Poverty, Fertility Preferences and Family Planning Practice in the Philippines[1]

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1. Introduction

It is well known that poverty incidence is always higher among larger households. This is true in the Philippines as it is in many parts of the world. In the case of the Philippines, for instance, Orbeta (2005) highlights the enduring positive relationship between family size and the poverty incidence as well as severity using family income and expenditure data for the past 25 years. Results of research summarized in Orbeta (2005) also highlights how large family size creates the conditions for more poverty through its negative impact on household savings, labor force participation and earnings of parents as well as on the human capital investment in children. The flipside of this story is that its also well known that poorer households have poorer access to public services and access to family-planning services is not an exception. This is reflected in lower contraceptive prevalence rates and higher unmet need for family planning. The data also indicates that the desired family size is higher among the poor (Orbeta 2004a). Given that it is known that actual fertility is dependent on contraceptive practice, the question then is whether higher actual fertility among the poor is a result of higher demand or of poorer access to family planning or both. Clarifying these intertwined issues would help provide policy makers, wanting to reduce poverty among larger households, a clearer direction on what to do.

This paper presents descriptive and multivariate analytical evidence on the relationship between poverty, fertility preferences and family planning practices using a recent nationally representative Family Planning Survey (FPS) in the Philippines. There are a few studies providing national survey and analytical evidence on this relationship and to the best knowledge of the author none using Philippine data. Previous analysis, e.g., DeGraff et al (1997), used sub-national surveys and did not deal directly with the role of different socioeconomic background which is the focus of this paper. Using cross-tabulation analyses utilizing a nationally representative survey data, the paper first characterizes these relationships. It then estimates the joint demand for additional children given children ever born and the use of modern contraception using a recursive discrete choice model that accounts for the correlations of the unobserved characteristics in these relationships. Like earlier studies (e.g., DeGraff et al 1997, Guilkey and Jayne, 1997) it recognizes the proper structuring of the variables, e.g. that children ever born is the product of past decision and that the demand for additional children is the more relevant current demand for children that affects the current demand

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for contraception. Since the particular interest of the paper is in quantifying the role of socioeconomic status in these relationships, after controlling for other personal, household and community characteristics, a variable is provided to represent this particular concern. It uses a wealth index constructed from the presence of household amenities which the survey provides as a measure of the socioeconomic status of the household. The use of a wealth index was first introduced in Filmer and Pritchett (1998) and this has been used in many other studies. A complete description of the construction of the wealth index is provided in the Annex.

The paper is organized as follows. The next section provides a brief overview of population and development relationships in the Philippines. This overview provides a brief background for the socioeconomic and demographic outcomes in the country. It also provides cross tabulation of relevant demographic outcomes by socioeconomic class. The cross-tabulation analysis is designed to provide the needed introduction to the multivariate analysis which follows in the third section of the paper. The last section summarizes and provides some implications of the results for policy.

2. Population and Development in the Philippine Context

2.1 Overview of population and development[3]

Around the beginning of 1960s, Philippines, Thailand and Korea have about the same population size. These two other countries have long achieved replacement fertility (total fertility rate (TFR) of around 2), Korea before the 1990s and Thailand about the middle of 1990, the Philippines has still a long way to go with a TFR of 3.5 as of 2003. As a result, the population sizes of these three countries have diverged. By around 2000, Philippines had about 30 million more people than Korea and 16 million more than Thailand (Figure 1). In addition, while these two countries continued to register consistent high growth, the Philippines had slow and inconsistent growth rates. After putting these two together, it would not be difficult to understand why the per capita income of the country has not gone far from 1,000 US dollars for more than two decades now (Figure 2). It would not be surprising also to know that poverty reduction has been slow and tentative (Reyes, 2002).

As one looks at other development indicators, the overall long-term development picture given above is hardly surprising. Savings rates have been low, even often times lower than Indonesia in spite of the higher per capita income in the Philippines (Figure 3). Labor force participation of women is lower compared to many other countries in Asia even if the educational attainment of women is higher. The high school attendance rate[4] that the country is proud about for so long is eroding fast.

Yet the issue of the role of population in development, in general and poverty and vulnerability, in particular, is largely unresolved. This reality persists despite the growing literature worldwide and also in the Philippines providing evidence on the importance of population growth and family size in development (see for instance Alonzo et al. (2004), Orbeta (2003) and de Dios and Associates (1993)). The two glaring proofs to this fact

[3] This section draws heavily from Orbeta (2005).
[4] That Philippines is an outlier in this regard is well-documented (see for instance, Berhman and Schneider, 1994; Behrman 1990)

are: (a) the equivocal support given by the government to the population program, and (b) up to now virtually all of contraceptives supplies in public facilities are supplied by donors as national government has not appropriated money for these commodities[5]. Herrin (2002) describes in detail the stop-go attitude of government population policy. There are several ways the national leadership, both past and present, had avoided the issue. The current government, for instance, has left to local government units (LGUs) the provision of family planning services citing the Local Government Code (LGC) of 1991 as basis. The LGC has transferred many direct services, including maternal and child health service and family planning, to the LGUs. The lack of national guidance has resulted into fragmented and local programs often working in opposite directions largely depending on the persuasion of the local executive (Alonzo et. al 2004, Orbeta 2004b). One perhaps may ask whether there is any real demand for family planning services that government has to respond to. It should be mentioned that all demographic surveys showed the consistent high demand for family planning services from women of reproductive age (Herrin, 2002). Orbeta (2004a) also pointed out that the poor have lesser access to family planning services and that their wanted fertility is higher than those of the rich. The demand, therefore, for an appropriately funded population program is clear. What is absent is the national government's resolve to push the program consistently as other countries, such as Thailand, Indonesia and Vietnam, have done.

2.2 Demographic Outcomes by Socioeconomic Class[6]

To provide a background for the multivariate analysis in the next section, this subsection present cross-tabulation of fertility and contraceptive practice by asset index quintile. Asset index quintiles were generated using the information on household amenities which are included in the FPS since the 1999 round following Filmer and Pritchett (1998). The full description of the construction of the asset index is described in the Annex.

2.2.1 Children Ever Born

The main fertility variable that can be generated from the FPS is the Mean Children Ever Born (CEB)[7]. The CEB for women aged 40-49, who are considered to have completed or nearly completed fertility, is used as an indicator of fertility. Table 1 shows the CEB for women 40-49 by asset index quintile from 1999-2002. The mean CEB remained virtually constant over the years staying at around 4.6 per married woman. Also noteworthy is the stable difference in the mean CEB across socioeconomic classes. One finds that the difference in mean CEB for women 40-49 years old in the poorest and richest households is a little over 2 births. This difference hardly changed from 1999 to 2002.

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[5] USAID, the primary donor of contraceptive supplies, has recently indicated to government that it is phasing out its provision of contraceptive supplies.

[6] This section draws heavily from Orbeta, A. (2004c).

[7] The Total Fertility Rate (TFR) can be computed using the recorded births in the last three years asked in the FPS since 1996. The TFR computed, however, is too low and erratic in value compared to the ones generated from the National Demographic and Health Survey (NDHS), indicating perhaps, that the recording of births is not as complete and as consistent. Perhaps this is because FPS does not have has elaborate probing and validating questions as the NDHS. See Orbeta (2004c) for the estimates.

2.2.2 Contraceptive Prevalence

The contraceptive prevalence of married women in 2002 is given in Table 2. It shows that a less than half of married women are using any contraception. A little over 70% of these women using some contraception are using modern methods. As pointed out in Orbeta (2004a), given the very slow rise in total contraception rates, the redeeming fact is that the proportion of women using modern methods is the only ones rising faster.

As one looks across the socioeconomic classes, the main noticeable difference also lies in the use of modern methods. For the traditional method, there is virtually no difference between the richest and the poorest households. The difference for modern methods between the poorest and richest households, however, is above 8 percentage points. A lesser proportion of women from poorer households are using the modern methods.

2.2.3 Sources of Supply

The proportion of women using public source is 70.1% while 28.5% is getting their supplies from private sources. All contraceptive supplies, except condoms, are sourced primarily from the public sector (Table 3).

More than 80% of the poorest and as much as half of the women from the richest quintile source their supplies from the public sector. Only condoms and to some extent the pills and IUDs are sourced primarily from the private sector.

2.2.4 Unmet Need for Family Planning

Table 4 shows that the unmet need for family planning is about 20% which is evenly distributed between spacing (10.1%) and limiting (9.9%) needs.

Twenty seven percent of women from the poorest households indicated unmet need with 13.5% for spacing and 13.4% for limiting. Women from the richest households exhibited as 16% unmet need with 8.8% for spacing and 7.2% for limiting nearly one-half of the unmet need for the poor. Thus, the limiting need of women from the poorest household is almost twice as that for the women from the richest household while the spacing need is about one and half times more.

2.2.5 Demand for Children

The FPS has no direct measure for the demand for children unlike the National Demographic and Health Survey (NDHS) which has a measure of wanted fertility. The latest NDHS done in 2003 indicates that difference between actual and wanted fertility among women from the poorest households is about 2 births. For women from the richest households, the difference between actual and wanted fertility, however, is less than half a birth. These figures have hardly changed based on the three NDHS rounds done between 1993 to 2003 (Orbeta 2004d).

3. Multivariate Analyses

3.1 Model

To shed light on the differential impact of socioeconomic status on demographic behavior, the paper models the joint decision of contraception adoption and demand for additional children with an indicator of socioeconomic class as one of the explanatory variables after controlling for the usual individual, household and community characteristics.

The paper estimates a model for the decision for using modern contraception and wanting an additional child given the number of children ever born. The model follows closely the model used in Degraff, Bilsborrow and Guilkey (1997). It assumes a sequential decision-making process rather than a full dynamic lifetime model which would require data at every stage of the decision processes that are not usually available. But unlike Degraff, Bilsborrow and Guilkey (1997) we did not assume location (community) fixed effects.

The current problem modeled is the decision on whether or not to have an additional child and on the use of modern contraception. It is assumed that these decisions are correlated with past decisions embodied in the current number of children but in a recursive way. The current number of children is assumed to be the cumulative outcome of past decisions similar to Degraff, Bilsborrow and Guilkey (1997) and Guilkey and Jayne (1997). The impact of this outcome of past decisions is assumed to be only through its effect on the current demand for additional children. In turn, the current demand for additional children is expected to affect the decision to use modern contraception or not.

Specifically the model estimated is the following

$$n = f_n(X, Z_n, e_n)$$
$$d = f_d(n, X, Z_d, e_d)$$
$$c = f_c(d, X, Z_c, e_c)$$

The model presumes that the children ever born n is a function of a set of a common individual, household and community characteristics X, and other specific determinants to n, Z_n . The demand for additional children d is a function of the children ever born, common characteristic X and determinants specific to d, Z_d. Finally, the contraception c is a function of the demand for additional children, common characteristics X, and determinants specific to c, Z_c. The error terms e are by implication of the structure correlated.

Similar models are in Bollen, Guilkey and Mroz (1995) and Guilkey and Jayne (1997). Bollen et al. (1997) uses the difference between the stated desired number of children and children ever born as the demand for children variable. In Guilkey and Jayne (1997) the demand for children is more finely disaggregated into wanted soon, wanted later, and wanted no more. In this paper, the demand for children is indicated by the response to the question on whether the woman wants another child.

In terms of contraception, Guilkey and Jayne (1997) used the finer disaggregation of modern, traditional and none. Degraff, Bilsborrow and Guilkey (1997) and Bollen, Guilkey and Mroz (1995), on the other hand, lumped modern and traditional together. In this paper, use of contraception is confined to the use of modern methods. This is influenced by the cross tabulation result that shows that the difference across socioeconomic classes is only evident in the use of modern methods.

Given the structure of the model, the estimation strategy is as follows. The number of children model was estimated using OLS. This estimate was used as the first stage results in the demand for children equation. The demand for additional children and the use of modern contraception equations were also estimated using two types of two-stage probit estimation in addition to using ordinary probit estimates. This is because the number of children ever born is hypothesized to be endogenous in the demand for additional children equation while the demand for additional children is hypothesized to be endogenous in the demand for contraception equation. One is proposed in Lee (1981) that uses the predicted values of the endogenous variable and the other one is the one suggested in Rivers and Vuong (1988) which uses the actual values of the endogenous variable plus the estimated error from the first-stage regression as regressors in the second stage. While both produce consistent estimates, it has been argued (Rivers and Vuong 1988) that the latter generates asymptotically efficient estimates. It has been pointed out that the estimated errors using common statistical packages in the second stage regressions are biased and needs to be adjusted. Bollen, Guilkey and Mroz (1995), however, mentioned Monte Carlo experiments that show that the gains from adjusting the standard errors do not change substantially the resulting test results. Thus, no adjustment was done in the estimates in this paper. The predicted values of the children ever born variable or the estimated error term from this first stage run are used in the second stage estimation of the demand for additional children equation. In the case of the contraceptive use equation, the predicted values of the demand for additional children or the estimated error term from this first stage run was used in the second stage estimation. Finally, another way of dealing with the correlated error terms in the spirit similar to the seemingly unrelated regressions in linear models is using a bivariate probit model. This also provides a way for directly testing the correlation of the error terms of the two equations. This procedure was used to jointly estimate the demand for additional children and the contraception equation and provide corroborating evidence to the other estimation results.

3.2 Data Used

The individual and household characteristics used in the estimation are from the nationally-representative 2002 Family Planning Survey (FPS). The survey is a rider to the April round of the quarterly Labor Force Survey (LFS). This survey has been conducted annually since 1995 except for years where the National Demographic and Health Survey (NDHS) are conducted. Like many surveys, the questions have evolved over the years. The 2002 FPS was chosen because it has the question needed to generate information on wanting a child in the future that are not available in the previous FPS besides the information on contraceptive use. These two questions are the dependent variable used in the literature to study the interaction between demand for children and demand for contraceptive use. The question on wanting an additional child is used to construct the current demand for children. The information on unwanted fertility was also used as an indicator of the availability of family planning services

because there is no other family planning program information in this data set. It should be noted that Bruce (1990) considers information on unwanted fertility as the ultimate measure of the quality of family planning services. Finally, it has information on household amenities that can be used to construct an index for socioeconomic status whose role on the question of demand for children and contraceptive is the primary focus of the paper.

This basic data set is augmented by community information taken from other sources. Community information such as the proportion of barangays with electricity and those with access to national highways are taken from the 2000 Census of Population and Housing. It is, therefore, assumed that not much has changed between the census and in 2002 particularly in the relative distribution of these types of infrastructure.

The child wage variable which is an indicator of the economic services provided by children was generated from the Annual Poverty Indicators Survey (APIS) 2002. This represents the wage income for the past six-months, the reference period for the survey, of working children aged 5 to 14 years old. To control for inter-provincial price variations, the 2002 provincial price index from the NSO price division was used as a deflator.

3.3 Descriptive Statistics

Table 5 shows the descriptive statistics of the variables used in the analysis. Only married[8] women are considered in the analysis. The mean number of children ever born to respondent married women is less than 4 children although the number could be as high as 17. The proportion of married women who wanted another child is 12 percent. Thirty four percent of the married women are using modern methods. The average age is about 36 years. In terms of education, 29% had some elementary education, 40% had some secondary education, 30% had college education, and about 2% had no education. These proportions revealed the high educational attainment of Filipino women. The proportion living in urban areas is 49%. The proportion of barangays with electricity is about 81% and about the same proportion of barangays also has access to national highways. The six-month labor earnings of children 5-14 years old range from zero to 207[9] or an average 20 pesos. Finally, the proportion of total (sum of limiting and spacing) unmet need for family planning is about 20%.

3.4 Estimation Results

The estimation only includes married women of reproductive age and always employs robust standard error estimates.

3.4.1 Children Ever Born

Table 6 shows the OLS estimates of the number of children ever born. The estimates confirm expectations that, controlling for the other variables, the children ever born for poorer households (wealth index quintiles 1 to 4) are all significantly bigger than for

[8] This includes those living together.
[9] This has been deflated using the consumer price index (1994=100). The recorded average six-month wage earnings of adults (15 years and above) is about 9,900.

women from the richest quintile, the omitted category. The poorest quintile, for instance, has an average of 1.1 children more than the richest. This is followed by the lower middle quintile with 0.6 more births and so on. The coefficients for the age of the mother show that, as expected, the number of children rises with age but at declining pace. The coefficients for the education dummy variables show that only the women with college education have significantly lower children ever born compared to the women with no education. Those with elementary and secondary education are not significantly different from those with no education. The impact of community variables confirms common expectations. Women living in urban areas have significantly lower children ever born. The results showed that the presence of electricity is not a significant determinant in contrast to earlier results such as Herrin (1979). Perhaps given the reach of electricity now compared to earlier periods, the availability of electricity no longer has pervasive effect as indicated in earlier studies. Access to national highways significantly lowers the number of children-ever-born confirming earlier results. The positive coefficient for the mean income of children workers lend some support to the hypothesis that children are desired because of their economic contribution to household income. However, this is not statistically significant implying perhaps that the influence in general is weak. It is worth noting that the recorded average contribution of children to household income is minuscule relative to the contribution of adult workers.

3.4.2 Demand for Additional Children

Table 7 provides the results of the different estimation procedures employed for the demand for additional children. As mentioned earlier, the different estimation procedures are employed to consider the possible endogeneity of the children ever born variable in this equation. The impact of the number of children ever born on the demand for additional children has a mixed result. The ordinary probit estimate generated the expected negative sign and statistical significance but when in the two two-stage probit estimation was applied to allow for the endogeneity of this variable this coefficient become positive but insignificant. As argued in Rivers and Vuong (1988) the significance of the estimated error term in the two-stage probit 2 results confirms the endogeneity hypothesis making the ordinary probit estimate inconsistent. It also means that the depressing effect of the children ever born on the demand for additional children exhibited by the ordinary probit results cannot be relied upon particularly that the two-stage probit estimate yielded the opposite sign and not significant. Hence, we use the two-stage probit 2 results in subsequent discussions.

The estimation results show that the demand for additional children rises with age but at declining rate. Education of the mother does not significantly affect the demand for additional children. There is no significant difference in demand for additional children between those living in the urban and rural areas.

The impact of the wealth variable yielded interesting results. It shows that, except for the upper middle quintile, there is a significant negative difference in the demand for children between women from the lowest three wealth quintiles and the women from richest quintile households, the omitted category. This implies that given children ever born, it is not true that women from poorer households demand more children than those from the richer households, contrary to what many expect. The estimation result shows that they in fact demand less than the women from richer households with marginal effects that are increasing as one goes lower the wealth ladder.

3.4.3 Use of Modern Contraception

The estimation results on the use of modern contraception are given in Table 8. The demand for additional children has mixed impact on the demand for modern contraception. The coefficient is positive and significant in the ordinary probit equation but became negative and significant in the two-stage probit equations. Even more important is the significant coefficient for the estimated error term in the first stage which confirms the endogeneity of the demand for additional children variable in the contraceptive use equation and indicating the inappropriateness of the ordinary probit results. Again following the suggestion in Rivers and Vuong (1988), we will use the two-stage probit estimate in subsequent discussions. The result of the two-stage probit implies that the demand for additional children depresses the demand for modern method which agrees with expectations.

The effects of the age of the mother show a rise in the demand for contraception with age at a declining rate. The impact of the education variable clearly indicates a higher demand for those with higher education with marginal effects rising from 21% with elementary education to 27% for those with college education over those with no education. Again living in urban areas has no significant impact on modern contraception adoption.

The variable used to indicate the availability of family planning services, the average proportion of women with unmet need averaged at the provincial level, has the expected negative sign and is highly statistically significant. Lowering the proportion of women with unmet need by 1% increases the proportion using modern contraception by a little more than 1% as well.

Finally, the use of modern contraception among women from poorer households is significantly lower relative to the richest quintile in the two-stage probit estimates. The marginal effects in the last column of the table shows that modern contraceptive prevalence of women from the poorest quintile is 13% lower than those for women in the richest quintile on the average. For women in the lower middle quintile this is lower by 6%, the middle lower by 2.9% and the upper middle by 2.6%. This result highlights the main source of the difference in unmet need for family planning – women from poorer households demand less modern methods compared to women from the richer households.

3.4.4 Bivariate Probit Results

Finally, to further confirm the estimated interrelationships of the relevant variables in these equations, bivariate probit estimates were obtained to directly test the correlation between the demand for children equation and the contraception equation. The bivariate probit estimation results are given in Table 9. The computed chi-square value for the test of the correlation of the errors between the two equations is 193.19 which is highly significant confirming the earlier results from the two-stage probit. It also confirms coefficient estimates of the two-stage probit as well as provide meaningful other results. For instance, the number of children ever born is a strong significant negative determinant of the demand for additional children. The age of the mother has the usual rising at a declining rate effect. The impact of education is not significant in the demand

for additional children equation but positive and significant in the contraceptive demand equation. Residing in urban areas has no effect on both the demand for additional children and the contraceptive equations. The impact of socioeconomic status on the demand for additional children and demand for modern contraception has similar direction of effects as those obtained from the two-stage probit results but the significance of the coefficient is much lower.

4. Summary and Implications

The cross-tabulation analyses show that, indeed there are significant differences in fertility and family planning practices across socioeconomic classes. The average children-ever-born among the poorest quintile is more than 2 children higher than the families in the richest quintile. Contraceptive prevalence is also lower among the poor. These results perhaps corroborate to yield higher unmet need for family planning among the poor compared to the women in richer households. This is not surprising as these facts are also observed in other countries as well. However, cross tabulation analysis is limited by its inability to control for other individual, household and community factors that are known to play in these relationships. A recursive discrete choice model was therefore estimated to shed light on the role of socioeconomic class measured by a wealth index on these relationships after controlling for individual, household and community characteristics. The estimation results show that children ever born are indeed higher among poorer households even after controlling for the other characteristics. The children ever born have mixed impact as a determinant of the demand for additional children. But what is interesting to observe from the results is that contrary to common expectation that the poor have higher demand for children, socioeconomic status is not a consistent significant determinant of the demand for additional children given children already born. In fact, the indication is that women from poorer households have lower demand for children relative to women from the richest quintile. This provides contrary evidence to the usual expectation that poorer families demand more children than the richer households given the ones they already have that is why they tend to have larger families. The other thing that is clear from the estimation results is that the demand for modern contraception is significantly lower among women from poorer households compared to women from richer households. This lends support to the common knowledge that women from poorer households have lower adoption rate for modern methods. Of course, this result can perhaps be viewed as the result of lower access to relatively free supplies from the public sector or lower ability to pay for supplies from the private sector. Considering the still high dependence on public supplies of women even from the richest households as shown in the cross-tabulation results there may be crowding out effect of women from poorer households contributing some more to their low demand for modern methods. Since there is no indication that these relationships have drastically changed over the years, this lower demand for modern contraception for whatever reason contributed to the higher actual number of children ever born among the poor.

These results show that it may not be true that the larger family size among the poor is the result of higher demand for children. The estimation results show that given the children already born, the demand for additional children is even lower among women from poorer households compared to those from richer households. The results also show that it is true that, other things equal, the demand for modern methods is lower

among women from poorer households. Using the econometric as well as the cross tabulation results, this particular outcome can be the result of at least three factors: (a) been crowded out by a significant percentage of women from richer households that are also depending on public supplies of modern methods, (b) lower education of women in poorer households, and (c) lower capacity to pay for private supplies.

These results imply that, in general, the Philippines has to deal with the fertility reduction issue once and for all. In addition, it puts in a better light the glaring problem of larger family size among poor households as well as the high unmet need for family planning among them. Since it is not the demand for more children but poorer fertility control that is the reason for their large family size, there is a need to focus attention on the demand for modern methods among the poor. Measures to address this issue could include: (a) subsidy for modern methods for the poor, (b) lowering the dependence of richer households on public supply, and (c) heightened advocacy for modern methods among the poor.

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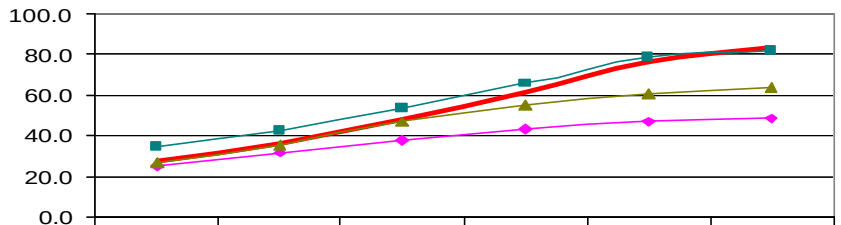
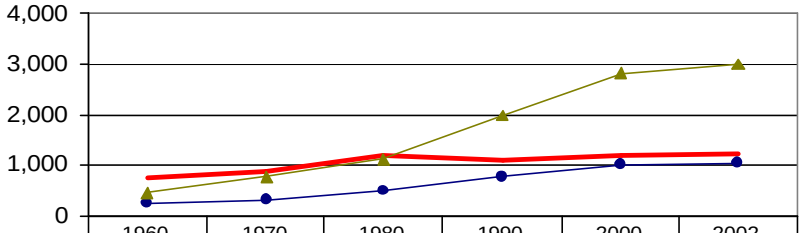
Figure 1. Population Size of Selected Asian Countries, 1960-2004



	1960	1970	1980	1990	2000	2004
Korea, Rep.	25.0	31.9	38.1	42.9	47.0	48.2
Philippines	27.1	36.6	48.0	61.0	76.6	83.7
Thailand	26.4	35.7	46.7	55.6	60.7	63.8
Vietnam	34.7	42.7	53.7	66.2	78.5	81.5

Korea, Rep. Philippines Thailand Vietnam

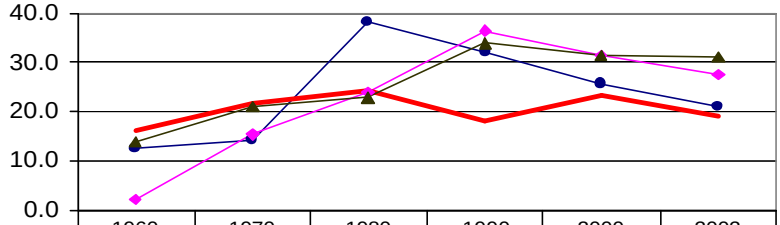
Figure 2. GDP Per Capita of Selected ASEAN Countries, Constant 1995 US$



	1960	1970	1980	1990	2000	2002
Indonesia	249	298	503	777	1,015	1,060
Philippines	725	867	1,173	1,091	1,173	1,209
Thailand	465	752	1,116	1,997	2,828	3,000

Indonesia Philippines Thailand

Figure 3. Gross Domestic Savings of Selected Asian Countries (% GDP), 1960-2002



	1960	1970	1980	1990	2000	2002
Indonesia	12.4	14.3	38.0	32.3	25.6	21.1
Korea, Rep.	2.0	15.3	24.1	36.5	31.3	27.5
Philippines	16.2	21.9	24.2	18.4	23.1	18.8
Thailand	14.1	21.2	22.9	33.8	31.4	31.1

Indonesia Korea, Rep. Philippines Thailand

Table 1. Mean Children Ever Born (CEB) for women 40-49 years by asset index quintile, 1999-2002

Survey Year	Poorest	L. Middle	Middle	U. Middle	Richest	Total	Poor-Rich Diff.
2002	5.8	5.0	4.5	3.9	3.6	4.6	2.2
2001	5.8	5.0	4.7	3.9	3.3	4.5	2.5
2000	6.0	5.1	4.8	3.9	3.5	4.6	2.5
1999	5.9	5.2	4.9	3.9	3.5	4.6	2.3

Source: Orbeta (2004c), basic data from NSO, 1999-2002 Family Planing Surveys

Table 2. Contraceptive Method by Asset Index Quintile, 2002

Age Group	Method			
	No method	Any Method	Modern	Traditional
Total	51.2	48.9	35.1	13.8
Poorest	58.5	41.5	28.0	13.5
Lower Middle	50.8	49.2	35.9	13.3
Middle	46.2	53.8	39.0	14.8
Upper Middle	49.6	50.4	36.8	13.7
Richest	49.9	50.1	36.5	13.6
Poorest/Richest Ratio	1.17	0.83	0.77	0.99

Source: Orbeta (2004c), basic data from NSO, 2002 Family Planing Survey

Table 3. Source of Modern Method Supply by Method by Asset Index Quintile, 2002

Source	Pill	IUD	Injection	Diaphragm	Condom	Ligation	Vasectomy	Total
Philippines								
Public	65.4	74.9	92.9	100.0	41.0	72.8	81.6	70.1
Private	33.4	22.7	6.0	0.0	57.4	25.6	18.4	28.5
Poorest								
Public	87.8	86.1	96.8	0.0	78.5	84.3	100.0	87.9
Private	11.7	12.1	2.2	0.0	20.2	15.6	0.0	11.4
Lower Middle								
Public	75.3	83.8	96.6	100.0	56.0	85.6	100.0	80.8
Private	22.9	12.8	2.4	0.0	44.1	13.2	0.0	17.6
Middle								
Public	66.0	81.1	93.1	0.0	36.6	78.3	53.1	72.9
Private	32.3	17.0	6.9	0.0	61.1	19.4	46.9	25.4
Upper Middle								
Public	53.5	61.2	86.0	0.0	36.2	66.9	100.0	60.1
Private	45.3	34.4	11.8	0.0	62.5	30.8	0.0	38.0
Richest								
Public	39.8	53.5	81.5	100.0	19.0	60.0	68.1	50.3
Private	59.2	46.0	16.4	0.0	78.0	38.9	31.9	48.6
Poorest/Richest Ratio (%)								
Public	2.2	1.6	1.2	0.0	4.1	1.4	1.5	1.7
Private	0.2	0.3	0.1	-	0.3	0.4	0.0	0.2

Source: Orbeta (2004c), basic data from NSO, 2002 Family Planing Survey

Table 4. Unmet Need for Family Planning, 2002

Asset Index Quintile	Total	Spacing	Limiting
Philippines	20.0	10.1	9.9
Poorest	27.0	13.5	13.4
Lower Middle	21.7	10.3	11.5
Middle	17.1	8.1	9.0
Upper Middle	17.7	9.7	7.9
Richest	16.0	8.8	7.2
Poorest/Richest Ratio	1.7	1.5	1.9

Source: Orbeta (2004c), basic data from NSO, 2002 Family Planing Survey

Table 5. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Children ever born	16625	3.472	2.325	0	17
Wants another child	16625	0.124	0.330	0	1
Use modern method	16625	0.344	0.475	0	1
Age of mother	16625	35.529	8.024	15	49
Mother with no education	16625	0.020	0.140	0	1
Mother with elem. education	16625	0.286	0.452	0	1
Mother with secondary education	16625	0.396	0.489	0	1
Mother with college education	16625	0.297	0.457	0	1
Urban	16485	0.606	0.489	0	1
Proportion of bgy. with electricity	16485	0.808	0.176	0.251	1
Proportion of bgy. with access to natinal highways	16485	0.809	0.127	0.384	1
Mean income of child workers (5-14), domain level	16485	20.090	28.301	0	207
Total unmet need for family planning, province level	16625	0.203	0.058	0.060	0.397

Source of basic data: 2002 FPS, NSO

Table 6. OLS Estimates of determinants of children ever born to married women, 2002

Explanatory variables	Coef.	Std. Err.*	t
Age of mother	0.370	0.016	23.26
Age of mother, squared	-0.003	0.000	-14.12
Mother with elem. education	0.325	0.172	1.89
Mother with sec. education	-0.212	0.172	-1.23
Mother with college education	-0.852	0.173	-4.91
Urban	-0.082	0.038	-2.17
Poorest quintile	1.085	0.067	16.29
Lower middle quintile	0.614	0.057	10.69
Middle quintile	0.348	0.051	6.88
Upper middle quintile	0.126	0.046	2.74
Proportion of bgy. with electricity	0.060	0.148	0.40
Proportion of bgy. with access to natinal highways	-1.216	0.193	-6.31
Mean income of child workers (5-14), domain level	0.001	0.001	1.45
Constant	-4.372	0.325	-13.45
R-square	0.339		
Obs.	16,485		

* Robust standard errors

Table 7. Determinants of demand for additional children, 2002

	Ordinary Probit			Two-stage Probit 1			Two-stage Probit 2			
Explanatory variables	Coef.	Std. Err.*	z	Coef.	Std. Err.*	z	Coef.	Std. Err.*	z	Mar. Eff.
Children-ever-born (CEB)	-0.1686	0.0120	-14.10				0.1189	0.1247	0.95	0.0151
Estimated error, CEB							-0.2891	0.1240	-2.33	-0.0367
Predicted CEB				0.1558	0.1199	1.30				
Age of mother	0.1124	0.0197	5.70	-0.0094	0.0482	-0.20	0.0060	0.0501	0.12	0.0008
Age of mother, squared	-0.0026	0.0003	-8.42	-0.0014	0.0005	-2.70	-0.0016	0.0005	-3.08	-0.0002
Mother with elem. education	-0.1500	0.1384	-1.08	-0.1723	0.1385	-1.24	-0.2276	0.1430	-1.59	-0.0271
Mother with secondary education	-0.1255	0.1388	-0.90	0.0104	0.1383	0.08	-0.0452	0.1426	-0.32	-0.0057
Mother with college education	0.0103	0.1415	0.07	0.3254	0.1743	1.87	0.2725	0.1796	1.52	0.0381
Urban	-0.0370	0.0346	-1.07	-0.0041	0.0386	-0.11	0.0043	0.0394	0.11	0.0006
Poorest quintile	-0.0660	0.0603	-1.09	-0.3830	0.1506	-2.54	-0.3955	0.1561	-2.53	-0.0426
Lower middle quintile	-0.0974	0.0543	-1.79	-0.2755	0.0937	-2.94	-0.2830	0.0964	-2.94	-0.0317
Middle quintile	-0.0314	0.0502	-0.63	-0.1304	0.0653	-2.00	-0.1333	0.0663	-2.01	-0.0160
Upper middle quintile	-0.0330	0.0482	-0.68	-0.0666	0.0504	-1.32	-0.0688	0.0509	-1.35	-0.0085
Constant	-1.3008	0.3322	-3.92	0.3152	0.7039	0.45	0.2012	0.7301	0.28	
Psuedo R2	0.1869			0.1642			0.1874			
Obs.	16,485			16,485			16,485			

* Robust standard errors

Table 8. Determinants of using modern contraception, 2002

Explanatory variables	Ordinary Probit Coef.	Std. Err.*	z	Two-stage Probit 1 Coef.	Std. Err.*	z	Two-stage Probit 2 Coef.	Std. Err.*	z	Mar. Eff.
Wants another child (WAC)	0.0800	0.0367	2.18				-4.4269	0.2287	-19.35	-0.5449
Estimated error, WAC							4.6410	0.2315	20.05	1.6885
Predicted WAC				-4.3644	0.2288	-19.08				
Age of mother	0.2086	0.0125	16.76	0.0698	0.0138	5.05	0.0693	0.0139	5.00	0.0252
Age of mother, squared	-0.0030	0.0002	-17.02	-0.0019	0.0002	-10.14	-0.0019	0.0002	-10.12	-0.0007
Mother with elem. education	0.6419	0.1143	5.62	0.5665	0.1173	4.83	0.5627	0.1181	4.76	0.2107
Mother with secondary education	0.7275	0.1150	6.32	0.6906	0.1179	5.86	0.6875	0.1187	5.79	0.2524
Mother with college education	0.5597	0.1169	4.79	0.7151	0.1199	5.96	0.7137	0.1207	5.91	0.2694
Urban	-0.0061	0.0253	-0.24	-0.0319	0.0255	-1.25	-0.0323	0.0255	-1.27	-0.0118
Total unmet need, province	-2.8943	0.2223	-13.02	-3.0882	0.2251	-13.72	-3.1013	0.2255	-13.75	-1.1283
Poorest quintile	-0.2283	0.0437	-5.22	-0.3906	0.0450	-8.67	-0.3919	0.0451	-8.69	-0.1345
Lower middle quintile	-0.0322	0.0400	-0.80	-0.1601	0.0409	-3.92	-0.1610	0.0409	-3.94	-0.0573
Middle quintile	-0.0235	0.0379	-0.62	-0.0789	0.0382	-2.07	-0.0797	0.0382	-2.08	-0.0287
Upper middle quintile	-0.0370	0.0368	-1.01	-0.0719	0.0368	-1.95	-0.0719	0.0368	-1.95	-0.0259
Constant	-3.8027	0.2481	-15.33	0.2235	0.3150	0.71	0.2539	0.3154	0.81	
Psuedo R2	0.0375			0.0566			0.0585			
Obs.	16,485			16,485			16,485			

* Robust standard errors

Table 9. Bivariate probit estimates of demand for additional children and contraception, 2002

Explanatory variables	Additional Children Coef.	Std. Err.*	z	Contraception Coef.	Std. Err.*	z
Children-ever-born (CEB)	-0.2245	0.0132	-16.97			
Wants another child (WAC)				-1.1913	0.0553	-21.54
Age of mother	0.1123	0.0175	6.40	0.1411	0.0128	11.05
Age of mother, squared	-0.0024	0.0003	-8.95	-0.0024	0.0002	-13.17
Mother with elem. education	-0.1458	0.1357	-1.08	0.5550	0.1039	5.34
Mother with secondary education	-0.1269	0.1358	-0.93	0.6446	0.1046	6.16
Mother with college education	-0.0292	0.1384	-0.21	0.5595	0.1062	5.27
Urban	-0.0502	0.0323	-1.55	-0.0133	0.0243	-0.55
Total unmet need, province				-2.6327	0.1987	-13.25
Poorest quintile	-0.0835	0.0568	-1.47	-0.2667	0.0420	-6.35
Lower middle quintile	-0.0926	0.0512	-1.81	-0.0746	0.0386	-1.93
Middle quintile	-0.0629	0.0474	-1.33	-0.0416	0.0366	-1.14
Upper middle quintile	-0.0350	0.0452	-0.77	-0.0456	0.0352	-1.29
Constant	-1.2896	0.3064	-4.21	-2.0959	0.2547	-8.23
Wald test of rho=0: Chi2 (P-value)	193.19 (0.0000)					
Obs.	16,485					

* Robust standard errors

Annex

Asset Index Construction Using FPS Household Assets

Introduction

Generating wealth index have been resorted to by researchers when there is a need for an indicator of socioeconomic status but the dataset under consideration does not contain income or consumption but only have information on household assets. There are many ways of generating a socioeconomic indicator out of household assets (see Bollen et al. (2001) for a recent review of the methods). Two will be discussed here. First is the statistical method called principal components analysis and the other is the NSO method, which for lack of a better term may be called "relative deprivation" index.

Principal Components Analysis[10]

Principal components analysis (PCA) is a technique of summarizing a set of variables into a smaller set of mutually orthogonal components that best capture the common information present in the variables. The first principal component captures the largest and the most common variation among the variables.

The generic problem with principal components analysis is that while it is easy to interpret the first principal component, the interpretation of the higher order components is more problematic. Filmer and Pritchett (1998) used the first principal component to define an asset index. The crucial assumption is that the most common variation in the assets is caused by the household long-run wealth. They have shown that the index fared well in comparison with other measures of economic status such as the family size-adjusted per capita consumption.

It should be noted that recently the use of discrete variables in PCA has been criticized because PCA was originally designed for continuous variables (Kolenikov and Angeles 2004). The authors themselves admit, however, that given the complexity of the proposed appropriate methodology for a PCA-like analysis for discrete variables,[11] the simulation results shows that the practical relevance of the proposal in only on the use natural ordering of the classifications rather than the discrete rendering of the natural ordering as originally proposed in Filmer and Pritchett (1998). The intuition provided is that information is lost by using the correlation of the discrete rendering of the natural ordering rather than what amounts to be the correlation of ranks if the natural ordering of the variables is used. These qualifications, however, do not apply to the data set we are using because the data only provides information on the presence or absence of the household amenity that are used as indicators for household wealth.

The variables are usually standardized before weights are computed. Raw values can be used but the weights will be larger for variables that vary more.

The asset index for household j (Aj) is given as

[10] A close cousin of PCA, factor analysis have also been used and argued to be better conceptually but the results, however, are very similar (Sahn and Stiefel, 2001).
[11] Kolenikov and Angeles (2004) called the procedure polychoric and polyserial correlations.

$$A_j = f_1 * \frac{(a_{j1} - a_1)}{s_1} + ... + f_N * \frac{(a_{jN} - a_N)}{s_N} \quad (A1)$$

where f_1 is the weight of asset 1; a_{j1} is the value of the household j's first asset; a_1 and s_1 are the mean and standard deviation of first asset for all households.

Thus, in the case of a dichotomous variable such as 1 representing the presence of an asset in the household and 0 the absence of it, A_j will change with two values. For asset 1, for instance, it is $f_1*(1-a_1)/(s_1)$ if present, and $f_1(-a1)/(s_1)$ if absent.

NSO Socioeconomic Index

The documentation of the socioeconomic index is not included in the survey reports but informally published in NSO(n.d). It uses "relative deprivation" as the weights to the asset variables. As such, assets more commonly owned by household will have smaller weights and, conversely, assets owned by fewer households will have larger weights. In particular, it uses as weights one minus the proportion of household in the survey owning the asset. Hence, I called it a "relative deprivation" index. Note that this method works only when asset measures are dichotomous such as the asset information in FPS. It cannot handle continuous variables like the principal component analysis.

Formally the asset index in the NSO socioeconomic index is

$$A_j = (1 - \tilde{a}_1) * a_{j1} + ... + (1 - \tilde{a}_N) * a_{jN} \quad (A2)$$

where $\tilde{a}_k$ is the proportion of households in the survey owning asset k.

Socioeconomic Classification

Those who use PCA typically use quintiles or deciles of the index value to classify households. NSO, on the other hand, uses poor/non-poor classification of households. It considers the lowest one-third of the women[12] in terms of index value as poor.

Principal Component Results

The FPS started to ask household assets questions in the 1999 round. These are used to generate asset index using PCA. The results of the exercise are summarized in Annex Table 1. The first two columns provide the mean and standard deviation of the household asset variables. Since the assets are coded as 1 when the household has the asset and 0 otherwise, the means are the proportion of the household that has the particular asset. For instance, in the 2002 round, 81% of the households have electricity. The right-most column is the PCA weights (the fs in equation A1). The generated index values (A_j) are used as the basis for classifying households into socioeconomic quintiles.

[12] NSO(n.d.) specifically mentions that it is the women, not the households, that are classified as poor or non-poor according to index values. This is surprising given that the assets are household assets, not individual assets.

The five columns in the middle of the table are the means by asset index quintile. Again this represents estimated proportion of households owning the asset by quintile. Thus, for instance, in 2002 the asset index predicted that there are only 16% of the poorest households who have electricity while virtually all in the richest quintile have electricity. Less than 1% of the poorest households owned cars/jeeps/vans while 47% of the richest household own cars. The rest of the assets have similar ownership pattern which agrees which common sense.

It should be mentioned that the FPS public use files (PUFs) only have individual weights referring to the subject of the survey – women of reproductive ages. It does not contain household weights which are needed in the construction of the household asset index.[13] Given this, it was assumed that the households are self-weighting.

NSO Socioeconomic Index Results

Annex Table2 provides the summary of the results generated using the NSO index. The right most column is $(1-\tilde{a_k})$ in equation A2. The ownership pattern is very similar to the one generated using PCA. In 2002, for instance, 22% of the poor are predicted to have electricity among the poorest households while virtually all have electricity among the richest quintile. Nobody owns a car/jeep/van among the poor while 47% among the richest household owned one.

Comparing the PCA and NSO Index Results

At the outset it must be stated that the correlation between the index values (the As) is very high. This is 0.93 in the 2002 round.

To appreciate the differences between the PCA classification results and the NSO index classification results, two comparisons are done. One is generating the poor/non-poor classification used by the FPS. The other is comparing the quintile classification results.

While the asset variables are included since the 1999 round, the poor/non-poor classification is included only in the 2002 PUF. The NSO index values are not provided. In order to do a replication, women were classified using the actual proportion of poor/non-poor women in the 2002 PUF. NSO (n.d.) says about one third of the women are considered poor. Tabulation using the 2002 PUF's "ecostat" variable says 25.76% of the women are poor. This proportion the proportion we used rather than one-third. The resulting classifications are then tabulated against the NSO classification included in the PUF. The results of the comparison are given in Annex Table 3. The diagonal cells indicating correct classification says 99% of the poor and non-poor are correctly classified.

The quintile generated using the NSO index values and the PCA results were compared. The results are given in Annex Table 4. The households classified as poorest and richest are more than 90% in agreement. There are considerable deviations in the middle quintile classifications. There is only 50% agreement in the middle quintile, around 66% agreement in the lower middle quintile and 75% in the upper middle quintile.

[13] Together with the survey parameters, the household weights are also requested by th% e consultant from the NSO. These were not released up to the time of the writing of this report.

Annex Table 1. Factor score coefficients, descriptive statistics, total and by Asset Index Quintile, 1999-2002

	Total		Asset Quintile Index (Means)					Score
Asset Variable	Mean	Std. Dev.	Poorest	L. Middle	Middle	U. Middle	Richest	Coeff.
2002								
Electricity	0.8148	0.3885	0.1660	0.9121	0.9975	0.9995	0.9990	0.3960
Radio	0.8186	0.3853	0.3714	0.7979	0.9476	0.9801	0.9962	0.3318
TV	0.6792	0.4668	0.0048	0.4245	0.9730	0.9945	0.9992	0.4533
Telephone	0.3192	0.4662	0.0008	0.0199	0.1162	0.5392	0.9199	0.4085
Refrigerator	0.4454	0.4970	0.0003	0.0358	0.2785	0.9247	0.9879	0.4508
Bicycle	0.2246	0.4173	0.0491	0.1524	0.2051	0.2008	0.5154	0.1771
Motorcycle	0.1438	0.3509	0.0053	0.0431	0.0748	0.1429	0.4529	0.2334
Car/Jeep/Van	0.1010	0.3014	0.0035	0.0086	0.0098	0.0088	0.4745	0.2677
2001								
Electricity	0.8106	0.3919	0.1420	0.9132	0.9980	0.9998	1.0000	0.4046
Radio	0.8420	0.3648	0.4389	0.8289	0.9577	0.9877	0.9968	0.3189
TV	0.6516	0.4765	0.0027	0.2876	0.9717	0.9966	0.9995	0.4655
Telephone	0.2252	0.4177	0.0005	0.0052	0.0088	0.2367	0.8746	0.3915
Refrigerator	0.4278	0.4948	0.0000	0.0460	0.1878	0.9108	0.9946	0.4629
Bicycle	0.2008	0.4006	0.0288	0.1799	0.1996	0.2114	0.3845	0.1663
Motorcycle	0.1143	0.3181	0.0032	0.0369	0.0760	0.1500	0.3053	0.2144
Car/Jeep/Van	0.0882	0.2837	0.0010	0.0074	0.0042	0.0143	0.4145	0.2769
2000								
Electricity	0.7883	0.4085	0.0570	0.8879	0.9971	0.9998	1.0000	0.4095
Radio	0.8277	0.3776	0.4579	0.7360	0.9549	0.9923	0.9976	0.3275
TV	0.6373	0.4808	0.0048	0.2190	0.9714	0.9925	0.9991	0.4628
Telephone	0.1901	0.3924	0.0003	0.0054	0.0061	0.1181	0.8205	0.3703
Refrigerator	0.4222	0.4939	0.0005	0.0495	0.1419	0.9279	0.9912	0.4573
Bicycle	0.2285	0.4199	0.0376	0.2135	0.2249	0.2591	0.4075	0.1757
Motorcycle	0.1266	0.3326	0.0053	0.0475	0.0825	0.1660	0.3319	0.2225
Car/Jeep/Van	0.0954	0.2937	0.0009	0.0046	0.0043	0.0189	0.4483	0.2903
1999								
Electricity	0.7747	0.4178	0.0000	0.8827	0.9920	0.9990	1.0000	0.4117
Radio	0.8489	0.3581	0.5777	0.7138	0.9636	0.9925	0.9969	0.3011
TV	0.6072	0.4884	0.0000	0.1356	0.9093	0.9917	0.9995	0.4708
Telephone	0.1572	0.3640	0.0000	0.0023	0.0065	0.0351	0.7420	0.3651
Refrigerator	0.3996	0.4898	0.0000	0.0070	0.0842	0.9176	0.9894	0.4672
Bicycle	0.2152	0.4110	0.0341	0.2146	0.2226	0.2634	0.3412	0.1774
Motorcycle	0.1095	0.3123	0.0023	0.0181	0.0777	0.1015	0.3479	0.2192
Car/Jeep/Van	0.0845	0.2781	0.0000	0.0052	0.0039	0.0145	0.3988	0.2951

Source of basic data: 1999-2002 FPS, NSO

Annex Table 2. Descriptive Statistics by Asset by NSO Asset Index, 2002

	Total		NSO Asset Index Quintile (Means)					Implied
Variable	Mean	Std. Dev.	Poorest	L. Middle	Middle	U. Middle	Richest	Score Coeff.
2002								
Electricity	0.8148	0.3885	0.2242	0.9778	0.8836	0.9904	0.9980	0.1852
Radio	0.8186	0.3853	0.4142	0.8801	0.8485	0.9635	0.9869	0.1814
TV	0.6792	0.4668	0.0048	0.6805	0.7555	0.9632	0.9919	0.3208
Telephone	0.3192	0.4662	0.0000	0.0008	0.1190	0.5712	0.9050	0.6808
Refrigerator	0.4454	0.4970	0.0000	0.0003	0.4761	0.8166	0.9342	0.5546
Bicycle	0.2246	0.4173	0.0000	0.0000	0.2956	0.2706	0.5567	0.7754
Motorcycle	0.1438	0.3509	0.0000	0.0000	0.0431	0.1736	0.5023	0.8562
Car/jeep/van	0.1010	0.3014	0.0000	0.0000	0.0083	0.0285	0.4685	0.8990
2001								
Electricity	0.8106	0.3919	0.1782	0.9850	0.9027	0.9889	0.9983	0.1894
Radio	0.8420	0.3648	0.4598	0.9071	0.9095	0.9440	0.9897	0.1580
TV	0.6516	0.4765	0.0000	0.5556	0.7394	0.9678	0.9953	0.3484
Telephone	0.2252	0.4177	0.0000	0.0000	0.0047	0.4821	0.6391	0.7748
Refrigerator	0.4278	0.4948	0.0000	0.0000	0.5155	0.6735	0.9501	0.5722
Bicycle	0.2008	0.4006	0.0000	0.0000	0.1753	0.3139	0.5150	0.7992
Motorcycle	0.1143	0.3181	0.0000	0.0000	0.0317	0.0809	0.4587	0.8857
Car/jeep/van	0.0882	0.2837	0.0000	0.0000	0.0074	0.0147	0.4191	0.9118
2000								
Electricity	0.7883	0.4085	0.1063	0.9774	0.8688	0.9920	0.9973	0.2117
Radio	0.8277	0.3776	0.4579	0.8491	0.8947	0.9454	0.9917	0.1723
TV	0.6373	0.4808	0.0000	0.5401	0.6912	0.9631	0.9923	0.3627
Telephone	0.1901	0.3924	0.0000	0.0000	0.0046	0.2940	0.6519	0.8099
Refrigerator	0.4222	0.4939	0.0000	0.0005	0.4937	0.6715	0.9452	0.5778
Bicycle	0.2285	0.4199	0.0000	0.0000	0.2220	0.4670	0.4536	0.7715
Motorcycle	0.1266	0.3326	0.0000	0.0000	0.0398	0.0910	0.5024	0.8734
Car/jeep/van	0.0954	0.2937	0.0000	0.0000	0.0065	0.0140	0.4564	0.9046
1999								
Electricity	0.7748	0.4178	0.0359	0.9796	0.8693	0.9915	0.9974	0.2252
Radio	0.8489	0.3581	0.5783	0.8006	0.9163	0.9566	0.9928	0.1511
TV	0.6072	0.4884	0.0000	0.3830	0.6958	0.9633	0.9941	0.3928
Telephone	0.1572	0.3640	0.0000	0.0000	0.0054	0.1242	0.6563	0.8428
Refrigerator	0.3996	0.4898	0.0000	0.0000	0.3649	0.6818	0.9514	0.6004
Bicycle	0.2152	0.4110	0.0000	0.0000	0.2216	0.4703	0.3840	0.7848
Motorcycle	0.1095	0.3123	0.0000	0.0000	0.0372	0.0795	0.4308	0.8905
Car/jeep/van	0.0844	0.2781	0.0000	0.0000	0.0070	0.0108	0.4044	0.9156

Source of basic data: NSO FPS 1999-2002

Annex Table 3. Comparison of PUF Classification & Publication classification

PUF Classification	Publication Classification Non-poor	Poor	Total
non-poor	22,017	77	22,094
	99.7	0.4	100.0
	99.7	1.0	74.2
poor	77	7,589	7,666
	1.0	99.0	100.0
	0.4	99.0	25.8
Total	22,094	7,666	29,760
	74.2	25.8	100.0
	100.0	100.0	100.0

(Number)
(Row Percentage)
(Column Percentage)

Source of basic data: NSO FPS 2002

Annex Table 4. Comparison of PCA and NSO Index Quintile Classification, 2002

NSO Index Classification	PCA Classification Poorest	Lower Middle	Middle	Upper Middle	Richest	Total
Poorest	4,789	315	0	0	0	5,104
	93.8	6.2	0.0	0.0	0.0	100.0
	94.2	5.8	0.0	0.0	0.0	17.2
Lower Middle	6	3,653	1,906	0	0	5,565
	0.1	65.6	34.3	0.0	0.0	100.0
	0.1	66.7	32.4	0.0	0.0	18.7
Middle	287	1,454	2,893	1,157	0	5,791
	5.0	25.1	50.0	20.0	0.0	100.0
	5.6	26.5	49.2	18.5	0.0	19.5
Upper Middle	4	57	1,079	4,708	448	6,296
	0.1	0.9	17.1	74.8	7.1	100.0
	0.1	1.0	18.3	75.2	6.4	21.2
Richest	0	1	7	394	6,602	7,004
	0.0	0.0	0.1	5.6	94.3	100.0
	0.0	0.0	0.1	6.3	93.7	23.5
Total	5,086	5,480	5,885	6,259	7,050	29,760
	17.1	18.4	19.8	21.0	23.7	100.0
	100.0	100.0	100.0	100.0	100.0	100.0

(Number)
(Row Percentage)
(Column Percentage)

Source of basic data: NSO FPS 2002