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Foreign Aid and Poverty level in West African Countries:
New evidence using a heterogeneous panel analysis

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ABSTRACT

This paper re-examines the effects of different types of foreign aid on poverty level in 8 West African countries between 1975 and 2010 by employing both the first and second generation econometrics methods of panel unit root test, cointegration test and empirical estimators with heterogeneous slopes. Our results suggest that total foreign aid and food aid impact positively on poverty, while technical aid reduces poverty. Apart from total foreign aid, none of the results was statistically significant. The results show negative relationship among poverty, life expectancy, foreign direct investment, per capita GDP and financial depth, but they were not statistically significant. This suggests that their impacts on poverty in West Africa were minimal.

Keywords: *Foreign aid; Poverty; Non-stationary panels; Parameter heterogeneity; Cross sectional dependence, West African countries.*

BACKGROUND

In spite of the large of amount of foreign aid disbursed to developing countries as a whole and West African Countries in particular, the belief that foreign aid provides the take off ground for financial constrained economy and the consensus reached at Monterrey in March 2002 that donor community will increase aid flow to encourage the achievement of the Millennium Goals, studies have revealed that increasing foreign aid as a tool for promoting economic growth as well as reducing poverty is still empty of empirical generality. With increase in foreign aid, favorable environment and growing working population, threat of hunger and poverty alongside increased unemployment persist in West Africa. Ten of the twenty countries considered to possess the world's lowest human development indicators are found in West Africa (UN, 2008). This shows that the issue of foreign aid as a panacea for reducing poverty remains a subject of debate in West African Countries.

While some researchers argued that foreign aid can spur growth and thereby reduce poverty (see Arndt et al. 2010, 2011; Chowdhury and Das, 2011; Miller and Torr, 2003; Addison,Mavrotas and McGillivray, 2005; Sachs *et al*., 2004), some have argued that there is possibility of not spending foreign aid inflow on productive sectors, instead it can be wasted on frivolous spending (i.e. aid fungibility) as well as encourage corruption (Freidman, 1958;. Bauer, 1971, 1991; Boone, 1994, 1996; Radelet, Clemens, and Bhavnani 2005; Hodler, 2007; Economides et al., 2008) and therefore, it can undermine incentives for both private and government savings, sustain bad governments in power, helping to perpetuate poor economic policies and delay proper reforms, discourage private investment, motivating currency appreciation, and in consequence could lead to non-competitiveness in the production of non-tradable goods (i.e. Dutch diseases).

A common feature of these studies is that they have based their analysis on using the first generation of panel unit root test, cointegration test and empirical estimators which assumed that panel members were cross sectionally independent as suggested by Im et al, (2003); Maddala and Wu, (1999); Pedroni, (1999, 2004). Example is Chowdhury and Das (2011). The second generation such as Bai and Ng, 2004; Bai, Kao and Ng, 2009; Pesaran 2006, 2007) have explicitly expressed great concern on the correlation across groups of the panels. Despite this disagreement, relatively few studies have applied and compared these methods in their analysis. Exceptions to this are the work of Herzer and Nunnenkam, (2012) that examined the effects of foreign aid on income inequality for 21 recipient countries over the period 1970-1995. However; this study failed to examine the effects of aid components on poverty. On this note, this study explores the advantages of first and second generation econometric methods to reexamine the effects of foreign aid on poverty level in West African Countries.

The remainder of this paper is organized as follows. Section 2 examines the literature review, section 3 discusses and specifies our model, section 4 discusses the method, sources of data and measurement of variables. Section 5 discusses the results, while section 6 presents concluding remarks.

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LITERATURE REVIEW

It has been argued in aid-growth literature that foreign aid has the potential for increasing economic growth via its effect on savings and investment, and in consequent reduce poverty (Morrissey and Gomanne, 2002; Gommanee, Morrissey, Mosley and Verschoor, 2005; Collier and Dollar, 2002). Also, studies have shown that it is possible for foreign aid to reduce poverty without necessarily impact on growth. For example Morrissey and Gomanee (2002) argued that "aid that promotes growth that in turn reduces income poverty has an indirect effect in reducing poverty, and presumably the welfare of the poor is increased. Aid that increases the (non-income) welfare of the poor alleviates poverty, but may not have any impact on growth or on measured income poverty".

While foreign aid has been reported to be an important instrument in the process of reducing poverty and promote economic development around the world (Mourmouras and Rangazas, 2007; Pallage and Robe, 2001), many studies have shown that although aid on its own have no impact on poverty except when it is allowed to interact with other variables that significant effect is recorded (Burnside and Dollar, 2000). It has been noted during the 1990s, that countries in Sub-Saharan Africa received foreign assistance in cash amounting on average to 12% of their GDP, and their average growth rate per capita fell by 0.6% per year (Birdsall, Rodrik and Subramanian, 2005). It has also been discovered that if per capita health aid is doubled, there will be a two percent reduction in infant mortality rate. On average increasing per capita health by $1.60 per year causes 1.5 lower infant deaths per 1000 births (see Mishra and Newhouse, 2007).

Basically, school of thought on aid-poverty relation can be divided into two strands. The first strand emphasized the positive impact of foreign aid on growth noted that, for economic growth to exist in less developed countries characterized by shortage of capital, enough and constant flow of foreign aid is necessary. The baseline rests on the assumption that foreign aid augments domestic resources, supplements domestic saving provides access to technology and exposes recipient countries to foreign market, (Chenery and Strout (1966); Papanek (1973); Levy (1998); Gupta (1975); Levy (1988); and Islam (1992)). Supporters of this strand argued further that even if there is existence of negative relationship between foreign aid and economic growth, the cause is attributable to the effect of factors such as economic policies, economic environment, business cycles as well as the volatility in aid flows. The second strand that supports the negative impact of foreign aid on economic growth explains that aid is fully consumed. Rather than compliment domestic resources, it only fuels import of inappropriate technology, distorts domestic income distribution, and encourages a bigger, inefficient and corrupt government in developing countries, (Griffin (1970); Griffin and Enos (1970); Weisskoff (1972 a,b); Boone1994; 1996)). According to Bauer (1991) and Easterly (2006), foreign aid has increased government bureaucracies, perpetuated bad governments, enriched the elite in poor countries, or just been wasted. They criticized foreign aid for not having achieved much, despite its acclaimed promises. They argued further that, increasing poverty level in Africa and South Asia, disastrous experience in Democratic Republic of Congo, Haiti, Papua New Guinea and Somalia serve as good examples of aid failure. Bauer (1991), argues further that aid is only seen as a form of government-to-government subsidy and that it translates into a transfer of resources from poor people in rich countries to rich people in poor countries, thus, it is seldom effective in developing countries. Another reason cited as contributing factor to aid failure is that, aid is often targeted at countries whose governments do not show interest in the fate of their people. Those in power use aid to achieve their selfish interests or to implement policies that favour their political interest but inimical to their economic development. Based on the inconclusive debate on aid-poverty relation, this study re-examines the relationship between foreign aid and poverty in West Africa by using the first and second generation of econometrics methods.

MODEL

Few existing studies of a direct relationship between aid flows and poverty have employed standard cross-country growth regression method by using poverty indicator as dependent variable to replace growth (see Boone, 1996). However, since aid directly finances government expenditure, focusing on public expenditure that is channeled towards projects that benefit the poor will provide a more clear transmission mechanism of aid effectiveness. Evidences have shown that incidence of public spending is progressive (see McKay, 2004; Heltberg, Simler and Tarp 2004). It has also been noted that the benefits of expenditures is more pro-poor as spending increases (Lanjouw and Ravallion (1999), thus, we start our model specification following the approach of taking inter-sectoral investment decisions suggested by Ferroni and Kanbur (1990). In this case, the choice of optimal inter-sectoral allocation of public expenditure is a problem of seeking to maximise welfare given a fixed fiscal budget constraint; thus, the state is seen as a rational agent, maximising social welfare, whether based on individual preferences or on some political reason. Public service expenditure is determined by balancing government's opportunity cost with the benefits that social services will provide. Algebraically, we can express this as:

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$$Max\sum_j w_j X_j(G_i, Y, z, X_{k\neq j}), \quad (1)$$

Subject to:

$$\sum_j G_E = \overline{G} \quad and \quad G_E \geq 0, \quad (2)$$

where G_E is government expenditure on sector k, X_j is the level of welfare indicator j achieved, w_j are the normative weights placed on each of the welfare indicators, z represents vector of other variables that can influence the targeted indicators, $\overline{G}$ represents the level of resources available to the government. The basic logic about this model is that the government is better off if expenditure on a particular sector yields largest returns compare to other sectors if they equally costs the government the same amount of resources. From the above, we need to determine the direct impact of public investment on each welfare indicators as well as its indirect effect on each indicator through its effects on other welfare indicators. Considering other sources of incomes such as foreign aid (FA) that might be available to the government, we restate the above as one of allocating public expenditure across sectors, in order to minimise the amount of resources necessary to achieve a targeted goal. The above equation can then be written as:
:

$$\text{Minimise } \sum_E G_E \quad (3)$$

Subject to:

$$X_j(G_i, z, X_{k\neq j}) \geq T_j, \qquad G_E \geq 0, \quad (4)$$

where T is the targeted amount of each of the welfare indicators j. Unlike in the above equation, expenditure on the targeted sectors is justified if it reduces the distance from one of the targets, taking into account its direct and indirect effects, and if a greater reduction in the distance could not be achieved by spending the same amount on another sector. Here the weight placed on each of the targeted welfare indicators depend on the value the society placed on it.

Since expenditure on public good such as healthcare provide direct welfare benefits to households in terms of increased quantity consumed and price reduction which in turn improve income as well as other non income determinants of poverty, we specify poverty equation as:

$$POV_{jit} = \beta_0 + \beta_1 FA_{it} + \beta_2 Z_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

where i indexes countries, t indexes time, POV_{it} is human development indicators (representing poverty) captured as rural development, real per capita income and household per capita consumption, A_{it} represents different types of foreign aid and Z_{it} is a vector of other exogenous variables that might affect welfare, μ_i is the unobserved country specific effect and ε_{it} is a time varying error term.

The most common method in aid-growth regression is Ordinary Least Squares (OLS) (see Meltzer, 2006). Since these countries differ in terms of political regimes, ideologies, colonial history etc, we take into cognizance the heterogeneity of foreign aid to make our results robust. We therefore use the Pesaran and Smith (1995) Mean Group estimator (MGe), the Pesaran (2006) Common Correlated Effects Mean Group estimator (CCEMGe) and the Augmented Mean Group estimator (AMGe) introduced in Eberhardt and Teal (2010). The latter two estimators allow for further unobserved correlation across panel members (cross-section dependence). For example, given the following: for

$$i = 1, \ldots, N \; and \; t = 1, \ldots, T \text{ .}$$

Assume

$$y_{it} = \beta_i x_{it} + \mu_{it}, \quad (6)$$

$$\mu_{it} = \alpha_{1i} + \lambda_i f_t + \varepsilon_{it} \quad (7)$$

$$x_{it} = \alpha_{2i} + \lambda_i f_t + \gamma_i g_t + e_{it} \quad (8)$$

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Where x_{it} and y_{it} are observables, β_i is the country-specific slope on the observable regressor and μ_{it} contains the unobservables and the error terms e_{it}. ε_{it} contains group fixed effects, α_{1i} that capture time-invariant heterogeneity across members and unobserved common factor f_t with heterogeneous factor loadings, λ_i that can capture time-invariant heterogeneity and cross-section dependence. Thus, the presence of f_t in (7) and (8) induces endogeneity in the estimation equation (see detail in Coakley et al., 2006; Eberhardt and Teal, 2011). e_{it} and ε_{it} are assumed to be white noise.

DATA DESCRIPTION AND SOURCES

In this study, we use official delopment assistance (ODA) based on the standard definition of aid. According to Development Assistance Committee of the OECD (2006), it takes into account grants and concessional loans, net of repayment of previous aid loans and treats forgiveness of past loans as current aid. Generally, ODA is taken to be a reasonable measure of the actual transfer to liquidity-constrained governments (Calderon, Chong and Gradstein, 2006). We consider in this study technical aid (techaid), total grant aid (totaid) and food aid (fudaid). All these data were obtained from the OECD International Development Statistics Database (2012); specifically the DAC Creditor Reporting system. The chosen of the above variables was motivated based on the fact that technical aid is known to possess attribute of being spent on programs oriented toward development such as economic infrastructures, poverty eradication and social services through its employment generation. The debate on the definition and measurement of poverty is really far from settled (see Ravallion, 1996 and Laderchi, Saith and Stewart (2003). However, while most studies on poverty rely on monetary poverty measures such as the headcount index, it has been argued that possessing an increased income does not necessarily mean an improvement in the well-being of people especially if this increased income does not translate to accessibility of basic necessities of life. Ravallion (1996) argued that since poverty is multi-faceted, multiple indicators are necessary including measures of distribution of real expenditure per adult, access to non market goods like health and education, distribution within households and the personal characteristics of the poor. Thus, to measure poverty effectively in this study we go beyond money metric measures. We employ multi dimensional approach by using human development indicators (i.e. rural development measured by per worker agricultural value added, real per capita income and consumption per capita which represents access to resources needed for a decent standard of living, (see Masud and Yoncheva, 2005; Chirino and Melian, 2006 and Morrissey, 2004). We employ principal component analysis on the above indicators to derive a single figure for poverty indicator.

It should be noted that aid recipient countries receive other resources in addition to foreign aid and since the flows of these resources may also affect economic growth as well as poverty level, we find it necessary to account for them so as to gain meaningful analysis of the effectiveness of aid-poverty relationship in the process of our analyses. Thus, we include, Foreign direct investment (fdi) and financial depth (findep). We define fdi as the ratio of foreign direct investment to GDP; total aid and its types are measured as their ratio to GDP. Financial depth is measured as the ratio of broad money (M2) to GDP. Financial depth stimulates economic growth by enlarging the services provided through financial intermediaries such as savings mobilization, project evaluation as well as management of various risks. We also include life expectancy rate to capture the quality of living of people since this is expected to reduce poverty. Data on other variables were obtained from the World dataBank (World Development Indicators (2012). All the variables used were in log form except life expectancy rate.

RESULTS AND DISCUSSION

We first examine the summary statistics and the correlation of all our variables and find that they do not pose any serious problem. They are presented in table 1 and 2 in the appendix. We then examine the unit root of all the variables using both the first (Maddala and Wu (1999) Panel Unit Root test (MW) and second Pesaran (2007) Panel Unit Root test (CIPS)) generation approach. The examination suggests that the variables are integrated of order one. They are also presented in Table 3 and 4 in the appendix. After this, we examine the average relationship across panel members which allow the slope coefficient to differ across groups by taking the advantage of the routine xtmg command in STATA software. We use three approaches in our regression analysis. First, we estimate using Pesaran and Smith (1995) Mean Group estimator (MGe) which assumes away cross section dependence $\lambda_i f_t$ or model them with linear trend. Second, we employ the Pesaran (2006) Common Correlated Effects Mean Group estimator (CCEMGe) which allows cross-section dependence, time-variant unobservables with heterogenous impact across panel group and problem of identification (β_i is unidentified if the regressor contains f_t). The CCEMGE is very efficient in solving the above problems

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through augmentation of group specific regression equation. Aside from the regressor x_{it} and an intercept, this equation now estimates each of the N regression equation using the entire panel data and includes the cross section averages of their dependent and independent variables, $\bar{y}_t$ and $\bar{x}_t$ as additional regressors. This then accounts for unobserved common factor f_t and as the relationship is estimated for each panel group separately the heterogenous impact λ_i is also given (see Eberhardt, 2011). The CCEMGe is robust to nonstationary common factors (see Kapetanios, 2011) and the presence of a limited number of strong factors and infinite number of weak factors Chudik et al., 2011; Pesaran and Tossetti, 2011) . It should be noted that estimated coefficients on the cross-section averaged variables and their average estimates are meant to remove the impact of unobservable common factor. Last, we use the Augmented Mean Group estimator (AMGe) developed by Eberthardt and Teal (2010) as an alternative to that of Pesaran (2006). The results of these three approaches were presented in Table 5 in the appendix. Residuals for cross-independence of these results were tested and presented in Tables 6, 7 and 8 in the appendix. The residual results of AMGe and CCEMGe failed to reject the null hypothesis of cross-independence, in contrast to that of MGe.

Our results based on AMGe show that total foreign aid (ltotaid) and food aid (lfoodaid) promote poverty, while technical aid (ltechaid) impact negatively on poverty. Apart from total foreign aid, none of the results was statistically significant. We also find negative relationship among poverty, life expectancy (lifxpe), foreign direct investment (lfdi), per capita GDP (lgdppk) and financial depth (lfindep), although, they were not statistically significant. This suggests that their impacts on poverty were minimal.

CONCLUSIONS

This paper is premised on re-examining the effects of disaggregate foreign aid on poverty level using both the first and second generation econometrics methods of panel unit root test, cointegration test and empirical estimators with heterogenous slopes, with the assumption that they may affect poverty differently, and thereby causing confusion in findings and conclusions. We find that, indeed, the effect of different foreign aid varies widely. The findings in the study show that the benefits of estimating the impacts of different types of aid will allow policy makers to draw new and useful conclusions on the type of aid to target when the focus is on poverty alleviation. This finding provides an important exploration to literature on aid effectiveness by complementing the existing controversial debate on aid- growth impact. In particular, our results contradict the optimistic view that total aid might be effective for poverty alleviation in recipient countries. However, the study suggests that developmental policies in countries studied could place high priority on ensuring effective management of technical aid, encourage foreign direct investment and encourage policies that can improve welfare since they are likely to complement the efforts of poverty reduction in countries studied and other developing countries.

REFERENCES

1. Arndt, C., Jones, S., and Tarp, F. (2011). Aid effectiveness: Opening the black box, Working paper // World Institute for Development Economics Research, No. 2011, 44.
2. Arndt, C., Jones, S., and Tarp, F. (2010). Aid, Growth, and Development: Have We Come Full Circle? *Journal of Globalization and Development*: Vol. 1: Iss. 2, Article 5.
3. Addison, T., Mavrotas, G. and McGillvray,M. (2005). Aid to Africa: an unfinished agenda. *Journal of International Development*, 17, 989-1001.
4. Bai, J., C. Kao, and S. Ng. (2009). Panel cointegration with global stochastic trends. *Journal of Econometrics*, 149(1), 82-99.
5. Bai, J. S. Ng. (2004). A PANIC attack on unit roots and cointegration. *Econometrica*, 72(4), 191-221.
6. Bauer, P. T. (1971). Dissent on development: Studies and Debates in Development Economics, London, Weidenfeld and Nicolson, 550 pp. 22 cm.
7. Bauer, P.T. (1991). The Development Frontier: Essays in Applied Economics, Harvard University Press, Cambridge, Mass.
8. Boone, P. (1994). The impact of foreign aid on savings and growth, Centre for Economic Performance, Working Paper 1265, London.
9. Birdsall, N., D. Rodrik and A. Subramanian (2005). How to Help Poor Countries? *Foreign Affairs*, 84(4), July/August 2005.
10. Boone, P. (1996). Politics and the effectiveness of foreign aid. *European Economic Review*, 40, 289-329.
11. Burnside, C. and D. Dollar (2000). Aid, policies and growth, Center for Economic Performance Working Paper 1265, London.

ISSN: 1839 - 0846

12. Calderon, C. and Gradstein (2006). Foreign Aid, Inequality, and Poverty, Inter American Development Bank, Research Department, Working Paper #547
13. Chenery, H.B. and Strout, A.M. (1966). Foreign Assistance and Economic Development. *The American Economic Review*, 56(4), 679-733.
14. Chirino, J.B. and Melian, J.M.B. (2006). Analysis of the effectiveness of official Development Assistance. *International Research Journal of Finance and Economics*, 3, 1450-2887.
15. Chowdhury, M. and Das, A. (2011). Aid-Growth Nexus in South Asia: Evidence from Time Series and Panel Cointegration. *Research in Applied Economics*, 3(1), 1-19
16. Chudik, A.M., H. Pesaran and Tossetti, E. (2011). Weak and Strong Cross Section Dependence and Estimation of Large Panels. *Econometrics Journal*, 14(1), C45-C90.
17. Coakley, J.A., Fuertes, M. and Smith, R.P. (2006). Unobserved heterogeneity in panel time series models. *Computational Statistics & Data Analysis*, 50(9), 2361-2380.
18. Collier, P. and Dollar, D. (2002), Aid Allocation and Poverty Reduction. *European Economic Review*, 46, 1475-1500.
19. Easterly, W. (2006). *The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good*, New York: Penguin Press.
20. Eberhardt, M. and F. Teal. (2010). *Productivity Analysis in Global Manufacturing Production*. Economics Series Working Papers 515. Department of Economics, University of Oxford.
21. Eberhardt, M. Teal,F. (2011). Econometrics for Grumblers. A New Look at the Literature on Cross Country Growth Empirics. *Journal of Economic Surveys*, 25(1), 109-155.
22. Economides, G., Kalyvitis, S. and Phillippopoulos, A. (2008). *Does foreign aid distort incentives and hurt growth? Theory and evidence from 75 aid recipient countries*. Public Choice 134, 463–488.
23. Ferroni, M. and Kanbur. (1990). *Poverty-conscious Restructuring of Public Expenditure, Social Dimensions of Adjustment in Sub-Saharan Africa* Working Paper No. 9. Washington, DC: World Bank.
24. Friedman, M. (1958). Foreign Economic Aid, *Yale Review*, 47(4).
25. Gomanee, K., Morrissey,O., Mosley.P. and Verschoor. (2005). Aid, government expenditure, and aggregate welfare. *World Development*, 33(3), 355-370.
26. Griffin, K.B. (1970). Foreign capital, domestic savings and Economic development. *Oxford University Institute of Economics and Statistics*. 32, 99-112.
27. Griffin, K.B. and Enos, J.L. (1970). Foreign assistance: Objectives And consequences. *Economic Development and Cultural Change*,18. 313-327.
28. Gupta, K. L. (1975). Foreign Capital Inflows, Dependency Burden and Savings Rates in Developing Countries: A Simultaneous Equation Model, *Kyklos*, 28, 358-374.
29. Heltberg, R., Simler, K. and Tarp, F. (2004). Public spending and poverty in Mozambique. In T. Addison, H. Hansen and F. Tarp (Eds), *Debt Relief for Poor* 20 *Countries* (pp. 209-240), Basingstoke: Palgrave Macmillan in association with UNU-WIDER.
30. Herzer, D. and Nunnenkam, P. (2012). The effect of foreign aid on income inequality: Evidence from panel cointegration. *Structural Change and Economic Dynamics*, 23, 245–255.
31. Hodler, R. (2007). Rent seeking and aid effectiveness. *International Tax and Public Finance*, 14, 525–541.
32. Im, K.S., Pesaran, M.H. and Shin, Y. (2003). Testing for unit root in heterogenous panels. *Journal of Econometrics*, 115(1), 53-74.
33. Islam, A. (1992). Foreign aid and economic growth; An Econometric study of Bangladesh. *Applied Economics*, 24, 541- 544.
34. Kapetanios, G., Pesaran, M. H, and Yamagata, T (2011). Panels with Non-stationary Multifactor Error Structures. *Journal of Econometrics*, 160(2), 326-348.
35. Laderchi, R.G., Saith,R. and Stewart,F. (2003). Does it Matter That we do not Agree on the Definition of Poverty? A Comparison of Four Approaches. *Oxford Development Studies*, 31(3), 243-274.
36. Lanjouw, P. and M. Ravallion (1999). Benefit incidence, public spending reforms and the timing of program capture. The World Bank Economic Review, *13(2)*, 257- 274.
37. Levy, V. (1988). Aid and Growth in Sub-Saharan Africa: The Recent Experience, *European Economic Review*, (32)9, 1777-1795.
38. Maddala, G. S., and Wu, S. (1999). A Comparative Study of Unit Root Tests with Panel Data and New Simple Test. *Oxford Bulletin of Economics and Statistics*, 6(1), 631-652, November.
39. Masud, N. and Yontcheva, B. (2005). Does Foreign Aid Reduce Poverty? Empirical Evidence from Nongovernmental and Bilateral Aid," IMF Working Paper 05/100.
40. McKay, A. (2004). Assessing the impact of fiscal policy on poverty. In T. Addison and A. Roe (Eds), Fiscal Policy for Development: Poverty, Reconstruction and Growth (pp. 199-217), Basingstoke: Palgrave Macmillan in association with UNU-WIDER.

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41. Meltzer, A.H. (2006). Reviving the Bank and the Fund. *Review of International Organizations*, 1(1), 49-59.
42. Miller, B. and Torr, J. D. (2003). Developing Nations: Current Controversies, Greenhaven Press, New York, Eds.
43. Mishra, P. and Newhouse, D. (2007). Does Health Aid Matter?" (Unpublished; Washington: International Monetary Fund).
44. Morrissey, O. (2004). Conditionality and Aid Effectiveness Reevaluated, *World Economy*, 27(2), 153-171.
45. Mosley, P., Hudson, J. and Gomanee, K. (2002). Aid poverty reduction and the new conditionality', Department of Economics, University of Sheffield, *Research Programme on Risk, Labour Markets and Pro-poor Growth: Occasional Paper 5*.
46. Mourmouras, A. and P. Rangazas (2007). Foreign Aid Policy and Sources of Poverty: *A Quantitative Framework, IMF. Staff Papers*, 54(1), 59-90.
47. OECD, (2006). http://www. oecd.org
48. OECD International Development Statistics Database (2012). http://www. oecd.org
49. Pallage, S. and Robe, M. (2001). Foreign Aid and the Business Cycle, *Review of International Economics*, 9(4), 641-672.
50. Papanek, G.F. (1973). Aid Foreign Private Investment, Savings And Growth in Less Developed Countries, *Journal of Political Economy*, 81, 120-130.
51. Pedroni, P. (1999). Crtitical values for cointegration tests in heterogenous panel with multiple regressors. Oxford Bulletin of Economics and Statitstics 61(Special Issue):653-670.
52. Pedroni, P. (2004). Panel cointegration: Asymptotic and Finite Sample Properties of Pooled Time Series Tests with an Application to the PPP Hypothesis. Econometric Theory 20(3): 596-625.
53. Pesaran, M.H. (2006). Estimation and inference in large heterogenous panels with a multifactor error structure. *Econometrica*, 74(4), 967-1012.
54. Pesaran, M.H. (2007). A Simple panel unit root test in the presence of cross section dependence. *Journal of Applied Econometrics*, 22(2): 265-312.
55. Pesaran, M.H. and Smith R.P. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal of Econometrics*, 68(1), 79-113.
56. Pesaran, M.H., and Tosetti, E. (2011). Large Panels with Common Factors and Spatial Correlations. *Journal of Econometrics* 161(2), 182-202.
57. Radelet, S. Clemens, M and Bhavnani, R. (2005). Aid and Growth" Finance and Development. *A quarterly magazine of the IMF*, vol. 42, no. 3, September. *Economics and Statistics*, 50, 137-138.
58. Ravallion, M. (1996). How important to India's poor is the sectoral Composition of economic growth. *World Bank Economic Review*, 10, 1-25.
59. Sach S, J., McArthur, J.W., Schmidt, G., Traub, C. Bahadur, M. Faye and McCord, G. (2004). Ending Africa's Poverty Trap, *Brooking Papers on Economic Activity*, 1, 117-240.
60. UN (United Nations) (2008). The Millennium Development Goals Report. New York: United Nations.
61. Weisskoff, T.E. (1972a). An econometrics test of alternative Constraints on economic growth of under developed countries, *Review of Economics and Statistics*, 54, 67-78.
62. Weisskoff, T.E. (1972b). The Impact of Foreign Capital Flow and domestic savings in underdeveloped countries. *Journal of Journal of International Economics* 2, 25-38.
63. World dataBank (World Development Indicators) (2012). http://databank.worldbank.org/ddp/home.do

APPENDIX

Table 1
SUMMARY STATISTICS OF VARIABLES

Variable	N	Mean	SD	Min	Max
lpoverty	94	0.39	1.16	-4.37	1.57
ltechaid	288	3.79	0.94	0.54	5.87
lfoodaid	288	0.96	1.57	-4.61	3.95
ltotaid	288	4.82	1.07	1.26	7.45
lifxpe	288	51.35	4.36	37.13	58.95
lgdppk	288	6.09	0.44	5.13	7.00
lfdi	254	0.01	1.38	-6.95	3.62
lfindep	288	-18.51	1.05	-20.57	-16.50

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Table 2

CORRELATION

	lpoverty	ltechaid	lfoodaid	ltotaid	lifxpe	lgdppk	lfdi	lfindep
lpoverty	1.0000							
ltechaid	-0.2258	1.0000						
lfoodaid	-0.1701	0.0450	1.0000					
ltotaid	-0.0100	0.9231	0.0932	1.0000				
lifxpe	-0.3410	0.0737	-0.0120	0.0859	1.0000			
lgdppk	0.5147	0.0258	-0.2153	-0.0083	0.4343	1.0000		
lfdi	0.1271	-0.0452	0.0111	-0.0228	0.3477	0.1404	1.0000	
lfindep	-0.7397	-0.6995	0.2033	-0.675	-0.1027	-0.429	-0.0184	1.0000

Table 3

Maddala and Wu (1999) Panel Unit Root test Specification without trend

Maddala and Wu (1999) Panel Unit Root test Specification with trend

variable	lags	p-value	First difference	p-value	First difference
Poverty	0	0.586	0.000	0.692	0.000
Lpoverty	1	0.002	0.001	0.011	0.003
Ltechaid	0	0.191	0.000	0.558	0.000
Ltechaid	1	0.620	0.000	0.949	0.000
Lfoodaid	0	0.271	0.000	0.187	0.000
Lfoodaid	1	0.685	0.000	0.474	0.000
Ltotaid	0	0.155	0.000	0.288	0.000
Totaid	1	0.557	0.000	0.717	0.000
Lifxpect	0	0.926	0.000	0.648	1.000
Lifxpect	1	0.000	0.000	0.000	0.000
Gdppk	0	0.935	0.000	0.990	0.000
Gdppk	1	0.333	0.000	0.493	0.004
Lfdi	0	0.001	0.000	0.001	0.000
Lfdi	1	0.224	0.000	0.509	0.000
Lfindep	0	0.699	0.000	0.948	0.000
Lfindep	1	0.548	0.000	0.796	0.001

Table 4.

Pesaran (2007) Panel Unit Root test specification with trend

Pesaran (2007) Panel Unit Root test specification without trend

variable	lags	p-value	First difference	p-value	First difference
LPoverty	0	0.823	0.000	0.235	0.000
Lpoverty	1	0.596	0.556	0.854	0.606
LTechaid	0	0.909	0.000	0.253	0.000
LTechaid	1	1.000	0.004	0.956	0.000

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LFoodaid	0	0.023	0.000	0.000	0.000
LFoodaid	1	0.897	0.013	0.219	0.011
LTotaid	0	0.071	0.000	0.126	0.000
LTotaid	1	0.175	0.000	0.285	0.013
Lifxpect	0	1.00	0.985	0.000	0.760
Lifxpect	1	0.000	0.000	0.000	0.007
LGdppk	0	0.987	0.001	0.797	0.000
LGdppk	1	0.467	0.437	0.586	0.277
Lfdi	0	0.002	0.000	0.000	0.000
Lfdi	1	0.949	0.000	0.827	0.000
Lfindep	0	0.792	0.000	0.813	0.000
Lfindep	1	0.975	0.000	0.989	0.001

Table 5

The Results of estimated coefficients of the cross-section averaged variables

	MGe	CCEMGe	AMGe
	lpoverty	lpoverty	lpoverty
ltechaid	0.0386	-0.290	-0.0114
	(0.63)	(-1.48)	(-0.03)
lfoodaid	0.0179	0.00205	0.00689
	(1.89)	(1.26)	(0.37)
ltotaid	0.0528**	0.0272***	0.207***
	(3.05)	(8.63)	(75.87)
lifxpe	-1.026	-0.0156	-0.0642
	(-0.97)	(-0.50)	(0.11)
lgdppk	2.899	-1.036***	-0.0498
	(1.59)	(13.49)	(-1.28)
lfdi	-0.00934	-0.0404***	-0.00807
	(-1.87)	(10.47)	(-0.86)
lfindep	-0.624***	-0.113	-0.894
	(-3.74)	(-0.15)	(-1.45)
_cons	17.88	-24.29**	-16.37
	(0.50)	(-2.79)	(-0.83)
N	82	82	82
RMSE	0.0617	0.0411	0.1074
# of sign trends (5%)	3	2	2

t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

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Table 6

Residual test of MGe

Average correlation coefficients & Pesaran (2004) CD test				
Variable	CD-test	p-value	corr	abs(corr)
residual	2.48	0.013	0.319	0.319
Notes: Under the null hypothesis of cross-section independence CD ~ N(0,1)				

Table 7

Residual test of CCEMG

Average correlation coefficients & Pesaran (2004) CD test				
Variable	CD-test	p-value	corr	abs(corr)
residual	1.18	0.239	0.119	0.212
Notes: Under the null hypothesis of cross-section independence CD ~ N(0,1)				

Table 8

Residual test of AMGE

Average correlation coefficients & Pesaran (2004) CD test				
Variable	CD-test	p-value	corr	abs(corr)
residual	-0.40	0.686	-0.083	0.253
Notes: Under the null hypothesis of cross-section independence CD ~ N(0,1)				