiated the PRSP framework as an effective strategy for poverty reduction. The PRSP were formulated to promote a broad based development through pro-poor growth in a long term perspective. "*PRSPs aim to provide the crucial link between national public actions, donor support, and the development outcomes needed to meet the United Nations' Millennium Development Goals (MDGs), which are centered on halving poverty between 1990 and 2015*" (IMF, p. 1). The PRS is updated every three years and the annual progress report evaluates the country's social, structural and macroeconomic situation to revise the strategy. After almost one and a half years of consultation a PRS was formulated for Honduras for the period 2001-2015. According to the PRSP, the main causes of high poverty in Honduras are: slow economic growth and low per capita income, unequal distribution of income and factors of production, low level of education and low productivity of employment. The primary objective of the PRS is therefore to reduce poverty by rapid economic growth with an equal distribution by increased development in human capital and access for poor to factors of production and social safety nets. Government institutions,

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[4] EPHPM and interview with Dante Mossi, 9/2-2010

grassroots organizations, municipalities, NGOs, private-sector groups and donors are responsible for the implementation and the follow-up of the strategy (PRSP, 2001, p. ii-vi).

2.1.2 PRSP Budget

PRS expenditures increased from 8,755.2 million Lempiras in 2001 to 14,424.1 million Lempiras in 2006. In relation to the GDP, expenditures represented between 7.5 and 8.8 percent during the period 2001-2006 (World Bank, 2007, p. 30). The PRS focus on six main program areas which are: 1) accelerating equitable and sustainable growth, 2) poverty reduction in rural areas, 3) reducing urban poverty, 4) investing in human capital, 5) strengthening social protection for specific groups and 6) guaranteeing the sustainability of the strategy (PRSP, 2001, pp. 60-93). Figure 2.1 presents the percentage share of the budget invested in the different program areas. Even though results of the strategy are difficult to evaluate after a few years, prioritization and redirections of the budget have been made.

Increased investments in human capital might depend on the absence of meeting the goals in the program area and increased knowledge of the positive effects of human capital on development. Lack of progress in the area of guaranteeing the sustainability of the strategy might be due to weak institutions, hence more resources were allocated to the program area. Reduction of spending on rural and urban poverty and special protection for specific groups is notable since poverty is still prevailing. But the increased spending in the human capital program area will indirectly benefit these groups. It is also notable that such a small part of the budget is being spent to promote economic growth, but this program area is more of a guideline permeating the decision making of the government.

Figure 2.1 Program areas share of PRS budget
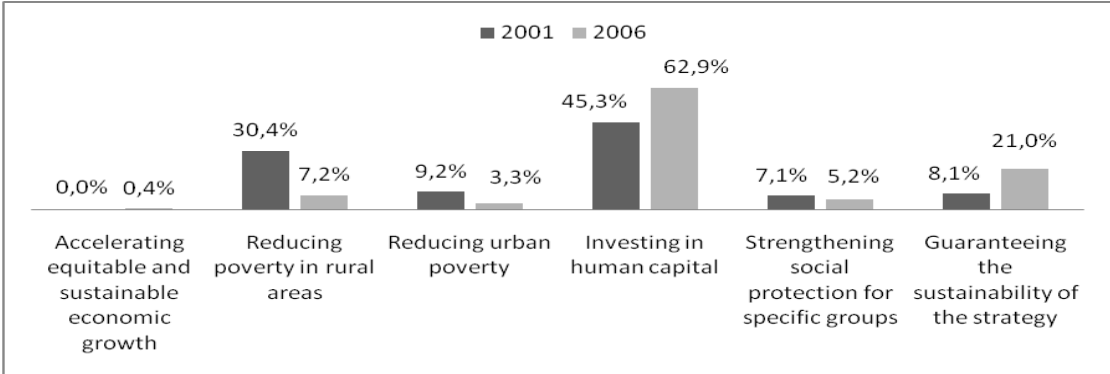
Source: Author's calculations based on PRSP 2001 and PRSP Progress Report 2007.

2.1.3 Program Area Objective

In the program area of human capital the main objectives are to enhance the coverage and quality of schooling. Further improvements in the quality and access to health services are part of the objective of improving the well-being of the poor (PRSP, 2001, pp. 80-86). Programs are implemented to improve curriculum, material, and infrastructure for schools and increase the number and competence of teachers. To reduce poverty in rural areas the objectives are to assure access to land and land tenure for small farmers, increase access to infrastructure, market-support and technology to improve the efficiency and competitiveness (Ibid, pp. 69-74). The National Program for Sustainable Rural Development (PRONADERS) has one of the most important roles in reducing poverty in rural areas. The program aims to empower rural citizens through capacity building by planning and coordination of the rural program objectives mentioned above.

To reduce urban poverty policy, focus is on generating employment and income opportunities by promoting micro-, small- and medium-size enterprises, develop medium-sized cities, construct low-cost housing and increase access to basic services (Ibid, pp. 75-79). To reach the objective, programs focus on financial support and training of entrepreneurs, land-use planning and subsidies for improvements in house building. In the program area of strengthening social protection for specific groups focus is to increase their opportunities. These vulnerable groups are the extreme poor such as children, adolescents, senior citizens, women and ethnic groups (Ibid, pp. 87-92). Strengthening of social infrastructure is carried out by the Honduran Social Investment Fund (FHIS), with focus on improving schools and health centers, and the Family Allowance Program (PRAF), with focus on direct money transfer through subsidies and vouchers to compensate for lack of income. These programs improve the social safety net, which imply better security and better opportunities for the extremely poor.

To guarantee the sustainability of the strategy, the objective is to strengthen governance, transparency and the judicial system, decentralize public administration and reduce ecological vulnerability (Ibid, pp. 91-100). To strengthen governance and transparency, programs for anticorruption and state purchasing and contracting will be implemented. Other programs provide technical support and administration to modernize the judicial system, the national congress as well as municipal offices. A more participatory democracy is promoted since

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corruption and lack of credibility in the legal framework hinder development. A weak system results in inefficient allocation of resources and higher costs through for example bribes. The main objective in the program area of accelerating equitable and sustainable growth is to have a stable macroeconomic framework. Further goals are development of infrastructure to attract domestic and foreign investments, improved competitiveness in international markets and development of high productive potential sectors which will all generate employment opportunities (Ibid, pp. 60-68). Foreign trade policies will be strengthened, market regulations developed and technical assistance will be provided to the high potential sectors of non-traditional agro-exports and forestry to generate employment through increased diversification and growth.

2.1.4 PRSP Progress and Achievements

By 2006 only half of the PRSP goals were met. The goals of economic growth, pre-basic school enrolment rate, mortality rates and basic services of electricity and telecommunications were fulfilled. But key indicators such as poverty, education and health, demonstrate low performance in achieving the goals (World Bank, 2007, pp. 27-28). Overall the well-being of the poor in Honduras has been positively affected by the strategy, but the effects might not be quantifiable. The positive effects of investments in human capital have not yet shown much result but are necessary requirements for long-term growth. However, the present poverty situation in Honduras indicates that economic growth has not been translated into significant poverty reduction.

Two of the main reasons for the slow progress of the PRS targets to reduce poverty are the remaining low factor productivity and low levels of employment (World Bank, 2007, p. 23). 80 percent of the income is generated by labour activities so the importance of access to employment and the level of wages have high influence on poverty (PRSP, 2001, p. 26). An important attempt to improve the poor's access to productive factors is the redistribution of land, but this has not been made on a sufficiently large scale. Capital investments should focus on improvements in machinery, technology and production, especially in the agricultural sector, to increase the low levels of factor productivity. Increased capacity of the Honduran worker through investments in human capital is also needed to increase factor productivity. Inefficient and weak institutions still have a negative impact on the

implementation of the strategy. Property rights and predictable rules are significant for entrepreneurs to gain confidence in the market and the economic system. For more effective results of the PRS, management and result-based systems are now implemented with expectations of goal achievements. The updated PRS for 2007-2015 continues to focus on creation of economic opportunities, jobs and increased access to assets for the poor (World Bank, 2007, p. 2).

3 Poverty, Inequality and Growth

3.1 Multidimensional Poverty

Poverty is multidimensional and may be defined both by monetary and non-monetary indicators (World Bank, 2005). Different poverty measures include different variables and indicate different types of poverty deprivations. Most commonly per capita income or consumption is used as a monetary measure. Non-monetary measures, for example Human Development Index, include variables of life expectancy, educational attainment and income. Depending on which variables a measure includes, the level of poverty will differ and might even give opposing results. For example, in the same time period income level might decrease while availability to schooling and healthcare might increase. Several different indicators are required to identify the multidimensional characteristics of poverty which is essential for a broad based poverty reduction. There are advantages and disadvantages in different ways of measuring poverty since welfare and well-being is a multifaceted concept. Income data is a valid indicator when measuring poverty as long as the poverty line is set in accordance to the actual purchasing possibilities of income. The poverty structure within countries can differ depending on the level of development in different regions. The urban and rural areas have different poverty patterns since income is generated from different sectors and sources.

3.2 Measuring Poverty

Poverty is based on a national poverty line. There are two national poverty lines defining extreme and total poverty, based on a Basic Food Basket[5] and a Basic Needs Basket[6]. People living in extreme poverty can meet neither the cost of the basic food basket nor the basic needs basket. The national poverty lines emanate from World Bank's extreme poverty line of

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[5] Monthly income to afford to buy 2200 calories per person per day food intake.

[6] In addition to basic food, the availability of potable water, access to basic sanitation, school attendance of children between 7-12, the number of dependents per worker, the existence of three or more persons per room (excluding bathroom) and the state of housing not improvised or built from scrap materials.

$ 1 a day and moderate poverty line of $ 2 a day. The national poverty lines are calculated in relation to income purchasing power of the costs of these baskets in Honduras.

Foster, Greer and Thorbecke (1984) developed a class of poverty measures to get a better understanding of the poverty structure. The Foster-Greer-Thorbecke index, also called the P_α index, estimates poverty deprivation depending on the value of α. If $\alpha = 0$ the index corresponds to the headcount index, if $\alpha = 1$ we get the poverty gap and if $\alpha = 2$ we will get the squared poverty gap, also referred to as severity of poverty.

$$P_\alpha = \frac{1}{N} \sum_{i=1}^{H} \left(\frac{Y_P - Y_i}{Y_P} \right)^\alpha \tag{3.1}$$

The Headcount Index, P_0, measures the share of the population, H, which have an income below the poverty line, Y_p. The total population is N. This measure is also called the incidence of poverty.

$$P_0 = \frac{H}{N} \tag{3.2}$$

Since the headcount index does not identify how poor the poor are, *The Poverty Gap,* P_1, is used to identify the depth of poverty. The poverty gap measures the mean distance of how far from the poverty line households are, expressed as a percent to the poverty line. It is calculated by the mean aggregate income shortfall in relation to the poverty line. The poverty gap adds up the poor people's shortfall of income divided by the total population and consequently identifies the resources needed to move these people out of poverty.

$$P_1 = \frac{1}{N} \sum_{i=1}^{H} \left(\frac{Y_P - Y_i}{Y_P} \right) \tag{3.3}$$

Severity of Poverty, P_2, takes the distribution of income amongst the poor into consideration. Households far from the poverty line get a higher weight than the ones close to the poverty line.

$$P_2 = \frac{1}{N} \sum_{i=1}^{H} \left(\frac{Y_P - Y_i}{Y_P} \right)^2 \tag{3.4}$$

3.3 Measuring Inequality

Inequality in this thesis refers to disparities in income distribution in a population. Inequality could also be estimated for other welfare indicators than income, for example inequalities in education or health. Further inequality gives a broader perspective since it includes the entire population instead of only people living below a poverty line (World Bank, 2005, p.96). Inequality is commonly measured by the Gini coefficient (hereafter referred to as Gini). The Gini can be derived from the Lorenz curve. The Lorenz curve shows the cumulative proportion of income in relation to the cumulative proportion of a population. The Gini is given by the area between the Lorenz curve and the 45° line of equity from origo (Figure 3.1). The Gini varies between 0, total equality, and 1, complete inequality. The higher the Gini, the higher the inequality. A value of 0.55 and above is a high level of inequality, 0.45-0.55 is middle-high, 0.35-0.45 is middle and 0.35 and below is a low level of inequality (Bourguignon, 2004, p. 8).

Figure 3.1 Lorenz curve
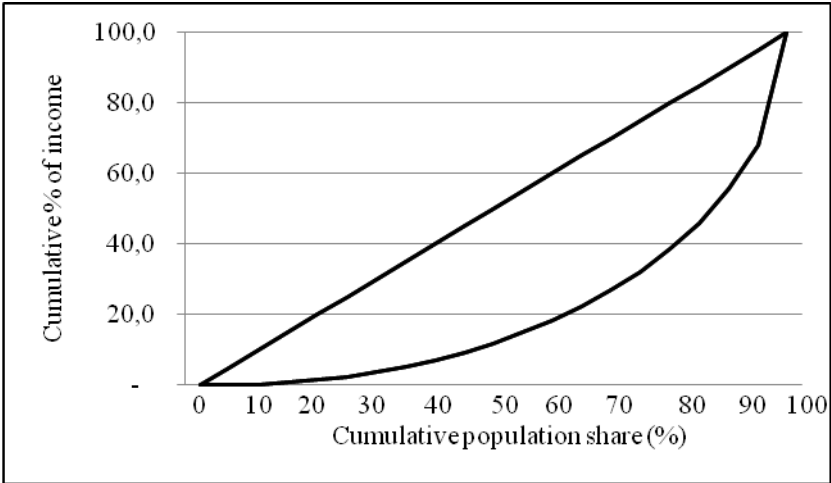
Source: Author's calculation based on EPHPM, Honduras Gini of 0.58 in 2006

The Gini coefficient of inequality, G, is given by

$$G = \frac{1}{2n^2 \bar{y}} \Sigma_{i=1}^{n} \sum_{j=1}^{n} \left| y_i - y_j \right| \tag{3.5}$$

where the y bar is mean income, n is the total number of individuals, y_i and y_j are individual incomes (Litchfield, 1999). The Gini satisfies several important properties of measuring inequality. The Gini is mean as well as population size independent because it is always a relative measure to the total, i.e. currency or size of the economy does not change the Gini. The Gini is symmetrical, i.e. if two individuals swap income, the Gini does not change. The Gini also satisfies the Pigou-Dalton criterion of transfer sensitivity, i.e. an income transfer from rich to poor reduces inequality. However the Gini cannot be broken down to compare subgroups or sources of income since the sum of the Gini in subgroups is not equal to the total Gini of the society (World Bank, 2005, p. 98).

Inequality in income is affected by several factors. *Endowment effects* change personal and population conditions of the inequality, for example age, educational levels, gender, ethnicity and area of residence. Changes in the returns to factors of production such as education and experience also have an impact on the wage rate, *price effects*. *Occupational choice effects* such as changes in wage-work, self employment and unemployment influence the inequality (Bourguignon et al., 2004, p. 4). Further, inequality can also be measured by dividing the population into quintiles by income level to detect changes in the share of the different income groups (World Bank, 2005, p. 96).

3.4 Measuring Growth

Growth is defined as an increase in a country's GDP and at a household level growth is detected as an increase in income. But what is the engine of a country's economic growth? Endogenous growth theories hold that growth is generated by increased capital and labour and improvements in technology and human capital (Jones, 1998, p. 96ff). These factors are often in deficit in many developing countries.

Policies can be implemented to generate economic growth by creating employment opportunities which increase income and possibilities to save. This leads to increased capital stock and factor productivity. Policies targeting improvements in human capital through higher quality and better coverage of education, as well as improved healthcare will increase factor productivity and create better opportunities for the poor. Different policy strategies can

achieve poverty reduction through different channels, but how is it possible to decide the most efficient development strategy? As growth, inequality and poverty have proven to be interlinked, it is important to study the connections between them. The link between growth, inequality and poverty will be investigated in the following chapter.

3.5 The Poverty-Growth-Inequality Triangle

Bourguignon (2004) explains the simple arithmetic of development regarding the relation between poverty, growth and inequality (Figure 3.2). Economic growth implies a higher income of the population on average. Depending on how the income growth is allocated in the population, changes in the distribution of income in the country will have impact on the poverty structure. In recent studies, Bourguignon establishes evidence implying this connection to be strong and concludes that changes in income distribution and growth may have sizeable impact on changes in poverty.

Figure 3.2 The Poverty-Growth-Inequality Triangle
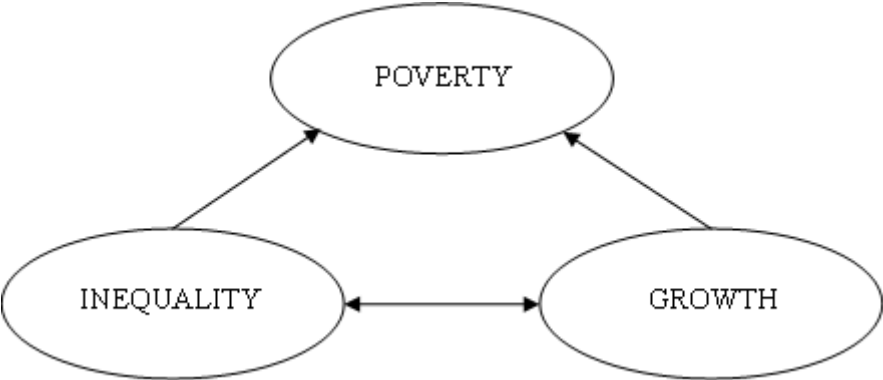
Source: Bourguignon (2004), revised by Martin Larsson

Poverty: Absolute poverty

Inequality: Distribution and distributional changes

Growth: Aggregate income level and growth

Figure 3.3 below shows the density function of the distribution of income in the population on a logarithmic scale. The growth and inequality effects on poverty are shown with arrows as

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the shifts of the distribution. The growth effect increases income and shifts the distribution horizontally to the right, which means that people in the population cross the poverty line (light shaded area in Figure 3.3) if income increases more than the poverty line. The next change in the figure is the distribution effect on poverty. The income distribution in the population becomes more equal, shifting vertically upwards, and moves even more of the poor over the poverty line (dark shaded area in Figure 3.3). The order of the effects is not relevant, the distribution effect can also occur first followed by the growth effect (Bourguignon, 2004). In the figure the growth effect has more impact on poverty reduction than the distribution effect, but it could just as well be the distribution effect having the most impact.

Figure 3.3 Decomposition of change in distribution and poverty into growth and distributional effects
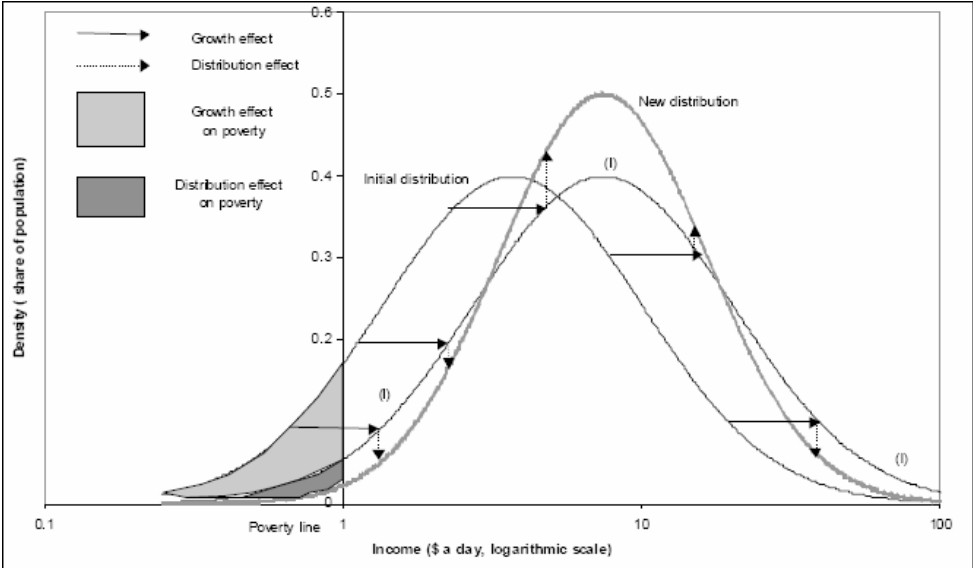
Source: Bourguignon (2004)

3.5.1 Growth Effects on Poverty

Economic growth has a positive effect on poverty reduction. Development theories during the 1950s and the 1960s suggested poverty reduction could be achieved by policies emphasizing accumulation of capital stock. Growth would then in the long run reduce poverty as a trickle-down effect by first benefitting the rich and increasing their income, and in a later trickle-down stage increase the income of the poor. This implies that inequality could be neglected and there should only be growth policy focus which eventually benefits the poor (Kakwani and Pernia, 2000). But how effective is the trickle-down mechanism in a country with high

inequality? Dollar and Kraay (2002, p. 219) state there is no evidence for the trickle-down process but "*growth on average does benefit the poor as much as anyone else in the society, and so standard growth-enhancing policies should be at the center of any effective poverty reduction strategy*".

According to Dollar and Kraay (2002) slightly more than a 1 percent increase in per capita income will increase the income of the poor by 1 percent. However, economic growth can marginalize and bypass the poor if the focus is on sectors with a small share of the poor participating. If an increase in income is more favorable for the high income quintiles, the probability of reducing poverty decreases since the poor gain relatively less. A small income increase can have noticeable effect on poverty reduction if the poor take part (Datt and Ravallion, 1998). If the poor gain relatively more from growth, receive higher income, poverty will be affected since more money will be spent in their surroundings. Christiaensen et al. (2010) state the importance of the poor's participation in the growth process, and that growth should be generated in sectors where it has the largest poverty reducing effect. To decrease poverty it is important to choose an effective pro-poor development strategy where growth affects the poor with a higher proportion in the growth process than the non-poor. [7]

3.5.2 The Two-way Relationship Between Inequality and Growth

According to Kuznets inverted U-hypothesis, inequality initially increases as the economy grows, but at later stages in the development process inequality lessens. This relationship was found for a selection of countries in the 1970s, but has been disproved in research conducted in later years and should not be used as base for poverty reducing policy approach (Deininger and Squire, 1998). A high growth rate has not proven to worsen the distribution of income and there is no causal relationship between low growth and improved income distribution (Todaro and Smith, 2006).

According to Persson and Tabellini (1994) income inequality is negatively correlated with growth. Inequality can be divided into initial inequality of assets for example land and contemporary inequality in factor rewards such as income. High inequality hinders growth because it causes inefficiencies in economic activities. The savings rate is low in high

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[7] There are several definitions of pro-poor growth. In this study it is defined as when the poor gain a relatively higher share of an income increase than the rich. For further discussion see Kakwani and Pernia (2000).

inequality economies because the highest rate of savings is usually found in the middle class (Todaro and Smith, 2006). The poor lack savings and collateral for loans and therefore have no possibilities to invest. The already wealthy do not have the same incentive either to save or to innovate since they profit from the present structure. This lack of investment options of the poor keep them in a poverty trap. If the poorest people have a possibility to borrow money to invest in micro projects, this could generate income. The participation of the lowest income groups is crucial for poverty reduction. Deininger and Squire (1998) conclude that efforts made for reducing poverty of the lowest income group should focus on generating new assets as investment possibilities for poor and not redistribution of existing assets. Ravallion (1997) states a mixed policy of redistribution of initial assets as well as targeting the contemporary inequality in distribution is the best method.

When economic growth is boosted in an economy, a sectoral reallocation might occur. This new segmentation of the economy might change the factor endowment ownership, relative prices and factor rewards which modify the inequality structure. Changing marginal product by an increase in supply of a factor in production affects prospects of poverty reduction depending on the new sectoral reallocation of production (Stiglitz, 1969; Bourguignon, 2004).

3.5.3 Inequality Effects on Poverty

When income growth is generated, the distribution of income affects how effectively poverty is reduced. An income increase has two effects on poverty. The growth effect increases incomes proportionally and leaves the relative income distribution unchanged. The distribution effect changes the distribution of income in the different income groups. This relative distribution change can be in infinite ways (Bourguignon, 2004). Pro-poor growth can be promoted by the second effect, when the poor people gain a higher relative share of the income increase than the rich. Inequality can be decreased if policies target sources of income generated in the sectors where the poor of lower parts of the distribution participate, hence factor rewards and income will increase. High initial inequality matters, since at a high level of inequality, poverty will be more insensitive to growth (Ravallion, 1997; Son and Kakwani, 2004).

4 Analysis of the Poverty Situation in Honduras

The following chapter presents the development of growth, inequality and poverty in Honduras 2002-2009. A comprehension of the development provides important guidance in PRS policy evaluation and setting to decrease income poverty in Honduras.

4.1 Income Structure

Household income is determined by different characteristics, for example level of education and distribution according to sex, but here urban and rural area differences in income from principal occupation are identified. Further, growth in income from principal occupation can be differentiated into sectors as well as income source. Detecting these characteristics may provide a better understanding if PRS policies have affected the structure in income generating sectors and source. Changes in different income sectors and sources reflect how income is distributed in the population, which affects the inequality and poverty reduction.

The sources of income from principal occupation have not changed much during the period investigated. There has been a small increase, around 5 percent, of self employment as source of income in the urban area and wage taking labor has increased about the same amount in the rural areas (see Appendix, Table A.2). Sectoral division of wage and self employment is presented in Table 4.1 and 4.2.

Table 4.1 Percentage share of wages divided by sector

Sectors	2002	2009	2002-2009
		Wages	
Agriculture, forestry, hunting and fishing	24.4	26.2	**+1.8**
Mining	0.2	0.3	**+0.1**
Industrial manufacturing	20.2	14.9	**-5.3**
Electricity, gas and water	0.7	0.8	**+0.1**
Construction	7.1	9.4	**+2.3**
Commerce, hotel and restaurants	13.6	15.2	**+1.6**
Transport, storage and communication	3.8	3.8	**-**
Finance, insurance and real estate	4.7	5.2	**+0.5**
Communal, social and personal services	25.4	24.2	**-1.2**

Source: Author's calculations based on EPHPM 2002-2009.

Table 4.2 Percentage share of self employment divided by sector

Sectors	2002	2009	2002-2009
		Self employment	
Agriculture, forestry, hunting and fishing	46.3	42.1	**-4.2**
Mining	0.1	0.2	**+0.1**
Industrial manufacturing	12.3	12.3	**-**
Electricity, gas and water	-	-	**-**
Construction	4.8	5.1	**+0.3**
Commerce, hotel and restaurants	26.4	28.1	**+1.7**
Transport, storage and communication	3.5	3.7	**+0.2**
Finance, insurance and real estate	1.2	1.5	**+0.3**
Communal, social and personal services	5.2	6.8	**+1.6**

Source: Author's calculations based on EPHPM 2002-2009.

In 2002 the communal, social and personal service sector accounted for the largest part of wage takers incomes, but in 2009 the agricultural sector accounted for the largest part. The agricultural sector is also the main income source for the self employed, followed by the commerce, hotel and restaurant sector. The large participation of self employed labour in agriculture and commerce sectors may be explained by a large share of small and traditional family run businesses in these sectors.

In rural areas wages increased and self employment decreased as source of income, which is not in accordance with PRS small farmer tenure target. The increase of wage workers in agriculture implies that agricultural workers get employed at large farms, *fincas*, instead of cultivating their own land. The PRS target to promote economic growth in lucrative sectors such as tourism, commerce and agriculture, might explain the increased participation of rural wage takers in construction and commerce.

In urban areas self employment has increased (see Appendix, Table A.2), especially in tourism related activities such as in the commerce and service sectors. This could be an effect of the PRS target of promoting enterprises to increase income opportunities. Hence, some of the changes in the sectoral sources of income can be effects of PRS policy targets.

4.2 Nominal Income Growth in Relation to Nominal Poverty Line

To put the nominal increase in income and poverty line in relation to actual purchasing power of the income, the nominal income and the nominal poverty line are presented. Since both nominal income and the poverty line are equally influenced by inflation, the inflation has no net effect on the poverty rate (World Bank, 2005). When income increases more than the poverty line, the purchasing power will increase. This relationship has also been used by the World Bank (2005). Figure 4.1 shows the development of income and the national poverty line. A more precise development of the percent change of nominal income and poverty line and the ratio between the two is presented in Table A.1 in Appendix.

Figure 4.1 Income level in relation to poverty line, 2002-2009
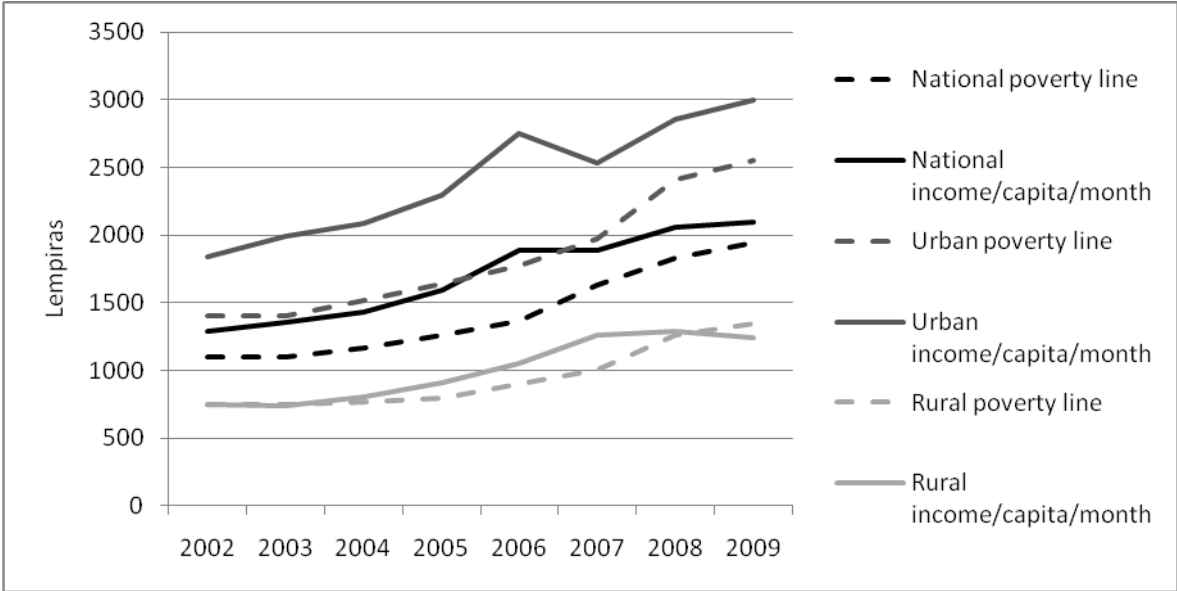
Note: Based on the total poverty line.
Source: Author's calculations based on EPHPM 2002-2009.

The results suggest that the poverty rate should have decreased more in the first period than in the second since income increased more, given that the growth was evenly distributed. The poverty decreasing effects of income are further discussed in Chapter 4.4 since growth has not been evenly distributed as established in Chapter 4.3.

4.3 Income Inequality

Inequality in the distribution of income determines how effective growth reduces poverty given the prevailing distribution structure. Table 4.3 presents the development of inequality between 2002 and 2009.

Table 4.3 Gini coefficient of inequality and unit change

	2002	2003	2004	2005	2002-2005	2006	2007	2008	2009	2006-2009
National	0.58	0.60	0.59	0.60	**+2**	0.59	0.55	0.54	0.53	**-6**
Urban	0.51	0.53	0.51	0.52	**+1**	0.52	0.50	0.49	0.47	**-5**
Rural	0.57	0.58	0.61	0.64	+7	0.60	0.54	0.54	0.52	**-8**

Source: Author's calculations using POVCAL based on EPHPM 2002-2009.

Inequality increased in all areas in the first period. In the second period inequality decreased and the decline was greater than the increase in the first period. Though, inequality still remains on a high level.

The rural region shows the highest level of inequality but has also experienced the largest decrease, from high to middle-high Gini. Rural areas are characterized by low productivity of labour and unequal distribution of income and factors of production. The decrease in inequality could be explained by investments in human capital and social protection for the poor, since healthy people can participate in economic activities and be more productive. The decreasing inequality could also be explained by the efforts made in the program area of reducing rural poverty, by for example infrastructure development and land tenure for small farmers. These examples highlight activities of increased productivity of labour and access to factors of production, which the poor traditionally have been denied. Now, the rural poor can take part in the economic activity to a larger extent. Even though the income increase has been relatively small in rural areas, the distributional effect must here have had large impact in favor of the poor since inequality decreased in the second period.

Inequality in urban areas is not as high as in rural areas, and the Gini has decreased within the middle high level of inequality. Income has increased relatively more in urban than in rural areas, but the distributional effect has not favored the urban poor to the same extent, since the urban inequality decreased less. The decreased inequality in urban areas could be explained by the policies promoting income opportunities and employment by generating enterprising for the poor. The increase of self employed labor in the commerce and construction sector in Table 4.2 can be evidence of successful strategy targeting, since the decreased Gini is evidence of improvements for the poor. The results suggest that high inequality areas in Honduras have been more responsive to distributional changes of income growth, which may have been an effect of successful PRS policies targeting the inequality.

By dividing the population into sub-groups by income, here from the poorest in quintile 1 to the richest in quintile 5, it is possible to identify changes in the share of income in the different income groups, as well as whether redistribution from richer to poorer income groups has taken place. If the lower quintile receives a larger share of the income distribution, pro-poor growth occurs, i.e. the poor gain relatively more from growth.

Table 4.4 Income distribution of the population (%)

	2002	2003	2004	2005	2002-2005	2006	2007	2008	2009	2006-2009
Quintiles										
1	2.5	2.2	2.0	1.7	**-29%**	1.9	2.3	2.6	2.9	**+54%**
2	6.5	5.6	5.5	5.4	**-16%**	5.7	5.6	6.4	7.0	**+22%**
3	11.6	10.5	10.5	10.4	**-10%**	10.8	10.1	11.3	12.1	**+12%**
4	20.2	19.3	19.7	19.0	**-6%**	19.3	17.9	19.4	20.7	**+7%**
5	59.3	62.4	62.3	63.4	**+7%**	62.3	64.2	60.3	57.2	**-8%**

Source: Author's estimation based on EPHPM 2002-2009.

As seen in Table 4.4 the disparities in the income distribution increased between 2002 and 2005. During the second period, 2006-2009, the income distribution disparities decreased and were therefore pro-poor. The lower the quintile in the distribution, the higher was the relative gain of the income growth. The growth was even higher than the decreases in the first period. The changes are not large in absolute values but are proof of effective pro-poor growth policies.

According to the World Bank (2007, p. 5), only 24 percent of the PRS funds reached the lowest quintile, while 30 percent of the funds reached quintile four and five in the year 2006. Our results suggest that the redirections of the PRS funds in 2006 have reached the lowest

quintiles to a higher extent since the inequalities decreased during the second period. Income generating sources might have improved coverage or the rate of return to labour especially in rural areas since the inequality has fallen most in this area. But since the rural initial inequality was higher, small changes in income distribution might prove to have larger impact. The income disparities in Honduras are still high. Since inequality change slowly over time, more inequality decreasing policy effort is required to reach a lower inequality level that does not impede poverty reduction.

4.4 Incidence, Depth and Severity of Poverty

The high poverty rate and harsh living conditions in Honduras have prevailed for many years, but since 2005 the total poverty rate in Honduras has declined (Table 4.5). The poverty level decreased by 6.3 percentage points from 2002 to 2009, but it remains very high. When comparing urban and rural poverty, the rural poverty rate is almost 13 percent higher. The urban poverty rate increased in the first period, then declined in the second and is now on its lowest level in the investigated period. The rural poverty has gradually decreased during the period and has made the largest decrease of the three areas.

Table 4.5 Total headcount poverty measured by household income, 2002-2009 (%)

	2002	2003	2004	2005	2002-2005	2006	2007	2008	2009	2006-2009
National	64.3	65.4	64.6	65.5	**+1.2**	61.8	59.7	59.1	58.6	**-3.2**
Urban	55.6	56.0	59.4	59.4	**+3.8**	54.2	52.8	54.0	51.7	**-2.5**
Rural	72.1	72.7	72.4	70.9	**-1.2**	69.6	64.2	62.5	64.3	**-5.3**

Note: Based on the total poverty line.
Source: Author's calculations using POVCAL based on EPHPM 2002-2009.

Since poverty deprivation is diverse among the poor, the headcount index is not sufficient to identify how poor the poor are. Table 4.6 presents extreme headcount poverty, poverty gap and severity of poverty.

Table 4.6 Extreme headcount poverty, poverty gap ratio and severity of poverty, 2002-2009

	2002	2003	2004	2005	2002-2005	2006	2007	2008	2009	2006-2009
National										
Headcount	44.9	45.1	45.2	47.1	**+2.2**	42.7	36.2	36.8	36.5	**-6.2**
Poverty gap	23.9	24.3	25.0	26.8	**+2.9**	24.2	17.2	16.1	16.5	**-7.7**
Poverty severity	16.1	16.5	17.7	19.3	**+3.2**	17.7	10.6	9.1	9.7	**-8.0**
Urban										
Headcount	28.1	30.7	30.3	32.1	**+4.0**	26.5	24.9	24.4	21.7	**-4.8**
Poverty gap	11.5	13.2	13.2	14.4	**+2.9**	10.8	8.7	8.3	6.9	**-3.9**
Poverty severity	6.2	7.5	7.6	8.5	**+2.3**	5.8	4.0	3.7	2.9	**-2.9**
Rural										
Headcount	62.3	63.2	62.5	63.4	**+1.1**	60.2	53.0	49.6	52.0	**-8.2**
Poverty gap	34.8	35.7	36.5	38.5	**+3.7**	36.5	26.9	22.4	24.4	**-12.1**
Poverty severity	23.8	24.6	26.4	28.6	**+4.8**	27.3	17.3	12.9	14.6	**-12.7**

Note: Based on the extreme poverty line.
Source: Author's calculations using POVCAL based on EPHPM 2002-2009.

For the three extreme poverty measures, poverty rates increased until 2005 but have declined since then. The income increase was highest in the first period, which should have reduced poverty, but the high inequality seems to have hindered poverty reduction. As discussed earlier, the income increase only favored the highest income quintile and consequently increased inequality and poverty. The poverty decrease in the second period was greater than the increase in the first period. The poverty rates indicate conditions are worse in rural than urban areas, but the greatest progress has been made in the rural area. The lower urban poverty rates indicate fewer people in poverty as well as less poverty severity, suggesting a more egalitarian structure of the urban poverty. It is notable that a large decrease in rural poverty and inequality occurred between 2006 and 2007; for further discussion see Appendix.

In the first period the increased poverty in the rural region is mainly perceptible by the increase in the more inequality sensitive measures poverty gap and poverty severity. The fact that rural poverty gap and poverty severity had the highest values, as well as made the largest increases, this period might depend on that the income increase did not accrue the poor, which consequently increased the Gini and hindered poverty reduction.

The rural poverty reduction in the second period can be explained by an inequality decrease, where the poor benefited more from the distributional change of the income increase. Because of the decreased Gini, the rural poverty decreased more in the second period, even though the income increase was lower than in the first period. The rural poverty gap and poverty severity

decreased the most, which implies that the higher the deprivation of poverty the greater was the benefit from the decrease in inequality.

The urban poverty increased in the first period. The income also increased, which suggests poverty should have decreased. But the small increase in the Gini implies the urban poor gained a relatively less share of the income and therefore the increase in the Gini must have impeded the poverty reducing effect of growth. The urban poverty gap and poverty severity increased relatively less than the urban headcount poverty, which implies the distributional change had a smaller effect on the depth and severity of poverty.

The low urban income increase in the second period suggests that the decrease in inequality has had an impact on the poverty reduction. Despite the lower income growth, the poor must have gained a relatively larger share of income than the rich. As can be seen in Table 4.6 urban headcount poverty has changed more than the urban poverty gap and severity of poverty in both periods. So the results imply that changes in income and inequality affect the poor in urban areas closer to the poverty line to a higher extent than the more deprived households further away from the poverty line.

Higher income growth should result in reduced poverty but the poverty reduction has been hindered by high inequality and worsened income distribution of growth in the first period. The increase in income has been low which suggests the PRS has not managed to increase the low wage levels and low returns of employment still prevail. Especially the income in rural areas has lagged and is even below the poverty line.

It is evident that the high inequality, and how growth accrues to the income groups in the distribution, have had larger impact on poverty reduction than income growth. If the high inequality in the first period, where the rich gained relatively more of the increase in income, would have prevailed the inequality would have worsened even more in the second period. This did not occur and the development was pro-poor since the poor gained relatively more from the income growth and the Gini decreased, which consequently had a reducing effect on poverty.

Since the implementation of the PRS our result suggests poverty reduction in the second period, though the decrease in poverty has not been sufficient. As presented in Table 4.7 the total and extreme poverty will not be halved by 2015 and the MDGs will not be met. If

poverty would decrease by the same rate as in the second period, 2006-2009, the poverty level would still remain on a high level.

Table 4.7 Poverty prognosis for achieving the MDGs

	2001	2015	
	Actual	Expected	Goal
Total headcount poverty			
National	64.5	56.0	32.2
Urban	56.3	49.8	28.2
Rural	73.8	59.4	36.9
Extreme headcount poverty			
National	47.4	33.3	23.7
Urban	36.1	20.1	18.0
Rural	60.5	46.0	30.3

Note: Expected values calculated as exponential decay, given values of the second period.
Source: Author's calculations based on data estimated by POVCAL based on EPHPM.

According to our results in Chapter 4 it is evident that PRS policy efforts must be more efficient and adequately targeted for Honduras to reach the MDGs. How to find the appropriate policy approach will be examined in the following chapter.

5 Analysis of Poverty Elasticities of Growth and Inequality and Inequality-Growth Trade-off Index

The impact of growth and inequality on poverty reduction can be measured with the poverty elasticity of growth and the poverty elasticity of inequality. The two elasticities are calculated holding the independent variable constant to detect the effect of only one of the variables, i.e. when calculating the elasticity of growth, the distribution is held constant to be able to detect the effects of growth on poverty and vice versa. Then the ratio of the inequality elasticity to the growth elasticity is estimated, which gives the inequality-growth trade-off index. The index presents a trade-off between the two elasticities, which indicates if a country should focus on growth or inequality policies to reduce poverty, or a combination of the two.

5.1 Measuring Poverty Elasticity of Growth

The poverty elasticity of growth estimates how responsive poverty is to growth, holding the income distribution constant. An increase in income will give a percentage change in poverty. This indicates to what extent growth reaches the poor and reduces poverty (Kakwani, 1993). The poverty elasticity of growth, ŋ, is given by:

$$\eta = \frac{\partial P}{\partial \mu} \frac{\mu}{P} \qquad (5.1)$$

where P is the poverty measure and μ is the mean income. The poverty elasticity of growth is always negative since an increase in mean income reduces poverty, when inequality is unchanged. The poverty elasticity of growth for the Foster, Greer, and Thorbecke measure was first derived by Kakwani (1993), but is used in later studies by Kakwani (2001) and Son (2007), and is given by:

$$\eta_\alpha = \frac{z f(z)}{H} \text{ when } \alpha = 0 \qquad (5.2)$$

where z is the poverty line, f(z) is the density function of the poverty line divided by the number of individuals below the poverty line, H. The growth elasticity of poverty for the headcount ratio ($\alpha = 0$) is shown below.

$$\eta = -\frac{\partial H}{\partial \mu}\frac{\mu}{H} \tag{5.3}$$

The equation below shows how the growth elasticity of poverty is calculated for poverty gap ($\alpha = 1$) and severity of poverty ($\alpha = 2$).

$$\eta_\alpha = -\alpha \frac{P_{\alpha-1} - P_\alpha}{P_\alpha} \text{ when } \alpha \geq 1 \tag{5.4}$$

The growth effect on poverty can be seen in Figure 3.3. When growth in income increases more than the poverty line, people cross over and escape poverty. This is shown graphically in the figure by a shift in the density function of the distribution of income (a horizontal move).

5.2 Measuring Poverty Elasticity of Inequality

The poverty elasticity of inequality is calculated as the percentage increase (decrease) in Gini index to a percentage increase (decrease) in poverty, keeping mean income constant. The poverty elasticity of inequality indicates how redistribution of income reduces the poverty rate. The elasticity of inequality should always be positive since a decrease in inequality should decrease poverty (Kakwani 2001; Son 2007), and is given by:

$$\varepsilon_H = \frac{\partial P_\alpha}{\partial G}\frac{G}{P_\alpha} = \frac{(\mu-z)f(z)}{F(z)} \text{ when } \alpha = 0 \tag{5.5}$$

$$\varepsilon_H = \frac{\alpha}{zP_\alpha}\left[(\mu - z)P_{\alpha-1} + zP_\alpha\right] \text{ when } \alpha \geq 1 \tag{5.6}$$

The inequality effect on poverty can also be seen in Figure 3.3. The density function in the figure shifts depending on how the new distribution of income of the population changes (a vertical move). This shift can have more or less impact on poverty depending on how the distribution changes.

5.3 Measuring Inequality-Growth Trade-off Index

The inequality-growth trade-off index gives a percentage value of how much growth in mean income, μ, is needed to offset an increase in inequality, G, to keep poverty constant. The IGTI is defined as minus times the ratio of inequality elasticity to the growth elasticity, when the change in poverty is set to zero. Since the poverty measures are a decreasing function of the mean income, the IGTI gets larger as the poverty get deeper. A relatively large IGTI, 3 and above, suggests pro-poor policies that decrease inequality are more efficient to reduce poverty. A lower IGTI, around 1 and below, indicates growth enhancing policies should be adopted and if the IGTI is around 2, a mixed policy approach should be adopted (Kakwani, 2001; Son, 2007).

$$\text{IGTI} = \frac{\partial \mu}{\partial G} \frac{G}{\mu} = -\frac{\varepsilon_\alpha}{\eta_\alpha} \tag{5.7}$$

5.4 Results of Poverty Elasticities of Growth and Inequality and Inequality-Growth Trade-off Index in Honduras

Table 5.1 and Table 5.2 present the growth and inequality elasticity estimates and the inequality-growth trade-off index, which are based on changes in growth, inequality and poverty. The discussion of the elasticities and the IGTI is divided into three parts.

Table 5.1 Growth and inequality elasticities and inequality-growth trade-off index, 2002-2005

	Headcount			Poverty gap			Severity of poverty		
	Elasticity of growth	Elasticity of inequality	IGTI	Elasticity of growth	Elasticity of inequality	IGTI	Elasticity of growth	Elasticity of inequality	IGTI
National	-0.72	0.81	1.13	-0.83	3.06	3.71	-0.88	5.25	6.00
Urban	-1.09	1.83	1.67	-1.33	4.89	3.69	-1.53	7.90	5.18
Rural	-0.55	0.18	0.34	-0.33	1.58	1.22	-0.82	2.94	3.63

Note: Poverty elasticities based on the extreme poverty line.
Source: Author's calculations using POVCAL based on EPHPM 2002-2005.

Table 5.2 Growth and inequality elasticities and inequality-growth trade-off index, 2006-2009

	Headcount			Poverty gap			Severity of poverty		
	Elasticity of growth	Elasticity of inequality	IGTI	Elasticity of growth	Elasticity of inequality	IGTI	Elasticity of growth	Elasticity of inequality	IGTI
National	-0.91	1.26	1.38	-1.09	3.89	3.63	-1.23	6.46	5.52
Urban	-1.38	2.63	1.90	-1.85	6.42	3.49	-2.30	10.17	4.50
Rural	-0.76	0.43	0.55	-0.99	2.11	2.17	-1.15	3.76	3.41

Note: Poverty elasticities based on the extreme poverty line.
Source: Author's calculations using POVCAL based on EPHPM 2006-2009.

5.5 Results of Poverty Elasticity of Growth

During the first period, 2002-2005, a 1 percent increase in income would reduce poverty by 0.72 percent. The urban value of -1.09 is higher than the national, which indicates that growth would decrease poverty to a higher extent in urban areas than nationally. The rural poverty elasticity of growth, -0.55, is lower than both the national and the urban, which indicates more growth is needed in rural areas to reduce poverty. The poverty elasticity of growth is low in all three areas compared to other studies which means, given the prerequisites in Honduras, growth would have a small poverty reducing effect. For example Ram (2006) concludes that the majority of the literature suggests that the headcount poverty elasticity of growth is between -2 and -3.2 for developing countries. World Bank (cited in Ram, 2006) proposes a growth elasticity of -2 on average, which is the Latin American average. The elasticity has also been specifically calculated to be -0.51 for Honduras 1999-2004 based on consumption data (World Bank, 2006). Both World Bank's and our estimate of the growth elasticity of poverty are lower than the regional average, which implies that the conditions are worse in Honduras.

The poverty elasticity of growth is increasing with the different poverty measures, evidently an increase in income reduces poverty faster the higher the deprivation in poverty. The findings on the elasticities are in accordance with the results in a study by Kakwani (2001). The result holds with the only exception of the rural poverty gap, which indicates that the rural poverty gap does not respond to an income increase to the same extent as the other two measures.

Between 2006 and 2009 the values of the poverty elasticities of growth are higher than in the first period as the income level becomes higher which is consistent with the findings of Bourguignon (2003). The result shows poverty to be more responsive to growth in the second period. The values of the elasticity of growth are still low in the second period compared to the regional average. Nationally the elasticity of growth is -0.91 compared to -1.38 and -0.76 in urban and rural areas respectively. Fosu (2010) estimated the elasticity of growth to be -2.6 for Honduras in 2006. Fosu's higher value might be due to the fact that he uses the World Bank database for only one year and that we use the national poverty line and an average value during the period 2006-2009.

According to Bourguignon (2003) the poverty elasticity of growth is lower the higher the inequality which is in accordance with our study. Bourguignon concludes with a Gini of 0.4 the elasticity of growth is around -2, but in our study the inequality is higher. The Gini is 0.53-0.60 during the period which consequently results in lower headcount elasticities of growth in our study, between -0.55 and -1.38. The results of the growth elasticities in the second period imply growth is more effective in urban than rural areas in reducing poverty. The high inequality results in lower growth elasticities, which hinders Honduras from achieving effective poverty reduction by growth.

5.6 Results of Poverty Elasticity of Inequality

In the first period, a 1 percent decrease in inequality would reduce poverty by 0.81 percent nationally. The urban elasticity of inequality of 1.83 is a lot higher than the rural of 0.18. The elasticities of inequality for poverty gap ratio and severity of poverty are higher in urban than rural areas. The value of the inequality elasticity is higher the more sensitive poverty measure used which is in accordance with Kakwani's study (2001). This further emphasizes how effective a decrease in the Gini is to reduce poverty the more severe the deprivation in the poverty is. The results suggest that reduction of inequality has a larger effect on poverty in urban than rural areas.

In the second period, 2005-2009, the values of the poverty elasticity of inequality are higher than in the first period. The result suggests that poverty is more responsive to changes in

inequality in the second period. A 1 percent decrease in the Gini would decrease national poverty by 1.26 percent. The urban value is 2.63, while the rural value of 0.43 is lower. The higher elasticity of inequality in the urban area is due to the lower level of inequality. As poverty is less severe in urban areas, changes in income growth have a more even outcome for the poverty when the inequality is low. In the study by Fosu (2010) the value of the national elasticity of inequality is calculated to be 4.1, but as noted earlier the higher value in his study might be due to a different measurement method.

For both periods, when comparing the values of the elasticity of growth and elasticity of inequality, rural headcount poverty is more effectively reduced by growth. But in all other measures, inequality reducing efforts are the most efficient. To conclude inequality reducing efforts reduce poverty more effectively than growth the more sensitive the poverty measure is.

5.7 Results of Inequality-Growth Trade-off Index

The IGTI explains how much growth is required to offset the adverse effect of an increase in inequality, in order to keep the poverty rate unchanged. A high value of IGTI indicates a high growth rate is needed to keep poverty unchanged, if inequality would increase. The urban values of the IGTI are higher than the rural, which is due to a higher income level in urban areas and is consistent with Son's findings in 2007. Further, our results suggest an increasing IGTI as the poverty measures become more sensitive, which also is in accordance with Son's study.

The results for the first period, 2002-2005, give a national IGTI of 1.13, so a 1 percent increase in the national Gini is equivalent to a 1.13 percent growth in income to keep poverty unchanged. A 1 percent decline in inequality would be equivalent to achieving a growth of 1.67 percent in urban areas and 0.34 percent in rural areas. So to hinder increases in poverty, more growth would be needed in urban areas if inequality would increase.

The relatively low values of the headcount IGTI suggest policies should be growth enhancing to reduce poverty most effectively. The IGTI of the rural poverty gap also implies adoption of growth enhancing policies. However the higher national and urban IGTI of the poverty gap implies policies should focus on inequality reduction to reduce the poverty gap. The values of

the IGTI for severity of poverty are even higher and, therefore, inequality reducing policies are the most efficient option to reduce severity of poverty.

The headcount IGTI values, which in the first period suggested growth enhancing policies, have in the second period increased slightly and the results still imply growth to be the efficient policy approach. The urban headcount IGTI and the rural poverty gap IGTI now have increased to higher values suggesting a mix of growth and inequality policies to reduce poverty most efficiently. The urban and national poverty gap and all values of severity of poverty IGTI, which suggested inequality enhancing policies in the first period, decreased in the second period, but still imply that decreased inequality is the efficient policy approach. The national headcount IGTI value of 1.38 in the second period can be compared to a study by Fosu (2010) where the IGTI would be 1.57, which is close to our results and suggests that the same policies should be adopted.

The headcount IGTI values are higher in the second period even though the Gini decreased. These findings are not in accordance with the study by Son (2007) where the relationship is the opposite. Son concludes that IGTI increases as income increases, which is consistent with our results and could be an explanation for our higher IGTI values despite a decreased Gini. Since inequality decreased in the second period, as did our values of the IGTI for severity of poverty and poverty gap (except rural), this indicates that PRS inequality-reducing policies have had an effect.

If it can be assumed that the PRS targeting has been significant for the pro-poor development of decreasing poverty and inequality in the second period, policy approach must be continuously evaluated. For Honduras to have a possibility to reach the MDG of reducing poverty by half by 2015, the IGTI findings offer a clear policy approach of how to further strengthen existing program areas, since the changes of poverty and inequality have been very small.

Based on the current prerequisites in Honduras, the headcount IGTI results suggest growth enhancing policies in rural areas and a mix of growth and inequality enhancing policies in urban areas to reduce extreme headcount poverty. To reduce the poverty gap and severity of poverty, it is evident that inequality enhancing policies have a greater impact. Because of the high poverty rates, adequate and efficient policy approach is important since it affects the great number of Honduran people living in poverty.

The PRS program area of reducing rural poverty should continue to focus on growth through employment opportunities and increased wage levels. Because of the unequal distribution of land in rural areas the low wage level and employment situation remains because of low factor productivity. A suggestion for further improvement of PRS policy would be redistribution of land and access to micro credits for the poor which would affect income and consequently the distribution of income.

In the program area of reducing urban poverty, the PRS should continue to focus on growth through job creation by enterprise promotion and skill building which in turn would decrease inequality. To generate income, sectors with potentially high rate of return to labour should be promoted by for example small enterprises in commerce, service sector and tourism. Also development of industries, for example the maquila industry, as well as a more developed value added production and diversification of production industry could be acknowledged as important to generate economic growth and potentially higher income opportunities.

In both urban and rural areas, the PRS should further focus on improved standard and increased access to health care, social safety net and coverage of schooling to accumulate human capital. Achievements within these areas in Honduras are especially important for the severely poor to be given an opportunity to take part in the development process and increase their income possibilities, which would decrease inequality.

To be able to implement the appropriate policy approaches, the program area of guaranteeing the sustainability of the strategy is also of importance since corruption and weak institutions have a large impact on the outcome of the PRS. The inefficiency in the Honduran administration has to be improved for PRS policies to be efficient for Honduras to have a possibility to meet the MDG of reducing poverty by half by 2015.

6 Summary and Conclusion

The first objective was to investigate the development of income growth, inequality and poverty in Honduras 2002-2009. For the first period investigated, 2002-2005, growth in income showed a positive development, but both inequality and poverty increased. In the second period, 2006-2009, a pro-poor development in the distribution of income can be identified since both inequality and poverty decreased, despite a lower income increase this period. However, since the implementation of the PRS in 2001 the results prove income poverty remains at a high level, high inequality prevails and income level remains low. The differentiation of the poverty structure as well as geographic area has proved to be important since it identifies different characteristics and prerequisites to most effectively reduce poverty. Both inequality level and poverty rates are higher in rural than in urban areas. The results also show the poverty gap and severity of poverty to be much worse in rural than in urban areas.

The second objective was to investigate how the prevailing structure of growth and inequality has affected poverty in Honduras. The interconnectedness between these three components, described in the Poverty-Growth-Inequality Triangle, is examined and established in this thesis. Income growth should have a decreasing effect on poverty, but the effect on poverty will be stunted if inequality is high, since inequality has a negative effect on growth and consequently hinders pro-poor growth. This relationship is found in Honduras where increasing inequality in combination with low income growth has hindered poverty reduction in rural areas in the first period. Further the poverty reducing effects of income growth was cancelled out by a small inequality increase in urban areas. In contrast, in the second period, our results show a pro-poor development in the distribution of income and consequently decreased inequality which decreased the poverty, even though income growth was not as high as in the first period. In the case of Honduras it is obvious that the high level of inequality has hindered the positive effects of growth on poverty reduction.

The third objective was to investigate if Honduras PRS has served its purpose to reduce poverty and how the PRS policy approach can be improved. Our results of the poverty elasticities suggest different policy approaches depending on regional area and deprivation in poverty. Holding inequality constant, growth would reduce poverty to a higher extent in urban

than in rural areas. Holding growth constant, inequality reduction would have a larger impact on poverty reduction in urban than rural areas. The lower values of the poverty elasticities of growth and inequality in rural areas, further emphasize the fact that the higher inequality in rural areas impedes the positive effects of increased growth and decreased inequality on poverty reduction. The poverty elasticities of growth and inequality are increasing the more sensitive poverty measure used, which suggest inequality has a larger impact on poverty reduction the more severe poverty is. Further, the higher values of the elasticities in the second period now suggest a higher potential to reduce poverty in Honduras. The values of our estimates are still low compared to the regional average, which indicate further growth and inequality enhancing policy efforts are needed to reduce poverty.

The IGTI results suggest that growth enhancing policies decrease headcount poverty in rural areas. To reduce rural poverty gap a mixed policy approach of both growth and inequality should be adopted, and to reduce rural poverty severity inequality reducing policies should be adopted. Further the IGTI results suggest a mixed policy approach to decrease headcount poverty in urban areas. To decrease poverty gap and poverty severity in urban areas, inequality enhancing policies should be adopted.

Since the redirections of the PRS budget in 2006, pro-poor development has occurred in the second period and program area policies can be assumed effective. But Honduras still suffers from low wage levels because of low factor productivity and inequalities in factors of production. So the PRS should continue to focus on potentially high productive sectors for employment opportunities and promoting enterprising, as well as accumulation of human capital to decrease inequality. A decrease in inequality is evidently a requirement to generate economic growth and achieve poverty reduction in Honduras. However, the slow progress of the pro-poor development can partly depend on weak institutions and corruption in Honduras. For Honduras to have a possibility to reach the MDG to reduce poverty by half by 2015, an adequate and efficient policy approach is of great importance.

A Appendix

A.1 Discussion of Honduras EPHPM Household Data

Between 2002 and 2009, household surveys were conducted twice a year in Honduras, one in May and one in September. We use the surveys conducted in May, since INE only publish numbers on poverty in the May survey due to governmental policy from 2006.[8] The survey data show seasonal differences between May and September since a large part of agricultural workers are employed only parts of the year when harvest time occurs. Since all estimates of income, inequality and poverty each year are comparable within that year the relative change between years would be the same for both May and September. When the household surveys are conducted, the two departments of Gracias a Díos and Islas de Bahía are excluded and will therefore be excluded in our study.[9]

The survey data sample include about 20 000 households which are weighted and enlarged to match the total population. There are households in the survey not declaring any income, and the majority of these people belong to the high income quintile.[10] This implies that the mean income and the inequality in the country actually are higher than estimated based on the surveys (INE, 2009).

The urban area is defined as the districts of Tegucigalpa (Central district), San Pedro Sula and the rest of the urban towns with more than 2000 inhabitants.[11] The rural area is defined as towns with less than 2000 inhabitants.

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[8] Interview with Horacio Lovo Peralta, 5/2-2010

[9] Gracias a Díos is a poor and desolate rural department while Islas de Bahía is a wealthier tourism department, with about 6500 inhabitants respectively.

[10] Interview with Horacio Lovo Peralta, 5/2-2010

[11] Interview with Horacio Lovo Peralta, 5/2-2010

A.1.1 Delimitations in the Calculations of the Household Data

In this study income is defined as income from principal occupation, by wage or self employment. Inequality is therefore also derived from these sources of income. Until 2006 the income data only included income from principal occupation, but from 2007 for example self employed labor, remittances and family support are included. This implies that the income level is higher from 2007, which would affect poverty rates and inequality in our calculations. To correct for this, other sources of income apart from principal occupation have been excluded from 2007 to 2009 to be comparable to previous years. The exclusion of remittances makes it possible to identify income increase generated within the country, since remittances is income generated abroad. The notable decrease in poverty and inequality between 2006 and 2007 might be due to the new method of more detailed household surveys.

A.1.2 National Accounts vs. Household Data

There is a divergence between national accounts and survey data because of different methodology of sampling. Since we use micro level income survey data this might not be comparable to studies using macro level GDP data as in for example Ram (2006). In our study the survey data is a better indicator since household survey data reveal the micro level changes in income more accurately.

A.1.3 Income vs. Consumption Data

Household surveys can also be based on consumption data. Household consumption has a smoother trend than household income. Using consumption as a measure of poverty can be misguiding though, since it does not consider the fact that when incomes fall short, people live from savings. Only one household survey based on consumption has been conducted in Honduras in 2004 because it requires more resources and money. This hinders us from using consumption data on poverty in our thesis because we investigate a longer time period.

A.2 Nominal Income in Relation to Poverty Line

The ratio of the nominal income increase to the poverty line is calculated to demonstrate the development of the purchasing power in Honduras.

Table A.1 Changes in poverty line and income, and the ratio of income to poverty line (%)

	2002-2005	2006-2009
National		
Income per capita	24.0 %	11.2 %
Poverty line	14.8 %	42.9 %
Ratio of income per capita and poverty line	**1.6**	**0.3**
Urban		
Income per capita	24.3 %	8.7 %
Poverty line	17.6 %	43.5 %
Ratio of income per capita and poverty line	**1.4**	**0.2**
Rural		
Income per capita	22.3 %	18.0 %
Poverty line	6.1 %	49.9 %
Ratio of income per capita and poverty line	**3.6**	**0.4**

Source: Author's calculations based on EPHPM 2002-2009.

The urban wage level is more than twice as high as the rural, and the divergence has actually increased during the investigated period. The poverty line hardly changed during the first period but increased by 40-50 percent in all areas during the second period. According to the calculated ratio, the purchasing power of income was higher in the first period than the second. In the first period, 2002-2005, when the rural poverty line increased by 1 percent the rural income increased 3.6 times more. The urban relation of income increase to the poverty line was 1.4. In the second time period, 2005-2009, the poverty line increased relatively more than income in all areas. When the rural poverty line increased by 1 percent the rural income only increased 0.4 over the period. In the urban area the relation was 0.2.

Table A.2 Percent of total income from principal occupation

	2002	2009	2002-2009
National			
Wages	45.4	45.6	**+0.2**
Self employment	40.1	42.0	**+1.9**
Urban			
Wages	62.3	57.1	**-5.2**
Self employment	40.0	40.2	**+0.2**
Rural			
Wages	37.7	42.9	**+5.2**
Self employment	60.0	59.8	**-0.2**

Source: Author's calculations based on EPHPM 2002-2009, non-salaried family workers are not presented.

A.3 Map of Honduras

Figure A.1 Map of Honduras

Source: United Nations, May 2004.

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