The Determinants of Pro-Poor Growth: Evidence from Brazil

Joseph I. Amuka  
Department of Economics  
University of Nigeria Nsukka, Nigeria  
Email: dobuamuka@gmail.com

Fredrick O. Asogwa  
Department of Economics  
University of Nigeria Nsukka, Nigeria  
E-mail: fredrick.asogwa@unn.edu.ng

Anthony O. Agu  
Department of Economics  
Odumegwu Ojukwu University, Anambra State, Nigeria  
E-mail: aguagain@yahoo.com

Chukwuma C. Ugwu  
Department of Economics  
Federal University Wukara, Taraba State, Nigeria  
E-mail: ucollins98@yahoo.com

Abstract  
Pro-poor growth is good for poverty eradication if it can be achieved. Brazil is a good example of a country where growth was pro-poor between 1981 and 2014 but the pro-poor growth was reversed in 2015. The paper examined what led to pro-poor growth between 1981 and 2014 and what may have been responsible for the reversal in 2015. The dynamic ordinary least squares method was used to analyse Brazilian data from World Bank Development Indicators between 1981 and 2014 for the determinant of pro-poor growth. Regression analysis shows that job creation was responsible for the pro-poor growth between 1981 and 2014. Moreover, rise in unemployment rate in 2015 was responsible for the reversal in the pro-poor growth. The result has good policy implication for poverty and inequality reduction in Brazil.

Keywords: Pro-poor, Pro-rich, Growth, Determinants, Brazil

1. Introduction  
Growth and poverty reduction has been at the centre of the discussion in economic development for a long time now. Lustig, Arias and Rigolini (2002) asserted that economic growth as well as the pattern of the growth is very important in achieving substantial poverty reduction. In the early discussion on the relationship between growth and poverty in 1950s and 60s, the debate was around trickle down hypothesis because of the belief that as an economy grows, its benefits will pass through the rich down to poor and solve poverty problem (Kakwani and Permia, 2000). However, experience showed that in many developing countries, poverty increased instead of reducing with growth, especially in sub-Saharan African countries (World Bank, 2016). The simultaneous rise in growth and poverty in many countries in late 1990s and early 2000 led to a shift in discussions on growth and poverty to pro-poor growth. There are many definitions of pro-poor growth. According to Kakwani and Permia (2000) pro-poor growth is the growth which favours the poor more than the non-poor in income redistribution. Similarly, Son (2007) points out that pro-poor growth means the growth in favour of the poor. White and Anderson (2001) defined pro-poor growth as that growth which can increase the share of the poor from growth above the international norm. White and Anderson considered the mean income of the bottom 20 and 40 income group as the international norm. In the definition given by Grant (2005), pro-poor growth in its absolute term is the growth which can reduce poverty, and from the relative term it is the growth which can increase the income of the poor disproportionately such that inequality falls.
Overseas Development Institute Brief (2008), Organization for Economic Co-operation and Development (OECD, 2010) and Federal Ministry for Economic Cooperation and Development (FMECD, 2006) have different approaches in the definition of the pro-poor growth. The Overseas Development Institute Brief defined pro-poor growth as the growth which can increase the income share of the poor more than the rich, and the Federal Ministry for Economic Cooperation and Development (FMECD, 2006) sees pro-poor growth as the growth which can increase the income share of the poor such that inequality falls. According to FMECD, growth is pro-poor if the growth in income share of the poor rises more than the growth rate. But the OECD in its definition maintained that pro-poor growth is the growth which can increase the welfare of the poor who provide services in the sectors which drive the growth. From these various definitions of pro-poor growth, two important issues emerge. First, pro-poor growth should be able to reduce poverty, and two, it must lead to a fall in inequality (Jmurova, 2017).

Poverty is harmful to growth and development. According to Nallari and Griffith (2011), poverty reduction is very essential because its reduction can speed-up growth. de la Fuente (2016) emphasized that it is good to fight poverty because it is one of the factors which is threatening world growth. de la Fuente maintained that to increase the speed of world development, effort must be made to improve the current world living standard. The assertion fell in line with the view of Lustig, Arias and Rigolini (2002) who maintained that poverty impairs growth. Therefore, pursuance of poverty reduction policy will consequently lead to sustainable economic growth and world development in the twenty-first century. The poor are the people who lack the resources to meet basic needs that improve wellbeing (World Bank, 2018). Or, they are the people who have higher risk of disease, people who live in sub-standard condition and lack basic infrastructure (Fatima and Ali Khan, 2018). Dollar and Kraay (2001) defined the poor as the people on the bottom fifth of income distribution. For general use, the poor are those people whose consumption expenditure is less than $1.90 per day. From purchasing power parity, it is assumed that people who earn less than $1.90 per day cannot meet their basic necessities of life.

Development Indicators showed that the Brazilian economy experienced a boom between 1966 and 1980, with an average growth rate of 8.23. The country’s average growth rate fell to 2.21 between 1981 and 1995. Her economy picked up in 1996 and posted an annual average growth rate of 7.21 percent between 1996 and 2014 (World Bank Development Indicators, 2018). An important aspect of the growth between 1981 and 2014 which is good to note is its distribution pattern. For instance, between 1981 and 2014, the income share of the bottom 20 percent group rose by 1% against the fall in the income share of the top 20 percent group by 6 percent. The scenario led to a decline in income inequality by 6.9% and a reduction in poverty from 21.4 % in 1981 to 2.8% in 2014 (World Bank, 2016). Unfortunately, poverty rose to 3.4% in 2015 while the income share of the bottom 20% fell by 0.4%.

The fall in income share of the bottom 20%, and rise in poverty in Brazil in 2015 is a signal that the pro-poor growth experienced between 1981 and 2014 is being reversed. It raises a serious concern because if the trend continues, the gains of economic prosperity the country recorded for two decades will be lost. To see that the trend is not reversed, it is important to investigate the factors that determine pro-poor growth in Brazil and advice policy makers on the measures to take so as to stop the economy from taking more people back to poverty. While the study is being done in Brazil, it will serve as a lesson for other emerging economies, especially the sub-Saharan Africans where poverty is endemic.

2. Theory and Related Literature
The growth-poverty debate is old but still ongoing. The debate in the 1960s was built around the trickle down hypothesis. However, global poverty continued despite the trickle down thesis. Jafar (2015) argued that the only way trickle down can lead to substantial reduction in poverty is if the benefits of growth shared is large enough to make an impact in the income of the poor, and once the benefits shared is small, the trickle down thesis will be ineffective. The redistribution with growth theory questioned the use of growth in domestic product as a measure of economic performance and the fight against poverty reduction (Chenery, Ahuwalia, Bell, Duloy and Jolly, 1979). Chenery et al maintained that 75 percent of economic assets in majority of the countries are owned by the top two income quintiles. That means that in every dollar increase from growth, 75 cent will go to the 40 percent of the population, leaving only 25 cent to the remaining 60 percent. This shows that the benefits of the growth that go to the poor are small because they neither possess physical nor human capital to command bigger share from growth.

The work of Chenery et al led to a shift in policy direction to social investments as the way to tackle poverty in the developing countries in the 1990s. Ogujiuwa and Alehile (2011) and Grant (2005) see investment in skill development as good step towards poverty reduction because it is the only way through which the poor can access modern sector employment with better condition of services. The United Nations (2012) supported social protection policy in developing countries, pointing out that it is an important tool to tackle multidimensional poverty and deprivation. Kakwani et al (2005) maintained that social protection is good because it ensures that the benefits
of growth can go round. Study by Marcus (2014) suggests that social spending is good for poverty reduction. On the other hand, Cantillon et al (2015) reiterates that social spending in many of the welfare states failed to reduce poverty, and kakwani et al (2005) in a cross country study discovered that social spending in most countries is small to have good impact on poverty reduction.

In the pro-poor growth debate, Grant (2005) points out that the poor are mainly in the rural area doing business in the agriculture sector, and to achieve pro-poor growth, government must direct attention to the improvement in agricultural productivity. This argument is supported by Klasen (2007) who stresses that pro-poor growth strategy should target the agriculture and rural economy where the poor works. Page (2005) and Timmer (2004) also accept that the promotion of agricultural productivity can enhance pro-poor growth because it is the sector where majority of the poor carry out their economic activity.

Kakwani and Permia (2000) and Kakwani et al (2004) in different studies discovered that pro-poor growth depends on country because there is no guarantee that every growth will benefit all the poor in a country. Cross country research in Asia, Europe, Latin America and sub-Saharan Africa by Cord, Lopez and Page (2003) discovered different effects of growth on the poor. Pasha and Palanivel (2004) equally discovered that growth affects the poor differently across countries. From a cross country study in Asia by Pasha and Palanivel, employment opportunity and growth in agriculture significantly lead to pro-poor growth. Other cross country investigations showed that some other determinants of pro-poor growth are improvement in education and health, control of corruption, financial openness and financial development (Djeneba, 2018, Olaogun, 2008, Chhibber and Nayyar, 2007).

According to Chhibber and Nayyar, education and literacy promotes pro-poor growth because it increases the opportunity of the people to get good jobs, and equally creates more entrepreneurs who can establish business with modern technology. Moreover, study by Menezes-Filho and Vasconcellos (2004) revealed that improvement in education (primary, secondary and college) and infrastructure development are the key factors that determined pro-poor growth in Brazil. Other factors are growth in urbanized area and low levels of wage differential. So far, one study has been done in Brazil on pro-poor growth. We went into this present study for two reasons, namely (1) the study was done based on cross-sectional data, and (2) the study was done more than ten years ago and the pro-poor growth in Brazil is reversing.

We improved on the study and used annual data and focused on total employment of labour and growth of sectors because OECD (2009) argues that the pattern of growth of the sectors of the economy determines the effectiveness of growth in reducing poverty and becoming pro-poor. Annual data are better than cross sectional data in the study of growth because growth is a macro variable and annual data accommodate changes overtime.

3. The Model
The ordinary least squares method of research was adopted in this study because of its simplicity and good properties of best linear unbiased estimates (BLUE). An exogenous growth model shows a long run economic growth and rural economy where the poor works. The Solow-Swan growth model which explains long run economic growth using capital, labour and technological progress belongs to this class. Accordingly,

\[ Y(t) = k(t)^\alpha (A(t)L(t))^{1-\alpha} \]  

(1)

Where: 
\( t \) = time, 
\( 0<\alpha<1 \) = elasticity of output accrued to capital, \( Y(t) \) = total output, \( A \) is a Labour-augmenting technology, and \( AL \) is the effective labour.

The effective labour (AL) grows at \( D+g \) while capital depreciates at \( \delta \). Hence, the derivative of \( K \) with respect to time becomes

\[ K'(t) = s*Y(t) - \delta*K(t) \]  

(2)

The model for this study is income share function using data from Brazil. Growth in some sectors of an economy can create jobs and lead to pro-poor growth (OECD 2011b; OECD, 2013a). The model is designed to capture the impact of such change in some sectors of the economy of Brazil on the income share of the lowest 20% group.

\[ YS = f(HC, AGR, EMP, INDG, GRS) \]  

(3)

Where: \( YS \) = Income share of a group, \( HC \) = human capital development, \( AGR \) = growth in agriculture, \( EMP \) = total employment, \( INDG \) = industrial growth, and \( GRS \) = growth in services.

Equation 3 captures the behaviour of income share in the lowest and highest 20% income group in Brazil.

For estimation, equations 4 is transformed, thus:

\[ YS = \alpha + \beta_1HC_i + \beta_2AGR_i + \beta_3EMP_i + \beta_4INDG_i + \beta_5GRS_i + \epsilon_i \]  

(4)

where
α = intercept, β₁-β₅ are coefficients, e = error and t = time to denote time series.

Equations 4 and 5 can be transformed further as specified below:

\[ Y_{it} = \alpha + \beta_1 X_{it} + e_t \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (5) \]

where: \( Y_t \) represents income share of a quintile group in Brazil, \( X_t \) is made up of all the explanatory variables as described in the model; \( e_i \) is the error term.

4. Data
Data for the estimation were sourced from World Bank Development Indicators between 1981 and 2015.

5. Result
The results of the analyses are presented in tables 1, 2, 3 and 4 below.

Table 1: Unit Root Test

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF</th>
<th>5%</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>YS₁</td>
<td>-12.09519</td>
<td>-2.881685</td>
<td>I(1)</td>
</tr>
<tr>
<td>LogHC</td>
<td>-12.03975</td>
<td>-2.881685</td>
<td>I(1)</td>
</tr>
<tr>
<td>IND</td>
<td>-4.226382</td>
<td>-2.881123</td>
<td>I(0)</td>
</tr>
<tr>
<td>AGR</td>
<td>-3.554343</td>
<td>-2.882279</td>
<td>I(0)</td>
</tr>
<tr>
<td>EMP</td>
<td>-12.00003</td>
<td>-2.881260</td>
<td>I(1)</td>
</tr>
<tr>
<td>SERV</td>
<td>-8.550733</td>
<td>-2.881685</td>
<td>I(1)</td>
</tr>
<tr>
<td>YS₂</td>
<td>-12.05008</td>
<td>-2.881260</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: analysis of Brazil data

Unit root is a pre-estimation test always done to make sure stationary data are used in regression analysis to avoid spurious and misleading regression results. Table 1 shows that industrial and agricultural growths are stationary at the level forms, and other variables are stationary at the first difference.

Table 2a: Cointegration Test (lowest 20% income group)

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF</th>
<th>5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>-1.794723</td>
<td>-2.882910</td>
</tr>
</tbody>
</table>

Source: analysis of Brazil data

Table 2b: Cointegration Test (highest 20% income group)

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF</th>
<th>5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>-8.674401</td>
<td>-2.882279</td>
</tr>
</tbody>
</table>

Source: analysis of Brazil data

In table 1, none of the variables is integrated in order 2, and there was the need to test for cointegration. Table 2a shows that there is no long run relationship between the dependent and independent variables. However, in table 2b, the relationship between the dependent and independent variables continued in the long run.

Table 3a: Dynamic Equation (dependent variable= lowest 20% income group)

<table>
<thead>
<tr>
<th>Variable</th>
<th>coeff</th>
<th>Std error</th>
<th>t</th>
<th>prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.008226</td>
<td>0.008611</td>
<td>0.96</td>
<td>0.3411</td>
</tr>
<tr>
<td>D(logHC)</td>
<td>-0.344480</td>
<td>0.154494</td>
<td>-2.23</td>
<td>0.0274</td>
</tr>
<tr>
<td>IND</td>
<td>-0.000278</td>
<td>0.001448</td>
<td>-0.19</td>
<td>0.8478</td>
</tr>
<tr>
<td>AGR</td>
<td>0.000262</td>
<td>0.001554</td>
<td>0.17</td>
<td>0.8665</td>
</tr>
<tr>
<td>D(EMP)</td>
<td>0.089345</td>
<td>0.011617</td>
<td>7.69</td>
<td>0.0000</td>
</tr>
<tr>
<td>D(SERV)</td>
<td>-0.012511</td>
<td>0.009180</td>
<td>-1.36</td>
<td>0.1752</td>
</tr>
<tr>
<td>R2</td>
<td>0.31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-stat</td>
<td>12.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob(F-stat)</td>
<td>0.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: analysis of Brazil data
Table 3b: Dynamic Equation (Dependent variable= highest 20% income group)

<table>
<thead>
<tr>
<th>Variable</th>
<th>coeff</th>
<th>Std error</th>
<th>t</th>
<th>prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.012259</td>
<td>0.095226</td>
<td>-0.13</td>
<td>0.8978</td>
</tr>
<tr>
<td>D(logHC)</td>
<td>3.839217</td>
<td>1.708532</td>
<td>2.25</td>
<td>0.0262</td>
</tr>
<tr>
<td>IND</td>
<td>0.013878</td>
<td>0.016014</td>
<td>0.87</td>
<td>0.3877</td>
</tr>
<tr>
<td>AGR</td>
<td>-0.021951</td>
<td>0.017191</td>
<td>-1.28</td>
<td>0.2038</td>
</tr>
<tr>
<td>D(EMP)</td>
<td>-1.096943</td>
<td>0.128476</td>
<td>-8.54</td>
<td>0.0000</td>
</tr>
<tr>
<td>D(SERV)</td>
<td>0.267224</td>
<td>0.101519</td>
<td>2.63</td>
<td>0.0095</td>
</tr>
<tr>
<td>R2</td>
<td>0.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-stat</td>
<td>17.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob(F-stat)</td>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: analysis of Brazil data

Tables 3a and 3b are the results of the dynamic equation. In the dynamic equation, the stationary levels of the variables are taken into consideration. Beginning with the poorest group in table 3a, the coefficients of the human capital, industrial and services growth are negative. The coefficients of employment and agriculture growth are positive. In the richest income group, the coefficients of human capital, and industrial and service growths are positive. The coefficients of agricultural growth and employment creation are negative.

5.1 Collinearity Test

The result of the Collinearity test is presented in table 4a and 4b below.

Table 4a: Result of Collinearity (lowest 20%)

<table>
<thead>
<tr>
<th>YSt</th>
<th>YS/i</th>
<th>AGR</th>
<th>EMP</th>
<th>HC</th>
<th>INDG</th>
<th>SERV</th>
</tr>
</thead>
<tbody>
<tr>
<td>YSt</td>
<td>1.000000</td>
<td>-0.069834</td>
<td>-0.299121</td>
<td>-0.522350</td>
<td>0.008786</td>
<td>0.094827</td>
</tr>
<tr>
<td>AGR</td>
<td>-0.069834</td>
<td>1.000000</td>
<td>0.231187</td>
<td>0.120450</td>
<td>0.174502</td>
<td>0.196375</td>
</tr>
<tr>
<td>EMP</td>
<td>-0.299121</td>
<td>0.231187</td>
<td>1.000000</td>
<td>0.603715</td>
<td>0.289614</td>
<td>0.550833</td>
</tr>
<tr>
<td>HC</td>
<td>-0.522350</td>
<td>0.120450</td>
<td>0.603715</td>
<td>1.000000</td>
<td>0.067812</td>
<td>0.237155</td>
</tr>
<tr>
<td>INDG</td>
<td>0.008786</td>
<td>0.174502</td>
<td>0.289614</td>
<td>0.067812</td>
<td>1.000000</td>
<td>0.569599</td>
</tr>
<tr>
<td>SERV</td>
<td>0.094827</td>
<td>0.196375</td>
<td>0.550833</td>
<td>0.237155</td>
<td>0.569599</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Source: analysis of Brazilian data

Table 4b: Result of Collinearity (highest 20%)

<table>
<thead>
<tr>
<th>YS/i</th>
<th>YSt</th>
<th>AGR</th>
<th>EMP</th>
<th>HC</th>
<th>INDG</th>
<th>SERV</th>
</tr>
</thead>
<tbody>
<tr>
<td>YS/i</td>
<td>1.000000</td>
<td>-0.020331</td>
<td>0.166024</td>
<td>0.514102</td>
<td>0.002121</td>
<td>-0.132081</td>
</tr>
<tr>
<td>AGR</td>
<td>-0.020331</td>
<td>1.000000</td>
<td>0.231187</td>
<td>0.120450</td>
<td>0.174502</td>
<td>0.196375</td>
</tr>
<tr>
<td>EMP</td>
<td>0.166024</td>
<td>0.231187</td>
<td>1.000000</td>
<td>0.603715</td>
<td>0.289614</td>
<td>0.550833</td>
</tr>
<tr>
<td>HC</td>
<td>0.514102</td>
<td>0.120450</td>
<td>0.603715</td>
<td>1.000000</td>
<td>0.067812</td>
<td>0.237155</td>
</tr>
<tr>
<td>INDG</td>
<td>0.002121</td>
<td>0.174502</td>
<td>0.289614</td>
<td>0.067812</td>
<td>1.000000</td>
<td>0.569599</td>
</tr>
<tr>
<td>SERV</td>
<td>-0.132081</td>
<td>0.196375</td>
<td>0.550833</td>
<td>0.237155</td>
<td>0.569599</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Source: analysis of Brazilian data

The highest value in the correlation matrix in tables (4a) and (4b) is 0.6. It is evidence that there is no problem of Collinearity in the model.

6. Discussion of Finding

The study investigated the determinants of pro-poor growth in Brazilian economy between 1981 and 2014, and what led to reversal in pro-poor growth in 2015. Results presented in tables 1-5 is interesting and met some degrees of expectation. Our discussion will however concentrate on the dynamic result in tables 3a and 3b because the analysis was based on stationary data. The structural equation can be referred to if there is a special case.
6.1 Pro-poor growth and its Determinants

6.1.1 Agriculture
The poor in every developing economy are found mainly in the agricultural sector. Brazil is no exception. The 2006 Brazilian agriculture survey showed that almost half of the farms in the country are family farms with annual income of less than a thousand dollar (< $1000). Evidence shows that members of the family farm group own less than 2 ha of land and the poor control only 0.3% of the agricultural land area (Bolliger and de Oliveira, 2010). Table 3a shows that growth in agriculture has a positive effect on the income share of the bottom 20% group. The positive effect is in line with theoretical expectation that expansion in the sector where the poor carry out economic activity will bring an improvement in their income (Timmer, 2004). The finding falls in line with the work of Pasha and Palanivel (2004) which suggests that growth in agriculture has positive effect on pro-poor growth. However, the growth in agriculture did not have significant effect on the growth of the income of the in Brazil between 1981 and 2014.

6.1.2 Human Capital
Human capital development is important because it leads to skill development and helps the poor to acquire the necessary skill needed in the modern economy with better work condition. It is an expectation that improvement in the skill of the poor will give them opportunities to move to high paying jobs. In this study, human capital development led to a significant reduction in income share of the poor in Brazil between 1981 and 2014. This outcome is surprising but falls in line with the argument of Dollar and Kraay (2001) who maintained that the benefit of education spending in the developing countries always go to the non-poor, and Kakwani and Permia (2000) pointed out that it is only the education spending at the basic level that is pro-poor.

6.1.3 Employment
Increases in employment opportunity expectedly had a positive and significant effect on pro-poor growth between 1981 and 2014. A unit change in employment opportunity, that is, whenever employment increases by a unit, the income share of the poor from the economy’s resources will increase by 0.09 units. It suggests that the more the jobs are created in Brazil, the more the income share of the poor in the country increases and the more the growth will be pro-poor. This suggests that increase in unemployment will have detrimental effect on pro-poor growth. In line with this, job creation fell in Brazil in 2015 and led to a fall in job opportunities. As a consequence, the income share of the poor fell and led to a reversal in pro-poor growth. Hence, for policy purpose, if government is interested in the reduction in poverty and inequality, government programmes must target creation of more jobs.

6.1.4 Industrial Growth
In real life situation, the industrial sector is largely owned by the middle and high income groups. The implication is that the benefits of growth in the sector do not go direct to the poor but to the rich and the middle class who are the owners of the assets. However, if the link between agriculture and industrial sector is high, growth in the industrial sector can generate growth in the agriculture activities and the poor will benefit. The result of the dynamic equation in table 3a shows that expansion in industrial activities has negative but insignificant effect on the income share of the poor.

6.1.5 Growth in Services
Growth in the service sector has a negative and insignificant effect on the income share of the poor. A unit increase in the service sector will reduce the income share of the poorest group by 0.01 units. This is an indication that the poor are no gainfully working in the service sector in Brazil.

6.2 Pro-rich Growth and its Determinants
Table 3b is the dynamic result for the highest 20 percent income group. The richest group is included in the analysis only because we want to use it as a check on the result of the poor. In actual fact the result turned out as expected. For instance, growth in the service sector had a significant effect on the increase in the income share of the highest 20 percent group. The factors which have positive effects on the income of the poor turned out to have negative effect on the income of the rich. The finding is very important for policy making purpose. For example, in pursuance of social investment through tax policy, the best way to finance it so that it will not hurt the poor is to tax the service sector. It will lead to e redistribution of resources from the rich to the poor.
7. Conclusion
The essence of going into the investigation on the determinants of pro-poor growth is because the world is interested in redistribution of benefits of growth in such a way that global poverty will fall. From the analyses with data from Brazil, employment was the significant factor that led to increase in the income share of the bottom 20% as well as the pro-poor growth in Brazil between 1981 and 2014. Government spending in education to build human capital significantly reduced the income share of the poor between 1981 and 2014. Moreover, the study reveals that increase in education spending and growth of the service sector had significant effect on the increase in the income share of the highest 20 group.

On the reverse of the pro-poor growth in Brazil in 2015, this is traced to increase in unemployment in the country in 2015. Therefore, to reverse back to pro-poor growth in Brazil, policy should target employment generation programmes. The policy direction of the result is that whenever government action leads to expansion in the service sector when every other thing remains the same, inequality will rise because the income share of the richest group will rise and the share of the poorest group will fall. Similarly, employment promotion programmes will narrow poverty and inequality in the country.

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