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Impact of Social Safety Net Programs In Seasonal Deprivation

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Abstract

Around the globe, there are varying types of social safety net instruments used by the governments, NGOs, microfinance institutions and private entities. The extent of hardship and welfare of the vulnerable and poor households largely depends on the effectiveness and adequate coverage of these safety net measures. Researchers have found in large number of instances that these instruments are quite useful and have substantial welfare and anti poverty impact on the recipient households. monga is a recurrent case of seasonal deprivation that forces a large number of households in the northern region namely – Greater Rangpur, suffer from occasional starvation, consumption rationing and induces poor households to sell advance labor, crops and assets. The Bangladesh government has been operating a number of social safety net programs – cash or in kind - in this part to reduce the vulnerability of households during monga pledging a long term solution. The study examines the impact of the social safety net programs on the welfare of the poor households during seasonal deprivation –called monga, in the five districts of Greater Rangpur namely Lalmonirhat. Nilphamari, Kurigram, Gaibandha and Rangpur. The study finds that VGD/VGF has strong positive effect in reducing poverty while old age pension has no such contribution. The findings also suggest that highly vulnerable groups such as day laborers, beggars are left out from the benefit of social safety net programs due to their limited coverage and size.

Key Word: Social Safety Net Program, Seasonal deprivation, Vulnerability, Poverty

JEL Classification:

Section 1: Introduction

The poor households in every part of the world are vulnerable to external and internal shocks such as natural disasters, seasonal hardships etc. They generally have low access to credit and low income generating activities, and thus lack adequate resource capabilities to sustain their livelihood. This very common nature of hardship pushes the low income households to deeper dimness of poverty. Their vulnerability to external shocks and almost negligible capacity to mitigate those shocks force them to sell their assets or embrace greater indebtedness to manage money and food. Therefore, their stability and suitability of livelihoods largely depend on the support from the government and non-government organizations. Worldwide, governments and non-government organizations employ social protection measures that aim to provide the poor households with enough cash support or

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opportunities for employment and income. These measures finally help the poor households to maintain their minimum livelihood, cope with the external or internal shocks and thus preserve their own resource capabilities.

Certainly, the severity of this vulnerability of poor households intensifies in the case of any natural shocks or any seasonal deprivation. Seasonal deprivation or hardship means households suffer from starvation or consumption rationing due to loss of income earning opportunities and lack of adequate resource to maintain minimum livelihood in particular period of the yea which is recurrent.

In Bangladesh, seasonal food deprivation, commonly known as *monga,* has been the most critical problem in the northern Bangladesh namely Greater Rangpur, Kurigram, Gaibandha, Lalmonirhat, Nilphamari, and Rangpur districts. *Monga* refers to a situation where poverty stricken households of the northern Bangladesh have to ration their consumption due to lack of income and employment. Monga is a famine like situation that occurs every year in varying degrees of intensity during the Bengali calendar months of Ashwin and Kartick (September to November).

During *monga* period in the Greater Rangpur region, households with low income or households below the poverty line are severely constrained by access to income due to unavailability of wage employment or self employment opportunities that in turn force them to go for consumption rationing and even to remain unfed. Even they do not have adequate access to microcredit. As a result, as coping mechanism, the poor households are induced to sell their standing crops in advance and others are forced to sell their labor. Many sell their assets (e.g. land or any income generating asset) and/or borrow money from the moneylenders at an exorbitant rate to maintain their minimum livelihood. A study by the institute of microfinance (2008) shows that in the *monga* period, 40 percent of the households in the *monga* affected northern part, migrate internally inside the country for income earning opportunities, 20 percent of the households borrow from the informal market and 15 percent of the households are forced to sell their assets to manage food. This seasonal crisis leaves its impact on the livelihood and life of the households forcing them to remain unfed or half fed, and inducing internal migration in possible cases in search of employment and income.

While the poor households apply different coping mechanisms, not that they always can successfully fight vulnerability. Therefore this is extremely important to provide external supports. In mitigating vulnerability and seasonal deprivation in *monga*, the Government, NGOs and private agencies are providing supports during monga. The government has a number of safety net programs. The major supports are the state social safety net programs that include both cash and in kind support, designed to meet both long term and short term solution.

Section 2: Background and Motivation

The severe crisis of unemployment in Bangladesh had made it more difficult for the poor households to manage income and food, and thus has intensified their vulnerability. In Bangladesh, natural disasters are quite regular phenomena that have made the life of poor households more challenges in addition to their low access to food and income. This situation is largely and very commonly evident in the northern part of Bangladesh – the poorest and most vulnerable part of the country. The regions in this northern part face seasonal deprivation or hardship that is commonly known as *monga*, generally occurs between September and November period. During this time, the poor households in this part lack employment, access to income and thus cannot manage even their three meals a day. Therefore, they are forced to sell labor or standing crops in advance to manage food and many sell their assets too to maintain minimum livelihood.

To reduce the vulnerability of the poor households government has both long term and short term social safety net measures. The short term or seasonal state of social safety net programs (e.g., FFW, CFW) provide quick and emergency cash or food support to the poor households to minimize the impact of natural disasters. And the long term measures (e.g., VGD and VGF, VGF) are some continuous programs conducted throughout the year providing both cash and food supports to reduce the vulnerability of the poor households. The government implements these programs through its different ministries and state divisions. Every year the government allocates a percentage of its total budget for these programs. Apart from the government, a notable portion of the country's total safety net support is provided by the Non-Government Organizations (NGOs) and private institutions.

There are many social safety net programs including old-age allowances, distressed disabled persons allowance, widow and distressed women's allowance, cash and food for works programs and student stipend programs. Additionally the Government allocates substantial resources each year to natural disaster relief programs. Although systematic evaluations of these programs are not much done, available research suggests that cash transfer programs have helped to alleviate food and health insecurity, have facilitated increased education enrolment among the poor and in some cases have enabled beneficiaries to invest in small-scale income generating activities. The major safety net programs available in Bangladesh can be divided into two broad categories – those that provide cash transfers and those that provide food/in-kind transfers. In summary, the major programs are as follows:.

Cash transfers

Program	Detail	Major Objectives
With work		
RMP (Rural Maintenance Program)	Cash transfer public works program with major focus on women under distress and physically fit for works at Taka 43 per day.	To provide financial support to the rural working age households to reduce vulnerability.
With Training and Schooling Requirement		
PESP (Known as Food For Education previously)	Primary Education Stipend Program is a conditional cash transfer program.	Promote primary school enrollments and attendance, reduce drop-outs and improve quality of education
FSSAP	Female Secondary School Assistance Program.	To promote and encourage continuing education for female.
No Work Requirement		
The Old Age Allowance	Tk. 165 a month for old aged households except the municipal area.	To provide financial assistance to reduce vulnerability of old aged households group who are unable to work and do not have formal pension scheme access.

Transfers in Kind and/or Food

Program	Detail	Major Objectives
With work		
FFW	Food for Work Program operates in rural areas and provided about 75,000,000 hours of work in 2003-04.	To reduce food vulnerability of poor household.
Test Relief	A food transfer program for those of working age	To provide financial support to the rural working age households to reduce vulnerability.
Other Programs such as CHT Development, etc.		
With Training and Schooling Requirement		
VGD and VGF	Vulnerable Group Development program. It also provides training for life-skills and for developing skills needed to undertake income generation activities. 185 thousand metric tons of wheat, 500 thousand beneficiaries with largest component about 450 thousand VGD and VGF women	To develop skills and reduce long vulnerability in the long run with major focus on women.
Program	Detail	Major Objectives
No Work Requirement		
VGF	Vulnerable Group Feeding program. . It provides food to selected households in the months following a disaster when agricultural production has been severely disrupted. About 6 million VGF cards were issued during 1998 flood.	To reduce food vulnerability at the event of disasters and any natural calamities.
Gratuitous Relief	Emergency relief program for those affected by natural disasters. While GR is a relatively small program, it is the main way in which the Government provides immediate, short-term relief to disaster areas.	Gratuitous Relief (GR), designed to provide emergency relief to disaster victim in small scale.

Coverage of Social Safety Net Programs in Bangladesh

Bangladesh's rapid economic growth and social changes have created new social protection challenges while old ones remain. New challenges are driven by rapid urbanization and breakdown of family system. Much of the existing safety net is rural focused and there is an urgent need to address the needs of the urban poor and excluded groups such as the disabled and street children. The Government of Bangladesh has given much importance on social safety net programs. The government spends less than 1 percent of the GDP, documented at around 0.7 percent in 2001 (WB and ADB, 2003) and about 4.4 percent of public expenditure in social safety-net programs (MOFBD, 2007-08); far less than the average allocation of 5 percent of GDP in south Asia and even less that 2 percent of allocation in Sub-Saharan Africa (WB's Assessment of SSNPs in Bangladesh, 2004).

Approximately 10 percent of the poor and 5 percent of the ultra poor are covered by any SSNP meanwhile 50 percent of eligible old age households are not covered by the pension scheme (MFDM and WFP, 2005). There are already 27 varieties of safety-net programs being run by the Government in Bangladesh (Hassan, 2007). But the amount given per households per year (Table-2) is not much larger and is not expected to have large anti poverty impact.

The SSNP coverage has, by and large, increased both in terms of areas (*mouzas*) and number of households. Coverage of the *mouzas* in the surveyed districts ranges from 38 percent (RIMP) to 96 percent (old-age pension scheme) while household coverage varies from 15 (RIMP) to 271 households (VGD and VGF) per *mouza*. But still the coverage seems to be very low. The average gross amount received by the beneficiaries was Tk.576 and the net benefit after deductions of associated costs and system payments stood at Tk 510, about 88 percent of what was officially received last time before the interview. Although the average gross amount received previously was somewhat less than that of the last time. But the net receipt of previous installment was about 95 percent of the gross amount, which means lesser deductions as banks or other legal charges and system payments (SSNP Survey, 2007). Before this survey, inadequacy of coverage became crystal when, for example, the 2000 HIES data arrived a rough estimate of 75 percent of allocations to the FFE do not reach beneficiary HH (Farid, 2003). Nevertheless, perception of SSNP benefits varies over regions and also between the beneficiaries and non-beneficiaries. But most of the informants personally interviewed or otherwise met in FGD or community meetings, expressed views that SSNP was an essential support system.

The World Bank reports, "The community survey data thus suggest that about 7.5 percent of all rural households participate in the FFE, an estimate that is not too far off from the official program estimate of approximately 10 percent coverage. Similarly, the 562,000 beneficiary estimate from the HIES community survey for the VGD and VGF is very close to the official estimates of 550,000 women covered in each 18-month VGD and VGF cycle." Of course the recent HIES 2005 states (Table-4) that the national coverage at 13.06 percent with 15.64 percent in the rural and 5.45 percent in the urban areas.

World Bank South Asian Human Development Report (2006) shows that safety net programs roughly cover below 10 percent of poor individuals and are administered by a large number of agencies. While it is difficult to compute the number of beneficiaries of these programs in any given year, especially as the disaster relief programs are rolled out and expanded in times of natural disasters – in general these programs reach about 4 to 5 million households. Most of the programs act as risk-coping instruments implemented by ministries including the Ministry of Social Welfare, the Ministry of Food and Disaster Management, the Ministry of Women and Children's Affairs, and, in the case of conditional cash transfers programs in education – the Ministry of Primary and Mass Education, and the Ministry of Education. The beneficiary level coverage has been shown in Table-5, as The World Bank study (2004) estimates:

Expanding the coverage of the social safety nets in Bangladesh is not costless. In fact, it is reallocation of financial resources. During the past decade costs of the social safety nets have enormously expanded. This quite evident from Table-6 () presented below.

Source: The World Bank Study, 2004

Figure-1: Social Assistance Expenditures as % of GDP and Public Expenditures (1996 - 2004)
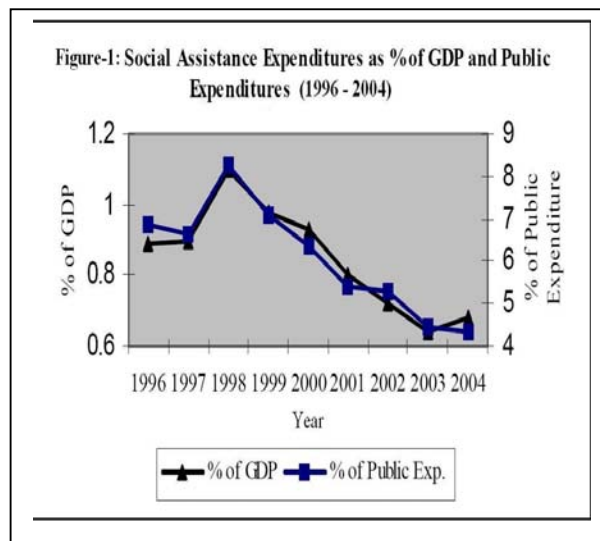
The trend that is of concern is highlighted in the figure above. The ratio of expenditures on safety net programs as a percentage of GDP and public expenditures has been declining. While expenditures on social sectors (this also includes spending on other social protection programs as well as on education and health) have remained fairly constant since the mid-1990s – in the range of 3.5-4 percent annually, safety net expenditures now make up less than 20 percent of all social sector expenditures, down from about 30 percent in the late 1990s – indicating crowding out of social assistance.

Section 3: Research question

This paper basically tries to assess how much these programs, provided by the government, are effective and how do these programs impact welfare of the livelihood of poor households during *monga*. The study also examines the coverage of these safety net programs and deep scale effect on consumption of the poor households in the *monga* period, and how much these programs have been successful in reducing the vulnerability of the poor household in seasonal deprivation, that is *monga*, in the northern region.

Section 4: Literature Review

Social Protection and Social Safety Net Defined

Social protection as a strategy is recognized globally. Although different agencies and scholars have defined social safety net measures in different ways, the basic elements remain the same. The UNDP IPC report identifies social protection as an instrument, focusing on poverty prevention and reduction providing support to the vulnerable, poor and the poorest, finally addressing the causes of poverty, not simply its symptoms. These risk factors impact the poor directly, through, lower consumption and asset depletion, and also indirectly through behavioral responses with long-term detrimental effects on welfare, productivity and income. As Holzmann and Grosh (2008) defines, "Social protection defined as public policies that assist individuals, households, and communities in better managing risk and support the critically vulnerable is crucial for sustainable and equitable economic growth, contributes in fundamental ways to human development, and is essential for poverty reduction." Another almost identical definition says that social protection is the sum of safety nets (social assistance) and social insurance (pensions, unemployment insurance) (Weigandand and Grosh, 2008). Therefore, through social assistance and insurance programs, social safety new ensures a minimum living standard for the poverty stricken people. As ILO (1997) stated, "A social safety net ensures that each member of society facing destitution is provided with the minimum level of cash income, health and social services needed to lead a socially meaningful life".

Babu (2005) in his study categorizes all these social protection and safety net measures based on their objectives - income transfers through cash, food related transfer programs, price subsidies, human capital related social safety nets, public works programs, and micro credit

and informal insurance programs. The other way an effective 'social protection package' can be designed including: a core of broad measures to enhance incomes, assets and security and increase access to services, and specific measures, such as nutritional support targeted at particular groups (CPRC, 2007).

According to the International Labor Organization (ILO), social protection is conceived as having four major components, namely, social security systems (statutory employer-related benefits), universal social benefit systems (benefits for all), social assistance systems (poverty alleviation in cash and in kind for all in special need) and private benefit systems (employer related or individual benefits) (ILO 1997: 5-6). Social security protects members of society through public measures against economic and social distress, the provision of medical care and the provision of subsidies to families with children (ILO 1998a: 8). All these programs push help the poor households to build and preserve their own resource and achieve sustainability in the long run.

Based on the documented social protection and safety net programs, we can identify the following elements:

- Cash transfers or food stamps, whether means tested or categorical as in child allowances or social pensions, old age pensions
- In-kind transfers, with food via school feeding programs or mother/child supplement
- Programs being the most common, but also of take-home food rations, school supplies and uniforms, and so on
- Price subsidies meant to benefit households, often for food or energy
- Jobs on labor-intensive public works schemes, sometimes called workfare, employment benefits,
- In-cash or in-kind transfers to poor households, subject to compliance with specific conditionalities on education or health, and tax benefit
- Fee waivers for essential services, health care, schooling, utilities, or transport
- Human capital specific social safety nets, and public works programs
- Microfinance, and informal insurance programs such as microinsurance

Social protection and safety net programs are much popularly and effectively used in the developing and transitional countries. Developed nations are less dependent on the social social protection instruments. This is evident from the findings that US, UK, Australia, New Zealand, and Canada are less reliant on social insurance instruments (pensions, health, unemployment insurance), and have greater use of targeted support to deserving poor, and specifically in Continental Europe social protection has played an excellent role (World Bank SSNPN, 2002).

Effective social protection is crucial to help persistently poor households and countries accumulate assets, increase their capacity to mitigate shocks and hazards, and thus escape from poverty. This has been stressed in many studies that social protection must be integrated with other anti-poverty measures for the best output; where currently in many countries, social protection is a string of discrete programs that are improperly connected to each other or to focal anti-poverty policies.

What Safety Net Measures are Available across the Globe?

Historically around the globe, social safety net programs have emerged as one of the major weapons to protect and uplift households from the grip of poverty. Different countries provide varied typed of social protection measures. Kamerman and Gabel (2006) found that most OECD and EU countries provide a number of social protection measures: social assistance such as cash benefits with minimum income programs, subsidize the costs of housing, cash or tax benefits and services for family, special cash or tax benefits for lone parents, advanced cash benefit maintenance or guaranteed child support, employment-related benefits, such as minimum wages or tax benefits, maternity or parental benefits and leaves from employment, credit towards old age pensions, cash benefits for child care, child trust funds, tax benefits - to supplement on wages etc.

The largest numbers of these SSNs are still in Latin America and the Caribbean, more are today in other regions. Emergency social funds, social investment funds, and social action programs have been implemented or are being implemented in at least 45 countries, in Latin America, Africa, and Asia. Although they are extremely prevalent in Latin America and the Caribbean (22 at least), they are also widely present in Africa (16 at least) and increasingly common in Asia (6 at least) (Reddy 1998). Thirteen countries in the region have implemented

conditional cash transfer programs, in most cases with support from the Inter-American Development Bank (IADB) (Inter-American Development Bank, 2006). Almost half (15) of the 36 Latin American/Caribbean region countries have family allowances of some sort in place, often income-tested, limited to women working in the formal sector and provides far more extensive child benefits than the Asian and African countries. Indeed, the region with the next highest proportion of countries with family allowances, after Europe, is Latin America, though the Caribbean countries are far less likely to have such policies (Kamerman and Gabel 2006).

Considering border regional view, this is found that the Commonwealth Independent States (CIS) countries in general lack proper unemployment benefit schemes (or indeed, means tested social assistance schemes) that can act as a reliable safety net for households out of work (Klugman, Micklewright and Redmond, 2002). Kamerman and Gabel (2006) in their report stated that apart from health care and education, the most significant service included in the social protection system in the OECD and EU countries is early childhood education and care services. Of course the European systems have both contributory benefits and non-contributory benefits - contributory benefits are designed to mitigate the risks directly linked to labor market events (unemployment, retirement, professional illness and accidents, etc) and Noncontributory benefits include a large number of social assistance is only one (such as universal child benefits and social pensions) (Neubourg, Castonguay and Keetie Roelen, 2007).

The Latin American countries, being the center of highest number of safety net and social protection programs, introduced a set of highly innovative ,domestically designed poverty and vulnerability reduction SSN programs by the mid 1990's of which the noted programs are - *Bolsa Escola/Familia* (Brazil), *Progresa/Oportunidadesa* (Mexico), and *Chile Solidario* (Chile) . These programs have mobilized regional and global interest in social protection policies (Barrientos and Hulme, 2008).

In Central America most of the countries also have a good number of social security programs that covers the risk of illness, disability, old age, and death. Marques (2003) studied the social safety net programs of 5 countries in detail. Marques (2003) identified social protection measures including early childhood development, school welfare programs, housing subsidies, income support programs, schools vouchers, student transportation and

scholarships, micro-credit/disaster management subsidies (land fund, housing, school transport, electricity), conditional transfers to families with infants and school age children, conditional cash transfer (CCT) program.

Asia, despite having, high number of poor population, doesn't have much innovative and wide scale safety net programs as found the Latin and Central American regions. Targeted cash benefits are the major policy instrument supplemented by food programs targeted on young and school-aged children and on lactating or pregnant women in Asian countries (Kamerman and Gabel, 2006). In 1990s and early 2000s there have been much donor-financed social protection activities along with government initiatives in Asia, for example old age pensions in Bangladesh, India and Nepal and the *Samurthi* Programme in Sri Lanka (Barrientos and Hulme, 2008). India has taken a regional leadership role through its National Rural Employment Guarantee Scheme (NREGS) (Barrientos and Hulme, 2008) in 2004 introducing guarantees employment at least for 100 days a year at the minimum wage to one person from every poor household (UNDP IPC, 2006). The NREGS is a social assistance program that has targeted to ensure basic income security for vulnerable households in the rural areas.

Alongside, India has varying types of safety net programs such as Jawahar Gram Samridhi Yojana (JGSY), Sampoorna Grameen Rozgar Yojana (SGRY), Universal health insurance (Not covered in this paper), Welfare funds, NGO local micro-insurance schemes, mitigate risks arising from lean season unemployment or health shocks etc. and School scholarship, School grain distribution program, Integrated Child Development Services (ICDS), Swarnajayanti Gram Swarozgar Yojana (SGSY) through building human capital, and finally For the poor households under chronic poverty, India has large scale Targeted Public Distribution System (TPDS), Social assistance schemes, National Old Age Pension (NOAP), Disability pension, Widow pension and Maternal benefits (Ajwad, 2007). On the other hand, although Asian, in China, social protection and safety net measures are less dependent on the state or donor. To increase aggregate and individual contributions from employers and employees into social insurance, housing, health services and education accounts publicly provided social protection benefits and services are now privatized since 2001 (Barrientos and Hulme, 2008).

The greater African region, a detail study by Barrientos and Hulme (2008) suggests that the status and evolution in and after 1970s social protection in much of the region has been worse as almost all measures found are quite short term measures and thus unsustainable, such as emergency food aid, famine relief, and humanitarian assistance. They also identified that recently in Zambia, Kenya, Malawi, Uganda, Ghana, and Nigeria, social protection programs have started to transform into permanent approach, shifting from the short term solutions such as cash transfers schemes targeting the poorest and the most vulnerable, including human development components. Zimbabwe established and updated a number of government-run social safety nets in the early 1980s such as Drought Relief, Child Supplementary Feeding and Agricultural Recovery Programs and later during the late 1980s (Munro, 2003).

But simply contrary to this abundance of social safety net measures, in Latin and Central America, OECD and EU countries, Asia, and Africa, the United States, as an example of the developed nations, also shows the availability of cash benefits and services that are of direct benefit to individuals and families including programs providing for income maintenance through social insurance and public aid, and those providing public support of health, education, housing, especially Child Health Insurance Program and cash and non-cash government transfer and other State welfare services (Danziger and Danziger, 2005).

The global picture of available safety net measures shows that there are plenty of different innovative safety net instruments around the globe which is difficult to be focused only on literature. Despite this, there is evidence that, all over the world either underdeveloped or developing, in every nation there are safety net measures to reduce the vulnerability of households most of which are targeted to the poor households. The developed nations also have safety net measures but less reliant on these safety net measures because low rate of poverty and high per capita income complimented by strong national economic condition.

Coverage and Impact of Social Safety Net Programs: The Global Experience
Whatever programs available in the world, the issue of how much coverage in terms of geographical outreach or number of beneficiaries, they have been able to attain is crucial. Because the success of these programs entirely depends on how many people have been able to reduce their vulnerability in realty. Different studies suggest that the coverage of social

safety net varies widely and distinctively across region and across the globe. After World War II, Social security grew massively in developed countries.

Safety net spending as a percentage of GDP, in most countries centers around 1 to 2 percent range (Weigand and Grosh, 2008; Atkinson, 1995). Social Safety Nets have seen large scale modernization and innovation in the last decade. The level of resources devoted to recent safety net measures by the states also has been found to be quite substantial. In a sample of countries, social safety net expenditure was estimated to average 10.3 percent of total public social expenditures and 32.6 percent of expenditures on basic social services that strongly advocates that these social safety net programs have strong scope to contribute to asset and income redistribution and poverty reduction (Reddy, 1998). On the other hand as an example of the Central American country, Uruguay spends almost 80 percent of GDP for its safety net and social protection programs (The World Bank, 2004).

In developing countries, during the last decade, the rapid introduction and innovation of social protection programs based on income transfers has resulted in a steep rise in coverage scenario. Studies reveal that these new forms of social assistance introduced in the last decade now reach over 150 million poor households in developing countries, covering roughly half a billion households as beneficiaries directly or indirectly. (Tambunan, 2003);

Asia is one of the most demanding regions for safety net programs with almost all middle-income and low-income countries. In Asia, Indonesia has wide range of safety net measures reaches maximum 52 percent to minimum 5 percent of the poorest 20 percent households while the rate is 40 percent and 5 percent of the poorest 40 percent households, respectively (Tambunan, 2003). Another large safety net hub India's National Rural Employment Guarantee Scheme expected to reach 26 million households during 2008. An extensive examination on Uttar Pradesh, the largest state in India whose households of almost 170 million, suggests that in UP, less than 1 percent of the households benefiting from any of the social assistance programs. Even the targeted public distribution system only benefits about 15 percent of Below Poverty Line (BPL) cardholders with the only exceptions - school grain distribution program (reaching 47 percent) and the school scholarship program (reaching 27 percent). In Egypt Program elements generally do not reach the poor as Food subsidies cover the majority of the poor (73 percent) but also go to most of the non-poor (72 percent). Only 11.5 percent of the poor receive government cash transfers, and only 0.6 percent of the

households were raised above poverty. The programs are very expensive when subsidies are included Core safety net is 2.1 percent of GDP (Blomquist, 2006).

Thus a number of studies conclude that despite abundance of resources allocated to many of the social safety net programs, coverage of key risks that affect the poor is inadequate to protect them from at least a number of risks categories. Many of these social protection and safety net measures are either demand driven or supply driven and the choice between this is crucial for a country in designing proper safety net measures.

Not only the coverage, but also notable impact brings success of the safety net programs which have high cost of operation. Alongside the expanded, this is also important to ensure that these programs have sufficient positive impact in reducing the vulnerability of the poor. Typically, these programs top up family or individual income up to a certain threshold set nationally or regionally. These last-resort safety nets can have a major impact on both the extent and the intensity of financial poverty. At the same time, the conditionality on resources, including employment income, reduces any short-term gains of attempts to escape poverty by pursuing other income sources (WB SSNPN, 2006). Evidence from OECD countries suggests that countries that devote a higher proportion of public expenditure to social protection generally have lower levels of chronic poverty (Fourage, D. 2003).

The impact of social safety net globally varies across region and across programs. Globally, there is evidence that cash transfer programs, regardless of whether they are child-conditioned or pensions increase the wellbeing of children in households (Barrientos and DeJong, 2004). Other studies (Duflo, 2000; Carvalho, 2000) show that the gender of the beneficiary is likely to affect children by gender. The old age pension is the largest program in South Africa, and has marginally reduced the number of households living below the poverty line; but it has demonstrated more significant positive impacts on children's health and nutrition (Barrientos et al, 2003). The increased availability of publicly provided employment on infrastructure projects (self-targeted to poor because of low daily wage rates) as a key element of regional development plans could have a significant impact on seasonal rural underemployment (Fritzen, 2003). Recent rigorous impact evaluations of Social Safety Net programs (cash transfers and workfare) have demonstrated the contribution of SP&L interventions to reducing poverty and malnutrition and improving access to health and

education services, and the prevalence of such programs is growing (Holzmann and Grosh, 2008).

The welfare impact assessment of Indonesian social safety net programs show that a household which participated in a social safety net program had a per capita consumption level which is around 4 to 10 percent higher compared to a similar household which did not participate in the program (Sumarto et al, 2004). A household which participated in this program has a three percent lower probability to be currently in poverty than a household with similar characteristics but did not participate in this program. On the other hand, participation in the subsidized credit program has a positive and statistically significant coefficient and thus a household which participated in this program has a higher probability to be poor than a similar household which did not participate in this program (Sumarto et al, 2004).

Section 5: Data and Variables Used

The main objective of the study to assess the impact of social safety net programs on seasonal deprivation. The variable, therefore, we choose to analyze impact of social safety net programs is seasonal deprivation. In the data set seasonal deprivation is defined in terms of meals during the previous year, that is, consumption in *monga* period. Especially, seasonal deprivation is defined a one meal in a day in *monga* period. This is a situation where households occasionally are deprived from food. The severity of *monga* affected households is determined by the occasional starvation

The other variables explaining the *monga* include age, family size, own room as household characteristics. VGD and VGF, old pension are included as social safety net programs. The variable "number of working male members over 12 years" is included as an instrumental variable for income. The dummy variables for monthly salaried or service, employment in agriculture and non-agriculture, day labor and beggar are taken as explanatory variables. Other variables incorporated into the analysis are – owning any agricultural equipment, owning fish culture, owning any transport, owning small business, owing any other business, presence of *Char* and presence of NGO.

To assess impact of social safety net programs on seasonal deprivation, it is highly emphasized to the selection of *monga* prone area and data collection from these areas. Since greater Rangpur is highly affected by the near indigence form *monga*, data were collected from this region. Data collection was covered by the jointly collaboration of Palli Karma-Sahayak Foundation (PKSF) and Institute of Microfinance (InM). Five districts of greater Rangpur - Gaibandha, Kurigram, Lalmonirhat, Nilphamari, and Rangpur itself were chosen and information is collected.

We used PKSF-InM census data. The instruments used to collect the data in this survey are Focus Group Discussion (FGD) questionnaire, community questionnaire and household questionnaire.

Section 6: Safety Net programs in monga: Coverage and Impact

Compared to the other parts in Bangladesh, the Greater Rangpur region faces the deepest dimness of poverty and deprivation during *monga* period. Households have to sell their assets, labor and/or standing crops in advance, to ensure their survival and the scope for income generating activities during *monga* is quite negligible. Consequently, the poor households have to largely depend on government supports for their minimum livelihood. Government support has been extremely inadequate to guarantee them a second chance. The results for main two government social safety net programs – Vulnerable Group Development (VGD), Vulnerable Group feeding (VGF) and Old Age Pension, prove this fact beyond doubt.

In the Greater Rangpur only about 7 percent of the households are covered under the VGD, VGF and old age pension program. Although meager, the programs suffer from equitable distribution. Despite being relatively less vulnerable Lalmonirhat has 11.31 percent and Rangpur 11.75 percent of households received VGD and VGF cards while in Kurigram which is the worst affected part during *monga* in the Greater Rangpur region, only 1.69 percent households received the benefit (Table –7). Nilphamari also has very insignificant coverage of 1.67 percent while Gaibandha also has thriving with a quite meager 5.84 percent coverage of the households the region (Table – 7).

This does not imply that Rangpur and Lalmonirhat districts are over emphasized in supporting total households under poverty and high vulnerability. The equity question arises on the ground of priority. Old age pension scheme as a safety net also fails to provide due coverage to the poverty stricken households in Greater Rangpur during *monga*. Table-8 shows only 1.21 percent of the households in Kurigram and 1.89 percent of the households in Nilphamari received old age pension. Gaibandha and Rangpur have around 3% with another substantial low coverage of 1.71 percent in Lalmonirhat. The total status is also not very healthy with only 6.29 percent of the households receiving VGD and VGF and 2.05 percent of the households receiving old aged pension. A very negligible proportion of households (0.21 percent) receive both the benefits (Table – 8). However, recently the present caretaker government has introduced Taka 100 crore employment generation scheme.

Despite having limited deepening of the social safety net programs, the placement of the programs seem to be determined by household characteristics. Table-9 shows that VGD and VGF have positive relationship with the family size. This implies that VGD/VGF are largely placed with the households with large family size. They are expected to be more vulnerable. Only about 1.5 percent of the households with family member up to 2 hold VGD/VGF card compared to some 1.9 percent for the family size 6 and above members. But the relationship between old age pension and the family size is negative though families with higher members are subject to higher vulnerability during *monga*. The highest coverage is 2.81 percent of the households with family members up to 2 compared to about 5 percent with family size of 6 and above members. This suggests that VGD/VGD and also age pension schemes have different target groups.

This is true that family size, although has relationship with VG/VGF and old age pension, is not the criterion for program placement. But the criteria of vulnerability reflect extreme poor. Therefore, land size may be found to have a relationship with VGD/VGF. Indeed, as evident from Table-10, landless households have more access to VGD/VGF programs. But no such trend is found for old age pension, as age is the criterion for placing pension scheme.

Table-11 shows that percentage of the old age pension beneficiaries increases as age increases. It ensures that obviously older headed households have more access to old age pensions. Some 0.39 percent of the households with the age of head in between 20 to 30, compared to a higher 4.93 percent for age of heads between 50 to 60 and 8.86 percent for age range 60 to 70. There is a systematic trend. Contrary to this, there is no such trend available

for VGD and VGF by age of the household heads. Table-12 presents a more concise picture of coverage by profession. Beggars have more access to old age pension (highest 6.54 percent), and VGD and VGF (highest 2.99 percent) as compared to the occupation in self employment in non agriculture. Unfortunately, day laborers, one of the most vulnerable groups, have very little access to the old age pension although they have better access to VGD and VGF.

To derive a sense of impact, we will try to find out a relationship between access to social safety net programs and consumption ordering in Tables–13 and Table-14. A possible impact will depend on the program and size deepening. The results indicate the effectiveness of the programs in reducing vulnerability and deprivation. At the aggregate level, around 46 percent of the beneficiary households compared to a higher 47.30 percent of the non-beneficiary households, were on occasional starvation during the last monga. This reduction in the occasional starvation strongly suggests of a strong positive impact of the safety net programs. In terms of consumption rationing no difference is found. But a clear difference emerges when looked at from the perspective of three full meals. Some 9 percent of the beneficiary households had three full meals a day compared to a little over 4 percent for the non-recipients. Perhaps it can be argued that social safety net programs benefit the participants. Similar pattern is found at the district level in Gaibandha, Lalmonirhat, and Nilphamari (Table-13).

Alongside the effect of VGD and VGF program, the effect of old age pension scheme which is another major program works to secure the livelihood of the old age households (Table-14). In fact, among the *monga* hit poor, old age households is the worst hit as they do not have adequate resources, ability to sell labor and capacity to work. They simply depend on the others' support and contribution. Therefore, the government's old age pension scheme should have greater impact in reducing vulnerability of the poor households especially the old headed households. But there is no positive impact observed for the households with consumption rationing and occasional starvation (Table-14). However, a positive difference is found in three full meals situation only. Participants in old age pension have higher percentage of three full meals a day. Similar pattern is found at the district level also. This suggests that old headed households are in more vulnerable condition.

The safety net statistics against occupation shows that targeting has been fairly successful for day laborers but for beggars and agricultural employees a negligible portion has been covered by all or any of these safety net programs. Hence, a large number of extremely vulnerable households have been left out of the social safety net.

Section 7: Econometric Model and Estimation Result

In order to derive consistent result of the impact of migration on seasonal deprivation, we have used three techniques. These are Heckman Probit, Propensity Matching Score and Logit technique. These techniques and its applications in this paper are briefly discussed.

Section 7.1 Estimation of Impact of Social Safety Net Using Heckman Probit Technique

The basic objective is to assess the impact of social safety net programs on reducing seasonal deprivation. We are dealing with two endogenous variables – seasonal deprivation and social safety net and observing the impact of various explanatory variables on seasonal deprivation and social safety net programs and then measuring the seasonal deprivation conditional upon social safety net. This conditionality may usually divulge the correlation between the errors of the two endogenous variables and this may create the potential risk of sample selectivity bias.

The bivariate sample selection model comprises a participant or selection equation that

$$y_1 = \begin{cases} 1 \text{ if } y_1^* > 0 \\ 0 \text{ if } y_1^* \leq 0 \end{cases}$$

And a resultant outcome equation that

$$y_2 = \begin{cases} y_2^* \text{ if } y_1^* > 0 \\ 0 \quad \text{ if } y_1^* \leq 0 \end{cases}$$

The model specifies that y_2 is observed when $y_1^* > 0$, whereas y_2 need not take on any meaningful value when $y_1^* \leq 0$. The standard model specifies a linear model with additive errors for the latent variables, so

$$y_1^* = x_1' \beta_1 + \varepsilon_1$$

$$\varepsilon_1 \sim N(0,1)$$

$$y_2^* = x_2' \beta_2 + \varepsilon_2$$

$$\varepsilon_2 \sim N(0,1)$$

Where y_1^* and y_2^* represent the unobservable variable for individual i and this is linearly determined. The intercept terms, α are constant terms; x refers to the set of observable exogenous variables and ε_1 and ε_2 are the error terms, which are normally distributed with mean zero and variance equals to 1. The problem of estimating β_2 arises if the two errors ε_1 and ε_2 are correlated.

For objective purposes we have constructed separate binomial Probit models to test for the determinants of seasonal deprivation (SD) and recipients of social safety net programs (SSNP), with the respective dependent variables are defined as:

$$y_1^* = SSNP = x_1'\beta_1 + \varepsilon_1 \qquad\qquad (1)$$

$$\varepsilon_1 \sim N(0,1)$$

$$y_2^* = SD = x_2'\beta_2 + \varepsilon_2 \qquad\qquad (2)$$

$$\varepsilon_2 \sim N(0,1)$$

Given (1) and (2), for $y_1^* > 0$ we observe y_2^*, with probability equal to the probability that $y_1^* > 0$ times the conditional probability of y_2^* given that $y_1^* > 0$. Thus for positive y_2 the density of the observables is $f^*(y_2^* \mid y_1^* > 0) \times \Pr[y_1^* > 0]$. For $y_1^* \leq 0$ all that is observed is that this event has occurred, and the density is the probability if this event occurring. The bivariate sample selection model therefore has likelihood function

$$L = \prod_{i=1}^{n} \{\Pr[y_{1i}^* \leq 0]\}^{1-y_{1i}} \{f(y_{2i} \mid y_{1i}^* > 0 \times \Pr[y_{1i}^* > 0]\}^{y_{1i}} \qquad\qquad (3)$$

Where the first term is discrete contribution when $y_{1i}^* \leq 0$, since then $y_{1i} = 0$, and the second term is the continuous contribution when $y_{1i}^* > 0$. This likelihood function is applicable to quite general models, not just linear models with joint normal errors.

We consider the truncated mean in the sample selectivity model where only positive values of y_2 are used. Therefore, under the assumption of correlation between the error terms according to a bivariate standard normal distribution with correlation coefficient ρ, the probability model is expressed as:

In general this is

$$E[y_2 \mid x, y_1^* > 0] = E[x_2'\beta_2 + \varepsilon_2 \mid x_1'\beta_1 + \varepsilon_1 > 0]$$
$$= x_2'\beta_2 + E[\varepsilon_2 \mid \varepsilon_1 > -x_1'\beta_1] \tag{4}$$

Where x denotes the vector of all explanatory variables in the outcome and selection equations. If the errors ε_1 and ε_2 are not correlated then the last term of the expression (4) simplifies to $E[e_2] = 0$

However, any correlation between the two errors means that the truncated mean is no longer $x_2'\beta_2$ and we need to account for selection bias. To obtain $E[\varepsilon_2 \mid \varepsilon_1 > -x_1'\beta_1]$ when ε_1 and ε_2 are correlated, Heckman noted that if the errors are normal, then we have

$$\varepsilon_2 = \sigma_{12}\varepsilon_1 + \xi \tag{5}$$

Here the random variable ξ is independent of ε_1.

Using (5), the truncated mean (4) becomes

$$E[y_2 \mid x, y_1^* > 0] = x_2'\beta_2 + E[\sigma_{12}\varepsilon_1 + \xi \mid \varepsilon_1 > -x_1'\beta_1]$$
$$= x_2'\beta_2 + \sigma_{12}E[\varepsilon_1 \mid \varepsilon_1 > -x_1'\beta_1] \tag{6}$$

The selection term is similar to Tobit model and then we can write

$$E[y_2 \mid x, y_1^* > 0] = x_2'\beta_2 + \sigma_{12}\lambda(x_1'\beta_1)$$

Where $\lambda = \dfrac{\phi(\bullet)}{\Phi(\bullet)}$ and ϕ and Φ represent the density and cumulative functions of the standard normal distribution, respectively.

The probability model (6) is equivalent to the original probit model but for the addition of a selection correction term $\lambda(\bullet)$ with coefficient value σ_{12}, which is included to adjust for the non-random sample. This selection term allows for changes in the independent variables to affect both the probability that the household is affected by seasonal deprivation and the probability that they receive social safety net support (Greene 2003). If it is proven that σ_{12} differs significantly from zero, that is, the error terms are correlated, a regression based only on observed data for y_1 and y_2 would be subject to an omitted-variable problem (Greene 2003, 2005). The value of ρ which is equal to $\dfrac{\sigma_{12}}{\sigma_2^2}$, is used to evaluate the risk of selection bias and assesses whether it is necessary to employ the selection model. If ρ differs significantly from zero, there is reason to reject the null hypothesis that no correlation exists.

Alternatively, if ρ is non-significant, there is no evidence of selection bias and no reason to apply the two-step selection model. In this circumstance, the standard Probit will deliver the more consistent and unbiased estimates. In the output results, the values of both ρ and λ will be estimated and their level of significance assessed.

Conditioning the observable y_2 on the unobservable y_1^* and y_2^*, then un-conditioning yields

$$
\begin{aligned}
E[y_2 \mid x] &= E_{y_{1i}^*}[E[y_2 \mid x, y_1^*]] \\
&= \Pr[y_1^* \le 0 \mid x] \times + \Pr[y_1^* > 0 \mid x] \times E[y_2^* \mid x, y_2^* > 0] \qquad (7) \\
&= \Phi(x_1'\beta_1)x_2'\beta_2 + \sigma_{12}\phi(x_1'\beta_1)
\end{aligned}
$$

The seasonal deprivation and social safety net support (as defined in (1) and (2)) are regressed on following explanatory variables: age of household head, family size, number of working male members over 12 years in the family, own land (homestead, cultivate) employment (salaried, agriculture, non-agriculture, day labor, beggar), presence of NGO, equipment (agricultural tools, transports), own business. The Probit selection technique requires that there be a variable included in the selection equation but not the outcome equation to function as an exclusion restriction. For this purpose, the variable "own small business" (which denotes the non-recipient of social safety net) is included as an explanatory variable in the selection equation but not the outcome equation.

Section 7.2: Estimation of Impact of Social Safety Net Programs Using Propensity Score Matching

The Propensity Score Matching has achieved popularity more recently as a tool of evaluation. It assumes that selection can be explained purely in terms of observable characteristics. Applying the method is, in principle, simple. For every individual in the treatment group a matching individual is found from among the non-treatment group. The choice of match is dictated by observable characteristics. What is required is to match each treatment group individual with individuals sharing similar characteristics. The mean effect of treatment can then be calculated as the average difference in outcomes between the treated and non-treated.

Our goal is to estimate the effect of social Safety Net Programs on economic hardship. Let us define

$$y_i = S = \begin{cases} 0 & \text{if the household does not receive any safety net benefit} \\ 1 & \text{if the household receive any of the safety net benefits} \end{cases}$$

We then define the outcome of social Safety Net Programs $(S = 1)$ as y_1 and the outcome of no social Safety Net Programs $(S = 0)$ as y_0. Our goal is to identify the average treatment effect on the treated (ATT). The average treatment effect on the treated is defined as benefits

$$ATT = E(y_1 - y_o / S = 1) = E(y_1 / S = 1) - E(y_0 / S = 0) \qquad\qquad 1$$

We can observe the first term of the equation (1), but the second term is not observable because it is not possible to observe the same individuals as recipient and non-recipient of any safety net benefit simultaneously. We will use the propensity score matching to estimate the term $E(y_0 / S = 0)$.

The estimation of an average treatment effect on the treated (ATT) is an observational study. That's why the estimation procedure can produce the bias if we use a non experimental estimator. The problem is that the assignment of subjects to the treatment and control groups is not random and therefore the estimation of the ATT is usually biased as a result of the existence of confounding factors. For that reason, the matching between treated and control groups becomes difficult when there are n-dimensional vector of characteristics.

One way to tackle this problem is by using propensity score matching (PSM) method which summarizes the pre-treatment characteristics of each subject into a single index variable, the propensity score, which is then used to generate the matching. The propensity score matching is used to reduce the bias by comparing the treatment and control groups whose observational characteristics are as similar as possible.

For matching certain assumption must be hold. The fundamental assumption underlying matching is conditional independence assumption (CIA). In our case the assumption is represented by

$$y_0 \perp S / X, \qquad\qquad 2$$

Where X is a vector of variables that are unaffected by the treatment. The assumption states that, conditional on a set of variables X, economic hardship for those who do not receive any

safety net benefit is independent of actual treatment status. In our study we consider the following explanatory variables in determining the effect of social Safety Net Programs on seasonal economic hardship: age of household head, family size, number of working male members over 12 years in the family, own land (homestead, cultivate) employment status (salaried, agriculture, non-agriculture, day labor, beggar), presence of NGO and Char, equipment (agricultural tools, transport), own business.

Secondly, to identify the treatment effect on the treated, matching also requires that

$$\Pr(S = 1/X) < 1 \qquad\qquad\qquad 3$$

This common support condition requires that at each level of X, the probability of observing non-recipients is positive.

Matching on all variables in X becomes impractical as the number of variables increases. Rosenbaum and Rubin (1983) show that if the conditions of equation 2 and 3 hold, matching can be performed conditioning on an index function $P(X)$ alone rather than on X, where $P(X) = \Pr(S = 1/X)$ is the probability of participating conditional on X. If outcomes are independent of treatment status given X, then they are also independent of treatment status given $P(X)$. Propensity score matching matches on a single index $P(X)$ instead of all variables in X. This powerful result overcomes the curse of dimensionality in multi-dimensional matching.

In order to estimate the propensity score, any standard model such as Logit or probit can be used. It is important to remember that the role of propensity score is only to reduce the dimensions of the conditioning; as such, it has no behavioral assumptions attached to it. For case of estimation, we use the Logit model which is as follows:

$$p(S_i = 1/X_i) = \frac{e^{\lambda h(X_i)}}{1 + e^{\lambda h(X_i)}} \qquad\qquad \mathbf{4}$$

Where S_i is the treatment status and $h(X_i)$ is made up of linear and higher-order terms of the covariates on which we condition to obtain an ignorable treatment assignment. The coefficients λ can be estimated by using the maximum likelihood estimation method.

The propensity score can be expressed as

$$P(X_i) = P(S_i = 1 / X_i = x_i)$$

Besides predicted probability itself, Logit, $\log\left(\dfrac{P(X)}{1-P(X)}\right)$, Odds Ratio and Linear Index can also be defined as propensity score as long as its distribution approximates to normal. In our study we use the predicted probability as the propensity score to determine the effect of social Safety Net Programs on economic hardship.

Section 7.3: Estimation of Impact of Social Safety Net Using Generalized Ordered Logit

Since we are dealing with a natural ordering of different alternatives, such as occasional starvation (1), consumption rationing (2) and three full meals (3), such data can be estimated by unordered multinomial model, but there is a much more parsimonious model and sensible model that take account of this ordering. In recent year, generalized ordered logit (gologit) has drawn attention to the researchers for its superiority than the multinomial logit and other order logit models.

The gologit model can be written as follows

$$P(Y_i > j) = g(X\beta_j) = \frac{e^{\alpha_j + X_i\beta_j}}{1 + e^{\alpha_j + X_i\beta_j}} \qquad j = 1,2,......M-1$$

Where, M is the number of categories of the ordinal dependent variable. From the above, it can be determined that the probabilities that Y will take on each of the values 1… M is equal to

$$P(Y_i = 1) = 1 - g(X_i\beta_1)$$
$$P(Y_i = j) = g(X_i\beta_{j-1}) - g(X_i\beta_j) \qquad j = 2,.....M-1$$
$$P(Y_i = M) = g(X_i\beta_{M-1})$$

The gologit model yields some special cases. For the case M = 2, the gologit model is equivalent to the logistic regression model. For the condition M > 2, the gologit model becomes equivalent to a series of binary logistic regressions where categories of the dependent variable are combined, for example, if M = 4, then for J = 1 category 1 is

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contrasted with categories 2, 3 and 4; for J = 2 the contrast is between categories 1 and 2 versus 3 and 4; and for J = 3, it is categories 1, 2 and 3 versus category 4.

The major strength of gologit is that it can estimate three special cases of the generalized model: the *proportional odds/parallel lines model*, the *partial proportional odds model*, and the *logistic regression model*. Hence, gologit can estimate models that are less restrictive than the parallel lines models estimated by ologit (whose assumptions are often violated) but more parsimonious and interpretable than those estimated by a non-ordinal method, such as multinomial logistic regression (i.e. mlogit). Other key advantages of gologit include support for linear constraints (making it possible to use gologit for constrained logistic regression).

Section 7.4: Empirical Analysis

The role of social safety net programs in attenuating the poverty led hardship is well acknowledged. Likewise, we desire to assess the role of these programs in reducing the extent of monga. This could be explained by the macroeconomic intervention so that the household consumption can be smoothened in monga and normal period.

We classified poor households into three groups – extreme poor, moderate poor and marginal poor – in order to clearly understand the impact of social safety net programs. Extremely poor households are those that remain on occasional starvation in both monga and normal time. Marginal poor households are those that continue to have three full meals even in monga time. The remaining households are classified as moderate poor.

As argued earlier, we have used several techniques to derive consistent results of the impact of social safety net programs. These include Heckman Probit, Propensity Score Matching, Probit and Generalized Ordered Logit. We have separately estimated for VGD/VGF and old age pension scheme.

Estimation of Parameters Using Heckman Probit

Heckman Probit determines seasonal deprivation conditional up on social safety net programs. As both are endogenous, the errors are likely to be correlated. Therefore, we used Heckman Probit as errors are correlated and statistically significant

In the outcome and selection equations (Table 15A and Table-15B), the variables – age of household head, family size, no. of working male family members over 12 years, own land (homestead, cultivable,, under river), number of employment, dummy of (monthly salaried, employed in agriculture and non-agriculture, day laborer, beggar, owned livestock, presence of NGO and presence of *Char* the village), ownership of tin made room, economic wealth (owning agricultural equipment, fish culture, transport, small business, small cottage industry), own saving and old pension. The variable "live in other's property" appears in the selection equation, but is absent in the outcome equation. The basic objective of including the same variables in the outcome and selection equations except the variable "live in other's property" is that the presence of variables in the outcome and selection equations indicates that the slope coefficients in the outcome equation is affected by its presence in the selection

The determinants of social safety net programs have been put forward in descriptive analysis. An empirical analysis is needed to validate the descriptive findings. We have performed this via the selection equation of Heckman Probit technique (Table – 15A). The results reveal that the household head being relatively old has the higher probability of getting the social safety net support. Family size plays a vital role in determining the participation of social safety net. The larger the family size is, the greater is the possibility of receiving the safety net supports like VGD/VGF, old pensions, grants etc. The coefficient of the variable "family size" in the selection equation of Heckman Probit model is highly significant. Number of male active members (over 12 years) was used as a proxy for higher income. Therefore it was expected that social safety net programs would be placed to the households with lower income households. This was validated by negative and significant coefficient of the variable. Assets such as land holding, number of tin roofed homes and economic wealth (e.g. agriculture and transport equipments etc.) also determines the distribution of safety net supports. It is evident from the result that there is an inverse relationship between assets and placement of safety net programs. This is logical and economically pertinent. The service holders and the non-agricultural sef employment have the lower probability of receiving the safety net supports. On the other hand, day labor and beggar are the most vulnerable and have the largest possibility of being the recipients of safety net programs. This is also verified by the respective coefficients. Households in *Char* areas are more vulnerable than others because of relatively less accessibility, natural calamities, and limited economic opportunities. As such, it is expected that social safety net programs will be placed more in *Char* areas. The significant coefficient suggests this hypothesis.

Table-15B presents determinants of seasonal deprivations (extreme and moderate poor) conditional upon social safety net programs. As evident, households with younger heads are likely to be less extreme poor, but the relationship is inverse for the moderate poor. Older headed households are less likely to be moderate poor. Family size does not have any impact. Assets matter. Assets – own and cultivable land, number of tin roofed homes, and economic wealth, contribute to reduce the likelihood likely to be extreme poor. Social safety net programs particularly VGD/VGF is likely to be effective for extreme poor. Net savings for future smoothens consumptions, and therefore, it is expected to reduce degree of poverty in terms of change in consumption.

Estimation of Parameters Using Propensity Score Matching

To find a reliable comparison group, the eminent approach – PSM (Propensity Score Matching) is used. The comparison group can be formed by picking the "nearest neighbor" for each participant, defined as the non-participant that minimizes the difference in the propensity score between participant and mom-participant, as long as this does not exceed some reasonable bound.

In order to derive a consistent estimate, we also estimated impact of social safety net on different groups of poor households. Results from the PSM have been shown in Table-17. There is no significant impact of old age pension scheme, probably because of narrower coverage and small size of the program.

The ATT estimate of VGD/VGF is -0.014 which indicates that the participants of the VGD/VGF programs will be 1.4 percent less in extreme poor than the non-participant group (Table-16). But the scenario is excruciating when we assess the impact of VGD/VGF on moderate group (Table-16). The result divulges that the participants of VGD/VGF programs will be 2.5 percent more likely to be moderate poor group than the non-participants.

Estimation of Parameters Using Probit Model

The probit technique was also employed to find out consistency of the results that we derive by using other techniques. The technique was used separately for participants in social safety net programs, non-participants and all poor households with a dummy variable for social

safety net programs. The results were generated separately for VGD/VGF and old age pension scheme.

The signs of other parameters are same as in Table-17 and Table-18. The dummy variable for VGD/VGF has negative sign. The coefficient of VGD/VGF was estimated to be -0.189 in moderate poor and -0.220 in extreme poor groups. These results suggest that the participants in VGD/VGF program are likely to be better off than the non-participants. This is consistent with what we found in PSM. The old age pension scheme is not effective as observed in probit results. This was also found in PSM as the relevant coefficients are insignificant.

Estimation of Parameters Using Generalized Ordered Logit

Yet another model has been used to justify the consistency of our findings. All the above three - Heckman, PSM and Probit measures consistently indicated that VGD/VGD have significant impact in reducing vulnerability of the poor households during monga. For all the participants, this is evident that VGD/VGF helps to reduce extreme poverty but no such positive effect for the moderate poor is observed (Table 19). The coefficient for extreme poor is highly significant (coefficient value of -0.543) strongly suggests that these households are more likely to scale up to moderate poor by participation in the VGD and VGF. Inversely the moderate poor households have a fair probability to scale down to extreme poor. Contrary to this result, old age pension coefficient shows negative sign for both moderate and extreme poor. This result is statistically highly significant as observed. Therefore, the result strongly suggests that the old age pension scheme has no positive impact in improving the poverty status of the poor households for both moderate and extreme groups. This result is fully consistent with earlier findings derived from Heckman, Probit and PSM models.

No. of working male family members over 12 years, own homestead land, or cultivable land, economic wealth, and existence of past savings, have all the way positive coefficients indicating that the more prevalence of these parameters would contribute to move up from extreme poor to moderate poor and also from moderate poor to marginal poor (Table-19). On the other hand, large family size increases the likelihood of being worse off. Households having self employment in agriculture are likely to be significantly better off for both moderate and extreme groups, and households with monthly salaried employees are better off only if they are the member of moderate poor category. But this more important that the signs

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for non-agriculture, labor and beggar are negative strongly suggesting that these groups are more vulnerable.

In *Char* areas, households are more likely to be extreme poor. Although households in *Char* areas are the most vulnerable, the households in extreme poor are more likely to move up from extreme poor to moderate poor. This possibly reflects intensity of support services.

The old age pension, as we derived in the earlier parts, shows negative coefficient but statistically significant for both moderate and extreme poor groups. Therefore, the finding that old age pension does not benefit the extremely poor households or the households in the moderate poor reinforces the earlier findings using other statistical techniques..

Section 8: Conclusion and Policy implications

The basic objective of this paper was to assess impact of social safety net programs in mitigating monga using the PKSF-InM census survey data of poor households in the Greater Rangpur region. We used several econometric techniques to derive consistent results.

Several findings emerged from the empirical Analysis. First, VGD/VGF have positive impact on mitigating monga. Second, old age pension appears to be ineffective probably because of targeting of extreme vulnerable older people. Third, the programs are relatively well placed. Fourth, households with labor as occupation are less covered under these programs although they are the most vulnerable. It is understandable that the designs of the programs are not targeted towards laborers. It seems that a separate scheme may be required for them. Fifth, households in the *Char* areas are vulnerable. Provision of social safety net programs for these households will help theme to move from extreme poor to moderate poor. Sixth, savings positively contribute to consumption smoothening, for both extreme and moderate poor. Introduction of appropriate savings instruments may contribute higher savings.

Since VGD/VGF programs are effective, it will be probably to correct to argue that the programs should be expanded. Program deepening has to be increased. Although old age pension appears to be less effective at the household level, probably it may have positive impact at the individual level. There is also a need to deepen the program both in terms of coverage and size. This is required in view of the fact that individual cannot be separated from the family.

Expansion of VGD/VGF and old age pension schemes will effectively contribute to mitigating monga. On the other hand, it will also reduce cost of short term measures for the government as expansion of annual programs like VGD/VGF will reduce the incidence and intensity of monga.

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Tables

Table-1

Table 1—Antipoverty Effects of Government Spending in Selected Countries

| Country | Share of Poor People by Income Source, in Selected OECD Countries | | | | |
| | | | | Percentage Reduction in Poverty | |
	Market Income	Social Insurance (and Taxes)	Social assistance	Social Insurance	Overall
Belgium	31.0	8.7	7.9	71.9	74.5
Canada	24.8	13.8	11.9	44.4	52.0
Finland	18.1	11.4	5.4	37.0	70.2
Germany	28.6	9.9	8.2	65.4	71.3
Netherlands	21.6	10.9	8.9	49.5	58.8
Sweden	29.2	11.6	6.4	60.3	78.1
United States	23.7	19.3	17.0	18.6	28.3
Average	26.1	13.6	9.8	46.9	61.8

Source: Smeeding, "Government Programs and Social Outcomes: Comparison of the United States with Other Rich Nations," in *Public Policy and Income Distribution*. A. Auerbach, D. Card, and J. Quigley, eds. (New York: Russell Sage Foundation, 2006).
Notes: Poverty rates are for persons living in households with adjusted incomes below 50 percent of median adjusted disposable income. Market income includes earnings, income from investments, public- and private-sector occupations, pensions, child support, and other private transfers. Social insurances include the effect of taxes. Refunds from Earned Income Tax Credits (U.S.) and Family Tax Credit (U.K.) are treated as social assistance, as are near-cash benefits, such as food stamps and housing allowances. The percentage reduction in poverty is calculated as the market income rate minus the social insurance rate as a percentage of the market income rate.

Table - 2
Amount of Payment under programs per household per year (HIES: 2005)

Type of program	Average (BDT)
Total	781
VGD and VGF	916
IFS	2549
FF W/M FW	502
Test relief	423
VGF	439
GR	1333
Food for education	628
RMP	450
Old age allowance	1429
Freedom fighter	2364
Other	765

Table-3

Coverage Rates: 2000 HIES Findings for Major Programs

Program	percent households living in a village where program was offered	Estimated number of beneficiary households	percent of rural households covered
	(1)	(3)	(4)
FFW	67.7 percent	--	--
VGD and VGF	56.8 percent	562,344	2.9 percent
VGF	63.3 percent	1,560,597	8.0 percent
FFE	28.3 percent	1,466,834	7.5 percent

Source: The World Bank Study, 2004

Note: Column 3 and 4 derived based on the 2001 Households Census's estimate of 19.43 million households living in rural areas in Bangladesh.

Table-4
Social Safety Net Coverage: HIES - 2005

Area	Total	Rural	Urban
National	**13.06**	**15.64**	**5.45**
Barishal	13.34	14.79	5.00
Chittagong	11.05	12.89	5.72
Dhaka	14.33	19.98	4.94
Khulna	9.51	11.03	4.23
Rajshahi	12.35	13.02	7.71
Sylhet	22.42	24.31	11.25

Table – 5
Beneficiary Coverage in (percent) under Different Programs

Type of Program	Total	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
VGD and VGF	17.59	17.39	9.90	24.79	12.80	17.11	8.84
IFS	0.33				3.76		
FF W/M FW	0.25	1.14	0.58	0.25			
Test relief	11.87	1.57	28.64	4.15	18.26	14.66	9.65
VGF	33.86	17.82	30.53	32.77	18.70	38.97	55.62
GR	0.58	1.14	3.49				
Food for Education	8.41	33.07	1.16	13.58	13.45		
RMP	0.12		0.81				
Old age allowance	17.91	25.36	17.42	11.94	23.19	25.80	11.44
Freedom fighter	0.73		0.58	1.07	0.94	0.69	
Other	11.24	12.68	15.08	11.40	7.87	7.03	18.06
percent of household	13.06	13.34	11.05	14.33	9.51	12.35	22.42

Table - 6

Expenditures on safety net programs (US $ millions,1996-2004)									
Program name	1996-7	1997-8	1998-9	1999-00	2000-1	2001-2	2002-3	2003-4	2004-5
Children and youth-conditional cash transfers									
FFE RESR	60.62	67.74	71.87	74	64.1	70.38	109.35	103.63	106.97
FSSAP	34.95	37.03	39.61	43.52	52.12	50.45	50.46	41.89	43.24
Working age households-public works/emergency relief									
FFW	149.16	151.01	130.06	151.54	164.48	123.95	75.87	40.93	88.79
VGD and VGF	39.6	40.66	37.97	42.87	43.86	42.72	40.49	37.92	35.66
Others	47.11	46.73	38.21	51.14	36.99	43.6	34.33	35.01	38.15
The elderly-cash transfer									
old aged allowance	0	4.7	8.91	9.21	9.29	8.79	12.62	31.09	42.36
other risk groups-public works									
VGF	0	13.77	106.3	43.05	55.2	23.03	18.26	29.8	17.83
Other risk groups-cash transfers									
Fund for national transfer	0	0	4.54	4.7	4.65	4.4	6.81	15.54	21.18
allowance for widows	0	0	2.73	2.82	2.79	5.06	4.85	3.11	3.85
Freedom fighters fund	0	0	0	0	0	0	4.21	8.64	13.37
Funds for other groups	0	0	0	12.82	5.77	11.6	4.57	11.25	13.37
Summary and targeted households	1996-7	1997-8	1998-9	1999-00	2000-1	2001-2	2002-3	2003-4	2004-5
For children and young	95.57	104.77	111.48	117.52	116.23	120.83	159.82	145.52	150.21
For working age households	235.87	238.4	206.25	245.54	245.33	210.28	150.69	113.86	162.6
For the elderly	0	4.7	8.91	9.21	9.29	8.79	12.62	31.09	42.36
For other risk groups	0	13.77	113.57	63.45	68.4	44.1	38.7	78.33	69.6
Total	331.44	361.64	440.21	435.72	439.25	384	361.83	368.8	424.77

Table-7
Having VGD and VGF card by District in Greater Rangpur

Have VGD and VGF card	District					
	Gaibandha N=120,608	Kurigram N=1,30,006	Lalmonirhat N=102,936	Nilphamari N=56,925	Rangpur N=72,473	District total N=482,948
No (%)	94.16	98.31	88.69	98.33	88.25	93.71
Yes (%)	5.84	1.69	11.31	1.67	11.75	6.29

Table- 8
Receiving Old-age Pension by District in Greater Rangpur

Old age pension	District					
	Lalmonirhat N=102,936	Kurigram N=1,30,006	Gaibandha N=120,608	Nilphamari N=56,925	Rangpur N=72,473	District total N=482,948
No (%)	96.80	98.79	98.29	98.11	97.39	97.95
Yes (%)	3.20	1.21	1.71	1.89	2.61	2.05

Table – 9
Safety Net Programs and family size

Family size	No safety Net programs	VGD and VGF	Old pensions	Subsistence support	Asset assistance	All combination	Total
0-2	54,705 (62.27) [17.27]	1,309 (1.49) [16.34]	2,470 (2.81) [48.00]	22,357 (25.45) [18.30]	514 (0.59) [19.37]	6,500 (7.40) [23.07]	87,855 (100.00) [18.19]
2-4	163,996 (67.93) [51.76]	3,824 (1.58) [47.75]	1,634 (0.68) [31.75]	58,316 (24.16) [47.74]	1,295 (0.54) [48.81]	12,353 (5.12) [43.84]	241,418 (100.00) [49.99]
4-6	82,568 (64.35) [26.06]	2,387 (1.86) [29.80]	825 (0.64) [16.03]	34,282 (26.72) [28.07]	691 (0.54) [26.05]	7,552 (5.89) [26.80]	128,305 (100.00) [26.57]
>6	15,550 (61.29) [4.91]	489 (1.93) [6.11]	217 (0.86) [4.22]	7,186 (28.32) [5.88]	153 (0.60) [5.77]	1,775 (7.00) [6.30]	25,370 (100.00) [5.25]
Total	316,819 (65.60) [100.00]	8,009 (1.66) [100.00]	5,146 (1.07) [100.00]	122,141 (25.29) [100.00]	2,653 (0.55) [100.00]	28,180 (5.83) [100.00]	482,948 (100.00) [100.00]

Table – 10
Safety Net Programs and land holding

Land	No safety Net programs	VGD and VGF	Old pensions	Subsistence support	Asset assistance	All combination	Total
0	63,487	1,856	1,404	32,288	743	7,700	107,478
	(59.07)	(1.73)	(1.31)	(30.04)	(0.69)	(7.16)	(100.00)
	[20.04]	[23.17]	[27.28]	[26.44]	[28.01]	[27.32]	[22.25]
up to 25	220,569	5,469	3,311	80,041	1,737	18,187	329,314
	(66.98)	(1.66)	(1.01)	(24.31)	(0.53)	(5.52)	(100.00)
	[69.62]	[68.29]	[64.34]	[65.53]	[65.47]	[64.54]	[68.19]
25-50	29,534	618	402	9,018	152	2,066	41,790
	(70.67)	(1.48)	(0.96)	(21.58)	(0.36)	(4.94)	(100.00)
	[9.32]	[7.72]	[7.81]	[7.38]	[5.73]	[7.33]	[8.65]
50-75	2,644	52	21	627	17	177	3,538
	(74.73)	(1.47)	(0.59)	(17.72)	(0.48)	(5.00)	(100.00)
	[0.83]	[0.65]	[0.41]	[0.51]	[0.64]	[0.63]	[0.73]
75-100	431	8	7	115	4	39	604
	(71.36)	(1.32)	(1.16)	(19.04)	(0.66)	(6.46)	(100.00)
	[0.14]	[0.10]	[0.14]	[0.09]	[0.15]	[0.14]	[0.13]
100-150	112	6	1	31	0	10	160
	(70.00)	(3.75)	(0.63)	(19.38)	(0.00)	(6.25)	(100.00)
	[0.04]	[0.07]	[0.02]	[0.03]	[0.00]	[0.04]	[0.03]
>150	42	0	0	21	0	1	64
	(65.63)	(0.00)	(0.00)	(32.81)	(0.00)	(1.56)	(100.00)
	[0.01]	[0.00]	[0.00]	[0.02]	[0.00]	[0.00]	[0.01]
Total	316,819	8,009	5,146	122,141	2,653	28,180	482,948
	(65.60)	(1.66)	(1.07)	(25.29)	(0.55)	(5.83)	(100.00)
	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]

Table –11
Safety Net Programs and age category

Age	No safety Net programs	VGD and VGF	Old pensions	Subsistence support	Asset assistance	All combination	Total
to 20	5,592	116	89	1,822	43	382	8,044
	(69.52)	(1.44)	(1.11)	(22.65)	(0.53)	(4.75)	(100.00)
	[1.77]	[1.45]	[1.73]	[1.49]	[1.62]	[1.36]	[1.67]
20-30	94,713	1,889	520	30,689	658	5,730	134,199
	(70.58)	(1.41)	(0.39)	(22.87)	(0.49)	(4.27)	(100.00)
	[29.90]	[23.59]	[10.10]	[25.13]	[24.80]	[20.33]	[27.79]
30-40	109,680	2,734	745	41,699	909	8,679	164,446
	(66.70)	(1.66)	(0.45)	(25.36)	(0.55)	(5.28)	(100.00)
	[34.62]	[34.14]	[14.48]	[34.14]	[34.26]	[30.80]	[34.05]
40-50	61,397	1,823	859	26,379	556	6,397	97,411
	(63.03)	(1.87)	(0.88)	(27.08)	(0.57)	(6.57)	(100.00)
	[19.38]	[22.76]	[16.69]	[21.60]	[20.96]	[22.70]	[20.17]
50-60	28,859	970	1,138	13,388	310	3,917	48,582
	(59.40)	(2.00)	(2.34)	(27.56)	(0.64)	(8.06)	(100.00)
	[9.11]	[12.11]	[22.11]	[10.96]	[11.68]	[13.90]	[10.06]
60-70	12,553	370	1,112	6,172	135	2,213	22,555
	(55.66)	(1.64)	(4.93)	(27.36)	(0.60)	(9.81)	(100.00)
	[3.96]	[4.62]	[21.61]	[5.05]	[5.09]	[7.85]	[4.67]
>70	4,023	107	683	1,992	42	862	7,709
	(52.19)	(1.39)	(8.86)	(25.84)	(0.54)	(11.18)	(100.00)
	[1.27]	[1.34]	[13.27]	[1.63]	[1.58]	[3.06]	[1.60]
Total	316,817	8,009	5,146	122,141	2,653	28,180	482,946
	(65.60)	(1.66)	(1.07)	(25.29)	(0.55)	(5.84)	(100.00)
	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]	[100.00]

Table – 12
Safety Net Programs and occupation

Occupation	No safety Net programs	VGD and VGF	Old pensions	Subsistence support	Asset assistance	Any one of the safety net program	Total
Day labor	202,829 (65.16) [64.02]	5,154 (1.66) [64.35]	2,940 (0.94) [57.13]	80,411 (25.83) [65.83]	1,748 (0.56) [65.89]	18,206 (5.85) [64.61]	311,288 (100.00) [64.46]
Employment in agriculture	8,868 (71.85) [2.80]	127 (1.03) [1.59]	121 (0.98) [2.35]	2,704 (21.91) [2.21]	65 (0.53) [2.45]	458 (3.71) [1.63]	12,343 (100.00) [2.56]
Employment in non-agriculture	37,239 (69.21) [11.75]	1,014 (1.88) [12.66]	400 (0.74) [7.77]	12,031 (22.36) [9.85]	229 (0.43) [8.63]	2,889 (5.37) [10.25]	53,802 (100.00) [11.14]
Monthly salaried	1,020 (67.55) [0.32]	20 (1.32) [0.25]	17 (1.13) [0.33]	334 (22.12) [0.27]	5 (0.33) [0.19]	114 (7.55) [0.40]	1,510 (100.00) [0.31]
Beggar	941 (47.69) [0.30]	59 (2.99) [0.74]	129 (6.54) [2.51]	559 (28.33) [0.46]	24 (1.22) [0.90]	261 (13.23) [0.93]	1,973 (100.00) [0.41]
All others	65,922 (64.61) [20.81]	1,635 (1.60) [20.41]	1,539 (1.51) [29.91]	26,102 (25.58) [21.37]	582 (0.57) [21.94]	6,252 (6.13) [22.19]	102,032 (100.00) [21.13]
Total	316,819 (65.60) [100.00]	8,009 (1.66) [100.00]	5,146 (1.07) [100.00]	122,141 (25.29) [100.00]	2,653 (0.55) [100.00]	28,180 (5.83) [100.00]	482,948 (100.00) [100.00]

Table: 13
Consumption ordering per day by VGD and VGF

District	Have VGD and VGF card?	2006 monga: Consumption ordering per day			2007: Consumption ordering per day			Total
		Occasional starvation	Consumption rationing	Three full meals	Occasional starvation	Consumption rationing	Three full meals	
Gaibandha	No	55,222 (48.63) [94.55]	56,678 (49.91) [93.65]	1,656 (1.46) [99.04]	2,268 (2.00) [90.58]	55,480 (48.86) [93.26]	55,808 (49.15) [95.23]	113,556 (100.00) [94.16]
	Yes	3,183 (45.21) [5.45]	3,841 (54.56) [6.35]	16 (0.23) [0.96]	236 (3.35) [9.42]	4,010 (56.96) [6.74]	2,794 (39.69) [4.77]	7,040 (100.00) [5.84]
	Total	58,405 (48.43) [100.00]	60,519 (50.18) [100.00]	1,672 (1.39) [100.00]	2,504 (2.08) [100.00]	59,490 (49.33) [100.00]	58,602 (48.59) [100.00]	120,596 (100.00) [100.00]
Kurigram	No	73,443 57.52 98.43	52,168 40.86 98.09	2,061 1.61 99.28	15,600 12.22 98.55	80,876 63.35 98.36	31,193 24.43 98.04	127,672 100.00 98.30
	Yes	1,171 53.15 1.57	1,017 46.16 1.91	15 0.68 0.72	229 10.39 1.45	1,351 61.33 1.64	623 28.28 1.96	2,203 100.00 1.70
	Total	74,614 57.45 100.00	53,185 40.95 100.00	2,076 1.60 100.00	15,829 12.19 100.00	82,227 63.31 100.00	31,816 24.50 100.00	129,875 100.00 100.00
Lamonirhat	No	23,678 25.94 87.91	55,499 60.79 89.32	12,112 13.27 87.33	2,108 2.31 88.20	29,804 32.65 88.02	59,377 65.04 89.04	91,289 100.00 88.69
	Yes	3,256 27.96 12.09	6,634 56.96 10.68	1,757 15.09 12.67	282 2.42 11.80	4,055 34.82 11.98	7,310 62.76 10.96	11,647 100.00 11.31
	Total	26,934 26.17 100.00	62,133 60.36 100.00	13,869 13.47 100.00	2,390 2.32 100.00	33,859 32.89 100.00	66,687 64.78 100.00	102,936 100.00 100.00
Nilphamari	No	26,943 48.19 98.78	27,579 49.32 97.91	1,393 2.49 97.75	8,086 14.46 98.98	30,736 54.97 98.61	17,093 30.57 97.51	55,915 100.00 98.32
	Yes	332 34.84 1.22	589 61.80 2.09	32 3.36 2.25	83 8.71 1.02	434 45.54 1.39	436 45.75 2.49	953 100.00 1.68
	Total	27,275 47.96 100.00	28,168 49.53 100.00	1,425 2.51 100.00	8,169 14.36 100.00	31,170 54.81 100.00	17,529 30.82 100.00	56,868 100.00 100.00
Rangpur	No	34,680 (54.51) [85.45]	26,646 (41.88) [91.36]	2,294 (3.61) [96.47]	11,503 (18.00) [92.75]	32,479 (50.83) [84.01]	19,920 (31.17) [93.28]	63,902 (100.00) [88.24]
	Yes	5,905 (69.39) [14.55]	2,521 (29.62) [8.64]	84 (0.99) [3.53]	899 (10.56) [7.25]	6,184 (72.61) [15.99]	1,434 (16.84) [6.72]	8,517 (100.00) [11.76]
	Total	40,585 (56.27) [100.00]	29,167 (40.44) [100.00]	2,378 (3.30} [100.00]	12,402 (17.13) [100.00]	38,663 (53.39) [100.00]	21,354 (29.49) [100.00]	72,419 (100.00) [100.00]

Table- 14
Consumption ordering per day by Old Age Pension

District	Receives Pension?	monga time: Consumption ordering per day			Normal Time: Consumption ordering per day			Total
		Occasional starvation	Consumption rationing	Three full meals	Occasional starvation	Consumption rationing	Three full meals	
Gaibandha	No	57,090 (48.16) [97.75]	59,790 (50.44) [98.80]	1,651 (1.39) [98.74]	2,426 (2.05) [96.88]	58,183 (49.09) [97.80]	57,922 (48.87) [98.84]	118,531 (100.00) [98.29]
	Yes	1,315 (63.68) [2.25]	729 (35.30) [1.20]	21 (1.02) [1.26]	78 (3.78) [3.12]	1,307 (63.29) [2.20]	680 (32.93) [1.16]	2,065 (100.00) [1.71]
	Total	58,405 (48.43) [100.00]	60,519 (50.18) [100.00]	1,672 (1.39) [100.00]	2,504 (2.08) [100.00]	59,490 (49.33) [100.00]	58,602 (48.59) [100.00]	120,596 (100.00) [100.00]
Kurigram	No	73,603 57.39 98.69	52,585 41.00 98.92	2,054 1.60 98.94	15,558 12.13 98.31	81,237 63.35 98.84	31,444 24.52 98.87	128,239 100.00 98.79
	Yes	977 62.03 1.31	576 36.57 1.08	22 1.40 1.06	267 16.95 1.69	950 60.32 1.16	358 22.73 1.13	1,575 100.00 1.21
	Total	74,580 57.45 100.00	53,161 40.95 100.00	2,076 1.60 100.00	15,825 12.19 100.00	82,187 63.31 100.00	31,802 24.50 100.00	129,814 100.00 100.00
Lalmonirhat	No	25,894 25.98 96.14	60,273 60.48 97.01	13,492 13.54 97.28	2,272 2.28 95.06	32,577 32.69 96.21	64,810 65.03 97.19	99,659 100.00 96.82
	Yes	1,040 31.74 3.86	1,860 56.76 2.99	377 11.50 2.72	118 3.60 4.94	1,282 39.12 3.79	1,877 57.28 2.81	3,277 100.00 3.18
	Total	26,934 26.17 100.00	62,133 60.36 100.00	13,869 13.47 100.00	2,390 2.32 100.00	33,859 32.89 100.00	66,687 64.78 100.00	102,936 100.00 100.00
Nilphamari	No	26,763 47.97 98.12	27,619 49.50 98.05	1,412 2.53 99.09	8,016 14.37 98.13	30,502 54.67 97.86	17,276 30.96 98.56	55,794 100.00 98.11
	Yes	512 47.67 1.88	549 51.12 1.95	13 1.21 0.91	153 14.25 1.87	668 62.20 2.14	253 23.56 1.44	1,074 100.00 1.89
	Total	27,275 47.96 100.00	28,168 49.53 100.00	1,425 2.51 100.00	8,169 14.36 100.00	31,170 54.81 100.00	17,529 30.82 100.00	56,868 100.00 100.00
Rangpur	No	39,347 (56.02) [96.95]	28,553 (40.65) [97.89]	2,343 (3.34) [98.53]	12,098 (17.15) 97.55	37,586 (53.29) [97.21]	20,846 (29.56) [97.62]	70,530 (100.00) [97.39]
	Yes	1,238 (65.61) [3.05]	614 (32.54) [2.11]	35 (1.85) [1.47]	304 (16.09) [2.45]	1,077 (57.01) [2.79]	508 (26.89) [2.38]	1,889 (100.00) [2.61]
	Total	40,585 (56.27) [100.00]	29,167 (40.44) [100.00]	2,378 (3.30) [100.00]	12,402 (17.13) [100.00]	38,663 (53.39) [100.00]	21,354 (29.49) [100.00]	72,419 (100.00) [100.00]

Table – 15A
Determinants of social safety Net Programs – VGD/VGF

Variables	Coefficient
Age of household head	0.022***
Square of age	-0.000***
Family size	0.015***
No. Of working male family members over 12 years	-0.064***
Homestead: own land	-0.001**
Cultivable: own land	-0.003***
Dummy: monthly salaried	0.096***
Dummy; agriculture	-0.054***
Dummy; non agriculture	-0.012
Dummy: day labor	0.054***
Dummy: beggar	0.190***
Own rooms: tin	-0.017***
Business wealth	0.069***
Presence of *Char*	0.099***
Having past savings	0.169***
Presence of NGO	-0.378***
Live in others room	0.125***
Constant	-1.871***

Note: *** p<0.01, ** p<0.05, * p<0.1

Table – 15B
Heckman Probit model

	Extreme poor	Moderate poor
	Coefficient	Coefficient
Age of household head	0.015**	-0.004
Square of age	-0.000	0.000
Family size	0.016	0.010
No. Of working male family members over 12 years	-0.103***	0.009
Homestead: own land	-0.009***	-0.003
Cultivable: own land	-0.009***	-0.009***
Dummy: monthly salaried	-0.133	-0.041
Dummy; agriculture	-0.128	0.039
Dummy; non agriculture	-0.001	0.009
Dummy: day labor	-0.155***	0.186***
Dummy: beggar	0.262**	0.051
Own rooms: tin	-0.091***	-0.062***
Business wealth	-0.168***	0.040
Presence of *Char*	0.174***	0.002
Having past savings	-0.134**	-0.112**
Presence of NGO	0.141	-0.148
Live in others room		
Constant	-1.893*	1.699
/athrho	0.242	
rho	-0.9957**	-0.998***

Note: *** p<0.01, ** p<0.05, * p<0.1

Table - 16
Propensity Score Matching – Social Safety Net Programs

Area	Safety net	Extreme poor	Moderate poor	Marginal poor
All District	VGD/VGF	-0.014**	0.025***	-0.111**
	Old pension	-0.003	0.02	0.001
	Subsistence assistance	-0.003*	0.011**	-0.008***
	Asset support	0.009*	-0.003	-0.007*

Notes: ** p<0.05, * p<0.1

Table - 17
Probit model – VGD

	Moderate poor			Extreme poor		
	All	Non participant	participant	All	Non participant	participant
	coef	coef	coef	coef	coef	coef
Age of household head	-0.001	0.006***	-0.001	0.000***	0.000***	-0.000
Age Square	-0.000	-0.000***	-0.000	0.014***	0.014***	0.014
Family size	0.013	0.008***	0.013	-0.123***	-0.125***	-0.093***
No. of working male family members over 12 years	-0.001	0.021***	-0.001	-0.010***	-0.010***	-0.009**
Homestead: own land	-0.004*	0.001**	-0.004*	-0.004***	-0.004***	-0.009***
Cultivable: own land	-0.010***	-0.004***	-0.010***	-0.020	-0.015	-0.155
Dummy: day labor	-0.027	-0.118***	-0.027	-0.100***	-0.101***	-0.120
Dummy: agriculture	0.031	-0.018	0.031	0.250***	0.256***	0.001
Dummy: non agriculture	0.008	-0.201***	0.008	0.093***	0.093***	-0.170***
Dummy: day labor	0.197***	-0.018**	0.197***	0.161***	0.113***	0.229**
Dummy: beggar	0.082	0.158***	0.082	0.009	0.012**	-0.088***
Own rooms: tin	-0.067***	-0.070***	-0.067***	-0.200***	-0.195***	-0.186***
Business wealth	0.051***	0.038***	0.051***	0.141***	0.165***	0.159***
Dummy: presence of *Char*	0.017	-0.026***	0.017	-0.020***	-0.015*	-0.170***
Having past savings	-0.088***	-0.113***	-0.088***	0.105***	0.098***	0.219*
Presence of NGO	-0.208**	-0.126***	-0.208**	-0.907***	-0.878***	-1.077***
Having VGD	-0.189**			-0.220***		
Constant	1.062***	1.139***	1.062***	-0.005***	-0.006***	0.011*
	Pseudo R2=.0987	Pseudo R2=0.1001	Pseudo R2=0.1519	Pseudo R2=0.1667	Pseudo R2=0.1706	Pseudo R2=0.1492

Note: *** p<0.01, ** p<0.05, * p<0.1

Table-18
Probit model - Old pensions

	Moderate poor			Extreme poor		
	All	Non participant	participant	All	Non participant	participant
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Age of household head	0.006***	0.006***	0.009*	-0.005***	-0.005***	-0.018***
Age square	-0.000***	-0.000***	-0.000**	0.000***	0.000***	0.000***
Family size	0.008***	0.009***	0.000	0.014***	0.013***	0.017
No. Of working male family members over 12 years	0.019***	0.018***	0.034	-0.121***	-0.121***	-0.110**
Homestead: own land	0.001*	0.001*	-0.000	-0.010***	-0.010***	-0.019***
Cultivable: own land	-0.004***	-0.004***	-0.005**	-0.004***	-0.004***	-0.005
Dummy: day labor	-0.114***	-0.115***	-0.083	-0.022	-0.019	-0.190
Dummy: agriculture	-0.019*	-0.021*	0.026	-0.097***	-0.089***	-0.246**
Dummy: non agriculture	-0.197***	-0.194***	-0.196***	0.252***	0.245***	0.366***
Dummy: day labor	-0.017**	-0.019***	0.130***	0.095***	0.096***	-0.104*
Dummy: beggar	0.134***	0.152***	0.033	0.148***	0.119***	0.230**
Own rooms: tin	-0.071***	-0.073***	-0.002	0.008	0.012**	-0.130***
Business wealth	0.045***	0.046***	0.026	-0.201***	-0.204***	-0.132***
Dummy: presence of *Char*	-0.016*	-0.023***	0.219***	0.147***	0.158***	-0.084
Having past savings	-0.109***	-0.110***	-0.138***	-0.023***	-0.022***	0.051
Presence of NGO	-0.138***	-0.139***	-0.087	0.108***	0.110***	-0.029
Having old pensions	-.003*			.089**		
Constant	1.169***	1.165***	0.199	-0.917***	-0.632***	0.348
	Pseudo R2=0.0988	Pseudo R2=0.0997	Pseudo R2=0.1070	Pseudo R2=0.1658	Pseudo R2=0.1630	Pseudo R2=0.1867

Note: *** p<0.01, ** p<0.05, * p<0.1

Table- 19
Generalized Ordered Logit model

	Extreme Poor	Moderate Poor
	coef	coef
Age of household head	0.009***	-0.011***
Square of age	-0.000***	0.000
Family size	-0.029***	-0.058***
No. of working male family members over 12 years	0.240***	0.258***
Homestead: own land	0.023***	0.016***
Cultivable: own land	0.011***	0.016***
Dummy : monthly salaried	0.082	0.405***
Dummy : agriculture	0.244***	0.223***
Dummy : non agriculture	-0.496***	-0.044
Dummy : day labor	-0.224***	-0.277***
Dummy: beggar	-0.264***	-0.693***
Own rooms: tin	-0.020*	0.269***
Business wealth	0.421***	0.338***
Presence of Char	0.553***	-0.251***
Having past savings	0.049***	0.574***
Presence of NGO	-0.180***	0.652***
Having VGD card	0.543***	-0.177***
whether get old pension	-0.157***	-0.098*
_cons	0.535***	-6.736***
Pseudo R2 =	0.1975	

Note: *** p<0.01, ** p<0.05, * p<0.1