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## Trade, migration, and poverty reduction in the globalizing economy: The case of the Philippines

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Research Paper No. 2006/58

## **Trade, Migration, and Poverty Reduction in the Globalizing Economy**

The Case of the Philippines

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### **Abstract**

This paper investigates how the two types of globalization—i.e., integration of international trade and emigration—affected poverty reduction in the Philippines. Using the Family Income and Expenditure Surveys from 1985 to 2000, we found that both nontransfer and transfer incomes decreased poverty significantly but transfer income exerted greater impact. External openness reduced poverty significantly before the Asian currency crises but its impact had been reversed since. The effect of land reform in inducing transfer income from abroad was significant only in the 1990s. Yet, the ultra poor were bypassed in the land reform-credit-emigration-transfer nexus.

Keywords: poverty, globalization, migration, Millennium Development Goals

JEL classification: F22, I32, O53

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## Acronyms

ARMM	Autonomous Region of Muslim Mindanao	BBD	beneficial braindrain
CAR	Cordillera Autonomous Region	CARP	Comprehensive Agrarian Reform Programme
CLT	certificate of land transfer	CPI	consumer price index
EP	emancipation patent	EPZs	export-processing zones
FDIs	foreign direct investments	FGT	the Foster, Greer, Thorbecke poverty index
FIES	family income and expenditure surveys	GRDP	gross regional domestic products
MDGs	Millennium Development Goals	NCR	national capital region
NSCB	National Statistical Coordination Board (of the Philippines)	NSO	National Statistics Office
PD	presidential decree	PPP	purchasing power parity
SEZs	special economic zones	SRA	Social Reform Agenda of the Ramos administration (1992-80)

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## 1 Introduction

In September 2000, the United Nations' (UN) 189 member countries made poverty reduction a global objective by setting the Millennium Development Goals (MDGs). The most important of the MDGs is goal 1: to eradicate extreme poverty and hunger—and target 1: to halve the proportion of people living on less than a dollar a day and those who suffer from hunger. The UN aimed to achieve goal 1 and target 1 between 1990 and 2015.

In the Philippines, poverty eradication has been a top priority of its government since 1986. The centrepiece of the Aquino administration (1986-92) was economic and social development programme through the comprehensive agrarian reform programme (CARP), which was initiated in the second half of the 1980s. The Ramos administration (1992-80) had the social reform agenda (SRA), which was the first effort toward human development in the Philippines (Balisacan 2003). The Estrada administration (1998-2001) initiated the *Lingap Para sa Mahihirap*, literally meaning 'looking after the poor' programme to alleviate poverty. The Arroyo government (2001- ) has been adopting the *Kapit-Bisig Laban sa Kahirapan* (KALAHI), i.e., 'linking arms against poverty' programme focusing on a comprehensive development of agricultural communities, some of them covered by land reform implementation.

While these targeted poverty reduction programmes may be effective, the costs of such programmes may be too prohibitive to cover a larger number of poorer communities and households. Many authors believe that another effective alternative approach toward more comprehensive poverty reduction is to enhance economic growth (Dollar and Kraay 2002; Ravallion 2001). It has been shown that an important driving force to enhance economic growth is globalization, which is defined as cross-national integration of goods, labour and financial markets (World Bank 2002). Since economic growth has been found to be an effective instrument to reduce poverty (Dollar and Kraay 2002), globalization has been hypothesized to be an important force that can lead to poverty reduction (Nissanke and Thorbecke 2005). Yet, there remains an empirical question whether such a hypothesis holds in the context of the Philippines.

There are different channels of the so-called globalization-growth-poverty reduction nexus. First, there is a direct positive relationship between trade openness of a country and its economic growth (Harrison 1996; Dollar and Kraay 2004).<sup>1</sup> Second, foreign direct investments (FDIs) are considered to be an important venue to the transfer of technology. FDIs contribute relatively more to economic growth than domestic investments. This positive nexus between FDI and growth is observed especially when sufficient absorptive capability of advanced technologies is available in the host economy (Borensztein, de Gregorio and Lee 1998). Third, in addition to the FDI, the indirect capital flows might affect economic growth positively as well. Harrison (1996) and the World Bank (1991) find that a higher black market premium was negatively associated with growth, suggesting that capital account openness positively enhances macro-level economic growth. And, finally, international labour migration might affect economic growth through two channels. On one hand, there is an *ex ante* 'brain effect' because migration induces domestic investments in education given the higher returns

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<sup>1</sup> Krueger and Berg (2002) find that openness enhances economic growth while it does not affect poverty systematically.

to education abroad. On the other, an ex post ‘drain effect’ arises when the more educated labour force migrate out. The so-called beneficial braindrain (BBD) emerges when the brain effect dominates the drain effect. Indeed, Beine, Docquier and Rapoport (2001) find supportive evidences for the possibility of a BBD. Moreover, international emigration reduces poverty through the remittances sent by the migrants. Indeed, Adams and Page (2003) find that international emigration exerts a strong statistically significant positive effect on reducing poverty in a broad cross-section of developing countries.

Despite the compelling evidence using cross-country macro data, there is relatively little empirical evidence on the role of the two types of globalization, i.e., integration of international trade and emigration, in reducing poverty at the household level. This paper tries to fill in this gap in the literature by using household-level data from the Philippines. We employ target 1 of the MDGs as the benchmark in evaluating the effects of globalization on poverty reduction. This paper has four remaining sections. Section 2 explains the procedure in calculating the province-specific poverty lines. Section 3 evaluates the impacts of external openness and emigration on poverty at the provincial and household levels. Section 4 identifies the determinants of transfer income from abroad. Finally, section 5 concludes this paper.

## 2 The provincial poverty lines

Poverty line can be the domestic poverty line, which is set by the National Statistical Coordination Board (NSCB) of the Philippine government and the international poverty line, which is pegged at US\$1.08 per capita per day purchasing power parity (PPP) equivalent (Chen and Ravallion 2004). The use of the PPP may indeed be appropriate in assessing the poverty situation of the country as a whole (World Bank 2005). The PPP, however, may not accurately measure the spatial variations of poverty within the country because it fails to incorporate the interprovincial price differences. Price variations across provinces may be considerable in large and poorly integrated economies like the Philippines (Baulch 1997). In this paper, we estimate better and internationally comparable provincial poverty lines by carefully assessing and incorporating the interprovincial price differences.

### 2.1 Provincial PPP and the provincial one-dollar poverty line

The PPP for province  $j$  in the Philippines in year  $t$  is defined as:

$$\frac{P_{j,t}^{Ph}}{P_{1993}^{US}}, \quad (1)$$

where  $P_{j,t}^{Ph}$  is the overall price level in province  $j$  in the Philippines and  $P_{1993}^{US}$  is the aggregate price level of the US in the benchmark year, 1993. The provincial PPP in Equation (1) can be represented as a product of the country-level PPP and the ratio of the provincial-specific price level to the national price level,

$$\underbrace{\frac{P_{j,t}^{Ph}}{P_{1993}^{US}}}_{\text{Provincial PPP}} = \underbrace{\frac{P_{j,t}^{Ph}}{P_t^{Ph}}}_{\substack{(A) \\ \text{Relative price} \\ \text{(Term A)}}} \times \underbrace{\frac{P_t^{Ph}}{P_{1993}^{Ph}}}_{\substack{(B) \\ \text{CPI in the Philippines} \\ \text{(Term B)}}} \times \underbrace{\frac{P_{1993}^{Ph}}{P_{1993}^{US}}}_{\substack{(C) \\ \text{Benchmark PPP} \\ \text{(Term C)}}}, \quad (2)$$

where  $P_t^{Ph}$  is the overall price level in the Philippines.

The provincial relative price (Term A) in Equation (2) can be computed through a two-step procedure. In the first stage, we used the detailed provincial-level individual commodity price information collected by the National Statistics Office (NSO) to obtain the benchmark relative prices in 2003 for all provinces. For example, the overall price level in province  $j$  at year 2003,  $P_{j,2003}^{Ph}$ , can be calculated from the commodity-wise price data in the province,

$$P_{j,2003}^{Ph} = \sum_{k=1}^N w_k P_{j,2003}^{k,Ph}, \quad \sum_{k=1}^N w_k = 1, \quad (3)$$

where  $k$  is an identifier of consumption items and  $w_k$  is the share of the commodity in the household budget. We take the price information in 2003 on rice as a major staple, poultry meat as source of protein and electricity as a nonfood expenditure item to construct this benchmark price. We also calculate the aggregate price level,  $P_{2003}^{Ph}$ , by applying Equation (3) to the national-level data. In the second stage, we use the provincial- and national-level consumer price index (CPI) to compute the relative price for year  $t$  using the formula:

$$\underbrace{\frac{P_{j,t}^{Ph}}{P_t^{Ph}}}_{\substack{\text{Relative price} \\ \text{(Term A)}}} = \underbrace{\frac{P_{j,2003}^{Ph}}{P_{2003}^{Ph}}}_{\substack{\text{Benchmark relative price} \\ \text{(Term B)}}} \times \underbrace{\frac{\overbrace{P_{j,t}^{Ph} / P_{j,2003}^{Ph}}^{\text{Provincial CPI}}}{\underbrace{P_t^{Ph} / P_{2003}^{Ph}}_{\text{National CPI}}}}_{\text{(Term C)}}. \quad (4)$$

Equation (4) constitutes the entire Term A of Equation (2). Term B of Equation (2) is simply the ratio of the aggregate CPI in the Philippines at time  $t$  and the CPI in 1993 with the CPI taken from the NSO database. Finally, following World Bank (2005), the benchmark PPP in Term C of Equation (2) is simply the consumption PPP in 1993 drawn directly from the Penn World Tables 5.7.2 By using the province-specific PPP of Equation (2), it is straightforward to compute the poverty line for each province in local currency, which is equivalent to the US\$1.08 per capita per day.

The NSCB is the agency responsible for setting the domestic poverty lines. The NSCB poverty line, however, is considerably higher than the US\$1.08 per capita per day PPP equivalent. For example, the NSCB annual poverty line in 2000 is Php 13,966, whereas the US\$1.08 per capita per day is Php 6,614 only. We thus expect that the proportion of

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<sup>2</sup> The 1993 benchmark PPP is used by the World Bank (2005) as the benchmark PPP in assessing the poverty situation in the Philippines.

households and individuals that are classified poor is significantly higher using the NSCB poverty line.<sup>3</sup>

## 2.2 Poverty trends in the Philippines, 1985-2000

We assessed the provincial poverty situation by applying the province-specific US\$1.08 per capita per day to the per capita expenditure (Table 1). We use household size as weights in our calculations of poverty incidence and poverty gap ratio to correct for possible sampling bias associated with household size, i.e., the poverty contribution of smaller households is magnified if there is no correction for household size in the calculations.

For each province, we construct two poverty measures: the incidence of poverty or the headcount ratio,  $P(0)$ , and the poverty gap measure,  $P(1)$ , where  $P(\alpha)$  is Foster, Greer, Thorbecke (FGT) (1984) poverty index, which is defined as:

$$P(\alpha) = \int_0^Z \left( \frac{Z-C}{Z} \right)^\alpha f(C) dC, \alpha \geq 0 \quad (5)$$

where  $C$  is the individual consumption level,  $f(C)$  is its consumption density function, and  $Z$  is the poverty line. We do all our calculations using the rounds of family income and expenditure surveys (FIES) in 1985, 1988, 1991, 1994, 1997 and 2000. The FIES in the Philippines is a large-scale, repeated cross-section and multipurpose household surveys that had been collected and compiled by the NSO.

Table 1  
Poverty lines and poverty indicators at the individual level in the Philippines, 1985-2000

	1985	1988	1991	1994	1997	2000
	Poverty lines in Php annual values					
NSCB	3,856	5,008	7,292	8,878	10,998	13,966
US\$1.08 <sup>(1)</sup>	2,003	2,497	3,452	4,343	5,413	6,614
	Poverty incidence at the individual level (%) <sup>(2)</sup>					
US\$1.08 <sup>(1)</sup>	23.5	24.9	24.6	17.5	16.6	18.1
	Poverty gap at the individual level (%) <sup>(2)</sup>					
US\$1.08 <sup>(1)</sup>	6.04	6.34	6.53	4.18	3.89	4.38

Notes: <sup>(1)</sup> Per capita per day adjusted for interprovincial price differences.

<sup>(2)</sup> Based on per capita expenditure data.

Source: NSCB (*Statistical Yearbook*, various years).

<sup>3</sup> We compare our provincial poverty lines with the domestic provincial poverty lines calculated by the NSCB and with the poverty line based on real expenditure calculated by Balisacan (2003). The NSCB domestic poverty lines are calculated using the prevailing domestic prices of a basket of commodities typically consumed by an average poor household. Balisacan's (2003) poverty line is calculated by deflating the nominal expenditure by the true cost of living index, which is defined for fixed reference prices and reference household characteristics. A simple OLS regression of our poverty line with that of the NSCB shows a slope of 0.56 and, in the case of Balisacan (2003), a slope of 0.17.

Table 1 shows the poverty measures at the level of individual members of the household for the Philippines as a whole using the US\$1.08 per capita per day poverty line. The proportion of poor individuals remained fairly the same at about 25 per cent from 1985 to 1991, decreased to 16.6 per cent in 1997 and increased to 18.1 per cent in 2000.<sup>4</sup> The increase in 2000 is possibly due to the negative impacts generated by the Asian financial crisis and the severe drought brought by *El Niño*. Datt and Hoogeveen (2003) find that the *El Niño* shock accounts for the largest share of the overall impact mainly because a substantial number of poor Filipino households stake out their living from agriculture.

The appendix shows the provincial-level poverty incidence in 1985-2000. The incidence of poverty in 1985 was generally higher in provinces located in the Bicol region, namely Catanduanes, Masbate and Sorsogon, but the decline in poverty in these provinces was remarkable in the 1990s. The Central Luzon region, more notably, the provinces of Bulacan, Pampanga and Nueva Ecija had the lowest poverty incidence in all years.

Cebu experienced the most remarkable decline in poverty in the Central Visayas and Camiguin in Northern Mindanao. Davao and Davao del Sur had the lowest poverty in Southern Mindanao comparable with the provinces in the Central Luzon. Provinces located in Southern Tagalog, Central Luzon and Ilocos are less poor compared with provinces in other regions due to their proximity to the national capital region (NCR). Provinces in Southern Tagalog region that belongs to the CALABARZON group (Cavite, Laguna, Batangas and Quezon) are expected to be less poor due to their proximity to the NCR and the government efforts to build infrastructure to induce industries to relocate and move residential areas to CALABARZON in efforts to decongest the NCR. On the other hand, the poorest provinces in 2000 where poverty incidence is larger than 50 per cent are Masbate in Bicol, Eastern Samar in Eastern Visayas, Ifugao, Kalinga and Mt. Province in CAR. Overall, we can observe wide variations in poverty across provinces and years, which can be explained partly by the wide variations in provincial household income and price levels.

### **3 Poverty, international trade and emigration**

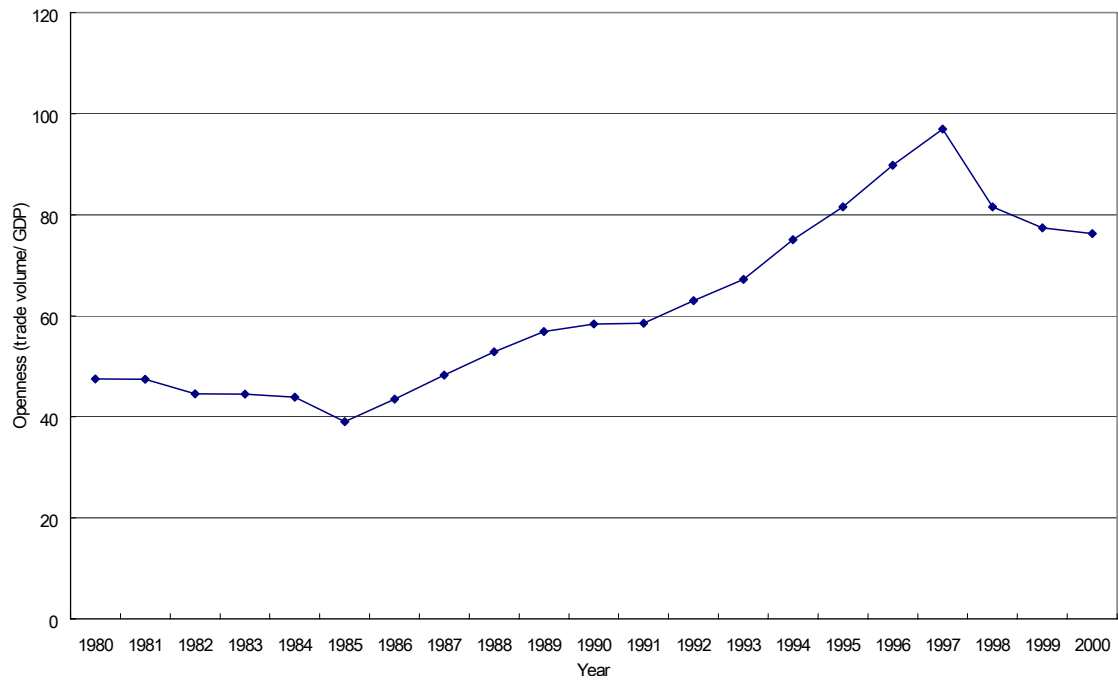
The Philippines can be characterized by an increasing external openness, which we define as a ratio of the total value of exports to the GDP, from 1986 to 1998, except in 1997 during the outbreak of the Asian currency crisis, when the degree of openness in the Philippines declined sharply (Figure 1). Using household data from the Philippines, Pernia and Quising (2003) find that trade openness appears to be beneficial to regional economic growth because it induces movement of the production base away from the NCR, which has been the hub of major economic sparks in the country. Pernia and Quising (2003) find that most of the special economic zones (SEZs), which are largely export processing zones (EPZs), have started to move out of NCR to relocate to Southern Tagalog, Central Luzon and Central Visayas. The movement of industries away from NCR has been facilitated by the Bases Conversion and Development Act,

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<sup>4</sup> Estudillo, Sawada and Hossain (2005), on the contrary, find a remarkable movement out of poverty in their study villages in Central Luzon and Panay Island.

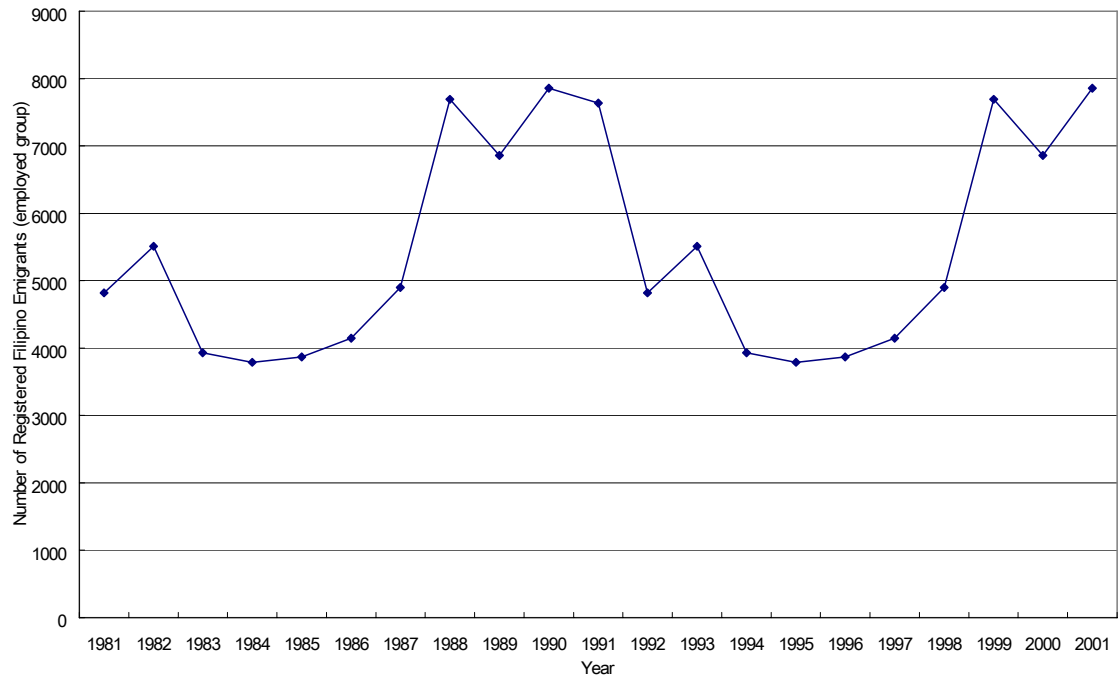


Figure 1  
Openness in the Philippines, 1980-2000



Note: The openness index is defined as the ratio of export value to GDP.  
Data source: Penn World Tables.

Figure 2  
Number of registered Filipino emigrants, 1981-2001<sup>(1)</sup>



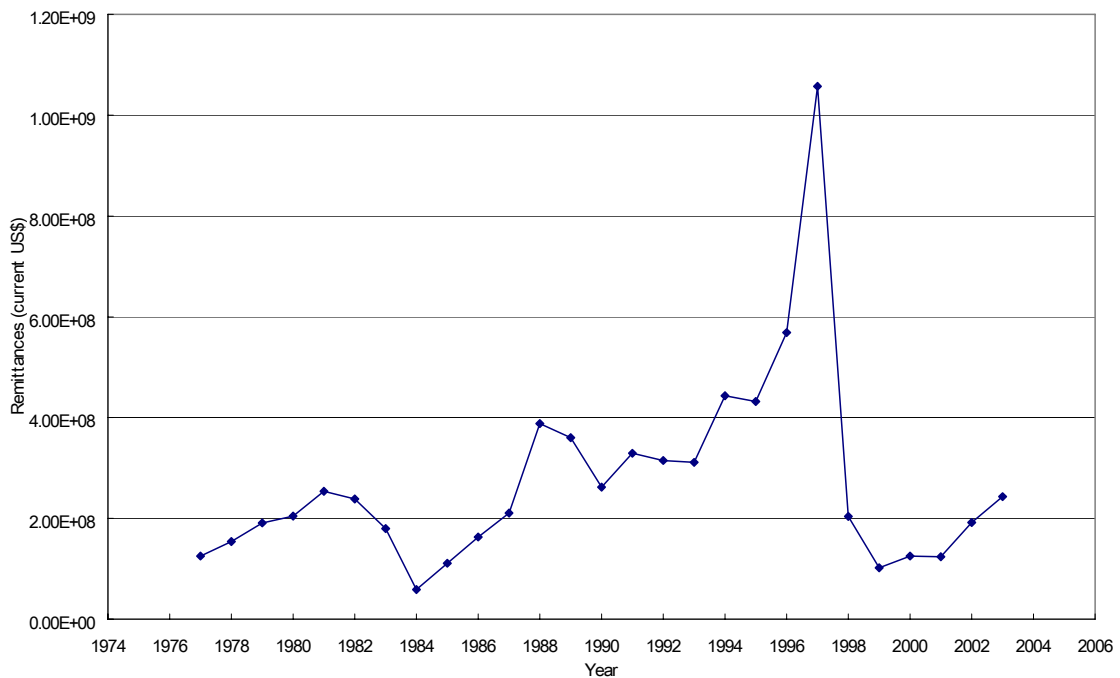
Note: <sup>(1)</sup> Refers to employed professional, technical and related workers only.  
Data source: NSCB (*Statistical Yearbook*, various issues).

which was enacted in 1995, mandating the conversion of the former US bases into SEZs. The Special Economic Zone Act, on the other hand, facilitates the flow of exports overseas from these four regions. The NCR had 24 per cent share of the total value of exports in 2000, Southern Tagalog had 52 per cent, Central Luzon 7 per cent, and Central Visayas 6 per cent. Machines and transport equipment, which are largely labour-intensive products, were the major export of the Philippines, consisting of 22 per cent in 1994 and 37 per cent in 2000 of the total value of exports.

The Philippines is also known as a major supplier of international migrants. Contract workers in Saudi Arabia and permanent emigrants to the US are the major groups of Filipino migrants. Figure 2 presents the number of registered Filipino emigrants in the professional, technical and related categories. It is evident that the number of these workers increased remarkably from the late 1990s. Noteworthy is the fact that overseas workers consist of 51 per cent males and 49 per cent females in 2002. The common country destinations are Saudi Arabia, Japan and Taiwan for males and Hong Kong, Singapore, Japan and Saudi Arabia for females.

Using household-level data, Rodriguez (1998) shows that an expansion in international emigration increases the per capita income growth in the Philippines, even though the amount of remittances (in US dollars) does not necessarily comply with this pattern of labour emigration (Figure 3). This is possibly because the level of remittances sent to the Philippines is explained mainly by the level of income of the host countries and not by the mere number of Filipino workers overseas in the respective host countries.

Figure 3  
Remittances to the Philippines, 1977-2003



Data source: World Bank (*World Development Indicators*, various years).

### 3.1 Impacts of external openness and emigration on poverty reduction: provincial-level estimates

To investigate the role of international trade and emigration in poverty reduction, we apply a reduced-form cross-country regression approach suggested by Besley and Burgess (2003) to the provincial-level data in the Philippines. The Besley and Burgess (2003) model is:

$$\log P_{it} = \eta \log y_{it} + \theta_i + \varepsilon_{it}, \quad (6)$$

where  $P_{it}$  and  $y_{it}$  are the incidence of poverty and average per capita household income, respectively, in the  $i^{\text{th}}$  province at time  $t$ . The second and the last terms on the right-hand side are the provincial fixed effects and a well-behaved error term, respectively. With the estimated elasticity,  $\eta$ , we can compute the annual per capita household income growth rate necessary to achieve target 1 of the MDGs. We extend the Besley and Burgess (2003) model in Equation (6), by adding a variable for external openness,  $OPEN$ , and by decomposing total household income into nontransfer income,  $y^{NT}$ , and transfer income,  $y^T$ , both of which are extracted from the FIES.

$$\log P_{it} = \eta_{1(t)} \log OPEN_{it} + \eta_2 \log y_{it}^{NT} + \eta_3 \log y_{it}^T + \theta_i + \varepsilon_{it}. \quad (7)$$

Since the left-hand side variable is at the provincial level,  $y^{NT}$  and  $y^T$  refer to the average values for each province.  $OPEN$  is defined as the ratio of regional exports to the gross regional domestic products (GRDP) and we allow its coefficient to vary by year by interacting  $OPEN$  with the year dummies. The export data are extracted from the foreign trade statistics, while the GRDP is extracted from various issues of the Philippines Statistical Yearbook.  $OPEN$  is constructed for 14 regions in 1988, 1994 and 2000, with the exclusion of 1985, 1991 and 1997 only. While the sample size reduces to about half when we exclude the three years, Pernia and Quising (2003) argue that significant liberalization measures were introduced in the Philippine economy in 1988, 1994 and 2000, thus, making these years particularly suitable for our analysis. Also, these three years cover the wake of the Asian currency crisis when the national economic growth rate fell back significantly.

We further extend Equation (7) by adding an income inequality variable at the right-hand side measured by the interprovincial standard deviation of household income,  $\sigma_{it}$ . And to examine the effects of the changing degree of globalization, we estimate Equation (7) by allowing  $OPEN$  to vary by year. The revised equation is:

$$\log P_{it} = \eta_{1(t)} \log OPEN_{it} + \eta_2 \log y_{it}^{NT} + \eta_3 \log y_{it}^T + \beta \sigma_{it} + \theta_i + \varepsilon_{it}. \quad (8)$$

Table 2 summarizes the descriptive statistics for the variables used in our estimations, while Table 3 shows the results of Equations (6), (7) and (8). We calculate an elasticity,  $\eta$ , of -0.44 with a standard error of 0.04; the coefficient was statistically significant at the 1 per cent level of significance (Table 3: Specification 1).<sup>5</sup> This implies that it would require a 6.5 per cent annual per capita income growth over 25 years to cut the poverty incidence by one half in the Philippines. Specifications (3) and (4) in Table 3 show that

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<sup>5</sup> The null hypothesis of zero fixed effects is rejected overwhelmingly.

the coefficients on  $y^{NT}$  were negative and statistically significant, suggesting that  $y^{NT}$  had the effect of decreasing poverty, whereas the coefficients of  $y^T$  were not statistically different from zero. These results suggest that, at the provincial level of aggregation, the growth of  $y^{NT}$  was a significantly more important driving force behind poverty reduction. Unexpectedly, the sign of the coefficients of *OPEN* turns out to be positive, pointing to the possibility that trade openness created more poverty (Table 3: Specifications 5 and 6). We thus include the openness index for each year separately to identify on what specific year trade openness led to more poverty. Specification (7) in Table 3 shows that the coefficient of *OPEN* was negative and significant in 1988 and 1994 and positive and significant in 2000. The sharp change in the impact of trade openness on poverty incidence may be a reflection of the Asian currency crises that decreased the living standards in the Philippines through the international transmission of the negative international macroshocks to the Philippine economy. This finding is consistent with those of Datt and Hoogeveen (2003) who find a 5 per cent reduction in the average living standards in the Philippines because of the Asian crises.

Our results are consistent with the hypothesis that inequality tends to increase poverty; the coefficients of the income inequality measure were all positive and highly significant in the specifications (2), (4), (6) and (7) in Table 3. More specifically, the estimated coefficient was 2.96 with a standard error of 0.595 and the variable's standard deviation of 0.102 (Table 3: Specification 6). This means that if we lower the level of

Table 2  
Descriptive statistics for the variables used in the estimations

Variable name		No. of valid observations	Mean	Standard deviation
Province-level data				
Headcount ratio (in log)	lpoor	461	-2.094	1.228
Average income per adult equivalent in log	lpi	468	9.458	0.675
Average nontransfer income per adult scale equivalent in log	lpmeti	468	9.384	0.659
Average transfer income per adult equivalent in log	ltr	466	6.442	1.376
Openness index (regional-level data)	open	223	0.264	0.441
Intraprovince standard deviation of income per adult equivalent scale	di	468	0.721	0.102
Rate of implementation of land reform by province	carp	419	36.271	36.706
Household-level data				
Dummy=1 if a household's income per adult equivalent scale is below 1\$ per day poverty line	wbpoor1	161014	0.149	0.356
Poverty gap (Z-C)/Z if a household income is below poverty line	adwb1	161014	0.036	0.106
Nontransfer income per adult scale equivalent in	netapci	161645	19996.140	49331.78
Transfer income per adult equivalent	aptr	161645	1845.789	10044.16
Openness index (regional-level data)	open	79029	0.329	0.504

inequality by one standard deviation, poverty declines by as much as 30 per cent—i.e.,  $2.96 \times 0.102$ .<sup>6</sup> This simple back-of-the-envelope calculation suggests that a redistribution policy can lead to a considerable reduction of poverty in the Philippines. Indeed, Balisacan and Fuwa (2003) point out that the implementation of the CARP has had an important impact on economic growth and asset and income redistribution in the Philippines.

The absolute magnitude of the elasticity in the Philippines is much smaller compared with that of the Asia and Pacific region and other regions in the world, as reported by Besley and Burgess (2003) (Table 4). Hence, it is reasonable to conclude that economic growth in the Philippines had the lowest impact on poverty reduction in East Asia. The historical per capita real GDP growth rate from 1960 to 1990 was only 1.3% per annum, which means that the Philippines needs to increase its speed of economic growth by about five times in order to achieve target 1 of the MDGs. Since the speed of necessary

Table 3  
The determinants of provincial poverty headcount ratio in the Philippines, 1985-2000  
Results of Equations (6), (7) and (8)

Variable	Specification						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)
Total income <sup>(1)</sup>	-0.440 (0.040)	-0.540 (0.045)					
Nontransfer income <sup>(1)</sup>			-0.475 (0.064)	-0.522 (0.063)	-0.546 (0.132)	-0.608 (0.122)	-0.670 (0.138)
Transfer income <sup>(1)</sup>			0.028 (0.040)	-0.012 (0.040)	0.036 (0.080)	-0.056 (0.076)	-0.050 (0.076)
<i>OPEN</i> <sup>(2)</sup>					0.207 (0.105)	0.215 (0.097)	
<i>OPEN</i> in 1988							-0.387 (0.622)
<i>OPEN</i> in 1994							-0.774 (0.397)
<i>OPEN</i> in 2000							0.212 (0.100)
Std dev of total income		1.730 (0.374)		1.714 (0.383)		2.964 (0.595)	2.779 (0.634)
Constant	2.072 (0.380)	1.762 (0.376)	2.186 (0.431)	1.648 (0.437)	2.740 (0.852)	1.788 (0.809)	2.552 (1.015)
No. of observations	461	461	459	459	220	220	220
No. of provinces	81	81	81	81	81	81	81

Notes: <sup>(1)</sup> In logarithm and adult equivalent using the following weights: members 1-7 years old=0.2; 8-15 years old=0.4; 16-24 years old=0.8; 25 years old and above=1.0.

<sup>(2)</sup> Regional-level openness index defined as the ratio of the value of regional exports to the regional GDP in 1988, 1994 and 2000.

<sup>6</sup> Sawada (2004) shows that the major land reform in postwar Japan decreased standard deviation of income from around 0.9 in 1940 to 0.6 in the late 1950s.

growth necessary to achieve target 1 is higher than the historical average, there is clearly a need to identify policy instruments to enhance economic growth and implement redistribution and institutional reforms that can reduce poverty even in a regime of slow growth. Land reform has been considered an effective redistributive programme that is targeted to benefit the poor and, in addition, we believe that macroeconomic and political stability and revitalized public infrastructure are equally important to enhance private investments and private sector development.

Table 4  
Growth and poverty reduction in different regions, 1990 -2015

	Philippines	World	Asia & the Pacific	Eastern Europe and Central Asia	Latin America	Middle East & North Africa	South Asia	Sub-Saharan & Africa
Elasticity	-0.44	-0.71	-1.00	-1.14	-0.73	-0.72	-0.59	-0.49
Required growth (%) <sup>(1)</sup>	6.51	3.80	2.70	2.40	3.80	3.80	4.70	5.60
Average annual growth in 1960-90 (%)	1.30	1.70	3.30	2.00	1.30	4.30	1.90	0.20

Note: <sup>(1)</sup> Required growth rate to achieve goal 1 and target 1 of the MDGs.

Source: Authors' calculations, Besley and Burgess (2003) and Penn World Tables.

### 3.2 Impacts of external openness and emigrants on poverty reduction: household-level estimates

We investigate the determinants of poverty at the household level using  $P(0)$  and  $P(1)$  of the FGT index and the same regression equations that we apply at the provincial level. The econometric model for  $P(0)$  is:

$$P_{it}^* = \beta_0 + \beta_1 y_{it}^{NT} + \beta_2 y_{it}^T + \varepsilon_{it} \quad (9)$$

$$HC_{it} = 1 \text{ if } P_{it}^* > 0$$

where  $P_{it}^*$  is a continuous latent variable, which indicates the degree of poverty.  $HC$  is a discrete variable, which takes the value of unity, if the household per capita income falls below the poverty threshold, and zero otherwise. We estimate the system of Equation (9) using a probit model under the normality assumptions.

The econometric model for  $P(1)$  is:

$$P_{it}^* = \beta_0 + \beta_1 y_{it}^{NT} + \beta_2 y_{it}^T + \varepsilon_{it}. \quad (10)$$

$$GAP_{it} = P_{it}^* \text{ if } P_{it}^* > 0$$

$$= 0 \text{ otherwise,}$$

where  $GAP$  is defined as  $(Z-C)/Z$ .

Table 5 shows the results of Equations (9) and (10). In all the specifications, the coefficients of  $y^{NT}$  and  $y^T$  were negative suggesting that both types of income decreased the incidence and depth of poverty significantly. The magnitude of the coefficients of  $y^T$  was significantly larger than that of  $y^{NT}$  based on the Wald tests for the quality of coefficients, which means that at the household level,  $y^T$  is significantly more important than  $y^{NT}$  in decreasing poverty. Recall that in the provincial-level of analysis, we find the opposite, i.e.,  $y^{NT}$  was significantly more important than  $y^T$  in reducing the provincial headcount index. We believe that these contrasting results are simply an artifact of the aggregate data, which are provincial averages, that do not capture the individual household effects of  $y^T$  in reducing poverty.

Our finding that  $y^T$  was more important than  $y^{NT}$  is consistent with the finding by Cox and Jimenez (1995), who find that the income shortfall of the poor induces large increase in private transfers from the rich to the poor, which leads to a decline in poverty and an improved distribution of household income. Figure 3 also shows a marked increase in remittances in 1997 during *El Niño*, giving further support to Cox and Jimenez (1995). Private transfers in the Philippines commonly circulate among altruistically linked extended families.

Table 5  
The determinants of the probability of being poor and poverty gap ratio of poor households  
in the Philippines, 1985-2000  
(Results of Equations (9), (10) and (11))

Dependent variable	Probability of being poor			Poverty gap ratio (for poor households only)			
	Specification	(1)	(2)	(3)	(4)	(5)	(6)
Independent variable		Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)
Nontransfer income in adult equivalent scale (in 1,000 Php)		-0.184 (0.000142)	-0.188 (0.000204)	-0.228 (0.000238)	-0.060 (0.000473)	-0.059 (0.000646)	-0.067 (0.000697)
Transfer income in adult equivalent scale (in 1,000 Php)		-0.230 (0.000635)	-0.218 (0.00083)	-0.228 (0.000840)	-0.074 (0.000196)	-0.067 (0.00245)	-0.065 (0.00233)
OPEN in 1988, 1994 and 2000			0.512 (0.017)	-0.906 (0.08)		0.157 (0.00475)	-0.230 (0.021)
Additional coefficient of OPEN in 1988				-2.530 (0.104)			-0.723 (0.027)
Additional coefficient of OPEN in 2000				1.520 (0.080)			0.404 (0.021)
Constant		0.562 (0.010)	0.579 (0.015)	0.579 (0.015)	0.197 (0.0028)	0.196 (0.0040)	0.333 (0.0047)
Wald test statistics [p-value] on the equality of nontransfer income and transfer income coefficients		51.42 [0.0000]	12.60 [0.0004]	0.11 [0.736]	49.76 [0.0000]	10.54 [0.0012]	0.84 [0.359]
No. of observations		161,014	161,014	78,714	161,014	161,014	78,714

To examine the direct impacts of trade openness on household-level poverty, we include *OPEN* in Equation (10) so that our latent equation for poverty becomes:

$$P_{it}^* = \beta_0 + \alpha_t OPEN_{it} + \beta_1 y_{it}^{NT} + \beta_2 y_{it}^T + \varepsilon_{it}. \quad (11)$$

The coefficients of the openness index were positive and statistically significant, supporting the provincial-level evidence of a significant and positive relationship between trade openness and degree of poverty (Table 5). Year-specific slope dummies for the openness index showed a negative and significant coefficient in 1988 and 1994 but a positive and significant coefficient in 2000, once again supporting our provincial-level results and suggesting that trade openness reduced poverty significantly before the Asian crises while its impacts had been reversed after the crises. The massive depreciation of the local currency caused large changes in relative prices that reduced the real income of the poor (World Bank 2000). Accordingly, trade openness generated a negative impact on the welfare of the poor during the crisis. In fact, more than 90 per cent of families reported being adversely affected by higher prices of food and other commodities (World Bank 2000: 114).

We augment the Tobit model of Equation (11) by adding observations on the poverty gap variable of the nonpoor households along with the poor households. The resulting estimation model is the so-called treatment effect model or the model with endogenous dummy variable (Greene 2003: 787-9):

$$GAP_{it} = \beta_0 + \alpha OPEN_{it} + \beta_1 y_{it}^{NT} + \beta_2 y_{it}^T + \delta HC_{it} + \varepsilon_{it}. \quad (12)$$

$$POV_{it}^* = Z_{it}\gamma + v_{it}$$

$$HC_{it} = \begin{cases} 1 & \text{if } POV_{it}^* > 0 \\ 0 & \text{if } POV_{it}^* < 0, \end{cases}$$

where *POV* represents the latent continuous variable of being in poverty. We estimate the system of Equation (12) by assuming that  $\varepsilon$  and  $v$  follow a bivariate normal distribution. We employ the Heckman two-step procedure to estimate the model with corrected standard errors. The first stage is a probit model of the probability of being poor while the second stage is the regression of the determinants of poverty gap ratio. The poverty gap ratio of the poor households was positive while it was negative for the nonpoor households. Accordingly, we include the sample selection correction term in the second stage so that our second-stage equation becomes:

$$GAP_{it} = \beta_0 + \alpha OPEN_{it} + \beta_1 y_{it}^{NT} + \beta_2 y_{it}^T + \delta HC_{it} + \delta_{it} \alpha_1 \frac{\phi(Z_{it}\hat{\gamma})}{\Phi(Z_{it}\hat{\gamma})} - (1 - \delta_{it}) \alpha_1 \frac{\phi(Z_{it}\hat{\gamma})}{1 - \Phi(Z_{it}\hat{\gamma})} + u_{it}, \quad (13)$$

where  $\phi(\bullet)$  and  $\Phi(\bullet)$  are the density and cumulative density functions of a standard normal distribution, respectively. Table 6 shows that in the pooled sample, consisting of both the poor and nonpoor households, the effect of  $y^T$  became larger than that of  $y^{NT}$ , which suggests that transfer income is an especially important instrument in reducing the poverty of poor and nonpoor households alike. The coefficients on the sample-



selection correction terms were significantly different from zero, indicating that the exclusion of the nonpoor households in the regression of the determinants of poverty gap ratio leads to a significant sample selection bias.

Table 6  
The determinants of poverty gap ratio of poor and nonpoor households in the Philippines, 1988-2000  
(Results of the Heckman two-stage procedure in Equation (13) with provincial fixed effects)

Dependent variable Specification	Probability of being poor (1st stage)	Poverty gap ratio (poor & nonpoor households) (2nd stage)
	(1)	(2)
Independent variable	Coef. (Std err.)	Coef. (Std err.)
Nontransfer income in adult equivalent scale (in 1,000 Php)	-0.188 (0.0020)***	-0.0832 (0.00021)***
Transfer income in adult equivalent scale (in 1,000 Php)	-0.218 (0.0083)***	-0.0714 (0.00098)***
<i>OPEN</i> in 1988, 1994 and 2000 <sup>(1)</sup>	0.512 (0.017)***	0.372 (0.021)***
Headcount ratio (in log)		1.353 (0.056)***
Constant	0.579 (0.0150)***	-0.498 (0.017)***
$\alpha_1[\sigma(\varepsilon) \times \text{corr}(\varepsilon, \nu)]$		-0.262 (0.038)***
No. of observations		78,714

Note: <sup>(1)</sup> Regional-level openness index.

#### 4 The determinants of transfer income from abroad

Overseas migration is a direct way by which households can participate in globalization. Overseas migration tends to reduce poverty through transfer income from overseas, even though transfer income from abroad causes an increase in household income inequality (Estudillo, Quisumbing and Otsuka 2001). In the Philippines, about 5 per cent of the total household income comes from overseas transfers and about 4 per cent from domestic transfers.<sup>7</sup> Since overseas job placements require a significant amount of money for job placement fees and pocket money, credit availability is a key deciding factor for a household to invest in overseas emigration. Credit availability increases with land ownership and access to usufruct rights so that the implementation of the land reform programme may affect the household decision to invest in international emigration and, henceforth, the amount of transfer income received by the households.

<sup>7</sup> Overseas remittances are used to finance overseas placement fee and educational expenditures of younger siblings, build a house, purchase assets such as land, finance agricultural expenditures on current inputs such as fertilizer and pesticides, and invest in new agricultural equipment such as water pumps and threshers (Estudillo, Sawada and Otsuka 2005).

The land reform programme in the Philippines was promulgated under Presidential Decree (PD) 27 during the Marcos administration. PD 27 applies to rice and corn farms only. The programme converts share tenancy to leasehold tenancy, if the landlord owns less than 7 hectares of land or to the certificate of land transfer (CLT) if the landlord owns more than 7 hectares of land. CLT holders receive an emancipation patent (EP) upon completion of amortization payments paid to the Land Bank of the Philippines. The CARP under the Aquino administration continued to implement the programmes under PD 27 and, in addition, transferred the ownership rights of public and alienable lands to cultivating tenants, increased the scope to include plantation crops in addition to rice and corn and decreased the maximum allowable landholdings from 7 ha under the PD 27 to 3 ha.

Since the implementation of the land reform programme coincided with the green revolution, which had a significant impact on land productivity, the pawning values of land ownership and usufruct rights escalated, thus making land pawning revenues an important source of funds for international emigration. According to Otsuka (1991), the land reform programme has been implemented successfully in favourable rice-growing areas in the Philippines. Indeed, the areas that are characterized by favourable production environments and have undergone a successful land reform programme are those with a higher rate of international emigration. Given the increase in de facto land ownership in the Philippines and increased access to usufruct rights of land through the conversion of share tenancy to leasehold tenancy and CLT rights, land pawning became a dominant form of obtaining loans in the Philippines (Nagarajan, David and Meyer 1992).

Owned lands are commonly used as collateral to formal credit sources such as banks and cooperatives. Usufruct rights on land such as leasehold rights and CLT rights are pawned out to well-trusted informal credit sources such friends, relatives, fertilizer dealers and village money lenders because pawning-out of usufruct rights is deemed illegal by the land reform laws. Pawning revenues, on the other hand, are used to finance overseas job placement fees, secondary and tertiary education of children, and sickness and death of family members, and to start a nonfarm business endeavour such as the operation of a village transport and variety store (Estudillo, Sawada and Otsuka 2005).

In any case, a progress in land reform is likely to induce international emigration and increase transfer income from abroad. In order to investigate this linkage, we regress transfer income from abroad at the provincial and household level on the proportion of land under the land reform programme for each province. The estimation model is:

$$y_{it}^T = \alpha_0 + \alpha_{(t)} CARP_{it} + \theta_i + \varepsilon_{it}, \quad (12)$$

where  $CARP$  is provincial-level proportion of land area under the implementation of the comprehensive agrarian reform programme and  $\theta_i$  is provincial fixed effects.

It is clear from Table 7 that the coefficient of  $CARP$  was positive and statistically significant at both the provincial and household levels, supporting our argument on the existence of the land reform-credit-emigration-transfer nexus. We also relax the constant coefficients on the implementation rate of land reform (Table 7: Specifications 2 and 4). Interestingly, the net impact of the land reform coefficient was negative and

Table 7  
The determinants of transfer income, the Philippines, 1985-2000  
(Results of Equation (13) with provincial fixed effects)

Specification	(1)	(2)	(3)	(4)
	Data at the:			
Independent variable	Province level	Province level	Household level	Household level
	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)	Coef. (Std err.)
% area in the province covered by land reform	0.018 (0.001)	-0.053 (0.029)	22.234 (0.792)	-113.062 (19.819)
Additional coefficient of land reform for:				
1988		0.040 (0.030)		77.130 (20.197)
1991		0.074 (0.028)		118.255 (19.128)
1994		0.067 (0.029)		120.365 (19.436)
1997		0.070 (0.029)		126.615 (19.532)
2000		0.071 (0.029)		135.514 (19.565)
Constant	5.719 (0.053)	5.796 (0.067)	639.293 (40.965)	976.863 (54.934)
No. of observations	408	408	133,168	133,168
No. of provinces	69	69	69	69

Table 8  
Share of transfer income in total household income in the Philippines,  
by income decile, 2000

	I Poorest	II	III	IV	V	VI	VII	VIII	IX	X Richest
Share (%)	0.62	1.04	1.77	2.59	3.46	5.29	6.72	9.18	11.85	13.70
Standard deviation	4.73	5.97	8.17	10.00	11.82	15.43	17.11	20.51	23.18	25.04

statistically significant in 1985 and 1988, but the coefficient sharply increased after 1991. This implies that the effect of land reform was not positive in inducing transfer income from abroad in the 1980s, but the inducement effect had been enhanced significantly in the 1990s possibly because pawning revenues had become an important source of funds to finance overseas migration.

While we believe that the implementation of land reform induced the rise in transfer income from abroad, we need to examine whether the implementation of land reform improved the poverty situation of the ultra poor. The ultra poor are commonly landless households that were not identified as beneficiaries of the land reform, thus we can expect that such households were not able to invest in international emigration. Indeed,

we find that the transfer income of the poorest of the poor, who belonged to the lowest income decile, was less than 1 per cent of the total income, whereas the transfer income of the highest income decile was about 14 per cent of the total income in 2000 (Table 8). This implies that the ultra poor were excluded from land reform-credit-emigration-transfer nexus.

## **5 Concluding remarks**

The aim of this paper was to assess how the two types of globalization—i.e., integration of international trade and emigration—affected poverty reduction in the Philippines using provincial panel data and repeated cross-sectional household data from 1985 to 2000. We have three important findings. First, both nontransfer and transfer incomes decreased poverty. At the provincial level of aggregation, the growth of nontransfer income was the more important driving force behind poverty reduction, while at household level, transfer income was more important. This implies that transfer income exerted a wide variation of household-specific effects in reducing poverty.

Second, external openness reduced poverty significantly in 1988 and 1994, whereas its impact has been reversed in 2000. This sharp change may be a reflection of the Asian currency crisis, which decreased living standards through an international transmission of negative macro-shock to the Philippine economy. Third, and finally, progress in land reform implementation was likely to induce international emigration and increase transfer income from abroad. The effects of land reform in inducing transfers from abroad were not positive in 1980s but the inducement effect had been enhanced significantly in the 1990s perhaps because land pawning arrangements became popular in the 1990s. Pawning revenues were commonly used to pay job placement fees to ensure employment overseas. Unfortunately, we find that the ultra poor were left out in the land reform-credit-emigration-transfer nexus.

We believe that it is particularly important in future works to look closely at the households to identify other important transmission mechanisms by which emigration affected poverty reduction. For households that have benefited from previous emigration, we hypothesize that such emigration fosters further investments in secondary and tertiary schooling of the younger generation, given that returns to higher levels of schooling are bound to be higher in overseas work (Estudillo and Otsuka 1999). But the ultra poor never ventured in international emigration because they cannot afford to do so. An important question is how the benefits of emigration are transmitted to the ultra poor through interfamilial and intracommunity sharing mechanisms.

## Appendix

Appendix Table  
Provincial poverty incidence at the individual level, 1985-2000 <sup>(1)</sup>  
(US\$1.08 per capita per day poverty line)

Region	Province	1985	1988	1991	1994	1997	2000
Philippines	Philippines	0.235	0.249	0.246	0.175	0.166	0.181
NCR	Metro Manila	0.035	0.133	0.021	0.003	0.021	0.033
Ilocos							
	Ilocos Norte	0.133	0.181	0.265	0.159	0.111	0.073
	Ilocos Sur	0.346	0.303	0.246	0.211	0.111	0.152
	La Union	0.167	0.222	0.231	0.229	0.246	0.194
	Pangasinan	0.355	0.322	0.346	0.228	0.256	0.251
Cagayan							
	Batanes	0.367	0.359	0.179	0.244	0.050	0.030
	Cagayan	0.459	0.575	0.479	0.373	0.317	0.360
	Isabela	0.386	0.398	0.420	0.336	0.386	0.342
	Nueva Vizcaya	0.382	0.361	0.361	0.161	0.180	0.211
	Quirino	0.334	0.671	0.670	0.692	0.445	0.448
Central Luzon							
	Bataan	0.063	0.350	0.155	0.149	0.036	0.022
	Bulacan	0.028	0.008	0.027	0.030	0.015	0.013
	Nueva Ecija	0.187	0.137	0.162	0.101	0.106	0.075
	Pampanga	0.093	0.146	0.117	0.063	0.019	0.047
	Tarlac	0.460	0.548	0.481	0.417	0.329	0.446
	Zambales	0.208	0.336	0.338	0.371	0.246	0.382
Southern Tagalog							
	Aurora	0.103	0.071	0.171	0.056	0.034	0.112
	Batangas	0.133	0.136	0.087	0.046	0.029	0.022
	Cavite	0.000	0.003	0.030	0.007	0.005	0.008
	Laguna	0.022	0.031	0.020	0.009	0.008	0.014
	Occidental Mindoro	0.088	0.294	0.348	0.160	0.373	0.416
	Oriental Mindoro	0.543	0.753	0.622	0.422	0.365	0.447
	Palawan	0.505	0.408	0.513	0.396	0.251	0.199
	Quezon	0.186	0.254	0.148	0.087	0.134	0.174
	Rizal	0.074	na	0.035	0.006	0.003	0.018
	Romblon	0.535	0.826	0.730	0.650	0.556	0.671
Bicol							
	Albay	0.381	0.484	0.491	0.256	0.354	0.306
	Camarines Norte	0.348	0.219	0.392	0.250	0.299	0.362
	Camarines Sur	0.330	0.364	0.433	0.332	0.255	0.353
	Catanduanes	0.439	0.451	0.264	0.205	0.204	0.310
	Masbate	0.555	0.622	0.667	0.685	0.630	0.647
	Sorsogon	0.590	0.677	0.576	0.342	0.379	0.378
	Albay	0.381	0.484	0.491	0.256	0.354	0.306
Western Visayas							
	Aklan	0.326	0.364	0.410	0.333	0.284	0.344
	Antique	0.690	0.581	0.652	0.537	0.375	0.377
	Capiz	0.564	0.632	0.673	0.532	0.332	0.484
	Guimaras	na	na	na	na	0.067	0.057
	Iloilo	0.208	0.215	0.244	0.107	0.092	0.085
	Negros Occidental	0.403	0.284	0.208	0.166	0.155	0.244

Table continues

Appendix Table (con't)  
Provincial poverty incidence at the individual level, 1985-2000

Region	Province	1985	1988	1991	1994	1997	2000
Central Visayas							
	Bohol	0.476	0.522	0.565	0.488	0.333	0.393
	Cebu	0.325	0.228	0.264	0.152	0.140	0.152
	Negros Oriental	0.408	0.472	0.381	0.311	0.424	0.405
	Siquijor	0.506	0.629	0.516	0.107	0.541	0.427
Eastern Visayas							
	Eastern Samar	0.566	0.346	0.499	0.375	0.650	0.587
	Leyte	0.435	0.431	0.429	0.292	0.338	0.346
	Northern Samar	0.634	0.697	0.392	0.428	0.544	0.491
	Southern Leyte	0.437	0.358	0.476	0.318	0.359	0.313
	Western Samar	0.265	0.326	0.201	0.207	0.291	0.203
Western Mindanao							
	Basilan	0.244	0.228	0.244	0.072	0.007	0.098
	Zamboanga del Norte	0.279	0.327	0.434	0.244	0.111	0.310
	Zamboanga del Sur	0.244	0.223	0.200	0.168	0.115	0.211
Northern Mindanao							
	Bukidnon	0.214	0.193	0.369	0.347	0.229	0.270
	Camiguin	0.664	0.452	0.548	0.636	0.265	0.289
	Misamis Occidental	0.304	0.147	0.291	0.098	0.128	0.152
	Misamis Oriental	0.192	0.127	0.121	0.072	0.060	0.059
Southern Mindanao							
	Davao	0.000	0.026	0.012	0.015	0.015	0.021
	Davao del Sur	0.042	0.093	0.066	0.029	0.009	0.013
	Davao Oriental	0.245	0.254	0.297	0.145	0.299	0.191
	Sarangani	na	na	na	na	0.157	0.221
	Southern Cotabato	0.096	0.140	0.153	0.044	0.107	0.053
Central Mindanao							
	Cotabato	0.187	0.189	0.247	0.223	0.241	0.143
	Lanao del Norte	0.059	0.081	0.130	0.102	0.113	0.174
	Sultan Kudarat	0.039	0.038	0.085	0.061	0.017	0.051
Cordillera Autonomous Region							
	Abra	0.192	0.269	0.438	0.240	0.159	0.117
	Apayao	na	na	na	na	0.401	0.478
	Benguet	0.059	0.015	0.037	0.000	0.031	0.012
	Ifugao	0.623	0.673	0.831	0.681	0.657	0.697
	Kalinga	0.250	0.388	0.613	0.435	0.450	0.516
	Mt. Province	0.376	0.606	0.391	0.503	0.617	0.509
Autonomous Region of Muslim Mindanao							
	Lanao del Sur	0.022	0.039	0.191	0.080	0.199	0.087
	Maguindanao	0.065	0.175	0.270	0.108	0.158	0.273
	Sulu	0.000	0.058	0.245	0.147	0.088	0.093
	Tawi-Tawi	0.055	0.136	0.000	0.055	0.074	0.177
CARAGA							
	Agusan del Norte	0.205	0.081	0.268	0.249	0.220	0.212
	Agusan del Sur	0.502	0.460	0.589	0.462	0.408	0.381
	Surigao del Norte	0.102	0.140	0.090	0.076	0.084	0.056
	Surigao del Sur	0.395	0.329	0.409	0.289	0.349	0.244

Notes: <sup>(1)</sup> Based on the unadjusted per capita expenditure.  
na = not available.

## References

- Adams, R., and J. Page (2003). 'International Migration, Remittances, and Poverty in Developing Countries'. WB Policy Research Working Paper No. 3179. Washington, DC: World Bank
- Balisacan, A. M. (2003). 'Poverty and Inequality', in A. Balisacan and H. Hill (eds), *The Philippine Economy: Development, Policies, and Challenges*. Manila: Ateneo de Manila University Press.
- Balisacan, A. M., and N. Fuwa (2003). 'Growth, Inequality and Politics Revisited: A Developing-country Case'. *Economics Letters*, 79 (1): 53-8.
- Baulch, B. (1997). 'Transfer Costs, Spatial Arbitrage, and Testing for Food Market Integration'. *American Journal of Agricultural Economics*, 79 (2): 477-87.
- Beine, M., F. Docquier, and H. Rapoport (2001). 'Brain Drain and Economic Growth: Theory and Evidence'. *Journal of Development Economics*, 64 (1): 275-89.
- Besley, T., and R. Burgess (2003). 'Halving Global Poverty'. *Journal of Economic Perspectives*, 17 (3): 3-22.
- Borensztein, E., J. de Gregorio, and J. W. Lee (1998). 'How Does Foreign Direct Investment Affect Economic Growth?'. *Journal of International Economics*, 45 (1): 115-35.
- Chen, S., and M. Ravallion (2004). 'How Have The World's Poorest Fared Since the Early 1980s?'. *World Bank Research Observer*, 19 (2): 141-69.
- Cox, D., and E. Jimenez (1995). 'Private Transfers and the Effectiveness of Public Income Redistribution in the Philippines', in D. van de Walle and K. Nead (eds), *Public Spending and the Poor: Theory and Evidence*. New York: The Johns Hopkins Press.
- Datt, G., and H. Hoogeveen (2003). 'El Niño or El Peso? Crisis, Poverty and Income Distribution in the Philippines'. *World Development*, 31 (7): 1103-24.
- Dollar, D., and A. Kraay (2004). 'Trade, Growth and Poverty'. *Economic Journal*, 114: F22-49.
- Dollar, D., and A. Kraay (2002). 'Growth is Good for the Poor'. *Journal of Economic Growth*, 7 (3): 195-225.
- Estudillo, J. P., and K. Otsuka (1999). 'Green Revolution, Human Capital and Off-farm Employment: Changing Sources of Income Among Farm Households in Central Luzon, 1966-94'. *Economic Development and Cultural Change*, 47 (3): 497-523.
- Estudillo, J. P., A. R. Quisumbing, and K. Otsuka (2001). 'Income Distribution in Rice-growing Villages During the Post-Green Revolution Periods: The Philippine Case, 1985 and 1998'. *Agricultural Economics*, 25 (1): 71-84.
- Estudillo, J. P., Y. Sawada, and M. Hossain (2005). 'Socioeconomic Changes and the Decline in Poverty: A View from Three Villages in the Philippines, 1985-97'. *Asian Economic Journal*, 19 (4).
- Estudillo, J. P., Y. Sawada, and K. Otsuka (2005). 'Land Pawning and Overseas Workers in the Philippines' (in progress).

- Foster, J., J. Greer, and E. Thorbecke (1984). 'A Class of Decomposable Poverty Measures'. *Econometrica*, 52 (3): 761-65.
- Greene, W. H. (2003). *Econometric Analysis*, 5th edition. Upper Saddle Rive: Prentice Hall.
- Harrison, A. (1996). 'Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries'. *Journal of International Economics*, 48 (2): 419-47.
- Krueger, A. O., and A. Berg (2002). 'Trade, Growth and Poverty: A Selective Survey'. Paper presented at the World Bank's Annual Conference on Development Economics, 29-30 April, Washington, DC.
- Nagarajan, G., C. C. David, and R. Meyer (1992). 'Informal Finance through Land Pawning Contracts: Evidence from the Philippines'. *Journal of Development Studies*, 29 (1): 93-107.
- Nissanke, M., and E. Thorbecke (2005). 'Channels and Policy Debate in the Globalization-Inequality-Poverty Nexus'. WIDER Discussion Paper No. 2005/08. Helsinki: UNU-WIDER.
- National Statistical Coordination Board (NSCB) (various years). *Philippine Statistical Yearbook*. Makati City: NSCB.
- Otsuka, K. (1991). 'Determinants and Consequences of Land Reform Implementation in the Philippines'. *Journal of Development Economics*, 35 (2): 339-55.
- Penn World Tables. Available at: [www://pwt.econ.upenn.edu/php\\_site/pwt\\_index.php](http://pwt.econ.upenn.edu/php_site/pwt_index.php)
- Pernia, E. M., and P. F. Quising (2003). 'Trade Openness and Regional Development in a Developing Country'. *Annals of Regional Science*, 37 (3): 391-406.
- Ravallion, M. (2001). 'Growth, Inequality, and Poverty: Looking Beyond Averages'. *World Development*, 29 (11): 1815-2001.
- Rodriguez, E. R. (1998). 'International Migration and Income Distribution in the Philippines'. *Economic Development and Cultural Change*, 46 (2): 329-50.
- Sawada, Y. (2004). 'The MDGs and Applied Econometrics'. Paper presented at the Japanese Economic Association Annual Meeting, Meiji Gakuin University, 13 June.
- World Bank (1991). *World Development Report 2001*. Washington, DC: World Bank.
- World Bank (2000). *East Asia: Recovery and Beyond*. Washington, DC: World Bank.
- World Bank (various years). *World Development Indicators*. Washington, DC: World Bank.
- World Bank (2001). *Philippines Poverty Assessment*, volumes I & II. Washington, DC: World Bank.
- World Bank (2002). *Globalization, Growth, and Poverty: Building an Inclusive World Economy*. New York: Oxford University Press.
- World Bank (2005). *PovcalNet* Available at: [www://iresearch.worldbank.org/PovcalNet/jsp/index.jsp](http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp). Accessed 20 August.