ADB

ADB Economics
Working Paper Series

Poverty Impact of the Economic Slowdown in Developing Asia: Some Scenarios

Rana Hasan, Maria Rhoda Magsombol, and J. Salcedo Cain

No. 153 | April 2009

Asian Development Bank

ADB Economics Working Paper Series No. 153

Poverty Impact of the Economic Slowdown in Developing Asia: Some Scenarios

Rana Hasan, Maria Rhoda Magsombol, and J. Salcedo Cain
April 2009

Rana Hasan is Principal Economist, Maria Rhoda Magsombol is Associate Economics Analyst, and J. Salcedo Cain is Assistant Economics and Statistics Analyst in the Development Indicators and Policy Research Division, Economics and Research Department, Asian Development Bank.

Asian Development Bank

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org/economics

April 2009
ISSN 1655-5252
Publication Stock No.:

The ADB Economics Working Paper Series is a forum for stimulating discussion and eliciting feedback on ongoing and recently completed research and policy studies undertaken by the Asian Development Bank (ADB) staff, consultants, or resource persons. The series deals with key economic and development problems, particularly those facing the Asia and Pacific region; as well as conceptual, analytical, or methodological issues relating to project/program economic analysis, and statistical data and measurement. The series aims to enhance the knowledge on Asia's development and policy challenges; strengthen analytical rigor and quality of ADB's country partnership strategies, and its subregional and country operations; and improve the quality and availability of statistical data and development indicators for monitoring development effectiveness.

The ADB Economics Working Paper Series is a quick-disseminating, informal publication whose titles could subsequently be revised for publication as articles in professional journals or chapters in books. The series is maintained by the Economics and Research Department.

Contents

Abstract

This paper uses the empirical relationship between economic growth and poverty reduction observed between 1990 and 2005 and different scenarios for economic growth to get a sense of how the economic slowdown in the region will affect the incidence of poverty. Since most countries that we work with in this paper experience an increase in gross domestic product per capita even under our "low growth" scenario, poverty in developing Asia continues to decline in 2009 and 2010. What gets adversely affected, however, is the pace of poverty reduction. In particular, our estimates indicate that a reduction in growth of GDP per capita of 3 percentage points over growth registered in 2007—a year of high growth for many Asian developing countries—would result in almost 61 million additional \$1.25/day poor in 2009 and 98 million additional poor in 2010 as compared to a baseline scenario of no economic slowdown.

I. Introduction

While there are many factors that drive poverty reduction, it is clear that economic growth is among the most important. In this context, the sharp economic slowdown that is being experienced globally as well as regionally is a cause for concern.

How will the economic slowdown affect the incidence of poverty in developing Asia over the next 2 years? We provide numbers on the basis of various scenarios for economic growth and the empirical relationship observed between poverty and incomes between 1990 and 2005. In going over the numbers presented here, it is important for readers to keep in mind a couple of issues. First, there is considerable uncertainty regarding how much countries will grow in 2009 and 2010. Rather than only base our poverty estimates on specific predictions regarding economic growth, we also provide poverty estimates based on different scenarios for growth. Second, the projected poverty estimates for 2009 and 2010 rely critically on the relationship between economic growth and poverty reduction observed between 1990 and 2005. Thus, the accuracy of our projected poverty estimates depends not only on how reasonable our growth scenarios for 2009 and 2010 are, but also whether the past relationship between economic growth and poverty reduction proves to be a good guide for the post-2005 period.[1] Finally, most countries that we work with in this paper experience an increase in gross domestic product (GDP) per capita even under our low growth scenario. As a result, poverty in developing Asia continues to decline under all of our scenarios. What gets adversely affected, however, is the pace of poverty reduction.

With these caveats in mind, it can be noted that our estimates indicate that a reduction in growth of GDP per capita of between 1–3 percentage points over growth registered in 2007—a year of high growth for many Asian developing countries—would result in 21 to 61 million additional $1.25/day poor in 2009 and 34 to 98 million additional poor in 2010 *as compared to a baseline scenario of no economic slowdown*. The corresponding

[1] To estimate poverty incidence at the country level, one requires a nationally representative survey of household expenditure. Unfortunately, for many countries, 2005 is the most recent year for which such data are available. Thus, estimates of poverty incidence for any year from 2006 to 2008 must rely on extrapolations even though these years lie in the past. As for poverty incidence for any year after 2008, these must be forecasts of some type, of course.

numbers for $2/day poverty are naturally higher: 26 to 76 million and 42 to 122 million in 2009 and 2010, respectively.

The remainder of this paper is organized as follows. Section II describes briefly our methodology. Section III provides estimates of poverty corresponding to the different growth scenarios. Section IV concludes with some remarks, including how various countries may be placed in dealing with the poverty impacts of the economic slowdown.

II. Methodology

Our starting point for projecting poverty incidence in 2009 and 2010 is the empirical relationship between economic growth and poverty reduction observed between 1990 and 2005. We estimate this relationship using a simple linear regression model whereby the log of the poverty rate (also known as the headcount index, or HCI) is regressed on a constant and GDP per capita.[2] The coefficient on GDP per capita is our estimate of the growth elasticity of poverty, i.e., the percent change in the poverty rate that takes place when GDP per capita increases by 1%.

Two points may be noted. First, we estimate this relationship separately for two poverty lines: $1.25/day and $2/day, both at 2005 purchasing power parities (PPP). The former represents the international poverty line for extreme poverty while the latter is close to the median value of national poverty lines used in developing countries. Second, the regression is estimated separately for each Asian subregion in order to account for the fact that the relationship between economic growth and poverty reduction is likely to vary within a region as large and diverse as developing Asia.

Table 1 provides estimates of the growth elasticity by subregion. Interestingly, and confirming previous research, the growth elasticity is smaller in absolute value for higher poverty lines. Additionally, growth elasticities vary considerably across subregions. Somewhat surprisingly, the growth elasticity in Central and West Asia is considerably higher (in absolute value) than in other subregions, including Southeast Asia. Much lower growth elasticities are found in the Pacific and South Asia.

[2] That is, the regression equation is: $\ln P_{it} = \alpha + \beta^* \ln Y_{it} + \varepsilon_{it}$, where i denotes country, t denotes year, and P and Y represent the poverty rate and GDP per capita, respectively. Our data on poverty rates and GDP per capita are from World Bank's PovcalNet database and World Development Indicators database.

Table 1: Estimates of Growth Elasticity of Poverty, 1990 to 2005

Subregion	Estimated Growth Elasticity		Number of Countries
	HCI Based on $1.25/day (in 2005 PPP)	HCI Based on $2.00/day (in 2005 PPP)	
East Asia	–0.825	–0.541	2
Central and West Asia	–1.838	–1.148	8
The Pacific	–0.372	–0.294	2
South Asia	–0.659	–0.428	5
Southeast Asia	–1.623	–0.672	7

HCI = headcount index.
Source: Staff estimates using data from World Bank PovcalNet and World Bank World Development Indicators database.

Assuming that each subregional growth elasticity applies to every country within a subregion, we can estimate what poverty would be like in each country based on different scenarios for the growth of country-specific GDP per capita. In what follows, we consider four different scenarios for economic growth. The baseline scenario is one in which each country's growth in GDP per capita for the years 2008, 2009, and 2010 is identical to that it experienced in 2007 (a year of rapid growth for many developing Asian economies). The baseline scenario is thus one where the economies in the region do not experience any slowdown relative to 2007. The next three scenarios correspond to different degrees of economic slowdown. In particular, the scenarios consider what happens if growth in GDP per capita is 1, 2, or 3 percentage points slower in each of the 3 years (2008, 2009, and 2010) compared to growth in 2007. For example, if a country's GDP per capita grew by 7% in 2007, the baseline scenario is one where GDP per capita grows by 7% in each of the post-2007 years. In sharp contrast, the scenario of 3 percentage points slower growth is one where GDP per capita growth would be 4% in each of the post-2007 years. Appendix Table 1 provides growth rates of GDP per capita in 2007. It also provides estimates of GDP per capita growth in 2008 and forecasts for 2009 and 2010 based on ADB (2009).

III. Poverty Based on Different Scenarios

Before we get to estimates of what poverty may look like in 2009 and 2010, it is useful to consider what the most recent set of internationally comparable poverty estimates available tell us about poverty in the region. As Table 2 indicates, 27.1% of developing Asia lived below the $1.25 poverty line in 2005. This translates into 903 million extremely poor. In terms of the $2 poverty line, 54%, or 1.8 billion people, were poor. The numbers for 2005 are based on 25 Asian developing countries.[3]

[3] The 25 Asian developing countries are: Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, People's Republic of China, Georgia, India, Indonesia, Kazakhstan, Kyrgyz Republic, Lao PDR, Malaysia, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Turkmenistan, Uzbekistan, and Viet Nam.

Table 2: Headcount Index and Magnitude of Poor in Developing Asia in 2005

Poverty in Developing Asia (2005)	Based on $1.25/day	Based on $2.00/day
Headcount Index (%)	27.1	54.0
Magnitude of Poor (millions)	903	1,803

Sources: Estimates are from World Bank PovcalNet Database and Bauer et al. (2008).

Turning next to estimates of poverty for 2009 and 2010 in developing Asia, Table 3 provides numbers based on the various growth scenarios. These estimates are aggregates of those for each of the 24 developing Asian economies for which sufficient data were available on both poverty and economic growth.[4] Together, these 24 economies account for 95% the population of all developing Asian economies.

Rows 1 and 6 describe poverty in 2009 and 2010 under the baseline scenario for the $1.25/day and $2/day poverty lines. In the baseline scenario of no economic slowdown, there would be 586 million $1.25/day poor in developing Asia in 2010 and a little over 1.4 billion $2/day poor.

Row 2 describes poverty in a scenario of a mild slowdown (GDP per capita growth in each year after 2007 is 1 percentage point lower than in 2007). Since all indications are that the slowdown will be more severe than that, it is useful to start with Row 3. If each country experiences growth in GDP per capita in 2008 and 2009 that is 2 percentage points slower than that in 2007 (Row 3), there will be 41 million additional $1.25/day poor compared to the baseline scenario. If this slower growth rate were to continue in 2010 as well, there would be 66 million additional poor by 2010 (compared to the baseline scenario).

If growth is even slower, in particular, growth in 2008, 2009, and 2010 is 3 percentage points slower than that in 2007 (Row 4), almost 61 million additional poor by 2009 and almost 98 million additional poor by 2010 compared to the baseline scenario could be expected.

If the poor are defined in terms of the $2/day poverty line, and growth in each year after 2007 is 3 percentage points lower than that in 2007 (Row 9), 76 million additional poor by 2009 and 122 million additional poor by 2010 may be seen, compared to a situation where growth post-2007 was maintained at 2007 rates.

One cannot know now which is the most accurate scenario, but worryingly, projections of poverty based on growth rates of 3 percentage points slower than in 2007 for the post-2007

[4] The country omitted from the 2009 and 2010 estimates is Turkmenistan, for which information on GDP per capita for recent years was not available. This omission is not a serious one given its small population and poverty incidence relative to the 25 countries as a whole. In 2005, the population of Turkmenistan accounted for only 0.14% of the total population of the 25 countries. It accounted for only 0.06% and 0.08% of the $1.25/day and $2/day poor.

period are very similar to projections based on ADB's *Asian Development Outlook 2009* (ADB 2009) country-specific estimates of economic growth for 2008 and forecasts for 2009 and 2010 (Rows 5 and 10 for $1.25 and $2 poverty, respectively).

Based on these figures, it is clear that getting economic growth back on track and providing mechanisms for protecting the welfare of the poor and vulnerable until then are imperative.

Table 3: Headcount Index and Number of Poor in Developing Asia in 2009 and 2010, Four Scenarios[a]

Scenario	Headcount Index (%)		Number of Poor (million)		Additional Poor[b] (million)	
	2009	2010	2009	2010	2009	2010
Based on $1.25						
Baseline	**19.1**	**16.7**	**665.9**	**586.0**	–	–
1% point less growth	19.7	17.6	686.5	619.5	20.7	33.5
2% point less growth	20.3	18.5	706.6	651.9	40.8	65.9
3% point less growth	20.9	19.4	726.5	683.7	60.7	97.7
ADO projections	20.9	19.5	728.2	685.9	62.3	99.9
Based on $2.00						
Baseline	**43.9**	**40.7**	**1,526.8**	**1,430.9**	–	–
1% point less growth	44.6	41.9	1,552.6	1,472.8	25.8	41.9
2% point less growth	45.4	43.0	1,577.7	1,513.5	50.9	82.6
3% point less growth	46.1	44.2	1,602.6	1,553.4	75.8	122.5
ADO projections	46.2	44.4	1608.3	1,562.2	81.5	131.3

[a] Based on 24 developing Asian economies. [b] Relative to baseline scenario.
– means data not available.
ADO = Asian Development Outlook.
Note: * The projections are derived using the methodology described in Section II above.
** The number of poor is computed based on population projections from United Nations (2006).
† The projections are based on 24 Asian developing countries, unlike the numbers for 2005, which are based on 25 Asian developing countries. The country omitted from the estimates is Turkmenistan.
Sources: Authors' estimates. ADO growth rates are from ADB (2009).

IV. What Can Countries Do?

The numbers we have just seen should serve to illustrate why it is important to get the economies of the region back to paths of high growth. In the meantime, countries will need to consider how to alleviate adverse conditions for their populations, especially those subgroups that are already poor and whose plight is likely to worsen, and those liable to fall in poverty. A few points are important to consider as we think about what countries can or should do.

First, it is important to get precise information on the population groups that are most vulnerable to the economic slowdown. This includes groups who are either in danger of falling into poverty or, in the case of the already poor, experiencing greater deprivation. Given the sharp slowdown in exports from the region and construction activity, households that rely upon export production in manufacturing and construction are likely to feel the pinch the most. In addition, households that rely on remittances may also be adversely affected.

Not all of these households are vulnerable, however. Consider Figures 1 and 2 for the Philippines and Nepal describing the share of total income generated by remittances across decile groups. The data for the Philippines suggest that households that rely on foreign remittances are more likely to be those in the top half of the income distribution. Thus, even if a cutback in foreign remittances was to take place, it is possible that recipient households would not fall into poverty. The situation for Nepal would appear to be different given that foreign remittances account for a nontrivial portion of total income even for the lowest decile groups. Conversely, workers in construction tend to be among the poorest paid after agricultural labor. The decline in construction activity will probably affect very quickly, and adversely, the households that rely on construction work.

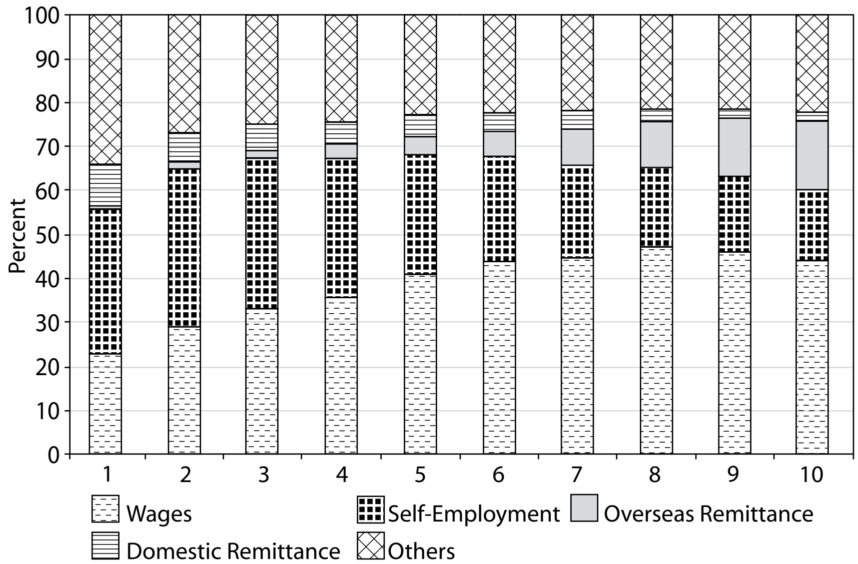
A good sense of which types of household are more vulnerable to the economic slowdown would be useful in designing appropriate interventions. In this context, it may be noted that a number of the current social protection programs that are in place in Asian developing countries—such as cash transfers or public employment programs—tend to focus on the extremely poor. If those who are facing the direct impact of the economic slowdown in the region are unlikely to be the extremely poor then the issue of how to assist them becomes a little trickier. For instance, many workers involved in manufactured exports may not count among the $1.25/day poor. But it is precisely these workers who are losing jobs as Asia's exports contract.

Second, the ability of countries to deal with the adverse effects of the economic slowdown can be expected to vary considerably. In addition to how exactly individual countries' economies perform over the next couple of years and the current share of the population that lives in poverty, two important determinants of how well countries may cope with the crisis are their fiscal capacity, or the ability of the country to finance larger fiscal deficits in order to provide economic stimulus, and their institutional capacity to implement programs that mitigate the poverty impact of the crisis (World Bank 2009).

Table 4 describes how the Asian developing countries are categorized in terms of these two criteria as reported in World Bank (2009) and their vulnerability to experiencing relatively large increases in poverty rates relative to the baseline scenario for economic growth described above.[5] In particular, we define vulnerability as low, medium, or high

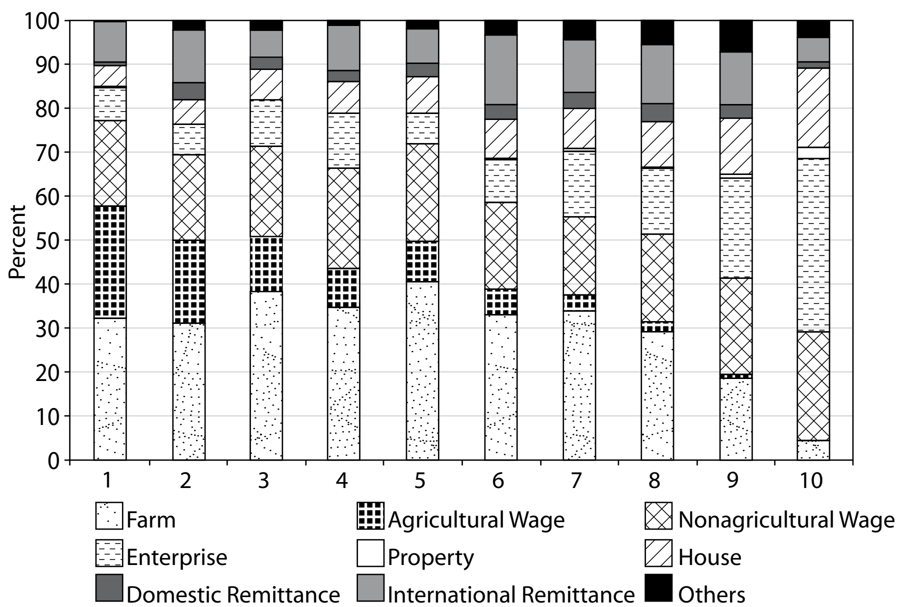
[5] World Bank (2009) measures fiscal capacity using information from 2002–2007 on debt to GDP ratios, fiscal deficits, current account balance, international reserves, and reversible capital inflows. The institutional capacity measure uses information from the World Bank's Country Policy and Institutional Assessment measures.

Figure 1: Philippines: Share of Income Source in Total Per Capita Household Income, by National Income Decile, 2006



Source: Staff estimates based on Family Income and Expenditure Survey 2006 (National Statistics Office 2006).

Figure 2: Nepal: Share of Income Source in Total Per Capita Household Income, by National Income Decile, 2003



Source: Staff estimates based on Nepal Living Standards Survey 2003 (Central Bureau of Statistics 2003).

depending on the percentage point increase in the projected $1.25/day poverty rate experienced by a country in 2009 relative to the baseline scenario. Vulnerability is "low" if the increase in the projected poverty rate over the baseline is between 0 and 1 percentage point. It is "medium" if the poverty rate increases between 1 and 2.0 percentage points over the baseline, and "high" if it is more than 2.0 percentage points over the baseline.

Table 4: Vulnerability, Fiscal Space, and Institutional Capacity

Institutional Capacity	Fiscal Capacity: Low or Medium		Fiscal Capacity: High
Low capacity	Cambodia (High) Lao PDR (High) Tajikistan (High)		Papua New Guinea (Low) Uzbekistan (Medium)
High or medium capacity	Armenia (Medium) Bangladesh (Low) Georgia (High) India (Medium) Indonesia (Medium) Kazakhstan (Low) Kyrgyz Republic (High)	Mongolia (Medium) Nepal (Low) Pakistan (High) Philippines (High) Sri Lanka (Low) Viet Nam (High)	Azerbaijan (Low) Bhutan (High) China, People's Rep. of (Medium) Malaysia (Low) Thailand (Low)

Note: The terms low, medium, or high pertain to vulnerability to projected increases in 2009 of $1.25/day poverty rates on account of economic slowdown relative to the baseline scenario of no slowdown. Vulnerability is low if the increase in the projected poverty rate relative to the baseline scenario is less than 1 percentage point. It is medium if the poverty rate increases relative to the baseline scenario by between 1.0 and 2.0 percentage points, and high if it increases relative to the baseline scenario by more than 2 percentage points.
Sources: Adapted from World Bank (2009); staff estimates for poverty differentials across growth scenarios.

As can be seen, the countries that are particularly vulnerable to the slowdown are Cambodia, Lao People's Democratic Republic (PDR), and Tajikistan. Not only do each of these three countries experience relatively large increases in poverty rates compared to the benchmark case (more than 2.0 percentage points), they also are categorized as having low/medium fiscal space and low institutional capacity. In contrast, the least vulnerable are countries in the lower right hand corner. This includes not only countries such as Azerbaijan, Malaysia, and Thailand—countries where extreme poverty is for all practical purposes and intents negligible, and remains so under the scenarios considered here—but also countries such as Bhutan and the People's Republic of China. While there is some increase in extreme poverty compared to the benchmark case for these two countries, both have fiscal space as well as institutional capacity to help the vulnerable. In general, a judicious mix of financial assistance, plus technical assistance in implementing well-designed social protection programs, will be critical for alleviating the adverse social impacts of the economic slowdown.

Appendix

Appendix Table 1: GDP per Capita Growth Rates
(% per year)

Country	2007	2008	2009	2010
Armenia	13.7	6.5	0.7	3.2
Azerbaijan	24.0	9.7	7.0	5.5
Bangladesh	5.1	4.9	4.2	3.8
Bhutan	12.5	9.9	4.0	2.1
Cambodia	7.8	4.9	0.4	1.9
China, People's Rep. of	12.4	8.4	6.3	7.4
Georgia	12.9	2.8	2.5	6.0
India	7.5	5.6	3.5	5.0
Indonesia	4.9	4.7	2.2	3.6
Kazakhstan	7.6	2.5	1.3	2.6
Kyrgyz Republic	7.3	6.4	2.8	4.8
Lao People's Dem. Rep.	6.3	5.3	3.6	4.0
Malaysia	4.3	2.6	-2.2	2.3
Mongolia	8.7	7.0	1.7	3.1
Nepal	0.8	2.7	1.0	1.5
Pakistan	5.3	4.3	1.2	2.3
Papua New Guinea	4.3	5.0	1.9	1.4
Philippines	5.1	2.6	0.5	1.5
Sri Lanka	6.1	4.9	3.5	5.0
Tajikistan	6.3	6.4	1.5	2.5
Thailand	4.2	1.9	-2.1	2.9
Timor-Leste, Dem. Rep. of	4.6	6.6	6.7	4.8
Turkmenistan	10.1	8.4	8.4	8.3
Uzbekistan	7.9	7.3	6.2	6.1
Viet Nam	7.2	4.8	3.2	5.1

Source: ADB (2009).

References

Asian Development Bank. 2009. *Asian Development Outlook 2009*. Available: www.adb.org/Documents/Books/ADO/2009/.

Bauer, A., R. Hasan, R. Magsombol, and G. Wan. 2008. The World Bank's New Poverty Data: Implications for the Asian Development Bank. ADB Sustainable Development Working Paper Series Number 2, Regional and Sustainable Development Department, Asian Development Bank, Manila.

Central Bureau of Statistics. 2003. Nepal Living Standard Survey II (2003/04) Dataset. Kathmandu.

National Statistics Office. 2006. Family Income and Expenditure Survey Dataset. Manila.

United Nations. 2006. *World Population Prospects: The 2006 Revision Population Database*. Population Division. Available: esa.un.org/unpp/index.asp.

World Bank. 2009. *The Global Economic Crisis: Assessing Vulnerability with a Poverty Lens*. Available: //siteresources.worldbank.org/NEWS/Resources/WBGVulnerableCountriesBrief.pdf.

About the Paper

Rana Hasan, Maria Rhoda Magsombol, and J. Salcedo Cain use the empirical relationship between economic growth and poverty reduction observed between 1990 and 2005 and different scenarios for economic growth to get a sense of how the economic slowdown in the region will affect the incidence of poverty. The paper's estimates indicate that a reduction in growth of gross domestic product per capita of 3 percentage points over growth registered in 2007 would result in almost 61 million additional $1.25/day poor in 2009 as compared to a baseline scenario of no economic slowdown.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org/economics
ISSN: 1655-5252
Publication Stock No.:

Printed in the Philippines