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Nguyen, Cuong and Van den Berg, Marrit

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Nguyen Viet Cuong

Marrit Van den Berg[1]


*Development Economics, Wageningen University*

*P.O. Box 8130*

*6700 EW Wageningen*

*The Netherlands*


[1]     corresponding author

Tel: (31) 317482548/317484360(secr)

Fax: (31) 317-484037

Email: Marrit.vandenBerg@wur.nl

Abstract

Vietnam's extensive social security system is claimed to have played a key role in the extraordinary poverty decline over the past decades. This claim is, however, not substantiated by empirical evidence. In this study, we investigate how well contributory pensions and social allowances reached the poor and to which extent these transfers affected poverty and inequality in the early 2000s. Using fixed-effect regression to avoid endogeneity bias and allowing for different effects of different types of transfers, we find that the impact of these transfers on poverty and inequality was low, due to low coverage of poor and relatively low amounts transferred to the poor. Contrary to studies for other countries, our estimates suggest that public transfers did not crowd out private transfers nor did they result in a decrease in work effort. We do find weak evidence for multiplier effects for social transfers, but not for pensions.

# The Impact of Public Transfers on Poverty and Inequality: Evidence from rural Vietnam

## 1. Introduction

Cash transfers have become an increasingly popular strategy of combating poverty and inequality. They are perceived as being more adaptable to the specific needs of individual beneficiaries, more empowering and less stigmatizing than transfers in kind. Cash transfers essentially are an additional source of income that can be freely spend by the recipients.

Besides increasing income of the beneficiaries, cash transfer programs can also have important positive indirect effects. The money transferred may be used to acquire productive inputs or to invest in productive assets, generating multipliers on the cash received (Sadoulet et al. 2001; Farrington and Slater 2006; Lloyd-Sherlock 2006) In the absence of effective collective arrangements to manage risk, poor households cannot afford a major setback, and so will often choose to manage their livelihoods so as to minimize their exposure to risk, even if this results in low average returns (Conway and Norton 2002). The ultimate consequence of this behavior may be that households are trapped in poverty (Carter and Barrett 2006). Cash transfers for social protection therefore supposedly encourage moderate risk-taking behavior, allowing income growth and asset accumulation (Devereux 2002). Other cash transfers can have the same effect, as they guarantee a minimum income level and thus provide security. Transfers may also cause positive indirect effects through other channels than risk mitigation. When households are devoid of reliable sources of credit, cash transfers may allow them to intensify or expand there production beyond a scale they would otherwise have been able to obtain (Sadoulet et al. 2001).

Empirical evidence supports these multiplier-generating indirect effects of public transfers. Sadoulet et al. (2001) find short-run income multipliers in the range of 1.5-2.6 for cash transfers to compensate Mexican farm households for the anticipated negative price effects of trade liberalization on basic crops. Likewise, Devereux (2002) finds evidence that even tiny income transfers are often invested in income-generating activities, education, social networks, or acquisition of productive assets in three Southern African case studies.

On the other hand, there may also be negative indirect effects of cash transfer programs. Transfers supposedly provide disincentives to work effort (Farrington and Slater 2006; Lloyd-Sherlock 2006; Sahn and Alderman 1996). Recipients may become dependent on social transfers, and fall into poverty when no longer receiving assistance (Dreze 2005). Moreover, there is evidence that public transfers crowd-out private transfers (Jensen 2004; Maitra and Ray 2003). As a result, income may increase by less than the transferred amount of money.

As both positive and negative indirect effects may be important, the quantitative effects of public transfers on the income of recipients are not *a priori* known. After-transfer income may be higher as well as lower than the sum of transfers and counterfactual income, *i.e.* income had there not been transfers. Moreover, given total income, the effect of transfers on expenditures may be different than for earned income. Often, social transfers and earned income accrue to different persons. These persons may have different preferences and pooling may be imperfect (Maitra and Ray 2003). Therefore, to assess the impact of public transfers, we need to carefully determine the counterfactuals for both income and consumption.

This is not straightforward, as obviously there are no data for what would have been the outcome had households not received transfers. Simply comparing transfer recipients with a control group mostly does not solve the problem. Both groups are likely to be systematically different, unless some randomization of transfer assignment is applied. Randomization is, however, mostly considered unethical for anti-poverty measures and therefore not applied. Using regression techniques, it is relatively easy to correct for between-group and between household differences that are observed by the researchers. Yet, some relevant variables may be unobserved. For example, people with good government contacts may receive more transfers and at the same time get more earned income from the same resources. In this paper, we use panel data techniques to control for these unobserved variables.

This is, however, not enough to assess the impact of public transfers on poverty and inequality. Generally not all beneficiaries belong to the target group. Barrientos and DeJong (2006), for example, observe that 20-40 percent of beneficiaries in three different cash transfer programs to support poor households with children of school age were among the non-poor. Leakage rates are also high in developed countries, where the poor tend to receive less from social security programs than people from middle and high income groups We therefore need to

consider the distribution of transfers over the population to go from average impact to changes in poverty and inequality.

The objective of this paper is to examine how well social security transfers including pensions and social allowances reach the rural poor in Vietnam and to which extent these transfers affect household welfare, poverty and inequality. Vietnam has committed itself to a "growth with equity" strategy of development. The country has achieved high economic growth, with annual GDP growth rates of around 6 percent over the past 10 years. Poverty rates have declined remarkably from 58 to 20 percent between 1993 and 2004. The mass media claim that the extensive social security system maintained by the government has played a key role in this decline.

Yet the few existing evaluation studies of the system do not support this claim. Van de Walle (2002) has analyzed the performance of Vietnam's public safety net during the 1990s. She found that social insurance and subsidies were badly targeted at the poor, with percentages of households receiving benefits being similar across expenditure quintiles. Social transfers helped to reduce the poverty incidence by less than three percentage points. The efficiency of the system may, however, have improved since then. Evans et al. (2006) suggest that some improvements have indeed taken place. In 2004, the proportion of households receiving benefits was highest for the poorest groups at least for some categories of social security benefits. Moreover, Evans et al. conclude that in this year poverty rates would have been almost five percent higher in the absence of social security payments. However, they compute this estimate by comparing actual poverty rates with poverty rates based on counterfactual expenditures calculated by simply subtracting social transfers from actual expenditures. As explained above, the results are therefore likely to be biased, and the bias may be positive as well as negative.

We contribute to these studies by assessing the impact of pensions and social allowances on poverty and inequality in the early 2000s, while correcting for potential biases due to the indirect effects of transfers and the endogeneity of transfer allocation. Also, contrary to Van de Walle, we allow for differences in impact for different types of transfers. We use the Vietnam Household Living Standard Surveys 2002 and 2004. These surveys form a panel of more than 3000 rural households, which allows us to estimate the impact of public transfers accounting for characteristics that are either observed or unobserved but stable between the two survey rounds. We find that the effect of the transfers on poverty was still relatively

low. Perhaps surprisingly, the effect was highest for pensions, which have lower prevalence among the poor but cover higher amounts than social allowances. The impact of transfers on inequality was negligible.

The paper is structured as follows. In the next section we introduce the data used in this paper. The third section describes poverty, inequality, and public transfers in rural Vietnam. The fourth section presents the methodology we used to measure the impact of the transfers. In the fifth section we present the empirical findings, and finally the sixth section concludes.

## 2. Data

The study relies on data from the two recent Vietnam Household Living Standard Surveys (VHLSS), which were conducted by the General Statistics Office of Vietnam (GSO) with technical support from the World Bank (WB) in the years 2002 and 2004. For the descriptive statistics, we also use two previous rounds of the VHLSS, conducted in 1993 and 1998.

The 2002 and 2004 VHLSSs covered 30000 and 9000 households, respectively. The samples are representative for the national, rural and urban, and regional levels. The 2002 and 2004 VHLSSs set up a panel of 4000 households, which are representative for the whole country, and for the urban and rural population.

The surveys collected information through household and community level questionnaires. Information on households includes basic demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, participation of households in poverty alleviation programs, and especially information on pensions and social allowances that households had received during the 12 months before the interview. In the rare cases that pensions and social allowances are provided in kind, VHLSS reports their equivalent estimated values.

Expenditure and income per capita are collected using very detailed questionnaires in VHLSS. Expenditure includes food and non-food expenditure. Food expenditure includes purchased food and foodstuff and self-produced products of households. Non-food expenditure comprises expenditure on education, healthcare expenditure, expenditure on houses and commodities, and expenditure on power, water supply and garbage. Regarding to income, household income can come from

any source. Income includes income from agricultural and non-agricultural production, salary, wage, pensions, scholarship, income from loan interest and house rental, remittances and social transfers. Income from agricultural production comprises crop income, livestock income, aquaculture income, and income from other agriculture-related activities.

Information on commune characteristics was collected from 2960 and 2181 communes in the 2002 and 2004 surveys, respectively. This data can be linked with the household data. Commune data includes demography, general economic conditions and aid programs, non-farm employment, agriculture production, local infrastructure and transportation, education, health and health facilities, and social problems. In the 2004 VHLSS, commune data are only available for rural areas.

This study focuses on the rural population. The main reason is that we use commune variables in the regression analysis. In addition, poverty in Vietnam is mostly a rural phenomenon, with 95 percent of all poor living in rural areas in 2004. The number of households in the rural panel for 2002-2004 is 3099.

A household is classified as poor if their per capita expenditure is below the poverty line set up by WB and GSO. The poverty line is equivalent to the expenditure level that allows for nutritional needs and some essential non-food consumption such as clothing and housing. This poverty line was first estimated in 1993. Poverty lines in the following years were estimated by deflating the 1993 poverty line using consumer price indexes. The poverty lines for the years 1993, 1998, 2002, and 2004 are 1160, 1790, 1917, and 2077 thousands VND, respectively.

## 3. Poverty and public transfers in rural Vietnam

Poverty rates declined continuously over the period 1993-2004 (Figure 1). The proportion of poor dropped dramatically from 58 percent in 1993 to 37 percent in 1998 and continued to decrease to 29 and 20 percent in 2002 and 2004, respectively. In rural areas, however, poverty was more prevalent than the country-average, with a poverty rate of 25 percent in 2004. The reduction of poverty was associated with a moderate increase in inequality. The Gini index increased from 0.33 in 1993 to 0.37 in 2004.

<<INSERT FIGURE 1>>

As indicated before, social security can play an important role in poverty reduction. Vietnam's social security net includes a large number of programs. Part of these programs are contribution-based. A major criticism of such programs is that they exclude groups without substantial periods of formal sector employment, thus minimizing their coverage of poor and vulnerable social groups (Lloyd-Sherlock 2006). Other schemes are specifically designed to reduce economic shocks and poverty, and may therefore be expected to have rendered a larger contribution to Vietnam's poverty reduction.

Contribution-based social insurance covers mandatory health insurance and pensions. Since 1995, both health insurance and pensions are compulsory for employees in State organizations, State-owned enterprises, and private enterprises with ten employees or more (Evans et al., 2006). To cover costs, employers deduct a portion of employees' monthly salary to pay contributions. In order not to complicate issues, we focus on pensions only. Pensions have existed since 1962, but before 1995 they covered only the State sector (Giang, 2004). Pensions include several types of benefits, such as maternity benefits, sickness assistance, assistance in case of occupational injury or disease, payments for job loss and redundancy, monthly pensions for the retired, and life insurance. Most of pension benefits are paid in cash.[1]

The most important non-contributory schemes are the National Targeted Programs (NTPs) and social allowances. The NTPs are government programs with the specific objective to reduce poverty. The NTPs provide the poor with support for, *e.g.*, education, health, production, and construction of infrastructure. Support under the umbrella of the NPTs is very diverse and often in kind and difficult to convert to money values. In this paper, we therefore focus on social allowances. These cover support to disadvantaged groups, such as war invalids, people who gained merit during the war, old people, and children without guardians, disabled people, and households adversely affected by natural calamities. Most social allowances are disbursed in cash, but in rare cases, support takes the form of food, clothes, production inputs and materials for housing repairs, etc.[2]

The impact of pensions and social allowances on poverty and inequality depends on the distribution of the benefits over the population. The distribution of pensions is clearly progressive. Richer households receive a more than proportional

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[1] For more information on the Vietnamese pension scheme, see Government of Vietnam, 1993a, 1993b, 1995, 1998 and 2003.

share of pensions, as they are both more likely to receive pensions and get a higher amount of pension on average (Table 1). Overall, nine percent of households received benefits, but this was only four and six percent for the lowest two expenditure quintiles. Nevertheless, for those households receiving pensions, pensions covered on average about thirty percent of total income. This pattern did not change between 2002 and 2004.

As most pensions are targeted at the elderly, Table 2 presents pensions of the poor and non-poor households for those with at least one member older than 60 years. In the period 2002-2004, this type of households accounted for around thirty percent of all households. While the coverage of pensions over households with elderly was higher than for the total population, the distribution over the expenditure quintiles was similar.

<<INSERT TABLES 1 & 2>>

As expected, social allowances were somewhat more pro-poor than pensions (Table 3). While the share of households receiving social allowances was nine percent, and therefore almost identical to the share of households receiving pensions, fifteen percent of the lowest expenditure quintile received transfers, compared to six percent of the highest quintile. Yet, the average amount received sharply increases with total expenditures. Overall, the contribution of transfers tot household income is low compared to the contribution of pensions: fourteen percent on average.

Summarizing, the poor received both pensions and social allowances, but a large share of both went to non-poor households. However, the analysis is *ex post* and does not take into account that the assignment of households to expenditure quintiles is done after accounting for public transfers. Pensions and social allowances may have lifted out of poverty. In order to test this hypothesis, we need to estimate household income in the absence of these transfers. This is what we will do in the remainder of this paper.

<<INSERT TABLE 3>>

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[2] For more information on social allowances in Vietnam, see Government of Vietnam, 1993b, 2003.

# 4. Assessing the treatment effect

## 4.1. Parameters of interest

We use two indicators to measure the impact of the pensions and social transfers. The first is the expected impact of these transfers on the recipients, which also known as the Average Treatment Effect on the Treated (ATT). Since the size of transfers differ across the population, looking at receipt alone does not tell the whole story. Our second indicator therefore refers to the expected effect of a small increase in transfer size for recipients. This is called the Average Partial Effect on the Treated (APET).

To define ATT, denote $D$ as the treatment variable *i.e.*, $D$ equals the amount of transfers received. Further let $Y$ denote the observed value of outcome, *i.e.*, household income and consumption expenditure in this paper, and let $Y_{(D)}$ denote potential outcome corresponding to the value of D. ATT can now be formalized as:

$$ATT = E(Y_{(D)} - Y_{(D=0)} | D > 0) = E(Y_D | D > 0) - E(Y_{(D=0)} | D > 0), \tag{1}$$

where the final term denotes the outcome of recipients had they not received treatment. This is unobserved, and the challenge of a good impact evaluation is to construct an accurate estimate of this counterfactual.

Please note that our formalization differs slightly from the standard definition, which assumes a binary treatment variable. We use a continuous variable, as we are also interested the effect of a small change in the level of transfers. The change in impact due a change in the amount of transfers from $d$ to $d+\delta$ is defined as:

$$E[\Delta(d,\delta)|D > 0] = E[Y(D = d + \delta) - Y(D = d)|D > 0]. \tag{2}$$

Dividing the right-hand side of (2) by $\delta$, we obtain the second impact indicator used in this study; the Average Partial Effect on the Treated (APET):

$$APET_{(d,\delta)} = \frac{E[Y(D^c = d + \delta) - Y(D^c = d)|D^c > 0]}{\delta}. \tag{3}$$

APET can be regarded as the average marginal treatment effect measured at transfer amount d. If $E[Y(D^c)|D^c > 0]$ is a continuous and differentiable function $f_{D^c>o}$ of $D^c$, the APET is simply the derivative of $f_{D^c>o}(D^c)$ with respect to $D^c$.

## 4.2. Measurement of impact on households' expenditure and income

The most common functional form for income and expenditure functions is log-linear:

$$\ln(Y_i) = \alpha + X_i\beta + \varepsilon_i, \tag{4}$$

where $X$ are observed households and location characteristics and $\varepsilon$ is an error term including characteristics that are unobserved by the researchers. A requirement for standard regression methods to give unbiased parameter estimates is that these unobserved characteristics are not correlated with the $X$ variables.

This requirement is likely to be violated in the case of transfers. Transfer-receiving households may be systematically different from other households. For example, households with social allowances may be less sturdy or have better political contacts than households without transfers. Put differently, ordinary least-squares regression of outcome functions including social transfers will results in biased estimates of transfer impact.

In this study, we use the panel nature of the data to minimize such bias. The main assumption underlying this method is that the relevant unobserved variables remained unchanged during the period covered by the panel, in this case 2002-2004. While we expect that between these years transfers respond significantly to changes in family composition, which are observed and included in the regressions, we assume that the unobserved characteristics correlated with both income/expenditures and transfers have remained unchanged over this relatively brief period.

The estimated equations can thus be formulated as follows:

$$\ln(Y_{it}) = \alpha_i + X_{it}\beta + D_{it}\gamma + \varepsilon_{it}, \tag{5}$$

where $\alpha$ is the household effect covering both observed and unobserved time-invariant household and commune characteristic. $X$ includes information on demography, household assets, housing, education, employment, infrastructure, and socioeconomic commune characteristics. $D$ is a vector of the amount of pensions and social allowances received. We include these as separate variables, as they may accrue to different (types of) persons with different preferences and bargaining power. The error term $\varepsilon_{it}$ and $D$ are assumed to be distributed independently. Fixed-

effect regression thus gives unbiased estimates of the coefficients of this function and of the effect of transfers on income and expenditures.

The estimator of the ATT can now be expressed as follows:

$$ATT = E(Y \mid D > 0) - E(\hat{Y}_{(D=0)} \mid D > 0) = \frac{1}{n_p} \sum \left\{ Y_{it} - e^{\ln(Y_{ti}) - D_{it}\hat{\gamma}} \right\} \quad \forall D_{it} > 0, \tag{6}$$

where $n_p$ is the number of cases with transfer receipts.

Similarly, the estimator of the APET is:

$$APET = E\left( \frac{\partial Y}{\partial D} \right) = E(\gamma Y) = \hat{\gamma} \frac{1}{n_p} \sum Y_{it} \quad \forall D_{it} > 0. \tag{7}$$

For sake of comparison between groups, we can also estimate group-based APETs at a certain level of D = d:

$$APET_{(D=d)} = \frac{1}{n_p} \sum \left[ \hat{\gamma} e^{(\ln(Y_{ti}) - D_{it}\hat{\gamma} + d\hat{\gamma})} \right] \quad \forall D_{it} > 0, \tag{8}$$

where D is the observed amount of transfers, and d is the transfer amount that we are interested in. The standard error of the estimates can be calculated using the Delta method or bootstrap technique.

**4.3. Measurement of impact on poverty and inequality**

In this paper, poverty is measured by three Foster-Greer-Thorbecke poverty indexes, which can all be calculated using the following formula (Foster, Greer and Thorbecke 1984):

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$$\tag{9}$$

where *Y* is a welfare indicator (consumption expenditure per capita in this paper), *z* is the poverty line, n is the number of people in the sample population, q is the number of poor people, and $\alpha$ can be interpreted as a measure of inequality aversion. When $\alpha$ = 0, we have the headcount index H which measures the proportion of people below the poverty line. When $\alpha = 1$ and $\alpha = 2$, we have the poverty gap *PG* which measures

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the depth of poverty, and the squared poverty gap $P_2$ which measures the severity of poverty, respectively.

To measure the inequality, we use three common measures of inequality: the Gini coefficient, Theil's L index of inequality, and Theil's T index of inequality. The Gini index can be calculated from the individual expenditure in the population as follows:

$$G = \frac{1}{2n(n-1)\bar{\bar{Y}}} \sum_{i=1}^{n} \sum_{j=1}^{n} |Y_i - Y_j| \tag{10}$$

where $\bar{Y}$ is the average per capita expenditure.

The value of the Gini coefficient varies from 0 when everyone has the same expenditure to 1 when one person has everything. The closer a Gini coefficient is to one, the more unequal is the expenditure distribution.

The Theil L index of inequality is calculated as follows:

$$Theil\_L = \frac{1}{n} \sum_{i=1}^{n} \ln\left(\frac{\bar{Y}}{Y_i}\right), \tag{11}$$

The Theil L index ranges from 0 to infinity, and the higher the value of Theil L, the higher the inequality is.

The Theil T index of inequality is calculated as:

$$Theil\_T = \frac{1}{n} \sum_{i=1}^{n} \frac{Y_i}{\bar{Y}} \ln\left(\frac{Y_i}{\bar{Y}}\right) \tag{12}$$

The Theil T index ranges from 0 (lowest inequality) to ln(N) (highest inequality).

Impact of transfers on an index $I$ of poverty or inequality is expressed as follows:

$$\Delta I = I(Y) - I(Y_{(D=0)}), \tag{13}$$

where $I(Y)$ is the standard index for the total rural population, which can be estimated directly from the sample data. $I(Y_{(D=0)})$, however, is the relevant index in the absence

of transfers. This term is only observed for non-recipient households. For recipient, it is estimated using the fixed-effect regression for recipients.

We also estimated the impact of transfers on the indexes for recipients only:

$$\Delta I = I(D > 0, Y) - I(D > 0, Y_{(D=0)}),\tag{14}$$

where the first term on the right-hand side is the actual index for transfer recipients, which is observed in the data. The second term on the right-hand side, however, is the counterfactual, which must be estimated using the regression results.

# 5. Results

In this section, we discuss the estimated effects of pensions and social allowances on household expenditure and income and on aggregate poverty and inequality. The fixed-effect regressions underlying these estimates are presented in the annex.

## 5.1. Impact on household expenditure and income

Pensions on average increased per capita income of the recipients by 1451 thousand VND or 40 percent, while social allowances increased per capita income by 428 thousand VND or approximately 12 percent (Table 4). Given that mean household size was about five, total household income on average increased by 87 percent of the transferred amount for pensions and by 119 percent of the transferred amount for social allowances. Yet, neither of these numbers is significantly different from 100, which implies that they do not support multiplier effects nor crowding out of private transfers or lower work effort.

<<INSERT TABLE 4>>

Computed at the actual level of transfers, an extra VND would on average have resulted in an increase of 0.26 VND and 0.31 VND in per capita income for pensions and social allowances, respectively (Table 5). Considering that the average pension-receiving household consists of five persons and the average allowance-receiving household of 5.5 persons, this implies that household-level APETs are 1.3 and 1.7. While the first is not significantly different from one, the second presents some evidence for multiplier effects for social allowances.

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<<INSERT TABLE 5>>

The impact of public transfers on expenditures was much lower than the impact on income (Table 6). Pensions increased per capita expenditure of recipients by 14 percent and social allowances by 5 percent. The ratio of the expenditure increase to the value of transfers was 31 percent for pensions and 34 percent of social allowances. This suggests that about two thirds of both pensions and social allowances were saved or used for long-term investment. The APETs give similar results: 0.41 and 0.45 at the household level for pensions and social allowances, respectively (Table 5). These numbers are in line with Van de Walle (2002) who finds a propensity to consume out of public transfers of 0.37 for Vietnam in the 1990s using a linear but otherwise similar consumption function[3].

<<INSERT TABLE 6>>

When comparing the impact estimates for poor and non-poor households, all effects are significantly lower for poor households (Tables 4-6). This could indicate that for poor households, public transfers did crowd-out private transfers or that the poor significantly decreased work effort when they get public transfers. Yet, are hesitant to draw this conclusion, as these findings may be driven by the functional form of the regression equations.

## 5.2. Impact on Poverty and Inequality

Despite the low share of poor households receiving pensions compared to social allowances, the impact of pensions on poverty was higher (Table 7). Pensions reduced the poverty incidence (P0) of recipients by around 5.5 percentage points, and they decreased both the poverty gap index (P1) and poverty severity index (P2) by around 50 percent. The effect of pensions total rural poverty is significant, but extremely small, as only 3.5 percent of poor households received transfers.

<<INSERT TABLE 7>>

Possibly due to their small size, social allowances did not significantly reduce the incidence of poverty. Yet a relatively large share of allowances did reach the poor, and although these transfers did not help them escape from poverty, they did reduce the poverty gap and severity indexes of recipients by around 6 percent. The impact of social allowances on total rural poverty, was however, extremely small.

Pensions and social allowances had very little impact, if any, on inequality. Inequality of the total rural population increased by about one percent due to pensions and was not significantly affected by social allowances (Table 7). Inequality between recipients did not change significantly due to either type of transfer and is therefore not presented in the tables.

## 6. Conclusion

Vietnam's extensive social security system is claimed to have played a key role in the extraordinary poverty decline over the past decades. This claim is, however, not substantiated by empirical evidence. Van de Walle (2002) found that social insurance and subsidies were badly targeted at the poor and helped to reduce the poverty incidence by less than three percentage points during the 1990s. Evans et al. (2006) suggest that the effects were somewhat larger in 2004, when poverty rates would have been almost five percent higher in the absence of social security payments. However, they use naïve estimates, which are likely to be biased.

In this study, we investigate how well contributory pensions and social allowances reached the poor and to which extent these transfers affected poverty and inequality in the early 2000s. We estimate the effect of the transfers on both income and expenditure. Neither is straightforward. Cash transfers do not necessarily result in an increase in income with the same value as the transfer. On the one hand, public transfers may crowd out private transfers and lead to a reduction of work effort. On the other hand, they may have positive multiplier effects, when (part of) the money is used for production or investment. At the same time, the propensity to consume is not necessarily the same for transfers and earned income, as they may accrue to different persons with different preferences and money may not be perfectly pooled. Last but

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[3] They find a propensity to consume of 0.45 for a linear (first difference) consumption function including transfers as the sole explanatory variable and of 0.72 when they use first-period transfers as an instrument for the change in transfers. However, we find neither specification credible.

not least, estimating the effect of transfers on income and expenditures will give biased estimates unless the endogeneity of transfer allocation is accounted for.

Using fixed-effect regression to avoid endogeneity bias and allowing for different effects of different types of transfers, we find that the impact of these transfers on poverty and inequality was low, due to low coverage of poor and relatively low amounts transferred to the poor. Contrary to studies for other countries, our estimates suggest that public transfers did not crowd out private transfers nor did they result in a decrease in work effort. We do find weak evidence for multiplier effects for social transfers, but not for pensions.

Our estimates for the impact on poverty rates during the early 2000s is even lower than the estimate of Van de Walle (2002) for the 1990s. This does not necessarily mean that the impact of the transfers has decreased, although of course the strong decrease in poverty could imply that it became more difficult to eliminate the remaining poverty. Differences in research approach may also explain the different results: while Van de Walle mingles all public transfers, we focus on the impact of two different types only.

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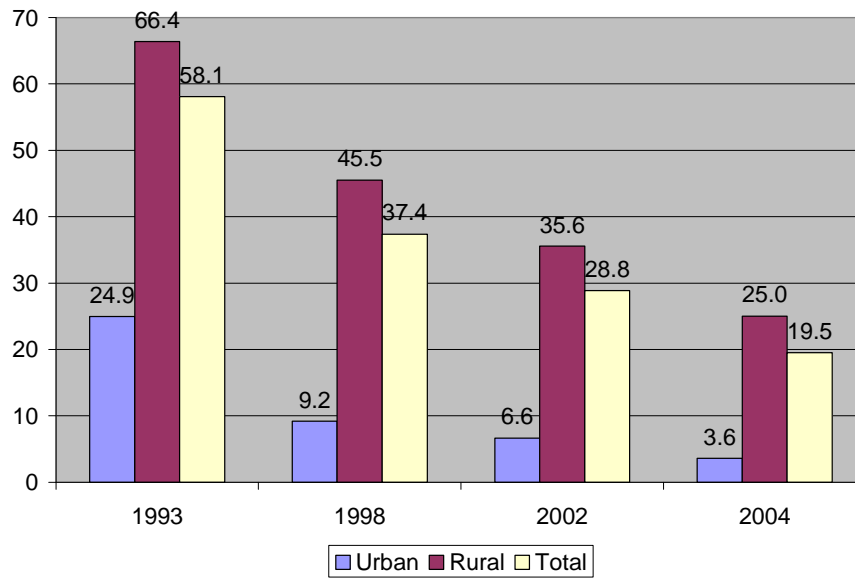
Figure 1: Poverty rate over the period 1993-2004 (in percent) (Estimates using VHLSS data).

Table 1: Pensions by expenditure quintiles

| Indicators | 2002 | | | | | | 2004 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Poorest | Near Poorest | Middle | Near Richest | Richest | All | Poorest | Near Poorest | Middle | Near Richest | Richest | All |
| % receiving households | 3.6 | 5.7 | 8.9 | 11.2 | 13.8 | 8.6 | 3.4 | 6.6 | 6.6 | 11.4 | 16.9 | 9.0 |
| | [0.4] | [0.5] | [0.6] | [0.7] | [0.8] | [0.3] | [0.5] | [0.7] | [0.7] | [0.9] | [1.2] | [0.4] |
| Transfer amount* | 3000.1 | 3527.9 | 4292.5 | 4836.9 | 6249.0 | 4851.7 | 3653.1 | 5393.6 | 5235.0 | 6961.9 | 8452.9 | 6782.7 |
| (thousand VND) | [203.8] | [148.4] | [181.0] | [173.8] | [247.7] | [116.6] | [354.3] | [537.9] | [415.0] | [338.4] | [418.7] | [223.9] |
| % of transfers over | 44.3 | 44.5 | 48.1 | 44.8 | 34.7 | 40.1 | 50.2 | 55.9 | 46.0 | 52.5 | 41.8 | 46.0 |
| household expenditure | [4.0] | [2.6] | [2.4] | [2.0] | [1.6] | [1.1] | [4.9] | [5.9] | [3.6] | [3.2] | [2.6] | [1.8] |
| % of transfers over | 29.3 | 31.8 | 34.8 | 34.5 | 27.6 | 30.8 | 34.1 | 33.9 | 34.3 | 38.0 | 32.1 | 33.9 |
| household income | [2.6] | [1.8] | [1.7] | [1.6] | [1.2] | [0.8] | [2.9] | [3.4] | [2.7] | [2.2] | [1.8] | [1.2] |

Note: * in 2004.prices

Source: Own Estimation using VHLSSs 2002 and 2004.

Table 2: Pensions by expenditure quintiles for households with at least a member older than 60 years old

| Indicators | 2002 | | | | | | 2004 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Poorest | Near Poorest | Middle | Near Richest | Richest | All | Poorest | Near Poorest | Middle | Near Richest | Richest | All |
| % households with | 28.3 | 28.5 | 28.9 | 29.7 | 28.7 | 28.8 | 33.3 | 28.7 | 27.0 | 30.2 | 30.3 | 29.9 |
| member older than 60 | [0.9] | [0.9] | [0.9] | [0.9] | [1.0] | [0.4] | [1.3] | [1.3] | [1.3] | [1.4] | [1.3] | [0.6] |
| % receiving households | 7.6 | 11.3 | 16.7 | 21.6 | 24.2 | 16.3 | 7.9 | 13.1 | 13.5 | 21.3 | 29.0 | 16.9 |
| | [1.0] | [1.1] | [1.4] | [1.7] | [1.9] | [0.7] | [1.3] | [1.8] | [1.8] | [2.2] | [2.5] | [0.9] |
| Distribution of amount | 5.5 | 9.8 | 18.1 | 25.8 | 40.7 | 100 | 5.3 | 11.7 | 10.4 | 26.7 | 45.9 | 100 |
| | [0.8] | [1.2] | [2.0] | [2.4] | [3.1] | | [1.1] | [2.0] | [1.9] | [3.1] | [3.8] | |
| % of transfers over | 47.5 | 50.5 | 53.5 | 50.3 | 40.2 | 45.7 | 53.1 | 62.6 | 50.3 | 58.3 | 49.8 | 53.1 |
| household expenditure | [4.7] | [4.0] | [3.6] | [3.0] | [2.5] | [1.7] | [6.2] | [6.6] | [5.1] | [4.3] | [3.9] | [2.5] |
| % of transfers over | 31.0 | 34.3 | 39.2 | 39.1 | 33.3 | 35.6 | 35.9 | 39.5 | 36.8 | 42.8 | 37.8 | 39.0 |
| household income | [3.2] | [3.0] | [2.3] | [2.3] | [1.9] | [1.2] | [3.5] | [3.4] | [3.9] | [3.1] | [2.7] | [1.7] |

Note: * in 2004.prices

Source: Own Estimation using VHLSSs 2002 and 2004.

Table 3: Social allowances by expenditure quintiles

| Indicators | 2002 | | | | | | 2004 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Poorest | Near Poorest | Middle | Near Richest | Richest | All | Poorest | Near Poorest | Middle | Near Richest | Richest | All |
| % receiving households | 14.7 | 8.9 | 8.4 | 7.0 | 5.9 | 9.0 | 15.2 | 8.6 | 7.7 | 7.9 | 7.6 | 9.4 |
| | [1.0] | [0.6] | [0.6] | [0.5] | [0.5] | [0.3] | [1.1] | [0.8] | [0.8] | [0.7] | [0.8] | [0.4] |
| Transfer amount* | 786.4 | 1345.9 | 1657.1 | 2043.0 | 2089.2 | 1428.0 | 809.5 | 1893.3 | 2007.5 | 2053.5 | 2251.8 | 1645.5 |
| (thousand VND) | [65.9] | [100.1] | [138.6] | [145.5] | [177.1] | [58.0] | [84.9] | [214.0] | [159.9] | [144.0] | [172.3] | [73.2] |
| % of transfers over | 15.6 | 19.6 | 21.0 | 21.5 | 14.3 | 18.0 | 15.5 | 23.0 | 18.5 | 17.8 | 11.7 | 16.2 |
| household expenditure | [1.6] | [2.1] | [2.7] | [2.0] | [1.5] | [0.9] | [1.9] | [3.1] | [1.8] | [2.1] | [1.4] | [0.9] |
| % of transfers over | 11.5 | 15.0 | 16.4 | 17.1 | 11.8 | 14.2 | 11.4 | 15.3 | 13.6 | 14.0 | 8.8 | 12.0 |
| household income | [1.2] | [1.5] | [1.9] | [1.6] | [1.3] | [0.7] | [1.4] | [2.1] | [1.4] | [1.6] | [1.1] | [0.7] |

Note: * in 2004.prices

Source: Own Estimation using VHLSSs 2002 and 2004.

Table 4: Average treatment effect on the treated (ATT) of public transfers on income (thousand VND)

| Group | Pensions | | | | | Social allowances | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Y1 | Y0 | ATT (Y1 – Y0) | ATT/Y0 (%) | ATT/D (%) | Y1 | Y0 | ATT $(Y_1 - Y_0)$ | ATT/Y0 (%) | ATT/D (%) |
| All | 5726.0*** | 4275.0*** | 1451.0*** | 33.9*** | 87.2*** | 3911.8*** | 3483.6*** | 428.2*** | 12.3*** | 119*** |
| | [223.0] | [196.5] | [170.8] | [4.7] | [8.9] | [174.2] | [160.5] | [83.0] | [2.5] | [22.5] |
| Poor | 3170.7*** | 2403.9*** | 766.7*** | 31.9*** | 65.6*** | 1610.9*** | 1496.2*** | 114.8*** | 7.7*** | 60.7*** |
| | [288.0] | [192.0] | [208.8] | [9.5] | [9.5] | [60.5] | [40.1] | [34.3] | [2.2] | [12.1] |
| Non-Poor | 6125.3*** | 4567.4*** | 1557.9*** | 34.1*** | 89.5*** | 5085.1*** | 4497*** | 588.1*** | 13.1*** | 131.5*** |
| | [240.6] | [196.7] | [191.2] | [4.7] | [9.4] | [240.0] | [199.5] | [118.1] | [2.6] | [26.6] |
| Difference | | | -791.2*** | -2.2 | -23.9*** | | | -473.3*** | -5.4*** | -70.8*** |
| | | | [241.6] | [9.0] | [8.3] | | | [93.9] | [1.5] | [16.9] |

Note: D is the amount of pension

* significant at 10%; ** significant at 5%; *** significant at 1%

Figures in parentheses are standard errors.

Standard errors are corrected for sampling weights and estimated using bootstrap (non-parametric) with 200 replications.

Source: Estimation from VHLSSs 2002 and 2004

Table 5: Average partial effects (APET) of public transfers on the treated (thousand VND)

| Group | Pensions | | | | Social allowances | | | |
|---|---|---|---|---|---|---|---|---|
| | Per capita income | | Per capita expenditure | | Per capita income | | Per capita expenditure | |
| | APET | APET at program mean | APET | APET at program mean | APET | APET at program mean | APET | APET at program mean |
| All | 0.2611*** | 0.2157*** | 0.0810*** | 0.0746*** | 0.3077*** | 0.2770*** | 0.0815** | 0.0783** |
| | [0.0331] | [0.0238] | [0.0211] | [0.0181] | [0.0628] | [0.0524] | [0.0352] | [0.0328] |
| Poor | 0.1505*** | 0.1276*** | 0.0373*** | 0.0347*** | 0.1198*** | 0.1112*** | 0.0411** | 0.0399** |
| | [0.0314] | [0.0148] | [0.0143] | [0.0099] | [0.0286] | [0.0248] | [0.0189] | [0.0176] |
| Non-Poor | 0.2765*** | 0.2279*** | 0.0871*** | 0.0801*** | 0.3635*** | 0.3262*** | 0.0969** | 0.0929** |
| | [0.0364] | [0.0278] | [0.0239] | [0.0210] | [0.0778] | [0.0649] | [0.0429] | [0.0400] |
| Difference | -0.1260*** | -0.1003*** | -0.0498*** | -0.0454*** | -0.2437*** | -0.2150*** | -0.0557*** | -0.0530** |
| | [0.0309] | [0.0207] | [0.0119] | [0.0114] | [0.0516] | [0.0425] | [0.0244] | [0.0227] |

* significant at 10%; ** significant at 5%; *** significant at 1%

Figures in parentheses are standard errors.

Standard errors are corrected for sampling weights and estimated using bootstrap (non-parametric) with 200 replications.

Source: Estimation from VHLSSs 2002 and 2004

Table 6: Average treatment effect on the treated (ATT) of public transfers in expenditures (thousand VND)

| Group | Pensions | | | | | Social allowances | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Y1 | Y0 | ATT (Y1 – Y0) | ATT/Y0 (%) | ATT/D (%) | Y1 | Y0 | ATT (Y1 – Y0) | ATT/Y0 (%) | ATT/D (%) |
| All | 4200.8*** | 3690.2*** | 510.7*** | 13.8*** | 30.7*** | 2803.3*** | 2682.2*** | 121.1** | 4.5*** | 33.7** |
| | [130.0] | [163.2] | [118.6] | [3.6] | [7.1] | [90.8] | [85.3] | [51.4] | [1.9] | [14.3] |
| Poor | 1904.1*** | 1690.6*** | 213.5** | 12.6** | 18.3*** | 1507.0*** | 1467.5*** | 39.5** | 2.7** | 19.2** |
| | [121.5] | [58.3] | [99.3] | [5.8] | [6.2] | [54.7] | [42.9] | [20.4] | [1.3] | [8.9] |
| Non-Poor | 4559.7*** | 4002.6*** | 557.1*** | 13.9*** | 32.0*** | 3770.5*** | 3588.5*** | 182.0** | 5.1** | 38.3** |
| | [142.7] | [141.5] | [132.5] | [3.5] | [7.5] | [134.3] | [108.2] | [78.7] | [2.2] | [16.4] |
| Difference | | | -343.6*** | -1.3 | -13.7*** | | | -142.5*** | -2.4** | -19.1*** |
| | | | [87.0] | [3.9] | [2.9] | | | [60.7] | [1.1] | [8.2] |

Note: D is the amount of social allowances

* significant at 10%; ** significant at 5%; *** significant at 1%

Figures in parentheses are standard errors.

Standard errors are corrected for sampling weights and estimated using bootstrap (non-parametric) with 200 replications.

Source: Estimation from VHLSSs 2002 and 2004

Table 7: Impact on poverty and inequality

| Index | Impact of pension | | | Impact of social allowances | | |
|---|---|---|---|---|---|---|
| | With transfers | Without transfers | Impact | With transfers | Without transfers | Impact |
| **Poverty of recipients** | | | | | | |
| P0 | 0.0800*** | 0.1351*** | -0.0551** | 0.4060*** | 0.4273*** | -0.0213 |
| | [0.0165] | [0.0309] | [0.0257] | [0.0321] | [0.0347] | [0.0197] |
| P1 | 0.0168*** | 0.0251*** | -0.0083** | 0.1179*** | 0.1254*** | -0.0075** |
| | [0.0046] | [0.0066] | [0.0039] | [0.0119] | [0.0119] | [0.0032] |
| P2 | 0.0054*** | 0.0079*** | -0.0025** | 0.0492*** | 0.0520*** | -0.0029** |
| | [0.0020] | [0.0027] | [0.0012] | [0.0063] | [0.0063] | [0.0013] |
| **Poverty of all rural** | | | | | | |
| P0 | 0.2540*** | 0.2586*** | -0.0047** | 0.2540*** | 0.2561*** | -0.0021 |
| | [0.0094] | [0.0099] | [0.0024] | [0.0086] | [0.0088] | [0.0020] |
| P1 | 0.0611*** | 0.0618*** | -0.0007** | 0.0611*** | 0.0618*** | -0.0007** |
| | [0.0028] | [0.0029] | [0.0003] | [0.0029] | [0.0029] | [0.0003] |
| P2 | 0.0218*** | 0.0220*** | -0.0002** | 0.0218*** | 0.0221*** | -0.0003** |
| | [0.0013] | [0.0013] | [0.0001] | [0.0014] | [0.0014] | [0.0001] |
| **Inequality of all rural** | | | | | | |
| Gini | 0.2902*** | 0.2874*** | 0.0028*** | 0.2902*** | 0.2903*** | -0.0001 |
| | [0.0046] | [0.0046] | [0.0008] | [0.0046] | [0.0046] | [0.0002] |
| Theil L | 0.1385*** | 0.1360*** | 0.0025*** | 0.1385*** | 0.1386*** | -0.0001 |
| | [0.0046] | [0.0045] | [0.0007] | [0.0046] | [0.0046] | [0.0001] |
| Theil T | 0.1447*** | 0.1426*** | 0.0021*** | 0.1447*** | 0.1449*** | -0.0002 |
| | [0.0058] | [0.0059] | [0.0006] | [0.0058] | [0.0058] | [0.0002] |

* significant at 10%; ** significant at 5%; *** significant at 1%

Figures in parentheses are standard errors.

Standard errors are corrected for sampling weights and estimated using bootstrap (non-parametric) with 200 replications.

Source: Estimation from VHLSSs 2002 and 2004

# Appendix

Table A1: Fixed-effect Regressions

| Explanatory variables | Log of per capita expenditure (thousand VND) | Log of per capita income (thousand VND) |
|---|---|---|
| Pension (thousand VND) | 0.00002*** | 0.00004*** |
| | [0.00000] | [0.00000] |
| Social allowance (thousand VND) | 0.00002** | 0.00006*** |
| | [0.00001] | [0.00001] |
| Ratio of members less than 16 | -0.16272** | -0.31974*** |
| | [0.07295] | [0.08714] |
| Ratio of members older than 60 | -0.27706*** | -0.33076*** |
| | [0.10190] | [0.11136] |
| Age of household head | 0.02747*** | 0.02600*** |
| | [0.00847] | [0.00933] |
| Age of household head squared | -0.00023*** | -0.00022** |
| | [0.00008] | [0.00009] |
| Household size | -0.13989*** | -0.16059*** |
| | [0.02484] | [0.03019] |
| Household size squared | 0.00505*** | 0.00593** |
| | [0.00194] | [0.00232] |
| Head with primary school | 0.02503 | 0.01324 |
| | [0.02569] | [0.02904] |
| Head with lower secondary school | -0.0143 | -0.037 |
| | [0.03842] | [0.04407] |
| Head with upper secondary school | -0.05714 | -0.00697 |
| | [0.05148] | [0.06224] |
| Head with technical degree | -0.01702 | 0.00064 |
| | [0.05422] | [0.06983] |
| Head with post secondary school | -0.04348 | 0.05289 |
| | [0.08675] | [0.10228] |
| Ratio of members with lower secondary school | 0.26260*** | 0.27900*** |
| | [0.05712] | [0.06616] |
| Ratio of members with upper secondary school | 0.60996*** | 0.37091*** |
| | [0.08521] | [0.10546] |
| Ratio of members with technical degree | 0.71028*** | 0.61254*** |
| | [0.11606] | [0.13298] |
| Ratio of members with post secondary school | 0.85881*** | 0.41601** |
| | [0.18127] | [0.18500] |
| Household having at least a working member | -0.01416 | 0.01392 |
| | [0.10377] | [0.09882] |
| Ratio of working members | 0.01028 | 0.26913*** |
| | [0.04410] | [0.05720] |
| Ratio of members working in agriculture | -0.13938*** | -0.33407*** |
| | [0.02876] | [0.03403] |
| Log of living areas (log of m2) | 0.07778*** | 0.10600*** |

| Explanatory variables | Log of per capita expenditure (thousand VND) | Log of per capita income (thousand VND) |
|---|---|---|
| | [0.01755] | [0.02151] |
| Living in permanent house | 0.12833*** | 0.19114*** |
| | [0.02816] | [0.03982] |
| Living in semi-permanent house | 0.06310*** | 0.08704*** |
| | [0.01855] | [0.02392] |
| Area of annual crop land (m2) | 0.00000*** | 0.00001*** |
| | [0.00000] | [0.00000] |
| Area of perennial crop land (m2) | 0 | 0 |
| | [0.00000] | [0.00000] |
| Area of aquaculture water surface (m2) | 0.00001 | 0.00002** |
| | [0.00000] | [0.00001] |
| Commune having non-farm activities | -0.03919* | -0.03873 |
| | [0.02086] | [0.02548] |
| Distance to nearest town (km) | 0.00111 | -0.00009 |
| | [0.00117] | [0.00123] |
| Distance to nearest road (km) | 0.00264 | -0.0004 |
| | [0.00504] | [0.00700] |
| Distance to nearest daily market (km) | -0.00004 | 0.00280* |
| | [0.00110] | [0.00146] |
| Distance to nearest periodic market (km) | -0.00091 | -0.0022 |
| | [0.00120] | [0.00145] |
| Distance to nearest post (km) | -0.00383*** | -0.00348* |
| | [0.00127] | [0.00179] |
| Distance to nearest primary school (km) | 0.01011** | 0.02439*** |
| | [0.00507] | [0.00726] |
| Distance to nearest lower secondary school (km) | -0.00382* | -0.00685** |
| | [0.00211] | [0.00330] |
| Distance to nearest upper secondary school (km) | 0.00514*** | 0.00366** |
| | [0.00113] | [0.00175] |
| Constant | 7.37903*** | 7.51188*** |
| | [0.24511] | [0.27008] |
| Observations | 6198 | 6198 |
| R-squared | 0.444 | 0.465 |