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## The case of the missing remittances in the FIES: Could it be causing us to mismeasure welfare changes?

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**The Case of the Missing Remittances in the FIES:  
*Could it be causing us to mismeasure welfare changes?***

by

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# The Case of the Missing Remittances in the FIES: *Could it be causing us to mismeasure welfare changes?*

Geoffrey Ducanes<sup>1</sup>

## Abstract

This paper highlights the increasing underreporting of remittances by the FIES compared to BSP and World Bank figures, advances possible reasons why such underreporting is occurring, and examines its implications for welfare measurement in the country at points in time and across time. Using simulation exercises, the paper finds that indeed the ‘missing remittances’ in the FIES could be causing the mismeasurement of poverty and inequality since 1997, possibly clouding the direction of welfare change.

## 1. Introduction

In the past decade, the Philippines has experienced what can be termed a growth-welfare conundrum – a situation where, on the one hand, the overall economy as measured by real per capita national income<sup>2</sup> from the national income accounts (NIA) has grown consistently, while on the other, the average individual standard-of-living as measured by per capita income or expenditure according to the Family Income Expenditures Survey (FIES) has declined consistently (see Figure 1) with poverty levels practically unchanged or even increasing.<sup>3</sup> This has led observers to voice strong concerns about the quality of the data coming out of the country’s statistical system and also about the distribution of the gains from the country’s economic growth.

Medalla and Jandoc (2008) suggest that economic growth from 1998 onwards as reported in the NIA is likely overestimated, after examining the internal consistency of the trends of the components of GDP and after comparing them with other data sources, including the FIES. Balisacan (2008) and Monsod (2010) also note the possibility of problems with the data but suggest that the trend probably indicates that growth has been by-passing those in the lower income brackets. Despite per capita GDP growth of 2.1 percent from 1997 to 2006, for instance, population poverty incidence is estimated to have increased by 1.7 percentage points during the period

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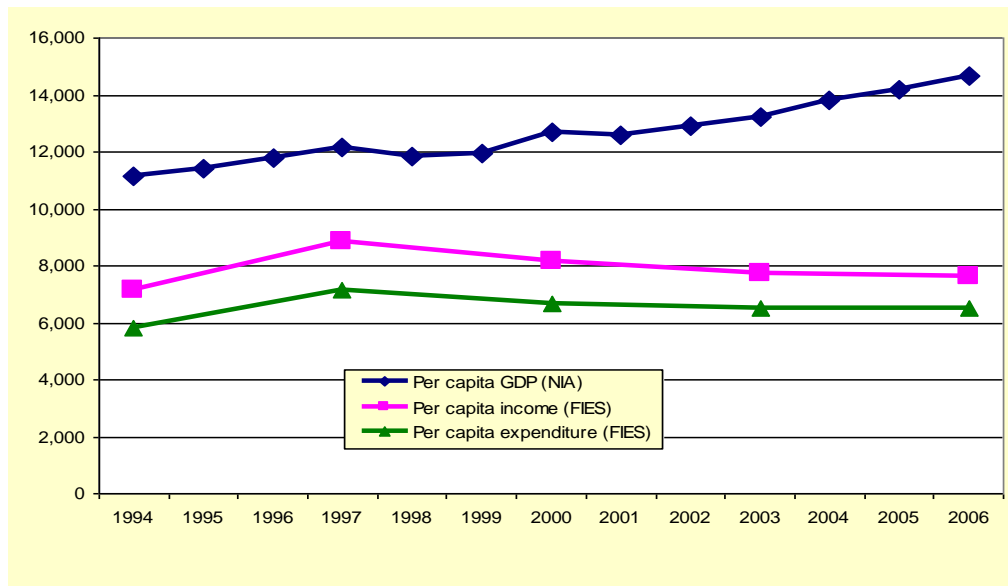
<sup>1</sup> PhD Candidate, UP School of Economics. The author wishes to thank Dean Emmanuel de Dios of UPSE for helpful comments on an earlier draft, and for first pointing out to him the discrepancies in remittances figures that is the subject of this paper. All errors are the author’s own.

<sup>2</sup> The conundrum exists whether one uses per capita GDP or per capita GNP.

<sup>3</sup> Since per capita GDP and per capita household income do not measure exactly the same thing, divergence between the two is not impossible, although unlikely to be very wide and sustained over a long period as has been observed.

using a poverty computation methodology that is consistent over time (Monsod 2010). Balisacan and Monsod also note, however, that if it were true that the growth in income has been accruing to those already well-off, it should have been the case that inequality is also on the rise. But in fact the Gini ratio of per capita income<sup>4</sup> has declined by more than 2 percentage points from its 1997 and 2000 levels (see Figure 2).

Figure 1. Real per capita income from the NIA and the FIES (1985 prices)



**Source of basic data:** NSCB website and the Family Income and Expenditure Survey.  
**Note:** For consistency, per capita income and expenditure from the FIES were deflated using GDP deflators.

Here we posit another explanation for the divergence between NIA and FIES income growth, which is that the FIES from 1997 onwards has increasingly underestimated remittances from abroad, and thus total household income, even as the former has become a progressively larger part of the latter. Note that this explanation is not necessarily inconsistent with the NIA itself being flawed or with the gains of economic growth being inequitably distributed. By 2006, less than half of total remittances was reflected in the FIES. The amount not captured is equivalent to Php 438 billion, which would have accounted for 12.7 percent of total household income, 7.3 percent of GDP, and more than three times the amount needed to raise all the poor out of poverty according to the official poverty lines.<sup>5</sup>

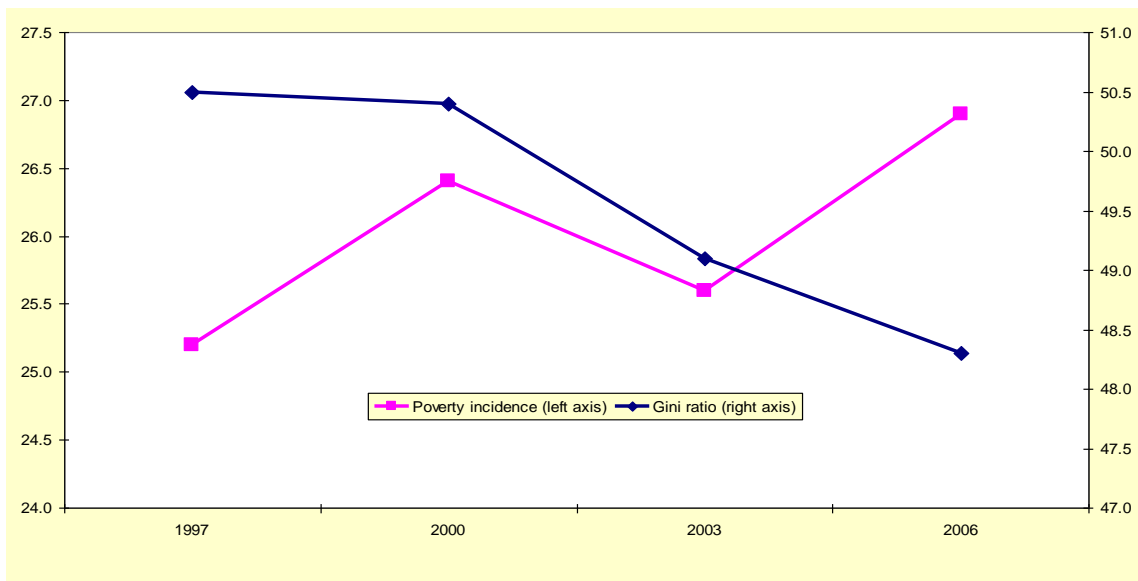
<sup>4</sup> This pertains to the population as opposed to households. Households in the lower per capita income brackets tend to have larger family sizes.

<sup>5</sup> Monsod (2010) estimated the income gap, or the amount needed to raise all the poor out of poverty at Php 120 billion in 2006 according to the official poverty lines and Php 73.3 billion according to the Cost-of-Basic Needs/Fixed-Level-of-Living poverty lines.

The size of the missing remittances in the FIES since 1997 is substantial and could be affecting our measures of household welfare at any point in time. But perhaps more importantly, because the size of the underestimation has been growing over time, even existing estimates of welfare changes since 1997 might not be robust.

The rest of the paper proceeds as follows. The next section discusses remittances data – its various sources and the increasing divergence between different estimates of remittances. The third section advances possible reasons why the FIES has become less and less effective in estimating total remittances. The fourth section examines the implications of the underestimation of remittances on the levels and trends of poverty and inequality under different assumptions as to the distribution of the missing remittances. A final section summarizes and concludes.

Figure 2. Poverty Incidence and Per capita income Gini Ratio



**Source of basic data:** Family Income and Expenditure Survey various years.

**Note:** Both poverty incidence and the gini ratio pertain to the individual population (as opposed to the household population).

## 2. Remittances Data

The three main sources of total remittances data for the country are the Bangko Sentral ng Pilipinas (BSP), the World Bank, and the National Statistics Office through the Family Income and Expenditure Survey.

The BSP keeps a monthly record of the total cash remittances coming into the country through formal financial channels, such as commercial and thrift banks, foreign exchange corporations, and offshore banking units. More recently, it has also been reporting total cash remittances, which include estimated remittances coursed through informal channels. BSP estimates for total remittances are available beginning 2001.

The World Bank generates its own estimates of total annual remittances<sup>6</sup> using the balance of payments statistics of the International Monetary Fund. It has remittances estimates for 210 countries from as early as 1970. In the case of the Philippines, remittances data begin in 1977.

The BSP figures on cash remittances coursed through formal channels are consistently lower than the World Bank estimates of total remittances. The only exception is 1998 but this could be due to the substantial movement of exchange rates during the year. Its estimates of total remittances have hovered at about 90 percent of the World Bank's estimates since 2002.

The triennial FIES is another source of total remittances. In its questionnaire, the FIES asks: *Did you or any member of your family receive in cash any receipt, gift, or other assistance from abroad?* If the respondent answers this question in the affirmative, he/she is then asked to report how much of the following items the family received:

- a. Cash received from family members who are contract workers
- b. Cash received from family members who are working abroad
- c. Pensions, retirement, workmen's compensation, and other benefits
- d. Cash gifts, support, relief, etc. from abroad
- e. Dividends from investment abroad

Note that **c** and **e**, or pensions, retirement benefits and dividends from investments abroad do not fit the typical notion of what should be counted as remittances, but these are nevertheless almost always included when using the FIES to analyze remittances and its impact. The primary reason studies include items **c** and **e** in remittances is that the NSO in its public use files provides the sum of **a** to **e** but not its individual components. A special tabulation will have to be requested from the NSO to get the individual components. In this paper, we also use the sum of the five items, being mindful that it is conceptually larger than what is typically meant by remittances; indeed it does not affect and in fact strengthens the point made that the FIES is substantially underestimating total remittances.

Both the BSP and the World Bank figures on remittances are believed to be more accurate than the FIES estimates. The FIES is, of course, subject to sampling error and is not specifically designed to generate an accurate measure of remittances. The BSP figures on formal remittances are based on reported transactions by banks and other financial institutions under its supervision and should be more accurate. But for years previous to 2001, BSP has no estimate of remittances that did not pass through the formal system. The World Bank figures are ultimately based on BSP figures but adjusted to international measurement standards, including the addition of informal remittances. In this paper we take the World Bank remittances figures as the

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<sup>6</sup> More precisely *workers' remittances, compensation of employees and migrant transfers*. Compensation of employees refers to the salaries of overseas workers with less than one year contract, which is presumed to be brought home after the end of the contract.

benchmark against which the FIES falls short, first because it is more comparable, as the FIES is also supposed to capture informal remittances, and second because we analyze FIES data prior to 2001.

### *2.1 Disparity in remittances figures*

From 1985 to 1991, the FIES remittances figures far exceeded those from the BSP and the World Bank, although the gap tended to decrease. From 1997 to 2006, however, as remittances have grown by leaps and bounds, the FIES estimates have increasingly fallen below the BSP and World Bank figures.

The 1985 FIES estimated total remittances to be US\$1.4 billion<sup>7</sup> whereas the BSP pegged total formal cash remittances<sup>8</sup> for the year at US\$ 687 million, and the World Bank put total cash remittances at US\$ 806 million. Alternatively put, the FIES remittance figure in 1985 was 202 percent of the BSP figure and 176 percent of the World Bank figure (see Figure 3, see Annex Table 1 for the actual numbers). Note that because the BSP remittance figure covers only those coursed through the formal financial system, it was not inconsistent for it to be lower than the FIES estimate. The share of remittances going through the informal system is believed to have been very high in the 1980s but to have substantially declined to the present, given the wider availability of banks and other financial institutions offering remittance services and the declining costs of those services. That the World Bank figure is higher than both the FIES estimate and the BSP figure is a sign of inconsistency, however, since WB figures are supposed to already incorporate informal and formal remittances.

In 1988, the FIES remittances estimate was US\$1.5 billion, which was 177 percent of the BSP figure and 120 percent of the World Bank figure. In 1991, the FIES estimate was US\$ 2.4 billion, which was 159 percent and 129 percent of BSP and World Bank figures, respectively. In 1994, the FIES estimate was 122 percent and 90 percent of those of the BSP and World Bank, respectively. This was the closest the three sources would get to each other.

### *2 Missing remittances*

In the four FIES runs from 1997 to 2006, estimated total remittances declined as a percentage of BSP figures from 70 percent to 53 percent, and as a percentage of World Bank estimates from 59 percent to 44 percent. This occurred even as remittances assumed an ever-larger share in total household income. The share of remittances in total household income has increased from 8 percent in 1994 to 11.5 percent in 2006. If one boldly assumes that the World Bank figures are the 'true' levels of remittances, then the figures are even starker. Adding the 'missing remittances', or the difference between the World Bank and FIES remittances figures,

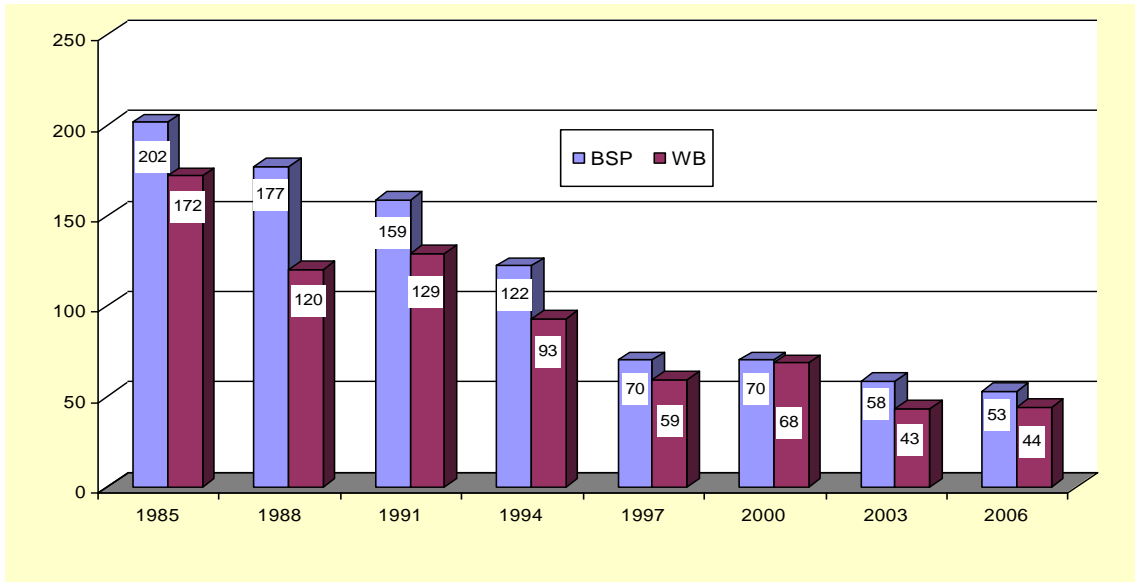
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<sup>7</sup> Php 25.8 billion at the average exchange rate for the year of Php18.6 per US dollar.

<sup>8</sup> Formal cash remittances is just short hand for cash remittances through the formal financial system.

in computing the share of remittances<sup>9</sup> in total household income will show it to have increased from 8.6 percent in 1994 to 22.7 in 2006 (see Figure 4).

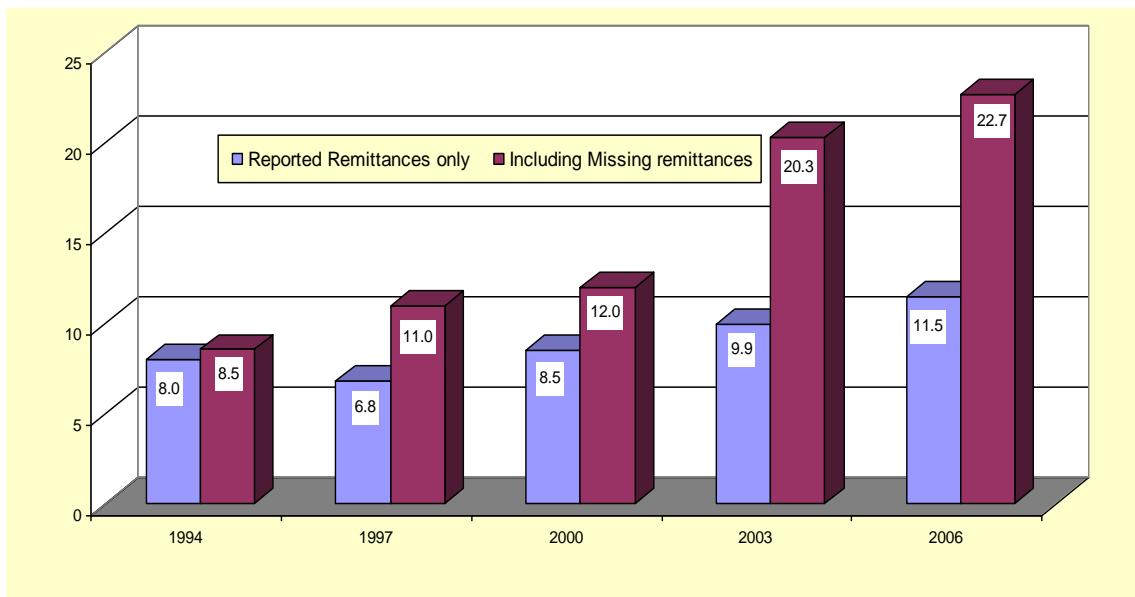
Figure 3. FIES Remittances as %age of BSP and WB estimates of Total Remittances



**Source of basic data:** FIES various years, BSP, World Bank estimates as of November 2009

**Note:** FIES estimates, which were in pesos, were converted into dollars using the average exchange rate for the year according to the BSP.

Figure 4. Remittances as percentage of total household income in the FIES



**Source of basic data:** FIES various years

<sup>9</sup> This of course involves adding the 'missing remittances' in both the numerator and the denominator.



Both the volume and the share in total household income of the ‘missing remittances’ have been increasing over time. In 2006, ‘missing remittances’ were equivalent to Php 438 billion or 12.7 percent of total household income. As already stated, this is more than three times the estimated income gap in 2006 using the official poverty lines. While it is of course highly unlikely that the ‘missing remittances’ would have gone exactly to those who fall below the poverty line, it is possible their exclusion may have resulted in the mismeasurement of welfare levels at points in time and of changes in welfare levels over time. A crucial element in this is the hypothesized distribution of the missing remittances across income groups.

### **3. Possible Reasons for Missing Remittances**

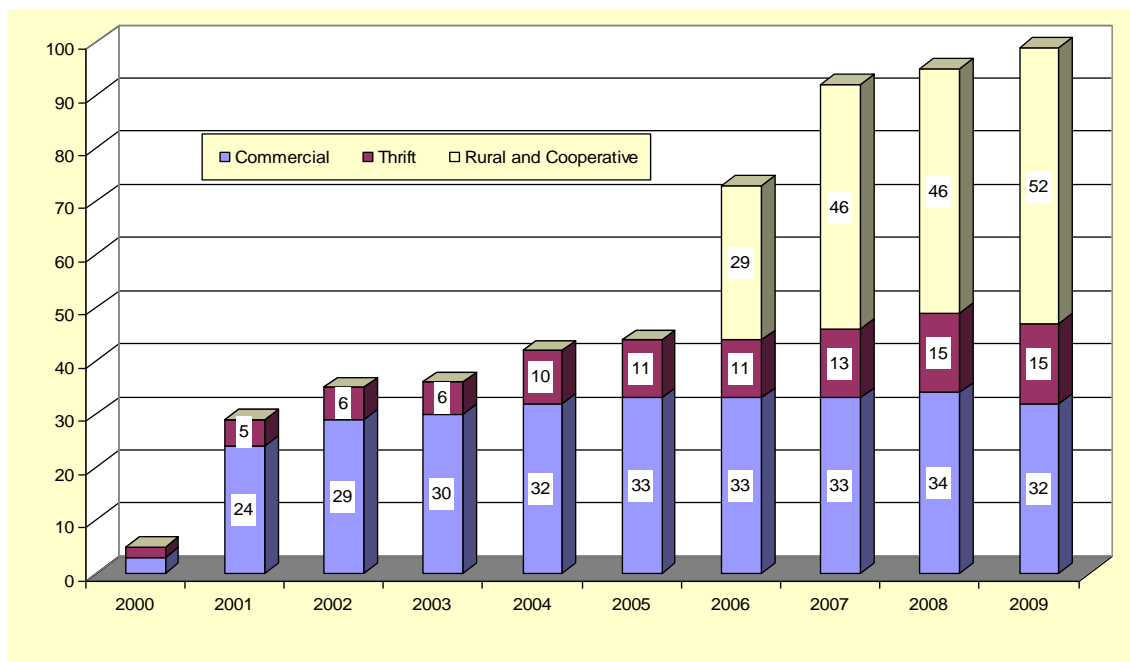
Why might the FIES have become less able to capture the total remittances coming in to the country? This paper suggests three possible explanations. First is the rise of electronic banking since the late 1990s. Second, related to the first, is the increasing amount of remittances that go towards the purchase of real estate, payments for which are difficult for household surveys to capture. And third is the undercounting of overseas workers in the household surveys, which may partly be due to the rise in the number of overseas workers that do not properly belong to any households in the country but who still remit their money to local banks.

#### *3.1 Rise of electronic banking*

A handful of banks started offering electronic banking services in the country beginning in the late 1990s. Electronic banking refers to the provision of retail banking products through electronic channels such as phones and the internet. In May 2000, the Bangko Sentral, through Circular No. 240, began requiring all banks providing such services to first get clearance from BSP. The number of banks that provided electronic banking services grew from 5 in 2000, to 36 in 2003, to 73 in 2006, and to 99 in 2009 (see Figure 5). Of the most recent total, 32 were commercial banks, 15 were thrift banks, and 52 were rural and cooperative banks. Since 2005, there has been especially rapid growth in the provision of electronic banking services by rural and cooperative banks.

Electronic banking has made it much easier for overseas workers to have greater control over their money and the amount and frequency of remittance they send their households. Overseas workers can have their salaries sent to their personal bank accounts, which they can access through the internet or through mobile phones, to either transfer some of it to another bank account (a spouse’s or a parent’s perhaps) or to an electronic money account (such as Smart Communication’s Smart Money or Globe Telecommunications’ G-Cash). Because the FIES only asks for the remittance that the household received, it fails to capture remittances that go directly into the overseas worker’s personal bank account and which do not get transferred to the households.

Figure 5. No. of banks cleared by BSP to provide electronic banking services



Source of basic data: Bangko Sentral ng Pilipinas

Note: It was only in 2000, through Circular No. 240 dated 5 May 2000, that the BSP required banks to get prior clearance before providing electronic banking services, although a handful were already providing such services from 1998.

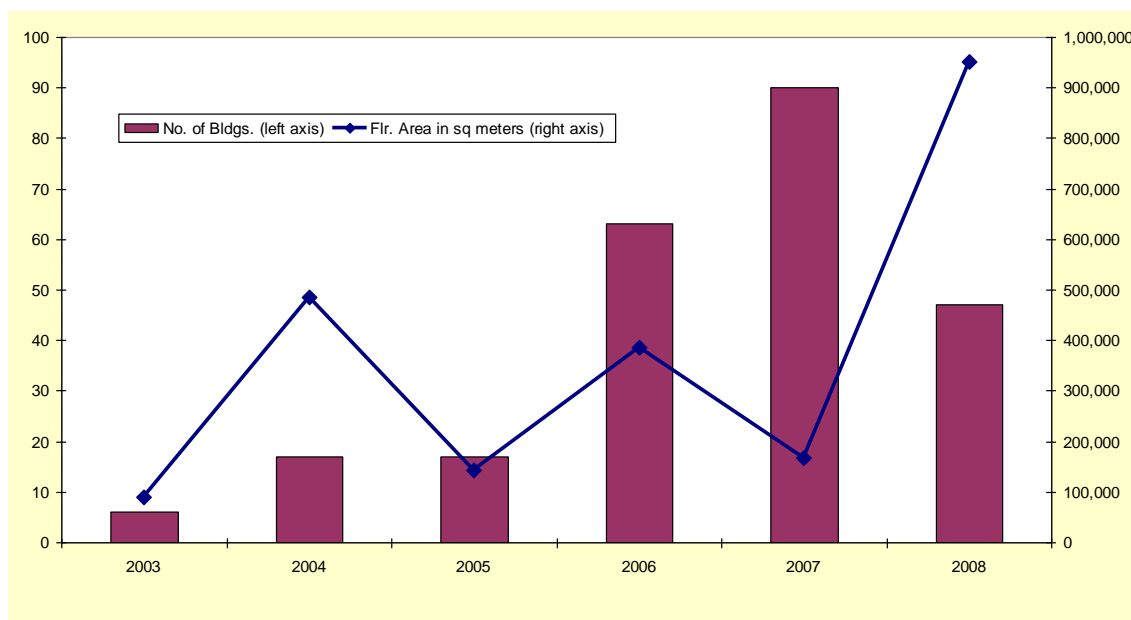
### 3.2 Real estate purchases by overseas workers

While there is yet no industry-wide publicly available data to support it, it is a widely held belief that overseas Filipino workers (OFWs) comprise a large part of the market for real estate, especially new condominiums. By some estimates, OFWs account for about 60-70 percent of new condominium purchases.<sup>10</sup> This seems to be borne out by the marketing strategies of real estate companies that appear to focus heavily on overseas workers.<sup>11</sup> If this is indeed the case, because of the large number of condominium units being produced and sold (e.g. see Figure 6), and the typical manner of payment for such units, this could be another reason that the FIES has been increasingly underestimating remittances. Condominium units are usually pre-sold and payments are in the form of postdated checks. If OFWs pay for their purchased units by putting money in their checking accounts directly (perhaps by making inter-account transfers through the internet) without going through their households, then this is unlikely to be captured by the FIES.

<sup>10</sup> One can also get an idea of how many OFWs are purchasing condominium units by browsing through the entries in online bulletin boards on real estate such as [www.skyscrapercity.com](http://www.skyscrapercity.com).

<sup>11</sup> For instance, Ayala Land Inc. has a separate arm - Ayala Land International Sales, Inc. - to market and sell its residential projects overseas. Megaworld Corp., in its 2007 Annual Report, says it has over 40 sales offices worldwide.

Figure 6. Number and floor are of new condominium buildings started in Metro Manila



Source of basic data: NSO Industry Division, Industry and Trade Statistics Department

According to the FIES 2006, total expenses for that year by all households on the purchase and amortization of real property, the construction of new houses, and major repair of houses amounted to Php62 billion or about US\$1.2 billion at the then-prevailing exchange rate. This was far below what was expected to have been spent on real estate just from the remittances of overseas workers alone.<sup>12</sup> Major developer Ayala Land Inc. (ALI), in its 2007 Annual Report, stated that overseas-based Filipinos accounted for 16 percent of its residential sales in 2004, 26 percent in 2005, 37 percent in 2006, and 32 percent in 2007.<sup>13</sup> In 2007, ALI valued its residential sales to overseas Filipinos at Php 6 billion. Megaworld Corp. reported in its 2007 Annual report that about 10 percent of its residential sales were made overseas.

### 3.3 Undercounting of overseas workers in household surveys

Another possible reason for undercounting remittances, not entirely distinct from 3.1 but rather reinforces it, is that household surveys undercount the overseas workers themselves. Household surveys are unable to capture adults who lived on their own before they migrated for work nor do they enumerate couples who both migrated for work, the latter especially if they did not leave any children behind. If such people

<sup>12</sup> An executive from a major real estate company was quoted by a newspaper as saying that they used the rule of thumb that 30 percent of remittances are spent on the real estate sector. Using the World Bank 2006 remittances figure of US\$15 billion, this is equivalent to US\$4.5 billion. (Source: 'OFW Remittances Fuelling Growth in Real Estate' in the 5 May 2007 issue of the *Philippine Daily Inquirer*.)

<sup>13</sup> The figures pertain to buyers who gave an overseas address at the time of purchase and do not include overseas Filipino workers who may have bought units at a time they were in the Philippines – for vacation, for instance – and gave local addresses

remit money to the country, then such remittances will not be captured by household surveys. The sheer volume of migration over the last decade suggests that overseas workers with such profiles are probably on the rise.

#### **4. Possible Impact of Missing Remittances on Welfare Measurement**

In 1997, 2003, and 2006, the size of what we have termed missing remittances in the FIES exceeded the sum of the income shortfall of the poor from the poverty line (see Figure 7). In 2000, missing remittances were equivalent to 89 percent of the income shortfall of the poor. In the highly unlikely event that the missing remittances in actuality went to those classified as 'poor' and distributed in a certain way, then it would have wiped out or substantially reduced poverty and considerably reduced inequality. On the other extreme, if all the missing remittances went only to the non-poor, there would be no impact on poverty but inequality would be much higher.<sup>14</sup> These two scenarios only underscore the crucial point that how much the inclusion of the missing remittances affects welfare measures depends on how we assume they are distributed across income groups.

The assumption that presents itself most readily, and the one pursued in this section, is that the missing remittances would have been distributed among the various income groups in the same way as the captured remittances. This is convenient in the absence of anything stronger to guide us, although it should be kept in mind that is a weak assumption. In truth, we do not have a good idea at the moment as to how the missing remittances are distributed, and it could very well be that they are very differently distributed compared to the captured remittances both with respect to the income groups to which they accrue, and the expenditure items for which they are used.

The explanations we put forward for the missing remittances centered on technological changes in banking services. If one supposes that higher income groups are those more likely to adopt new technology, then it can be argued that most of the missing remittances really go to the higher income groups, whether to a lesser or greater extent than the captured remittances, one cannot say. Still, another school of thought says that new technology, such as mobile phone banking, are more likely to be embraced by those in the rural areas, and thus by relatively poorer households, on the premise that they have a smaller attachment to existing technology to which they may have little or no access to, and that new technology represent relatively higher cost savings for them.<sup>15</sup>

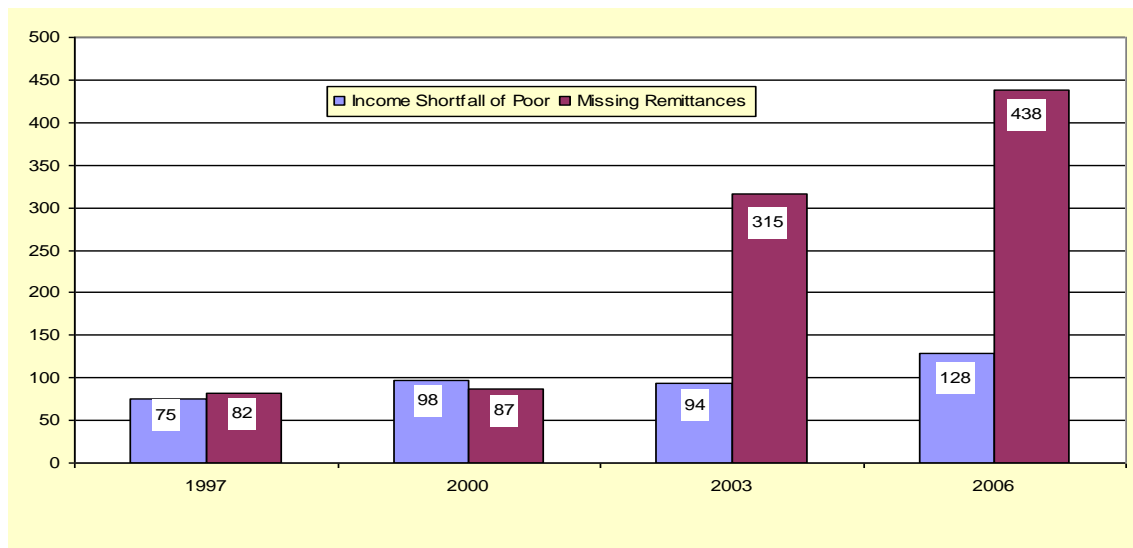
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<sup>14</sup> It can also be argued that additional remittances may be more biased towards the upper middle deciles rather than either extreme of the income distribution, since education is correlated with migration, which leaves out the very poor, while, on the other hand, having other valuable assets domestically, makes it less likely for the very rich to migrate. Why this pattern is not observed for captured remittances is the puzzle. It maybe that what we mean by the very rich is not the tenth decile itself but only a small fraction of it.

<sup>15</sup> This is especially true in the poorer provinces where commercial banks are typically concentrated in the provincial capital.

This issue has potentially serious implications for the many studies on remittances using nationally-representative household survey data, such as the FIES, the Annual Poverty Indicators Surveys, and the Survey of Overseas Filipinos. Studies based on the data sets mentioned, such as those on the motives behind remittances, the uses of remittances (e.g, whether for investment or consumption, the types of consumption), and even the welfare impact of remittances, presuppose that the remittances captured by these household surveys are representative of all remittances. If that turns out not to be the case, or if the missing remittances are very differently distributed from captured remittances, then it potentially invalidates inferences based on these data. In fact, a stronger point can be made – even if missing remittances are distributed in the same way as captured remittances, level measures (such as how much of remittances goes to specific spending categories like education or health or entrepreneurial activities, or savings from remittances, and remittance elasticities) based only on the captured remittances will also likely be misestimated.

Figure 7. The Missing Remittances and the Income Shortfall of the Poor (Php Bn)



**Source of basic data:** Family Income and Expenditure Survey various years.

**Note:** The income shortfall of Php 128 Bn computed for 2006 is different from the Php 120 Bn cited in Section 1 from the paper of Monsod (2010) because the computations here used a single national poverty line while that paper used provincial poverty lines. Poverty lines used were Php 9,718 for 1997, Php 11,458 for 2000, Php 12,309 for 2003, and Php 15,057 for 2006.

#### *4.1 Impact of missing remittances on measures of poverty and inequality*

To examine whether the missing remittances have potentially caused a mismeasurement of welfare levels at points in time and of welfare changes over time, we undertake simple simulation exercises using the various FIES rounds (1997-2006). The simulations involve adding the missing remittances across the different income groups and investigating the impact of doing so on poverty and inequality.

We try three scenarios: the first assumes that, for each FIES year, missing remittances are distributed in exactly the same way across the per capita income deciles as captured remittances; the second, that missing remittances are distributed across the per capita income deciles as captured remittances in the year when the captured remittances were most equitably distributed<sup>16</sup>; the third, that missing remittances are distributed across the per capita income deciles as the captured remittances in the year when the captured remittances were least equitably distributed. Using the Gini Ratio as the measure of inequality, Table 1 shows that captured remittances were most equitably distributed in 1997 and least equitable in 2003. Note that even at its most equitable, captured remittances were still very inequitably distributed, with only 1.4 percent going to the poorest three deciles and only 5 percent going to the bottom half of the population. Schooling qualifications make it unlikely for overseas workers to come from very poor households. Ducanes and Abella (2008) estimate that only 2.6 percent of overseas workers come from the bottom quintile of households ordered by per capita income, and that only 8 percent come from the bottom two quintiles.

Table 1. Decile Share in Captured Remittances, 1994-2006

Per capita income	1994	1997	2000	2003	2006
1 (Poorest)	0.2	0.2	0.1	0.1	0.1
2	0.4	0.4	0.3	0.3	0.3
3	0.8	0.8	0.6	0.6	0.7
4	1.3	1.3	1.0	0.9	1.1
5	2.3	2.2	2.0	2.0	2.1
6	3.5	4.0	3.4	3.4	3.3
7	6.0	7.6	5.7	6.1	5.9
8	10.1	11.7	10.5	11.1	10.5
9	21.3	21.0	21.4	18.2	19.0
10 (Richest)	54.1	50.8	55.1	57.2	57.1
<b>Total Remittances (Php Bn)</b>	<b>85</b>	<b>119</b>	<b>188</b>	<b>240</b>	<b>345</b>
<b>Gini ratio</b>	<b>71.8</b>	<b>69.6</b>	<b>73.3</b>	<b>73.7</b>	<b>73.7</b>

Source of basic data: FIES various years

Note: a) Decile refers to population deciles (as opposed to HH deciles)

b) Gini computed using PovCal software

Departing somewhat from recommended practice, income instead of expenditure is used in the measurement of welfare. This is mainly for convenience: remittances are a component of income and it is straightforward to add the missing remittances to total income; using expenditures will require additional assumptions to be made regarding how much of remittances go into consumption for different income groups. A case could be made that consumption should not be as underestimated as income as a result of the missing remittances, especially if most of the missing remittances go into bank savings. However, it still could be that some remittance-related consumption,

<sup>16</sup> In the case of remittances, the phrase ‘least inequitably distributed’ is probably more apt.

such as for real property, are not being counted accurately, as seems to be indicated by the gap between the FIES 2006 figure on real property expenditures and industry estimates cited in Section 3.2. In other words, the findings here could still be relevant, even if to a lesser degree, for welfare measures based on consumption.

The software Povcal, developed and used by the World Bank, is used to generate the poverty (incidence, depth and severity) and inequality (Gini ratio) measures. Povcal is used because it allows for the estimation of poverty and inequality using grouped distributional data (e.g. deciles and decile shares in total income) as opposed to unit record data (such as the entire FIES). Using unit record data would have entailed specifying how much each household gets out of the missing remittances, which would require additional assumptions, such as, for instance, that the missing remittances go to exactly the same households where the captured remittances go to. Estimates of poverty and inequality using unit record data and grouped distributional data for large data sets (such as the FIES) are typically close enough for the difference to be negligible.

#### *4.1.1. Poverty<sup>17</sup>*

##### *Scenario 1: Missing remittances distributed identically as captured remittances*

Figure 8 compares poverty for the case when unadjusted income is used versus the case when missing remittances are added to income and assumed distributed in the same way as captured remittances. It is clear that poverty is consistently lower when the missing remittances are added, but more interestingly, that the difference between the measured poverty levels grows over time. The difference between the measured poverty incidences in 1997 was half of a percentage point (32.3 versus 31.8) but this rises to 1.2 percentage points in 2006 (32.1 versus 30.9). As a consequence whereas poverty incidence is virtually the same for 1997 and 2006 using unadjusted income, it is clearly lower using adjusted income. To a lesser extent, the same pattern is observed for poverty depth and severity. It should be noted, however, that the general pattern of poverty is the same in both cases – increasing from 1997 to 2000, declining from 2000 to 2003, and increasing from 2003 to 2006.

##### *Scenario 2: Missing remittances distributed as most equitable observed captured remittances*

Figure 9 shows poverty when missing remittances are added to income but this time they are assumed to be distributed in the same way as the captured remittances in 1997 – the year when the Gini ratio of captured remittances was lowest. For comparison, poverty when income is unadjusted is also in the graph. As in Scenario 1, poverty is consistently lower with the adjusted income. However, there is a difference in the pattern observed. Using the adjusted income results in poverty actually declining from 1997 to 2000 instead of rising as observed using the unadjusted income. There's a 1.6 percentage point difference in the poverty

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<sup>17</sup> See Annex Table 2 for the numbers that go into Figures 8-11.

incidence between the two measures in 2000 (32.9 minus 31.3) and a 1.5 percentage point difference in 2006 (32.1 minus 30.6).

*Scenario 3: Missing remittances distributed as most equitable observed captured remittances*

Figure 10 shows aspects of poverty when missing remittances are added to income but assumed to be distributed in the same way as the captured remittances in 2003 – the year when the Gini ratio of captured remittances was highest. The results are very similar to Scenario 1 and the pattern similar to what has been observed using the unadjusted income. As in Scenario 1, the gap in poverty measures when using the adjusted and unadjusted incomes appears to be widening over time.

*4.1.2. Inequality*

Figure 11 shows the Gini ratio from 1997 to 2006 using the unadjusted income and the incomes using the three types adjustments described above. The Gini ratio for unadjusted income shows a sustained decline in inequality (from a Gini ratio of 50.5 in 1997 to 48.3 in 2006). In contrast, the Gini ratios using the adjusted incomes show inequality to be more or less unchanged from 1997 to 2006 (Gini ratio around 51 to 52). Under the assumption that missing and captured remittances are distributed similarly, then it is definitely underestimating both the level of inequality and its change over time. By 2006, the Gini ratio could be off by as much as 3 percentage points.

*4.2 Simulated Generalized Lorenz Curves*

In this subsection, we construct generalized Lorenz curves as a means to further examine whether the missing remittances in the FIES impacts our measurement of intertemporal welfare changes.

As in the standard Lorenz curve, the generalized Lorenz curve (Shorrocks, 1983) has for the *x-axis* the cumulative proportion of the population. The *y-axis* measures the cumulative mean income of the population (ordered from lowest to highest income) over the total population. The crucial thing is that if one generalized Lorenz curve dominates (is consistently above) another, under the assumption that for social welfare greater income is more desirable to lesser income and that higher inequality is undesirable, then the dominant generalized Lorenz curve represents higher social welfare. When the generalized Lorenz curves intersect, no definite conclusion can be made about the change in social welfare.



Figure 8. Poverty with missing remittances added and assumed distributed the same way as captured remittances

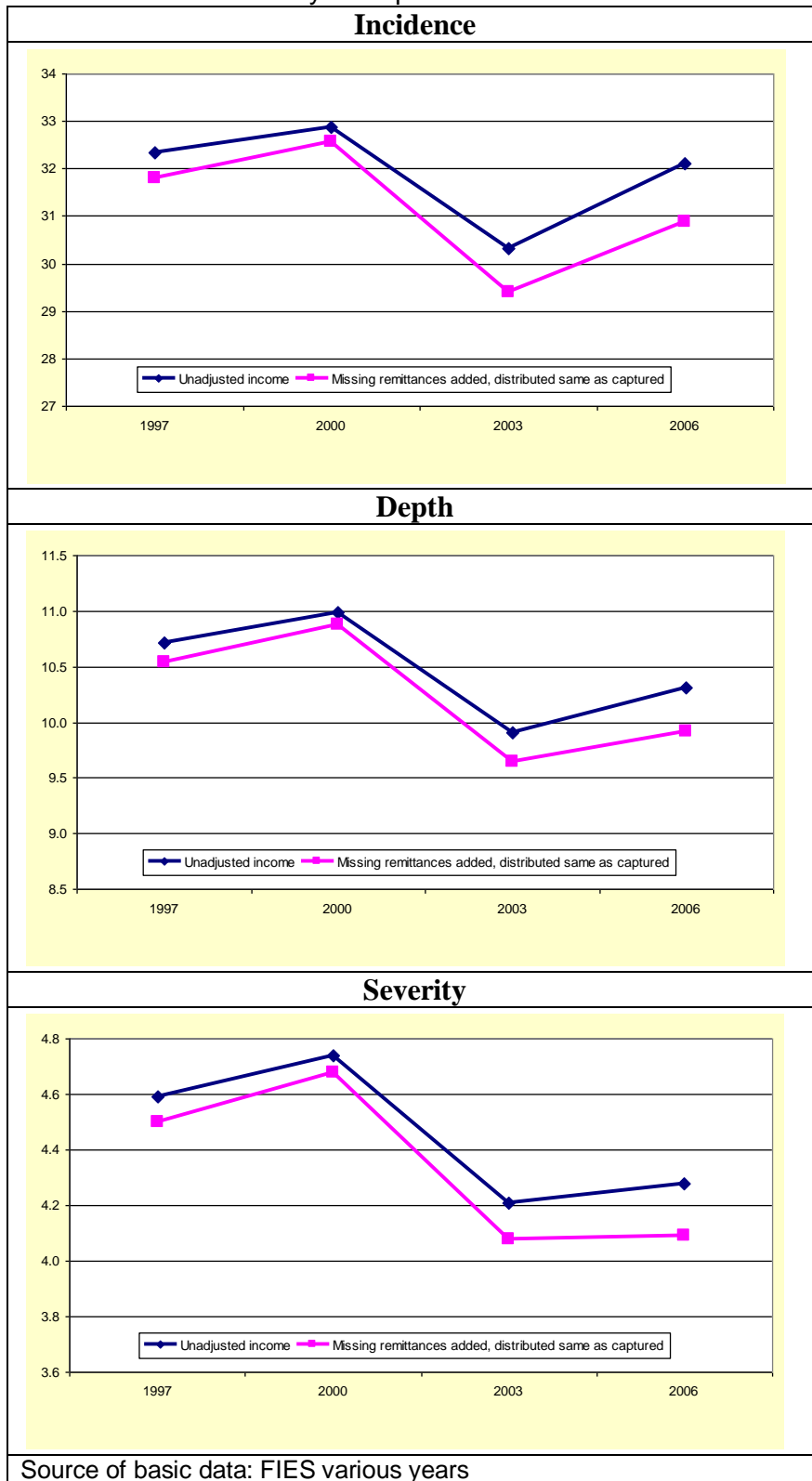


Figure 9. Poverty with missing remittances added and assumed distributed the same way as most equitable captured remittances

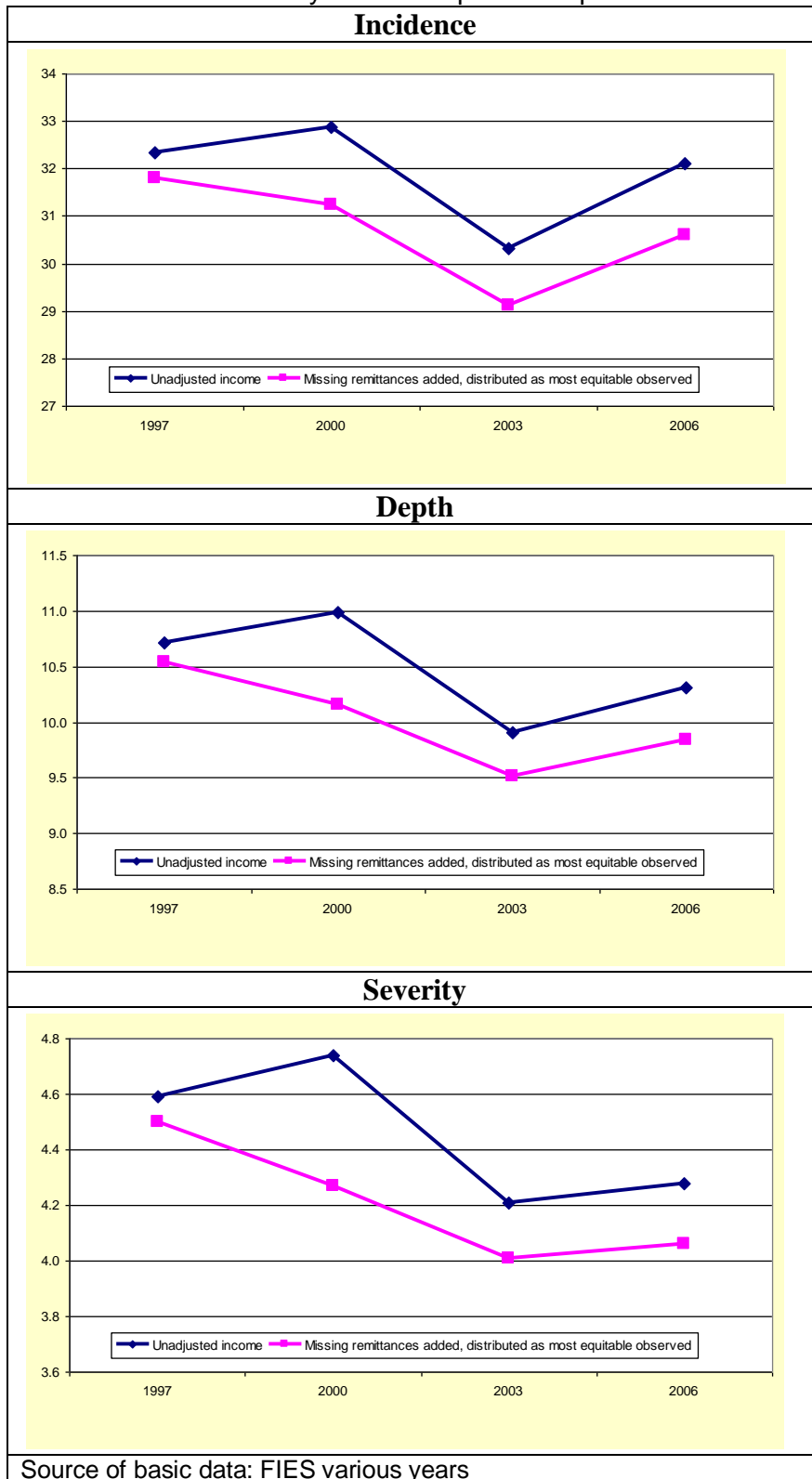


Figure 10. Poverty with missing remittances added and assumed distributed the same way as most equitable captured remittances

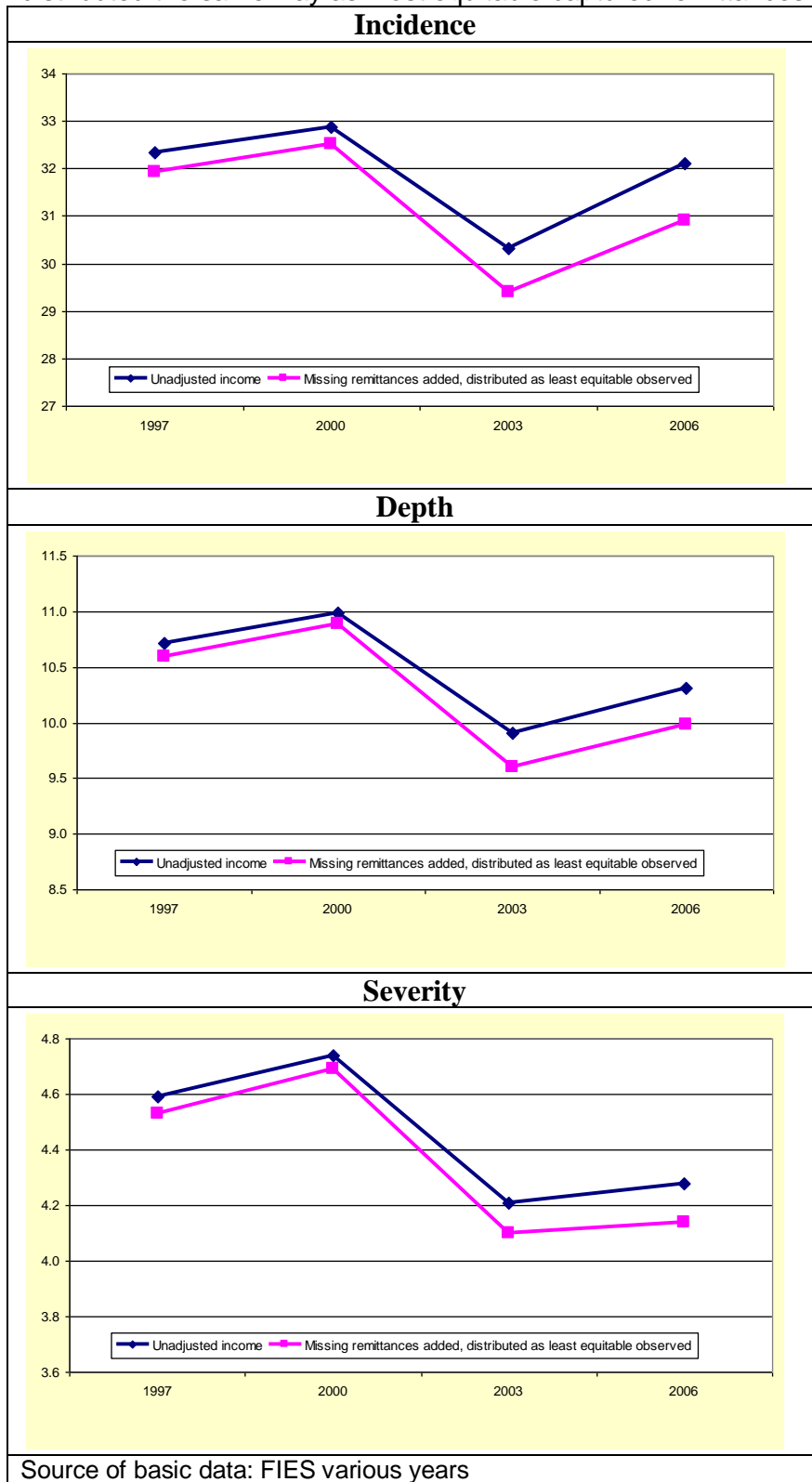
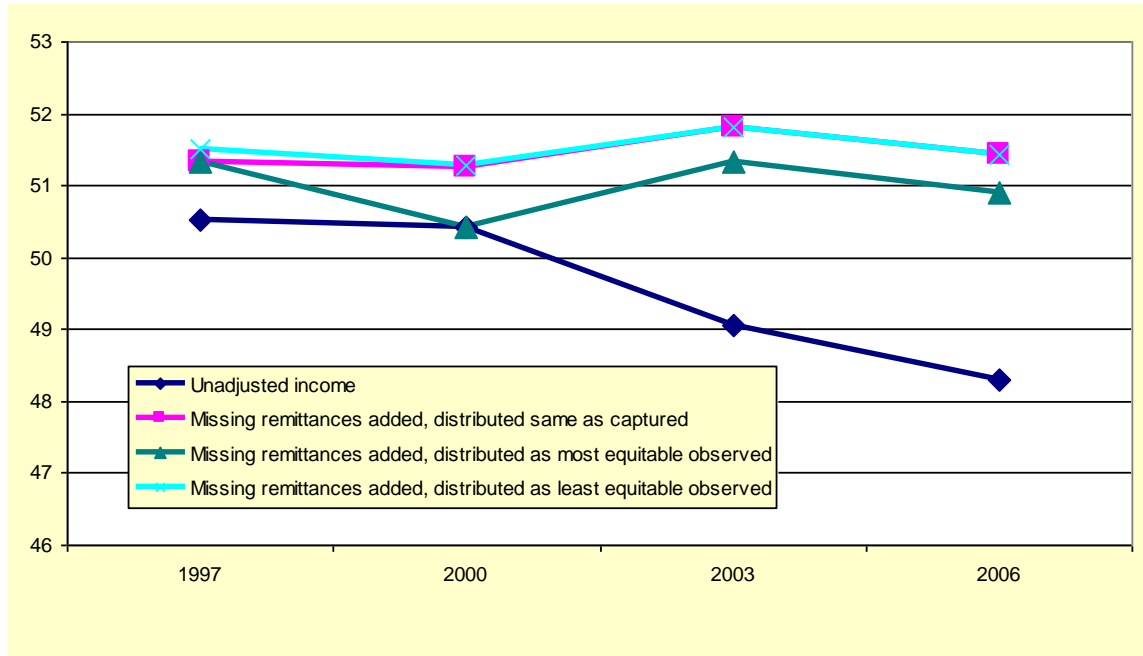


Figure 11. Gini ratio using adjusted and unadjusted per capita income

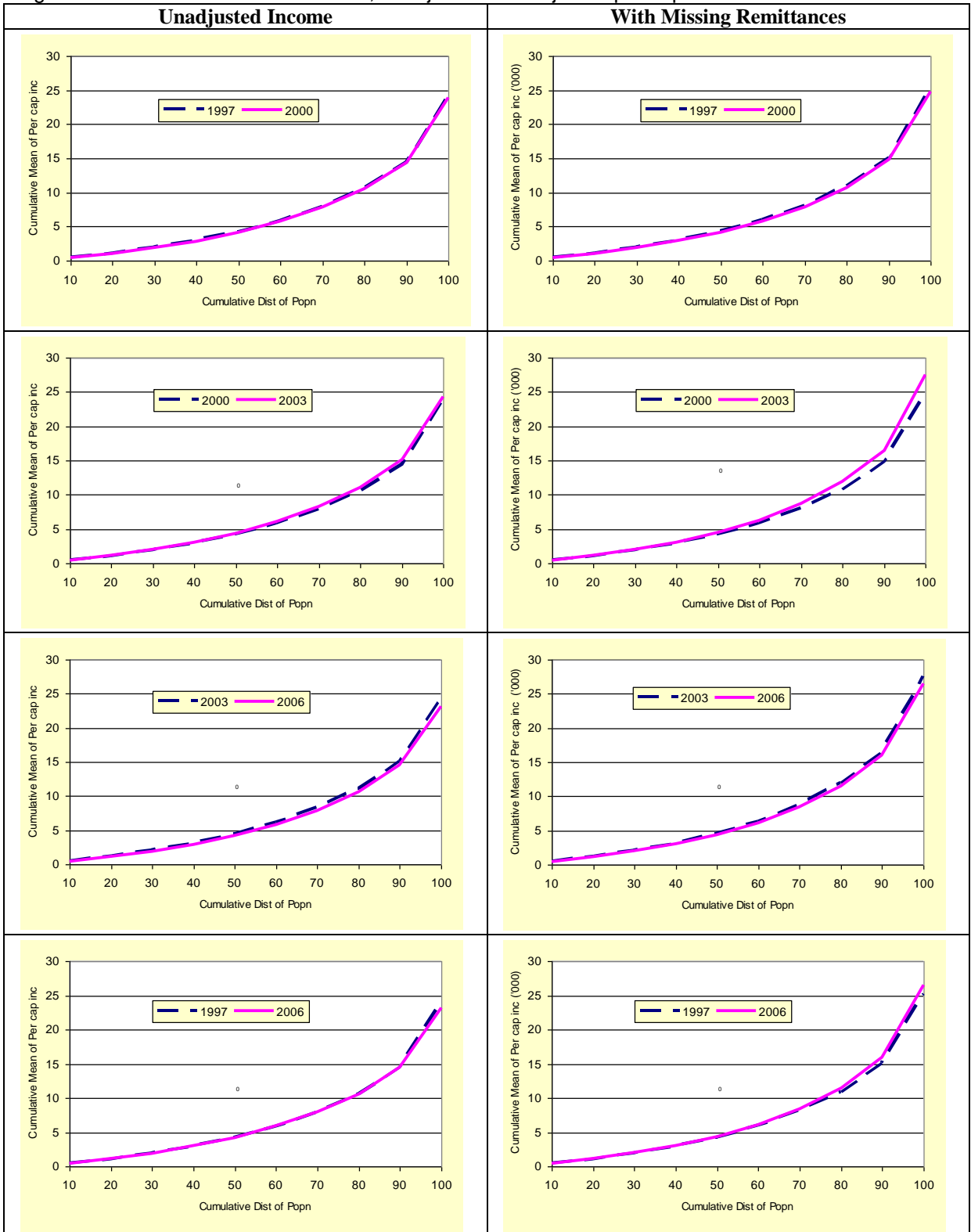


Source of basic data: Family Income and Expenditure Survey various years.

Figure 12 shows the generalized Lorenz curves for each three-year period from 1997-2006 and for the entire period using the unadjusted income (left column) and the income adjusted by adding remittances, which are assumed distributed in the same way as captured remittances for each year (right column). Both sets of graphs agree that a reduction in social welfare – in the sense of income equity – occurred in 1997-2000, that an increase in social welfare occurred in 2000-2003, with no definite conclusion possible for the period 2000-2003 – the curves intersect at the beginning of the second decile.<sup>18</sup> However, for the entire period 1997-2006, the generalized Lorenz curves using unadjusted income allow no conclusion to be drawn regarding the change in social welfare, while those using adjusted incomes indicate an unambiguous improvement. This is another indication we may be mismeasuring welfare changes over time as a result of the missing remittances.

<sup>18</sup> When the curves are too near each other, it can be hard to check the dominance. See Annex Table 3 for the numbers used to generate Figure 12.

Figure 12. Generalized Lorenz Curves, unadjusted and adjusted per capita incomes



Source of basic data: FIES various years

Notes: a) 1997 base prices with incomes adjusted using the inflation implicit in the poverty thresholds; b) the missing remittances were assumed distributed the same way as the captured remittances; c) see Annex Table 2 for the numbers that go into the graphs.

## 5. Summary and Conclusion

This paper highlights the increasing underreporting of remittances by the FIES as another reason for the divergence in the measured standard of living over the past decade when looking at the National Income Accounts and the FIES. This is in addition to reasons previously put forward, such as that the NIA is overestimating growth and that the non-poor are cornering the gains from economic growth. The paper shows that, by 2006, the remittances missed by the FIES accounted for more than half of total remittances as estimated by the World Bank and amounted to more than three times the total income shortfall of the poor using official poverty lines.

The paper suggests three reasons why remittances are being undercounted. The first is the rise of electronic banking, which has allowed overseas workers to remit their earnings to personal bank accounts that they can manage from abroad and thus dispense with the need to remit everything to their households. The second is the substantial portion of remittances that go to real property expenditures, the payment for which may skip the overseas workers' households. And third, not distinct but reinforcing the first reason, the possibly rising number of overseas workers who have not left any household behind, either because they were on their own before they migrated, or because all members of their households have migrated for work.

The large and growing size of missing remittances in the FIES and other household surveys linked to it, such as the SOF and the APIS, has serious implications for the validity of the findings of many studies on remittances (the motives behind remittances, their uses, their impact) that use these data sets, presupposing the representativeness of their remittances figures. This makes it vital to try and understand the nature of the missing remittances, particularly to which households they go and what they are used for.

Simulations show that under conservative assumptions about how the missing remittances are distributed across income groups, we could be mismeasuring poverty levels and, possibly, its direction of change for some periods. The mismeasurement appears especially severe for inequality where including the missing remittances shows inequality being basically unchanged since 1997, whereas its non-inclusion results in apparently declining inequality. Simulations using generalized Lorenz curves also show that conclusions about changes in social welfare, particularly over long periods, could be affected by the inclusion of the missing remittances.

Missing remittances alone will not explain the divergence between per capita income as measured in the NIA and FIES. Even with the missing remittances included, per capita income growth in the FIES is still significantly lower than in the NIA. It is possible that, as has been suggested elsewhere, the NIA is overestimating growth, that very little of the growth is going to the poor and thus not impacting poverty very much, and that, as suggested here, the FIES is underestimating income through remittances—all at the same time.

The world sometimes changes at a pace faster than one's capacity to measure it. If household surveys have indeed become deficient in measuring remittances and perhaps migration, it is not a problem unique to the Philippines. For instance, Thailand quite recently tried to measure the number of migrant workers entering its territory and the amount of remittances crossing its borders using its labor force survey, but since a large portion of its migrant workers lived in factories and not households, and many, because they were there in the country illegally hid from the people doing the survey, they were missed by the survey, resulting in serious underestimation of both remittances and migration level.

There does not seem to be an obvious or easy fix. In the future conduct of household surveys, however, questions regarding migration and remittances can be more probing (e.g., "Do you know if the overseas worker in the household keeps a personal bank account to which he/she remits money and to which you have no access to?", "Do you know if the overseas worker in the household has purchased real property that he/she is paying for directly?", "Do you know any relative who has gone to work overseas and who at the time he/she migrated was living by himself", etc.) just to get a better grasp of how remittances are being missed. Meanwhile, perhaps the least that can be done is to factor into our analysis the possible deficiencies in our data, and to temper our conclusions accordingly.

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Annex Table 1. Remittances to the Philippines according to the FIES, BSP, and World Bank

Year	FIES (Php Mn)	FIES (US\$ Mn)	Bangko Sentral (US\$ Mn)	World Bank (US\$ Mn)
1985	25,775	1,385	687	806
1986			680	861
1987			792	1,020
1988	32,050	1,519	857	1,262
1989			973	1,362
1990			1,181	1,465
1991	65,473	2,383	1,500	1,850
1992			2,202	2,538
1993			2,230	2,587
1994	84,840	3,212	2,630	3,452
1995			4,878	5,360
1996			4,307	4,875
1997	118,642	4,026	5,742	6,799
1998			7,368	5,130
1999			6,795	6,918
2000	187,706	4,247	6,050	6,212
2001			6,031	6,164
2002			6,886	9,735
2003	239,829	4,425	7,578	10,243
2004			8,550	11,471
2005			10,689	13,566
2006	344,629	6,716	12,761	15,251
2007			14,450	16,302
2008			17,348	18,643
2009e				19,411

Note: FIES remittances were converted to US dollar using the average exchange rate for the year as reported by the Bangko Sentral ng Pilipinas.

Annex Table 2. Poverty and Inequality using the unadjusted income and income adjusted for the missing remittances

	Poverty			Gini
	Incidence	Depth	Severity	
FIES unadjusted				
1997	32.3	10.7	4.6	50.5
2000	32.9	11.0	4.7	50.4
2003	30.3	9.9	4.2	49.1
2006	32.1	10.3	4.3	48.3
FIES w/ missing remittances distributed as captured				
1997	31.8	10.5	4.5	51.3
2000	32.6	10.9	4.7	51.3
2003	29.4	9.6	4.1	51.8
2006	30.9	9.9	4.1	51.4
FIES w/ missing remittances distributed as most equitable captured				
1997	31.8	10.5	4.5	51.3
2000	31.3	10.2	4.3	50.4
2003	29.1	9.5	4.0	51.3
2006	30.6	9.8	4.1	50.9
FIES w/ missing remittances distributed as least equitable captured				
1997	31.9	10.6	4.5	51.5
2000	32.5	10.9	4.7	51.3
2003	29.4	9.6	4.1	51.8
2006	30.9	10.0	4.1	51.4

Source of basic data: FIES various years

Annex Table 2. Cumulative Mean per capita Income by  
Cumulative Popn Decile

<b>Unadjusted Income</b>				
Cumulative Popn Decile	1997	2000	2003	2006
10	426	424	434	440
20	1,067	1,054	1,100	1,093
30	1,894	1,866	1,966	1,931
40	2,927	2,889	3,053	2,971
50	4,212	4,167	4,402	4,261
60	5,829	5,769	6,096	5,875
70	7,895	7,823	8,260	7,930
80	10,609	10,543	11,090	10,638
90	14,469	14,423	15,083	14,504
100	24,073	23,875	24,359	23,129

<b>With Missing Remittances</b>				
Cumulative Popn Decile	1997	2000	2003	2006
10	428	425	436	444
20	1,074	1,058	1,111	1,107
30	1,909	1,875	1,997	1,968
40	2,957	2,907	3,114	3,044
50	4,267	4,205	4,527	4,404
60	5,929	5,838	6,330	6,129
70	8,080	7,945	8,687	8,381
80	10,926	10,764	11,869	11,441
90	15,023	14,846	16,441	15,949
100	25,199	24,817	27,537	26,498

Source of basic data: FIES various years