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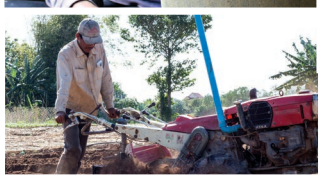
GRADUATION-BASED SOCIAL PROTECTION FOR CAMBODIA'S EXTREME POOR

A general equilibrium analysis of economic and poverty impacts

December 2017








FOREWORD

Cambodia is a country undergoing many transitions – an emergent Middle Income Country, with a fledgling middle class supported by a rapidly growing economy; and deeper level change driven by the twin processes of industrialization and urbanization, and by societal modernization. This is a time of dynamism and opportunity, but also one of turbulence, dislocation and vulnerability. These rapid changes bring risks alongside opportunities, and potential future disparities. Large numbers of Cambodians subsist just above the poverty line, public services struggle to keep pace with growing demands, and increased differentiation in the economy could drive inequalities.

Moreover, while positive transitions are well-advanced, and have been accompanied by improvements in livelihoods and large reductions in poverty, a significant proportion of Cambodians still live in extreme poverty. Large swathes of the country have benefited less than others from economic expansion and improvements in public services. Equally, family and community forms of support and informal protection are coming under stress.

In this context, effective and efficient state-backed social protection is a reform that is long overdue. Social transfers and support services are vital to reducing risk, and growing and sustaining livelihoods, while also completing the task of eradicating extreme poverty. It is encouraging that the Royal Government of Cambodia has recognized these needs and the potential of social protection to deliver a modern and fair economy, and has set out an ambitious reform agenda in the National Social Protection Policy Framework, which was launched earlier this year.

The focus has rightly now moved to examining how this agenda can be concretized. The report that follows offers insights into a set of models and policies, based on the graduation approach, which aims to address poverty and vulnerability by providing productive assets in place of cash transfers alone, to poor working-age households. These aim to secure productivity gains, enabling the poor to help themselves to secure a lasting exit from poverty. Graduation approaches used extensively in other countries with similar contexts have shown their worth, primarily in reducing poverty and strengthening livelihoods, but crucially also by boosting local and national economies. The researchers here also show, by using rigorous modelling techniques, that this is also likely to be the case for Cambodia. Innovatively, they find that by coordinating these programmes with public investments in infrastructure and other local economic development measures, the gains can be multiplied and accelerated.

While it is recognized that the graduation-based approach is one among many innovations, including life-cycle based cash transfers, that might be employed as the NSPPF is rolled-out, it is a promising option for addressing working age poverty and vulnerability. UNDP and other development partners stand ready to assist the Royal Government in taking these and other approaches forward in delivering a modern and fit for purpose social protection system in Cambodia.

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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
CGAP	Consultative Group to Assist the Poor
CGE	Computable General Equilibrium Model
CPI	Consumer Price Index
CSES	Cambodia Socio-economic Survey
CT/ CTs	Cash Transfer/s
DANIDA	Danish International Development Agency
FFS	Farm Field School
GDP	Gross Domestic Product
I/O	Input/Output (table)
IMF	International Monetary Fund
KHR	Cambodian Riel
LSE	London School of Economics
MEF	Ministry of Economy and Finance
MOP	Ministry of Planning
NIS	National Institute of Statistics
NSPPF	National Social Protection Policy Framework
ODI	Overseas Development Institute
OECD	Organization for Economic Cooperation and Development
RCT	Randomised Control Trial
RGC	Royal Government of Cambodia
SAM	Social Accounting Matrix
TFP	Total Factor Productivity
UNDP	United Nations Development Programme

CONTENTS

EXECUTIVE SUMMARY

CHALLENGES AND OPPORTUNITIES

Cambodia has experienced a rapid fall in poverty for over two decades, mainly due to sustained rural development in a country where about 90% of the poor live in the countryside. Over this period, Cambodia's agricultural sector has been a robust driver of inclusive growth and shown significant further potential to lift rural households out of poverty. It became the fastest growing agricultural sector in the region over the 2002-2012 period, with an impressive average rate of growth of 9.6% per year. However, in the light of slowing production, questions have been raised as to whether weakening growth trends could compromise the livelihood of millions who remain highly vulnerable to minor changes in their income.

Poverty reduction in Cambodia has largely been attributable to the new opportunities accruing to poor households with incomes close to the poverty line. Where poverty was more severe, wider economic progress less often translated into improved livelihoods. **Stubborn pockets of poverty continue to prevail nowadays in more remote areas, where extreme poor households with more restricted access to productive resources are harder to reach and require active support to graduate out of poverty.** These characteristics of the poverty profile and specificities of the Cambodian economy reinforce the need for a comprehensive approach to social protection that acknowledges and addresses the threats, and the differential opportunities often faced by extreme poor rural households.

THE GRADUATION APPROACH

This study explores activist approaches to social protection, through potential interventions that tackle poverty by addressing the multiple dimensions of economic exclusion of the rural extreme poor in Cambodia. It explores the potential of so-called ***graduation packages,*** which consist of a combination of transfers of productive assets, vocational training and cash payments.

Based on the idea that cash alone might not be sufficient to enable beneficiaries to promote their livelihoods, graduation packages combine complementary measures that each addresses specific dimensions or causes of poverty at the household level. Market imperfections and constraints on productive activities impede inclusive development and hinder the inclusion of the poor into the Cambodia's economy. Transfers of productive assets to the rural poor are particularly likely to favour their inclusion in rural development, while also helping to sustain the recent rapid growth of the sector. Similarly, the transfer of skills and professional training is highly relevant to address human capital constraints which have long been recognized as holding back Cambodia's rural production and economic development. Experience gained in similar operating environments and a new body of empirical evidence supports the growing recognition of the graduation approach as an efficient tool to eradicate extreme poverty.

ANALYTICAL APPROACH AND METHODS

This study develops a quantitative analytical tool that captures the impact of such interventions on poverty and income distribution, but also analyses their impact on local markets, through productive activities and trade, and, from these, estimates a series of macroeconomic impacts. The macroeconomic component of this tool consists of a Computable General Equilibrium (CGE) model designed to portray the Cambodian economy. To allow for a microeconomic analysis of policy impact, the traditional CGE model structure is modified to include a household-specific-production model within the general equilibrium framework. This enables linking the target households to their local economies and therefore analysis of the impacts of social protection measures beyond their effects on poverty. A set of micro simulations is developed based on data from household surveys, reflecting differences among households at different segments of the income distribution, in behaviour, endowment in productive factors and reliance on local markets to consume and to generate income.

The study specifies a set of scenarios to represent interventions that might be considered by the Government of Cambodia and its development partners to support households living in extreme poverty. This methodology aims at tracing the impact of these interventions locally, analysing their immediate and secondary effects on markets and trade, understanding the implications for income distribution, poverty reduction outcomes, and in turn, the impact on macroeconomic aggregates, including economic growth.

FINDINGS AND POLICY MESSAGES

The results confirm the efficiency of interventions that include a productive asset transfer on poverty reduction. Given the rural poverty profile and the well-established potential of direct support to the agricultural sector, graduation packages offer a range of benefits over conventional cash transfers programmes. This report discusses the trade-offs between each of these policy options, both from a poverty perspective and in terms of wider economic impact. It finds that while conventional safety net interventions reduce poverty, they were not proven to stimulate the economy – in contrast, every graduation-based intervention, both reduced poverty and boosted economic growth. Moreover, the best performing were those programmes that combined graduation-based social protection with public investment in rural infrastructure and agricultural development.

The study's results also indicate that these programmes are likely to promote the inclusion of beneficiary households in their local economies as a significant share of their new disposable income comes from producing activities fostered by the graduation scheme. This outcome contradicts both the dependency arguments sometimes associated with social protection schemes, and their potential negative perception as assistance programmes– graduation interventions offer a means of economically and durably empowering the extreme poor, and securing their exit from poverty.

The simulation results also reveal that both poverty and economic growth impacts were likely to last beyond the programme implementation period, as the catalytic effects of productive assets and

professional skills persist after programmes have ended. The findings reinforce the need to adopt a long-term perspective to capture the full efficiency of the graduation approach and estimate benefits relative to their costs. It also demonstrates the relevance of the graduation approach to unleash the economic empowerment of households who are able to engage in productive activities, without questioning the need for cash transfers for households who are not. Graduation programmes potentially have a vital role to play in the roll-out of social protection reform in Cambodia, as set out in the newly adopted National Social Protection Policy Framework (NSPPF).

OBJECTIVES

Poverty incidence in Cambodia has fallen rapidly and consistently over the past decade, from an estimated 53% in 2004 to under 13.5% in 2014, according to recent poverty data (World Bank, 2017). However, even though they might not be counted as poor according to the national poverty line, millions of Cambodian households remain highly vulnerable to financial shocks and in need of social protection. There is nowadays a growing consensus among practitioners and researchers on the effectiveness of cash transfers (CTs) to provide immediate safety nets and protect the livelihood of the poor, and an increasing number of developing countries have successfully implemented such programmes to create an efficient social protection floor.

However, cash transfers alone might not be sufficient to enable beneficiaries to sustainably promote their income generating activities and improve their livelihood beyond the transfer they receive. Investment in human and in physical capital, when combined with CTs, offer a potentially powerful tool to improve beneficiary's livelihood efficiently and durably. So-called Graduation Models, which combine cash transfers with training and productive asset transfers, have been experimented in many countries over the past years. Their impacts are believed to exceed those of cash transfers alone in the long term, by providing means to address the causes of poverty for those able to engage in productive activities. These packages of interventions, although costlier in the short term, are proven to improve resilience and effectively unlock poverty traps (Banerjee et al 2015).

What impacts could be expected if such interventions were implemented in Cambodia? What would be their benefits compared to cash transfers alone? Given the specificities of the Cambodian agricultural economy, could the transfers of productive assets to the rural poor favour their inclusion to rural development while helping sustain the recent rapid growth of the sector and promote their local economy? Are there complementarities at the local level that would justify the design of poverty interventions in conjunction to rural development policies? The present study aims at providing empirical evidence to help answering these questions in the context of Cambodia, given its current economic settings and poverty profile.

The first component of this study focuses on identifying and tracing the impacts that cash transfers and accompanying graduation measures are likely to have on poverty but also on the Cambodian economy. To do so, this study develops a Computable General Equilibrium (CGE) model that portrays the Cambodian economy and the relationship between its economic agents. A set of simulations is then designed to represent the measures UNDP Cambodia considers supporting in rural Cambodia. The analysis of these simulation results allows the characterisation of the main channels through which the interventions impact the beneficiaries' local economy, while measuring their direct and indirect effects on the country's productive sectors, trade and growth prospects. A complementary micro-simulation tool is used to

analyse the potential impacts on the consumption of the poor, given their geographic and demographic characteristics and their exposure to rural markets. Using household survey data, this study analyses the new income distribution of rural and urban poor, estimates the poverty reduction potential of each intervention and discusses the trade-offs beyond the first period of their implementation. The second component of this study focuses on the complementarity between graduation packages and rural development policies in Cambodia. Since 90% of the extreme poor live in rural Cambodia, their livelihood depends on rural markets. Supporting these markets while implementing social transfers can improve the efficiency of both measures, creating synergies at the local level.

Analysis of the simulation results provides empirical evidence for the design of effective interventions and the efficient use of available funds to benefit the extreme poor, while accounting for economic specificities and potential synergies at the local level. The results show that graduation packages offer substantial scope for tackling the causes of poverty, while stimulating the local economy of the beneficiaries. While these models might appear more expensive in the short term, their long-lasting benefits surpass those of conventional cash transfers after just two years of implementation. In addition to significant poverty reduction, the combination of cash and productive asset transfers enable the participants to generate their own income from productive activities, and thereby to participate to their local economic fabric, shifting their social status from beneficiaries of an assistance programme to a producer of wealth. This study also shows that combining graduation packages with agricultural growth policies can be a powerful driver for economic growth and help sustaining the country current strong trend of rural development and poverty reduction.

This report is structured as follows. The first Section presents graduation packages, their objectives and the existing results from research on their immediate and long-lasting impacts. We then discuss their potential relevance for extreme poor households in Cambodia, given the country's poverty profile and economic context. Section 2 introduces the methodology used to analyse the potential impact of graduation packages for the extreme poor, explaining what general equilibrium models are and why they offer a unique analytical tool to answer the questions above. In addition, this section includes a description of the data used and the model hypotheses and specificities. The set of simulations designed to capture the potential impact of various potential packages, as well as tests of their complementarity or trade-offs with other rural development policies are then presented. Section 3 discusses the simulation results and provides an in-depth analysis of the poverty impact of each scenario, through micro simulations based on existing household survey data. The report concludes with a discussion of the policy implications that can be drawn from the results and suggests economic factors that should be taken into account in the design of interventions aiming at graduating Cambodian ultra-poor out of poverty.

1 Section

GRADUATION PACKAGES IN THE CONTEXT OF CAMBODIA

CAMBODIAN SOCIAL PROTECTION CONTEXT

Cambodia experienced a rapid fall in poverty rates since 2004, mainly due to sustained-rural development in the country where about 90% of the poor live in the countryside. According to Cambodia development partners (World Bank, 2015 and Asian Development Bank, 2012), agricultural growth explains most of the poverty reduction over the past decade. New rural economic opportunities and increases in rural wages allowed economic growth to translate into sustained-poverty reduction and improved rural livelihood. However, several challenges remain to be addressed for this impressive record of social and economic progress to be sustained:

- Many of those whose income and consumption have increased sufficiently to be considered non-poor remained close to the poverty thresholds. Millions of households therefore remain highly vulnerable to financial shocks and stresses. World Bank (2015) estimates that the concentration of household just above the poverty line is such that a loss of $0.30 per day in income "would throw an estimated three million Cambodians back into poverty, doubling the poverty rate to 40%".

- Vulnerability is typically higher among female headed households, and women suffer from limited economic opportunities and disadvantaged access to productive resources.
- Significant regional differences persist across Cambodia provinces: isolated regions with poorer natural resource endowment and insufficient provision of public goods and social services are characterised by higher poverty incidence.

- As it is often the case with rapid falls in poverty, recent poverty reduction in Cambodia might be attributed to progress that benefited the highest part of the poor income distribution while more stubborn poverty remains to be tackled. Households living below, but at a short distance from, the poverty threshold are typically the first to benefit from their surrounding economic development while household living in more remote areas or with more difficult access to productive resources are harder to reach and help graduate out of poverty (the comparison to 'high' and 'low hanging fruits' is sometimes used in the literature to characterise the challenging aspect of poverty reduction).

- Despite many efforts, Cambodia's current provision of social protection policies remains insufficient, and tackling needs and poverty in Cambodia will remain a challenge until safety nets are effectively delivered. The Royal Government of Cambodia's (RGC) recently adopted National Social Protection Policy Framework (NSPPF), which offers a blueprint for the development of a social insurance system, and social assistance programmes for the poor and the vulnerable. This presents an opportunity to develop an effective social protection floor, through a suite of new programmes and policies, including the approaches examined within this report. The Ministry of Finance and Economy (MEF) who have led development of the NSPFF have underlined the importance of building a modern and progressive system of social protection, which tackles vulnerably and poverty, is affordable and efficient and provides wider economic pay-offs.

The impact of financial shocks and stresses on households below and just above the poverty line threshold is exacerbated by the lack of basic social protection. According to the Asian Development Bank, only 2% of households in Cambodia poorest quintile has access to some form of social safety nets. In comparison, the average poorest quintile coverage for East Asian countries is estimated to 53%, while it reaches 49% on average across all developing countries (ADB 2013). The ADB social protection index, SPI, which helps measuring and monitoring progress in the region, ranks Cambodia 34th out of 35 countries in Asia and the Pacific. Cambodia actual spending on social protection per intended beneficiary represents 2% of the expenditure threshold needed to allow the coverage of the extreme poor.

There is therefore a clear and substantial need to create a social protection floor in Cambodia, through the provision of safety nets that would allow the poor to satisfy their basic consumption needs and protect their livelihood. Cambodia's existing ID poor programme could help identifying and targeting beneficiaries of such programmes. Moreover, the National Social Protection Policy Framework (NSPPF) offers a policy strategy, to make poverty reduction trends sustainable and tackle stubborn pockets of poverty in disadvantages, isolated and remote provinces. The proposals outline in this study aim to inform the roll-out an operationalization of the NSPPF reforms.

AGRICULTURAL GROWTH AS A DRIVER OF POVERTY REDUCTION

Over the past decade, Cambodia agricultural sector has been a robust driver of inclusive growth and shown a significant potential to lift rural households out of poverty. Given the objectives of this study, it is essential to understand if the transfer of physical and human capital to support agricultural production could offer benefits that exceed those of conventional-cash transfers in tackling poverty, especially where it is the most stubborn.

Between 2004 and 2012, the Cambodian agricultural sector has experienced a major structural transformation, from traditional subsistence to a more modern commercial sector (World Bank, 2015). It became the fastest growing agricultural sector in the region over the 2002-2012 period, with an impressive growth rate of about 9.6% per year. Farmland expansion, mechanisation, diversification of crops, irrigation, use of fertilisers and improved seeds drove the structural transformation of Cambodia's agricultural landscape over that period. As a result, agricultural-production factors became more productive and crop yields increased rapidly converging towards regional averages. High agricultural prices allowed an increased adoption of modern inputs and led farmers to adopt new technologies as their profitability expectations raised.

However, in the light of the more recent sector production slowdown, questions have emerged as to whether its growth can be sustained without comprehensive-public support. A weakening in sector growth trends could compromise the livelihood of millions who remain highly vulnerable to minor changes in their income. For current poverty reduction trends to be maintained, the well-engaged process of structural transformation needs to be sustained. While agricultural growth offers substantial "opportunities for income generation and poverty reduction for years to come", policy decisions need to be made and effective public support implemented for Cambodia is to continue engaging in the right pathway (World Bank, 2015).

A comprehensive social protection strategy should acknowledge and address these threats to rural household's livelihood. For many farmers at the bottom of the income distribution, implementing measures that support and strengthen their income-generating activities appears to be an efficient mean to protect their livelihood in this context. Vulnerability is higher among smaller farms, which have typically lower capital intensity, smaller productivity and rely on more traditional technologies to produce. These farmers have in the past benefited from higher prices and therefore improved production values but their land and labour productivity remain lower than the country average (World Bank, 2015). So-called 'graduation packages' offer an efficient tool to enable these farmers to improve their production capacity and efficiency.

In this study, we will explore the potential of such measures through the following channels:

1. The transfer of productive assets to 1 million small farmers, as a key component to graduation packages, allowing acquisition of agricultural equipment and livestock, inducing improvement in the capital intensity as well as labour and land productivity where it is lacking behind national average;

2. The provision of vocational training to support labour productivity and increase yields;
3. Public investment in agricultural infrastructure and public goods, as a complement to graduation packages; and
4. Public investment in roads and transport networks as complementary measures to improve the functioning of rural markets.

Insufficient access to financial services to rural households is often pointed in Cambodia as causing missed investment opportunities, preventing adoption of new technologies. In the context of the graduation approach, research shows that participants tend to choose livestock over agricultural equipment. We have no evidence for what Cambodian households would choose if offered these options. Depending on the size of their farm and land, Cambodian farmers rely on different sets of equipment which graduation packages could help acquiring such as irrigation pumps and water management systems, drum seeders, power tillers, manual tractors. Transferring productive assets directly to farmers, letting chosen which capital stock they will receive, help address this constraint and allow flexibility at the microeconomic level.

Market imperfections and constraints on productive activities impede inclusive development and hinder the inclusion of the poor into the economic fabric. While cash transfers have been proven efficient to support the consumption of the poor, their impact on productive activities and accumulation of productive assets are typically recognised as more modest. The poorest the beneficiaries the more difficult it is to dedicate part of the transfer to productive investment, and, if the local economic constraints hinder inclusion to the economic fabric or prevent investment opportunities to be realised, graduating out of poverty would require more than safety-nets programmes alone. For beneficiaries to durably become independent from social protection, the conditions for their integration into their local economies need to be met.

In this context, graduation packages are likely to unleash multiple economic benefits for households who are able to engage in productive activities. The need for social protection for those who are not, should remain a key objective of a social protection strategy that aims at leaving no one behind. The graduation approach should therefore be considered as one policy option within a comprehensive programme that addresses the subsistence needs of the most vulnerable. The recently adopted National Social Protection Policy Framework (NSPPF) provides such a vehicle [1].

Interventions that combine safety nets with the transfer of productive assets and the development of skills have the potential to address these constraints. While the local economic context influences greatly the ability of households to generate income, well-designed interventions that address both the need for consumption support and the need for physical and human capital accumulation have the potential to improve the livelihood of the beneficiaries over a longer period of time.

Graduation packages have been designed based on these multiple objectives: providing a comprehensive set of complementary transfers

[1] As endorsed by the Prime Minister in July 2017 (see http://www.phnompenhpost.com/national/pm-announces-plan-social-security-system)

to allow both to meet the immediate needs of the ultra-poor while improving their prospects for income generation. While offering safety nets is a key component of graduation models, they aim at simultaneously improving economic prospects for the extreme poor through economic opportunities, transfers of skills, transfers of productive assets and better integration to their local economic fabric.

THE GRADUATION APPROACH

Graduation Models refer to multi-faceted programs that aim at enabling the extreme poor to 'graduate' out of poverty. They consist in a combination of complementary measures that each addresses one specific dimension or cause of poverty at the household level. Their five 'building blocks' are: targeting the extreme poor, supporting their consumption, transferring productive assets, providing skills and vocational training, and supporting their savings through financial training and services (CGAP, 2011).

This graduation approach is based on a combination of direct transfers to tackle the multiple dimensions of the exclusion of the extreme poor from their socio-economic environment. To support consumption and help satisfy their basic subsistence needs, graduation packages provide programme participants with safety nets in the form of monthly cash or in-kind transfers. To improve their professional skills, they offer vocational training and sometimes regular mentoring. To address their exclusion from productive resources and from micro-finance services, they provide beneficiaries with productive assets that will allow them to develop or strengthen their own productive activities and generate income. The objectives of this holistic approach are to enable participants to unlock the poverty trap and durably secure their livelihood.

Although typically more expensive than cash-based-safety-net programmes, the rationale for these packages is to provide a 'big push' to extremely poor households who would consequently not need social protection as they would become able to generate income streams through self-employment.

The graduation approach is inspired by programmes originally designed and implemented by BRAC in Bangladesh. BRAC, the largest non-governmental development organisation in the world is based in Bangladesh and operates in 11 countries in Asia, Africa and the Caribbean. Their empowerment strategy, through transfers of skills and productive assets, has shaped programmes and benefited more than 100 million extreme-poor in these countries. The graduation approach has now been adopted by development organisations for over a decade, through more than 40 programmes around the world. In most cases, NGOs such as Trickle Up, Village Enterprise or the Boma Project partner with foundations, financial service providers and local governments to implement and finance their programmes. Interest is growing from governments who seek to integrate the graduation approach to their existing social protection programmes. Among them Kenya, Peru, Haiti and Colombia, where the prospects of scaling up existing experiments to

reach a larger number of ultra-poor are nowadays considered. The research and policy organization Innovations for Poverty Action is similarly engaged in the design of Adaptive Social Protection Programmes in Burkina Faso, Chad, Mali, Mauritania, Niger, and Senegal. Although the cost of graduation packages is typically higher than conventional social protection schemes, the prospects of graduating the extreme poor (and therefore not needing safety nets in the longer term) and participating to the local economy represents an undeniable benefit, even when fiscal space is limited and poverty incidence is sizeable.

Empirical research on the economic impacts of graduation packages has started to provide evidence on their effectiveness. In a reference study and major contribution to this debate to date, Banerjee et al. (2015) investigated the effectiveness of graduation approaches through 6 country experiments. They identified a set of broad and long-lasting impacts consistent across the vast majority of the studied programmes. To do so, they estimated changes in key well-being indicators at two end line points: one immediately after the programme ended and one a year after. Per capita consumption, food security and total value of household assets showed significant improvement in all country experiments at the end of the programme implementation period, and results at the end of the following year confirmed this improvement for most case studies. Although progress in some of the non-economic indicators of well-being such as mental health did not persist after the programmes ended, the research concluded that the graduation approach was effective consistently in all contexts and that their impact on enabling and empowering participants were long-lasting for up to 7 years after the project ended. The authors concluded that further research is needed to better understand the components of the packages that drove the results. They also justified the need for investigating their impact on non-participants in the community. The present study focuses on both dimensions of the graduation approach.

In the light of the poverty context discussed in the previous section, the relevance of graduation packages appears particularly strong in Cambodia. The agricultural sector has been a major driver of poverty reduction over the past decade, empowering the rural poor with multi-faceted programmes that directly address their access to productive resources, skills and inclusion into economic activities does appear particularly relevant and promising. What economic and social impact could that be expected from such interventions? What could that be the benefit of graduation approach compared to standard cash protection programmes? To which extend are they complementary to rural development policies? What trade-offs should policy makers and practitioners consider when designing social protection programmes that involve various options in transfer components? In order to provide empirical evidence and answer these questions in the context of Cambodia, we design a methodology that is based on the Cambodian socio-economic context and on the results from existing research on these topics.

The present methodology relies on general equilibrium modelling, as opposed to existing studies which are mostly based on random control trials (RCTs). The choice of this analytical tool presents some trade-offs:

- The model encompasses four out of the five graduation building blocks: extreme poor targeting, consumption support, assets and skills transfers. The framework does not include the provision of saving facilities for targeted households, as their long term economic impact cannot be captured by this type of models. Since this component does not appear to have a major effect on poverty and economic inclusion in the short term, we consider that the core of the graduation package impact can still be captured and analysed.
- As opposed to project evaluation through RCTs, the analytical tool used here aims to trace and measure the direct and indirect impacts on the local economy, non-beneficiaries, and wider economic growth, mainly through market's interactions. This methodology study thus includes both a micro- and macroeconomic approach. The social dimension of inclusion and participation of the beneficiaries will also be captured through participant's productive activities and participation in local markets.

Our analytical strategy offers an additional variation from standard graduation packages, as it leaves the choice of productive asset opened to participants. In the Cambodian context, there is no justification to constrain the asset transfer to be livestock. Crop production represents a substantial opportunity for poverty reduction and livelihood promotion in Cambodia. The sector has been a key driver of the impressive achievements in recent rural development. Supporting capital accumulation, land and labour productivity increases and technology adoption is a clear priority to sustain and foster its progress. If a multi-faceted programme is to be scaled-up to reach hundreds of thousands Cambodian rural households, initial endowments in productive resources need to be accounted for. Since access to land and productive asset ownership is likely to vary among beneficiaries, the choice of asset transfer needs to be flexible to meet specific needs[2]. So, while there is a clear rationale to transfer chicken or a goat to a landless household, there is an equivalently strong rationale for allowing participants sufficient flexibility to choose over a larger range of productive assets depending on their existing access to land and subsistence activities. Therefore, the interventions modelled here allow participants to opt for the agricultural equipment of their choice. Since crop production and livestock are aggregated in the OECD production technology data used (i.e. in the input-output table), they are also aggregated in our general equilibrium model. For that reason, the choice of productive assets by beneficiaries will not affect their impacts at the sector level: in both cases they will increase the capital stock used to produce agricultural goods.

This study provides an illustration of the potential benefits and trade-offs that could be expected from multiple transfers to Cambodia's extreme poor: it could be considered as a basis for policy

[2] In this model, household's groups are not based on productive activities but on geographical location and distance to the food poverty lines. For this reason, land endowment varies among targeted households. Opening the choice of assets allows targeted landless households to opt for a productive asset transfer that corresponds to their factor endowment and productive capacity.

recommendations for relatively simple measures that can be implemented and scaled up by the Cambodian Government, potentially in partnership with its development partners. Although the packages in this study require local institutional capacity, they are somewhat simpler than the conventional graduation packages and the funding they require is below typical social protection programme budgets.

The following Section presents the methodology and the analytical tools used to identify and estimate these impacts.

2 Section MODELLING GRADUATION PACKAGES FOR EXTREME POOR HOUSEHOLDS IN CAMBODIA

In order to capture the economic impact of graduation measures, we design a Computable General Equilibrium (CGE) model to portray the Cambodian economy and a set of scenarios to represent the interventions that UNDP has put forward to support households. This methodology aims at tracing the impact of these interventions locally, analysing their immediate and secondary effects on markets and trade, and understanding their implications for income distribution and outcome in terms of poverty reduction.

COMPUTABLE GENERAL EQUILIBRIUM MODELS

Computable General Equilibrium (CGE) models are economic models that use empirical data together with a theoretical-general-equilibrium structure to understand how an economy may react to changes in policy, technology or other external factors. As simulation tools, CGE models solve numerically, the new levels of supply, demand and price on domestic markets that are likely to result from a change in policy or from an external economic or financial shock. CGE models are standard tools for empirical ex-ante analysis. They are widely used to analyse the aggregate welfare and distributional impacts of policies whose effects would be transmitted through multiple markets and economic agents. The range of measures that can be simulated is large and includes changes in taxes, subsidies, trade policies and redistributive

measures, including transfers to households and social policies. Examples of their use may be found in areas as diverse as fiscal reform and development planning, international trade, and increasingly, environmental regulation.

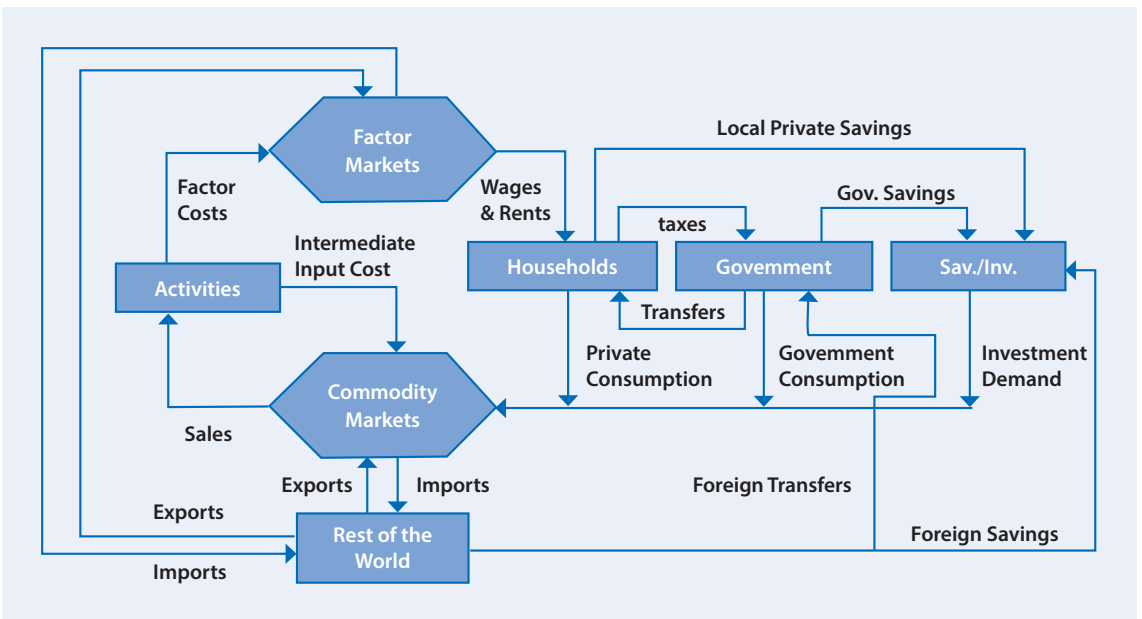
A CGE modelling framework consists of

1. A social accounting matrix (SAM),), which is a dataset that represents financial flows and economic transfers between all agents during a given period of time, typically a year. The domestic markets for goods, services and factors are represented, as well as households, private sector firms, government institutions

and non-governmental organizations operating in the country during the chosen period of time, through their economic and financial activities. The matrix provides a snapshot of the whole economy of a country (or even the whole world) at a given point of time. It distinguishes a number of sectors, commodities, production factors and types of households and includes an input-output table that reflects the consumption of inputs and production factors by each industry, and therefore reflects the technology used. Sectoral coverage ranges from relatively simple representations of capital, labour and intermediates to highly-detailed representations of specific sub-sectors.

2. An algebraic model, , consisting in a set of equations reflecting the relationship between the different economic agents, calibrated on the basis of the flows captured in the social accounting matrix. These equations could, for example, represent the behaviour of households through their budget constraints or the profit maximization of firms in each industry given the technology and the supply of production factors at the period of activity.

Figure 1: Economic blocks and financial flows within a CGE model (Lofgren et al. 2001)



The combination of the SAM and the algebraic model allows simulating a large range of public interventions or policies, identifying and trace their multiple impacts throughout the economy.

DATA USED IN THIS STUDY

The Social Accounting Matrix created here is based on two main sources of data: (i) first macroeconomic data published by the Government of Cambodia and by its partner international organisations, namely the IMF, the World Bank and the OECD, and (ii) household data from the Cambodia National Socio-economic Survey for 2011.

In 2016, the OECD published the first input-output table for Cambodia (OECD, 2016). Up until this publication, there were no estimates of the intermediate consumption of goods and services used by the Cambodian production sectors, at a two-digit industry level. This table provides a detailed valuation of what is used for production by each sector: it provides technical coefficients for intermediate consumption and production factors for each productive activity in Cambodia in 2011[3]. Our model is therefore the first general equilibrium model to be exclusively based on data produced by or estimated for Cambodia.

The production and trade components of this Social Accounting Matrix rely on OECD data for Cambodia, combined with the data published by the Government of Cambodia. We also used the IMF (IMF, 2016) and the World Bank (World Bank, 2016) macroeconomic estimates for public investment, foreign direct investment, remittances and transfers from abroad for the same year as the input-output table and macroeconomic aggregate, 2011.

The Cambodia Socio Economic Survey (CSES) that took place in 2011–2012 collected data on over 16,000 individuals in 3,600 households. It provides a detailed account of household employment, earnings, consumption and savings, and report on their productive assets such as land. This survey was used to disaggregate household groups into the model dataset and framework.

Given the objectives of this study, household groups were created using 2 criteria: their geographic location (urban/rural) and their consumption being above or below the 2011 estimated corresponding consumption poverty line.

In order to account for household's size and demographic composition, the equivalent adult consumption was estimated using conventional OECD scale methods[4] . This allows accounting for the fact that children have lower food requirements than adults and that some households' consumption, rents for example, do not increase proportionately to the number of household's members. This estimate of per adult equivalent consumption is used to determine whether a household should be considered as living below the food poverty line (i.e. as extreme poor).

Extreme poverty lines are defined on the basis of the food consumption needed to satisfy nutritional needs, it will therefore depend on local prices. For that reason, we use the estimates of regional poverty lines that correspond to the geographic location of each household in the CSES to allocate them a poverty status (Table 1). These poverty lines were updated by accounting for changes in prices between 2009 (when these lines were estimated) and 2011 (base year in the survey). According to the IMF (2016), Cambodia Consumer Price Index increased by 9.6% between 2009 and 2011.

[3] This explains why there has not been a CGE model developed for Cambodia up to date, based solely on Cambodian production estimates.

[4] See Haughton and Khandler (2009) for a review of this method.

Table 1: Extreme poverty line in riels (KHR) for 2009 and 2011

	Phnom Penh	Other urban	Rural	Cambodia
Poverty lines 2009	6,347.0	4,352.0	3,503.0	3,871.0
Poverty lines 2011	6,960.6	4,772.7	3,841.6	4,245.2

Source: Ministry of Planning 2014 and author's calculations

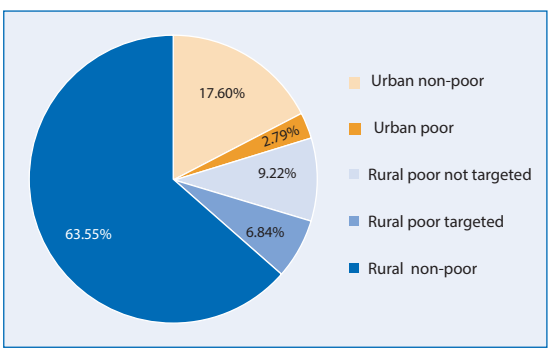
Table 2 shows the population of each household group and the corresponding average per capita consumption at the base year.

Table 2: Population and per capita consumption per household's group

	Urban non-poor	Urban poor	Rural poor not targeted	Rural poor targeted	Rural non-poor
Population	2,571,257	406,969	1,346,501	9,99,974	9,285,299
Number of households	566,442	72,021	257,023	1,93,916	2,138,064
Average household's size	4.5	5.7	5.2	5.2	4.3
Per capita consumption (KHR)	36,518.1	4,289.9	3,132.3	3,036.3	18,856.1

Using representative household's weights, we compose four initial household's groups in the SAM. Given the targeting objective set for this study to reach a million beneficiaries, the rural poor group was decomposed into two categories: those who will be targeted by the intervention in our simulations (about 43% of the group), and those who won't be. In order to avoid selection bias, the targeted households were randomly selected among the rural poor. The average consumption per capita for each group is presented in Table 2 and Graph 2. Combined with the micro-simulation model which will be presented in the next Section, this strategy allowed estimating the impact of each intervention precisely on the entire household distribution, as opposed to the average impact within each group.

Graph1: Proportion of rural and urban population in each household group

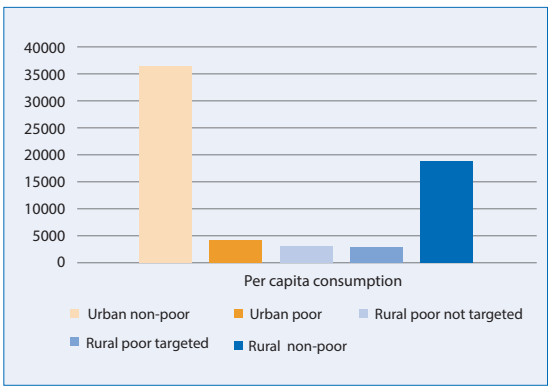


Using the Cambodia Socio-Economic Survey to estimate the poverty incidence in each group of households, we found that in all, 2.75 million Cambodians live below the extreme consumption poverty line in 2011, 20.2% in rural areas and 13.6% urban centres (Graph 1).

Table 3: Poverty rates by household groups

Poverty rates–base year			
Urban	Targeted	Rural	Total
13.66%	100%	20.17%	18.9%

Graph 2: Average per capita consumption per household group



The survey accounts for all productive and income generating activities at the household level over the year, and therefore includes all wages and income from seasonal work, capturing the impact of seasonal intra-household migration on annual income.

This Social Accounting Matrix is disaggregated into 22 production sectors, 21 commodities, 7 production factors, 3 taxes, and 5 household's groups, while institutions include the government and its public administrations as well as the 'rest of the world' (Table A1 in the appendix).

The Social Accounting Matrix is disaggregated into:

- **22** production sectors
- **21** commodities
- **7** production factors
- **3** taxes
- **5** household's groups
- Institutions include the government and its public administrations as well as the ' rest of the world' (Table A1 in the appendix)

LINKING THE TARGETED HOUSEHOLDS TO THEIR LOCAL ECONOMY: A MODELLING INNOVATION

The objective of our modelling exercise is to capture the potential impacts of graduation packages which consist of a combination of cash, skills and productive asset transfers. However, conventional general equilibrium models do not allow tracing the impact of physical and human capital investment targeted to specific households beyond their effects on production at the aggregate sectoral level. In other words, labour and capital production factors are aggregated and pooled within categories according to their type only. CGE models distinguish factor markets from household groups and production blocks with industrial sectors. Households supply labour on their specific labour market segment (for example

skilled or unskilled, urban or rural, according to years of education or training). For each type of factor, market balance at the equilibrium requires supply to meet demand on factor markets and wages or factor incomes to equal productivity.

As a result, it is not possible to trace the impact of an increase in worker's productivity beyond its impact on the aggregated labour supply. Similarly, the transfer of productive assets to targeted households cannot be captured through its impact on the household specific income, beyond the pooled factor income at the sectoral level and for the production that it contributes to. Therefore, households do not produce goods and services, instead they provide production factors on the factor markets, production sectors use these factors and distribute the corresponding-factor incomes to enterprises and households. As can be seen on Figure 1, there is no arrow linking 'households' and 'activities' in the CGE framework.

Because standard CGE models aggregate production factors from all households by type at the sectoral level, their structure prevents tracing the impact of the transfer of productive assets to beneficiaries' households on their own productive activities. In order to account for numerous impacts of graduation packages on the beneficiary productive activities, innovatively, this study created an agricultural production account and productive factors that are specific to households in our targeted group, disaggregating agricultural production, unskilled agricultural labour and agricultural capital. This new methodology allows adapting the CGE's macroeconomic framework to run micro simulations that are based on the characteristics of the main targeted household group, accounting for their productivity and factor endowment, for their sources of income and their reliance on rural markets.

With this new modelling framework, targeted households participation in productive activities can be simulated in two ways: (i) their contribution to the rural labour market and to the production of goods and services, aggregated with the contribution from households in other groups; and (ii) their own production of agricultural goods, whether marketed or home consumed, represented and accounted for separately, produced from the labour and capital they already possess or receive through the transfers. By disaggregating a production activity specific to the targeted households, this study is able to trace and measure the impact of graduation packages on household income and consumption, while also accounting for impacts on the local economy.

This new modelling specification gives programme participants the choice between keeping their production for own consumption or trading it on their local markets. In this sense, it is different from modelling home production that would be produced and consumed by the household, without entering the domestic markets (a common feature for CGE models representing a developing country economies). The present model allows production generated by the graduation packages, using both human capital and physical transfers to be marketed or home consumed. Most importantly, their impact on the beneficiary income can now be identified, traced and measured.

This extension of the CGE framework combined with (a) a disaggregation of household groups that matches our targeting strategy; and (b) micro simulations that account for the distance of every poor household to the poverty line, allows investigating the poverty impact at the household level as well as the potential macroeconomic effects of graduation packages.

3 Section SIMULATION RESULTS: POVERTY IMPACT AND GRADUATION PROSPECTS

Comparing the impacts of interventions combining the components of graduation packages in various proportions allows the analysis of their complementarity and potential trade-offs with other rural development policies.

SETS OF SIMULATIONS

Scenario 1 consists of a pure cash transfer programme that targets the same households as in all the successive scenarios. The transfer they receive is equivalent to the total cost of the graduation package. This scenario offers a benchmark or counterfactual case to evaluate graduation packages against. Beyond the comparison of direct and indirect economic effects, it allows comparison of the poverty impacts of asset transfers and public investment in cash transfers.

The next set of micro simulations (Scenarios 2 and 3) consists in modelling interventions that combine cash transfers with typical components of graduation packages in various proportions. Scenarios 5 and 6 aim at testing the

complementarity between graduation packages and rural development policies that directly support Cambodian rural markets. The components of each of these scenarios are detailed in Table 4 below.

Table 4: Components of policy interventions by scenario

Section	Intervention	Component	Shares of total funding
Scenario 1	Cash transfers	Cash transfers	100%
Scenario 2	Graduation package A	Cash transfers Productive assets	50% 50%
Scenario 3	Graduation package B	Cash transfers Productive assets Professional training	50% 30% 20%
Scenario 4	Second period impact of Graduation package A	As in 2 above	As in 2 above
Scenario 5	Second period impact of Graduation package B	As in 3 above	As in 3 above
Scenario 6	Graduation package A, and Public investment in roads and transport infrastructure	Cash transfers Productive assets Public investment in roads and transportation infrastructure	40% 40% 20%
Scenario 7	Graduation package A, and Public investment in agricultural infrastructure	Cash transfers Productive assets Public investment in agriculture	40% 40% 20%

In all the scenarios, except 4 and 5 which do not imply any new intervention but only investigate the potential long lasting impacts of graduation packages, we assume that:

- The total amount of public spending mobilised to finance the interventions is identical;
- Interventions are funded by foreign aid. This is in order to isolate and analyse the impact of the measures on the economy from the effects of raising taxes;
- The distribution of cash and asset transfers incurs administration costs of 25% of the value of the transfer;
- There is a cash transfer component to each scenario; beneficiaries are identical in each scenario, so the exact same set of households is targeted in each intervention; and
- The scenarios differ in the share of the total public funding allocated to each intervention component.

The modelling of cash transfers is straightforward in the analytical framework for the reasons explained above: the government distributes transfers to identified targeted households, the administration of the programme costs an additional 25% of the total cost of the transfers and the production of this service is entirely based on existing Cambodian administrative services estimated and modelled in the data and in the CGE framework.

Professional training is modelled from existing systems of Cambodian education services in the CGE framework. Their costing and productivity impacts are borrowed from the estimates of Farmers Field School (FFS) in Bangladesh (Danida, 2011). We assume that the provision of these services requires the same factor and input usage as existing education and training services already in place in Cambodia and accounted for in the Social Accounting Matrix and in the model. While the training provided by graduation packages usually includes a component similar to existing education services, focusing on numeracy and literacy skills, they also provide a professional and managerial skills training, which costing and economic impacts require a specific modelling approach. Existing cost-benefit analysis and research results of the impact of this training component are still scarce and estimates of their effect on labour productivity or production technology almost inexistent. FFS could however provide us with a comparable example to what could be achieved by these professional training modules. The case of FFS piloted in Bangladesh, by the Government of Bangladesh in partnership with the Danish Government, has been documented and rigorously evaluated by Danida (2011) and offers a reasonably close example for the graduation packages we would like to simulate in the present study. We therefore use their cost benefit calculation to calculate the cost of providing our beneficiary households with professional training during a year, and we base our impact on yields on their econometric estimates. It is assumed that the production of these specific services requires an equivalent funding per beneficiaries to the FFS in Bangladesh, but that the production function (intermediate inputs, labour and capital factors and technology) is the equivalent to this existing education and training services in Cambodia.

Existing research on graduation packages in Bangladesh shows that beneficiaries tend to allocate more time to their own productive activities when they receive productive assets. Banerjee et al. (2015) estimated that the corresponding adult labour supply from participants increases by 17.5 minutes per day on average across all country case studies. For Blattman et al. (2014) working hours improved by 17% on average as a result of non-cash transfers. To reflect this behaviour and in accordance with estimates in existing research, it is assumed that beneficiaries who receive productive assets dedicate an additional hour and a half on average every week to their own agricultural production of crops and livestock, which is a moderately low assumption given the range of these research findings.

Scenarios 6 and 7 aim to analyse the complementarity between graduation packages and rural development policies that support the functioning local markets and the productive capacity of local agricultural production. We therefore design simulations that correspond to interventions combining cash and asset transfers with public investment in rural public good provision.

In scenario 6, the total funding is shared between cash transfers (40%), productive asset transfers (40%) and public investment in roads and transport infrastructure (20%). While the framework allows the modelling of an increase in public investment in these types of infrastructure, based on existing public investment budgeting and implementation, we also want to reflect the impact of these infrastructures on the functioning of local markets. To do so, we assume an impact on the total factor productivity of the trade and transport sectors. We base our estimate of this impact on a large body of existing literature[5], (which econometrically estimates investment return for this kind of public investment in ranges between 0.2 and 0.4, at the macroeconomic level (in terms of economic growth) or in terms of production functions at the sectoral level. In the case of Cambodia, the lack of road and transport infrastructure in several parts of the rural economy hinders the functioning of markets and an efficient regulation of local trade, to an extend that substantial price differences persist between neighbouring markets and where middle men regulate markets, generating substantial margin even outside of food shortages periods. Given the Cambodian context, the value of investment return in our simulations (i.e. 0.2) may therefore be considered as conservative.

Scenario 7 is based on the same portfolio allocation as Scenario 5, except for public investment which is dedicated to agricultural public goods such as irrigation systems for example. So instead of investigating the complementarity between graduation packages and roads and transport infrastructure (as in scenario 5), Scenario 7 focuses on public support to agricultural productivity and production yields. The same modelling strategy is used here: public investment in agricultural goods improve the productivity of agricultural production and the investment return is set equal to 0.2. Cambodian agricultural yields lag behind those of its neighbouring countries and the need for investment that improves the capital stock, the productivity of factors and the technology used by both small scale and large scale farmers is well documented by Cambodia practitioners, policy

[5] See Anderson et al. (2006) for a review of methodologies and results.

makers and development partners. Again, we consider that the coefficient used for investment return in our simulation is rather modest in the view of the sector specific context.

MICRO SIMULATIONS AND POVERTY IMPACT

In order to refine the analysis of the impacts of each scenario on poverty incidence, a micro simulation tool was designed, based on the initial consumption of every household in the Cambodia socio-economic survey. This survey, which details food and non-food expenditures by each household, allows assessing the "per adult equivalent consumption per day" for each household member. This allows the estimates of household's distance from the extreme poverty line, which is a consumption threshold, and determines their poverty status. Household representative weights are then used to aggregate income, expenditure, transfers received from other households and from abroad at the country level: this constitutes the basis for each household groups' budget in our social accounting matrix.

Each simulation provides new estimates of total consumption, in real terms, for each household group. The microsimulation tools allow applying these changes to the whole distribution, for each and every household in the survey. The distance of each household to the poverty line will therefore be modified, and with it a new poverty gap and poverty headcount can be estimated at the group level. These micro simulations therefore use consumption and income results from each scenario to estimate microeconomic impacts at the household's level, computing a new ex-post consumption and income distribution.

This methodology allows results to be refined at the microeconomic level, providing a precise and detailed evaluation of graduation models, beyond average per capita changes at the household's group level. This tool combined with the targeting strategy imbedded in the Social Accounting Matrix and the CGE model, through the definition of household groups and the creation of a production function for the targeted households, provides estimates of the impact of interventions on the distribution of consumption across all households and allows comparison of the benefits and trade-offs between interventions to be made.

SIMULATION RESULTS

Benchmark scenario: a pure cash transfer programme

In order to evaluate the comparative advantages of graduation packages, we design a benchmark scenario which consists of transferring $25 a month, in the form of a direct cash transfer, to the same group of households targeted in all of the scenarios. This targeted group is composed of 1 million rural Cambodian extreme poor, or 193,915 households and the transfer they receive under this benchmark is strictly equivalent to the value of the package distributed in Scenarios 2 and 3. Scenario 1 is therefore a classic cash transfer programme, as opposed to all other scenarios hereafter, which involves a combination of transfers and policy interventions, in varying proportions.

Table 5 summarises some of the main results from our benchmark scenario. First, the cash transfers allow the real consumption of beneficiaries to increase by 25% during the first year of intervention, so that 40% of the targeted individuals move above the food poverty line. Out of the 1 million Cambodian targeted in this scenario, more than 443,000 rural poor will increase their consumption sufficiently to satisfy their basic food requirement and therefore could be considered as non-poor over this programme's implementation period. The impact of the transfers on the poverty incidence will depend on the initial distance to the poverty line for each beneficiary household.

According to the initial poverty gap and distribution of the consumption among the rural poor, the impact of the cash transfer programme would vary. In order to avoid selection bias that could overestimate the impact of the programme, beneficiaries are randomly selected among the extreme poor. A specific household category is created in the Social Accounting Matrix and in the model, that is composed solely of beneficiaries, for whom consumption, savings and income are estimated on the basis of the household survey. This analytical choice combined with the microsimulation estimation method ensures that the poverty impact is estimated on the entire distribution of our targeted group, as opposed to on average for households in the target group. We find that the poverty incidence decreases by 44% among the target group, by 19% for all rural poor and by 16% at the country level (Tables 6 and 7). These poverty results provide us with a benchmark to assess the graduation packages against, since the cash transfers allow beneficiaries to choose and directly consume to satisfy their needs and since the poverty line is indexed on consumption only.

The economic impact of the increase in demand for final goods and services from beneficiaries is summarised in Table 5 below. Specifically, Cambodian agricultural production only rises by 0.23%, while agricultural exports are redirected towards domestic markets to satisfy the new demands from beneficiaries. The quantity of agricultural imports increases moderately under this scenario (and represents a 2.7% increase compared to the base year). An extremely modest rise in the consumer price index at the macroeconomic level is found, estimated at 0.02%. The fact that exports are redirected towards domestic markets and that production factors are redirected to the agricultural sector to allow for more production, with no significant increase in the production capacity locally, explains why there is no increase in the real GDP under this scenario.

Table 5: Selected results from Scenario 1, in % change

Real household consumption			Agr. production	Agr. import	Agr. export	Consumer price index	Real GDP
Beneficiaries	All Poor	All HH	0.23%	2.7%	-0.23%	0.02%	0.0%
25.1%	8.1%	0.7%					

These results are similar to the ones in Levy and Robinson (2013), who investigate the potential economic impact of cash transfer programmes in Cambodia, also using a general equilibrium model. As opposed to the CGE model used by Levy and Robinson, our present model is based entirely on Cambodia data, offers a household production decomposition and a disaggregation of households that allows a detailed and precise impact assessment at the microeconomic level. The comparison between the two sets of results shows a more resilient Cambodian economy in 2011, with a more competitive agricultural sector with regards to Cambodia's neighbours and trading partners, a stronger capacity to respond to an increase in demand and a significantly lower poverty incidence. While the impact on local prices seems more modest in the present simulations, the results confirm that social protection programmes based solely on intervention that support the consumption of the poor are likely to be insufficient to promote the local economy after one year of programming.

It should be highlighted that higher levels of cash transfers per household could lead to a different set of results, both in terms of local economic impact and wider growth effect. Given the average household size in our targeted population, a monthly transfer of $25 per household corresponds to less than $0.15 a day per beneficiary. For Cambodians living in extreme poverty, it is reasonable to assume that virtually all the transfer received would be consumed and that very little investment would be undertaken on that basis. Davis and Handa (2015) estimated that cash transfers that represent less than 20% of the beneficiary-average consumption is unlikely to be dedicated to anything else than immediate consumption. The present results are therefore in line with theirs but it can be anticipated that at higher level of transfers, the impact of such a safety-net measure on investment and the local economy would be improved.

Table 6: Number of poor in Scenario 1

Changes in number of extreme poor			Number of extreme poor			
Urban	Targeted	Total	Urban	Targeted	Rural	Total
0	443,230	443,230	406,969	556,744	1,903,245	2,310,214

Table 7: New poverty rates in Scenario 1

Poverty rates				Change in poverty rates			
Urban	Targeted	Rural	Total	Urban	Targeted	Rural	Total
13.66%	55.68%	16.36%	15.81%	0%	-44.32%	-18.89%	-16.10%

These results offer a benchmark to evaluate the subsequent scenarios against, both in terms of their impact on domestic markets, production and trade and from a microeconomic perspective on real household consumption, poverty incidence and inequality.

Graduation packages

Scenarios 2 and 3 represent two graduation packages (called respectively Packages A and B) that target 1 million rural extreme poor Cambodian, with a transfer equivalent to $25 a month per household, which is in the range of graduation packages typically implemented elsewhere in Asia.

Scenario 2: Cash transfers (50%) and productive asset transfers (50%)

Scenario 2 consists of a transfer equivalent to $300 per households per year, equally shared between cash and productive assets. We assume that productive assets correspond to the agricultural capital stock, including irrigation and water management systems, livestock such as poultry and castle, bought locally by the government (although they could be from imported sources) and as per the beneficiary household's choice. Our model allows any of these productive assets to be imported if and where needed, and local prices will account for the trade and domestic supply component of the corresponding composite goods. It is also assumed that the implementation of this intervention implies an additional 25% administrative costs. The total funding needed to cover the cost of this intervention is 58 million dollars, which corresponds to 0.6% of Cambodia GDP that year.

Table 8 provides a summary of the main economic impact of the graduation package simulated in Scenario 2. As a result of the cash component, the demand for goods and services from beneficiary households increases, stimulating domestic production. Given that the intervention targets the extreme poor, the new purchasing power predominantly drives demand for agricultural products, such as rice, grains, vegetables and livestock, as well as processed food such as oils. To satisfy this new demand, agricultural exports are also partly redirected to domestic markets and food imports increased modestly. While this component of the simulation results is identical to the ones in the cash transfer benchmark, the overall impacts are rather different. The transfer of productive assets allows the local economy to directly respond to the increase in demand.

The capital transfer component of the graduation package has two opposing effects on the agricultural sector. On the one hand, it reinforces the demand for livestock and agricultural products on local markets, where these assets are bought. Local production is stimulated, a small share of exports redirected to local markets and agricultural imports increase – although very modestly. On the other hand, it supports the home production of agricultural products by households in the target group. But crucially, because the supply and the demand for agricultural products increase simultaneously, they promote economic growth and as a result, the level of GDP increases by 0.2%. This represents a significant investment return: while the total funding required to finance this intervention represents 0.6% of the GDP, the growth impact after one year is estimated to

0.2%. This represents an investment return of 0.33 after only one year of implementation, which can be considered remarkably high, especially since only half of the distributed budget is in fact invested in capital stock and 25% is used to cover administrative costs.

Table 8: Selected results from Scenario 2, in % change

Real household consumption			Agr. production	Agr. export	Consumer price index	Real GDP
Beneficiaries	All Poor	All HH	1.25%	-0.19%	-0.01%	0.23%
20.7%	6.7%	0.6%				

The impact of this intervention on poverty is more modest than with pure cash transfers, but still significant, with 4 out of 10 targeted households moving out of poverty at the end of the first period (Tables 9 and 10). The graduation package generated sufficient resources for 400,594 individuals out of the 1 million targeted to raise their consumption above the extreme poverty threshold. The new poverty headcount reflects this change in the number of extreme poor, which is approximately 1% lower than the benchmark cash transfer programme (Scenario 1).

Table 9: Number of poor in Scenario 2

Changes in number of extreme poor			Number of extreme poor			
Urban	Targeted	Total	Urban	Targeted	Rural	Total
0	400,594	400,594	406,969	599,380	1,945,881	2,352,851

Table 10: New poverty rates in Scenario 2

Poverty rate				Change in poverty rate			
Urban	Targeted	Rural	Urban	Targeted	Rural	Total	Total
13.66%	59.94%	16.73%	16.10%	0%	-40.06%	-17.07%	-14.55%

The main difference with the benchmark cash transfer scenario is that approximately half of the new consumption is financed by the beneficiaries' own income, generated by their productive activities. This result is particularly revealing of the enabling impact of graduation packages: they allow a significant improvement of targeted household's income, while still allowing 4 out of 10 targeted households to move out of poverty after the first year.

This also illustrates the substantial potential of the Cambodian agriculture to drive domestic growth, while reducing rural poverty. The following scenarios will illustrate other aspects of the numerous advantages of graduation packages to improve rural livelihoods.

Scenario 3: Cash transfers (50%), productive asset transfers (30%), and professional training (20%)

Scenario 3 differs from Scenario 2 on one component: 25% of total funding is now dedicated to professional training instead of productive asset transfers. We assume that this component of the graduation package has a direct impact on the productivity of the labour that beneficiaries dedicate to their own productive activities. There is little evidence to date on the return of investment in human capital in the context of graduation models, but the planned content and format– delivered as weekly sessions of professional training to farmers is very similar to existing farmers-training programmes such as Farmers Field Schools (FFS). A Danida impact evaluation (2011) estimates that the return of FFS in Bangladesh improved agricultural-production yields by 10% over the first year of implementation. The present study uses cost-benefit analysis and investment returns estimated for these training programmes as a reference for their potential impact on Cambodian households' productivity. Simulations for Scenario 3 were calibrated on the basis of FFS estimates, combining vocational training with cash and asset transfers in the proportions described in Table 4. The main economic impacts of this graduation package are presented in Table 11.

The results are fairly similar to Scenario 2, with an increase in the domestic production of agricultural goods, a redirection of exports to domestic markets and a modest increase in the imports of agricultural products to satisfy the new demand from beneficiary households. The transfer of productive assets combined with the improvement of farmer's productivity resulting from the training component has a significant impact on the income and consumption of the extreme poor.

Based on existing estimate of the cost-benefit analysis of professional training for poor farmers and of their impact on yields in comparable contexts, this study found that the impact of such human capital investment on the productive capacity of beneficiaries is more modest than the productive asset transfer in the first period. However, it is possible to hypothesise that while physical capital depreciates over time, farmers' skills are likely to be improved by practice and are also likely to have longer lasting effects – all benefits that cannot be captured in the present analytical framework.

Table 11: Selected results from Scenario 3, % change

Real household consumption			Agr. production	Agr. import	Consumer price index	Real GDP
Beneficiaries	All Poor	All HH	0.87%	-0.29%	-0.03%	0.16%
18.6%	6.0%	0.5%				

The changes in poverty indicators are similar to the ones resulting from the graduation package in the previous scenario: poverty incidence is reduced by approximately 13.5%, which is smaller but relatively close the result from pure cash transfers (Tables 12 and 13). The results also show that more than half of this impact is due to the non-cash component of the package, therefore comes from income generated by the productive activities of beneficiaries.

Table 12: Number of poor in Scenario 3

Changes in number of extreme poor			Number of extreme poor			
Urban	Targeted	Total	Urban	Targeted	Rural	Total
0	369,765	369,765	406,969	630,209	1,976,710	2,383,679

Table 13: New poverty rates in Scenario 3

Poverty rate				Change in poverty rate			
Urban	Targeted	Rural	Total	Urban	Targeted	Rural	Total
13.66%	63.02%	16.99%	16.32%	0%	-36.98%	-15.76%	-13.43%

These results underline the enabling impact of graduation packages which can be seen from the first year of implementation. The human and physical investment undertaken during the first year of implementation will continue to improve the productive capacity of the beneficiaries beyond the first round of graduation package implementation. The next set of simulations will show why this consideration needs to be accounted for in the evaluation of graduation packages and in the analysis of their full economic impacts.

ACCOUNTING FOR THE LASTING EFFECTS OF GRADUATION PACKAGES

While the cash transfer component allows for immediate meeting of households' basic needs, in the consumption of staples and essential goods that would addresses hunger and improve household nutrition in the short term, the training and capital transfer component support the capacity of beneficiaries to generate income beyond the first year of the programme. While the simulation results provide an estimate of the economic impact of these interventions at the household and at the market level, it does not account for longer lasting effects on the beneficiaries' capacity to generate income and move closer to the extreme poverty line. For this reason, the second set of simulations is designed that aim at estimating the impact of the non-cash component of graduation packages in the longer run.

Here it is assumed that the capital transfer in the previous two scenarios depreciates by 10% after the first year of transfer-an extremely conservative assumption for this type of asset, especially for livestock, whose value could instead increase as young cattle grow up. For human capital on the other hand, we consider that the productivity gains from professional training remain in the year consecutive to the programme, this is also a modest assumption, given that practice reinforces farmers' skills, via 'learning by doing'.

While these two scenarios do not involve any additional funding, the results show a persistent effect on both poverty reduction (Tables 15 and 16) and economic growth (Table 14) resulting from the long-lasting impact of human and physical capital transferred with the graduation packages.

From an economic perspective, physical-productive assets seem to generate larger impact on agricultural production, to the extent that a 0.16% increase in the GDP could be attributed to this effect only, during the year following programme implementation. The impact of professional training on both is slightly more modest, but probably more persistent over time.

Table 14: Selected results from Scenarios 4 and 5, % change

Scenario	Real household consumption			Agr. production	Agr. import	Consumer price index	Real GDP
	Beneficiaries	All Poor	All HH				
Scenario 4	7.3	2.4	0.3	0.76	0.17	-0.09	0.22
Scenario 5	5.4	1.8	0.2	0.55	0.12	-0.06	0.16

If the impacts on poverty reduction over the first and the second year of a single round of implementation accumulated, then all of the graduation model effects exceed those of the conventional cash transfer benchmark (Graph 3).

Table 15: Number of poor in Scenarios 4 and 5

Scenario	Real household consumption			Number of extreme poor			
	Urban	Targeted	Total	Urban	Targeted	Rural	Total
Scenario 4	0	166,870	166,870	406,969	833,104	2,179,605	2,586,574
Scenario 5	0	132,469	132,469	406,969	867,505	2,214,007	2,620,976

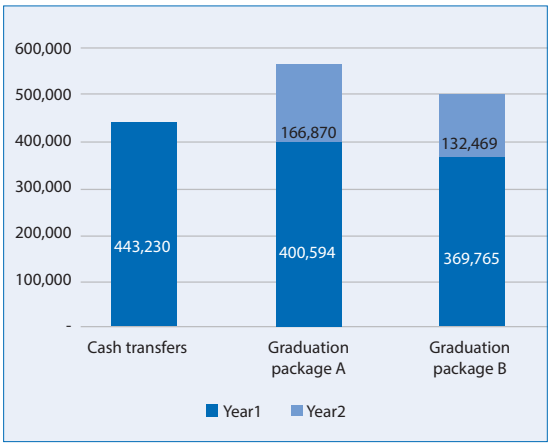
Table 16: New poverty rates in Scenarios 4 and 5

Scenario	Poverty rate				Number of extreme poor			
	Urban	Targeted	Rural	Total	Urban	Targeted	Rural	Total
Scenario 4	13.66%	83.31%	18.74%	17.70%	0.00%	-16.69%	-7.11%	-6.06%
Scenario 5	13.66%	86.75%	19.03%	17.94%	0%	-13.25%	-5.65%	-4.81%

Although the value of the productive asset transferred is likely to depreciate over time, the impact on the capacity of beneficiary households to generate their own incomes is likely to last far longer than the two years considered here. As for human capital improvement through skills and productivity, these effects are actually likely to increase over time. Accounting for these lasting impacts of graduation packages are essential to capture the comparative advantage of these interventions compared to conventional social protection measures. Their relative higher initial cost should be considered with respect of their benefits over time.

However, when comparing the economic impact of these different interventions over time, it should also be noted that the long term effect of cash transfers on children's education cannot be captured in our model due to its timeframe. While cash transfers are likely to increase the demand and consumption of the education services by beneficiary families, the long term effect of this investment in human capital cannot be accounted for in our framework. Its impact on future income, productivity and employment is therefore not reflected in the comparison of simulation results and the trade-off analysis. However, if the graduation interventions improve income and consumption prospects to the estimated extent, their impacts on education and investment in human capital are likely to converge towards, if not exceed, those of cash transfers.

Graph 3: Number of targeted poor lifted out of poverty over year 1 and 2



In addition to poverty and economic growth impacts, graduation packages would allow beneficiaries to integrate into the social fabric of their communities as an active participant in the local economy. This social dimension, although not in the scope of this study, needs to be included in the accounts of benefits of graduation packages described above.

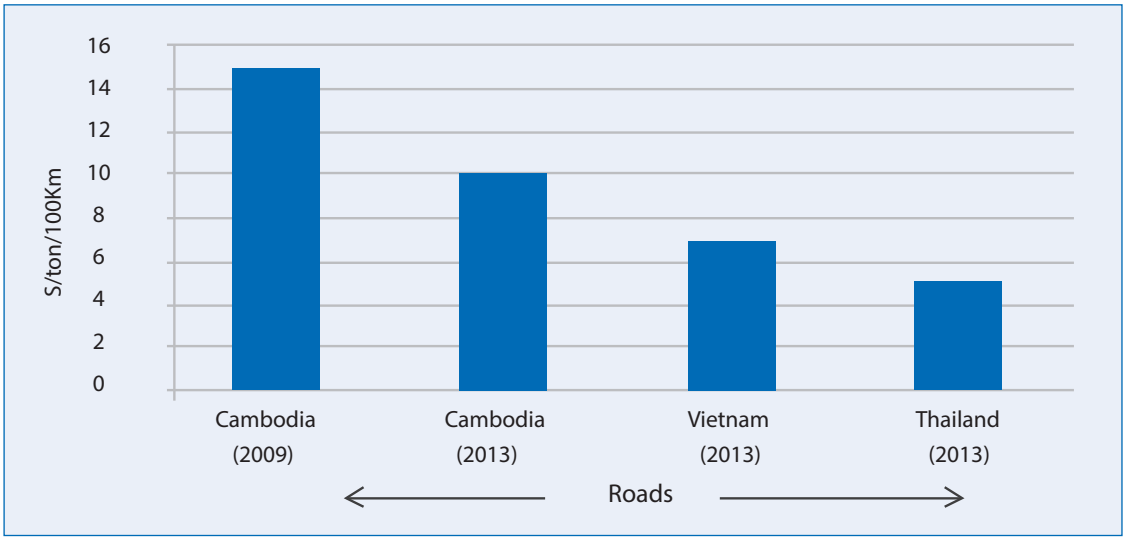
Complementarity between graduation packages and rural development policies

The potential of agricultural growth for poverty reduction in Cambodia has been proven to be substantial since 2002, and has been extensively documented and recognised by stakeholders and policy analysts. While poverty incidence is estimated to have halved over the past decade, 60% of this reduction is considered to have resulted from the substantial agricultural sector growth – through improvements in profitability, margins, employment, wages and regional trade opportunities (World Bank, 2015). It seems therefore very likely that poverty reduction interventions and policies that support agricultural growth would complement each other in improving rural livelihoods. Scenario 6 and 7 investigate the complementarity between graduation packages and agricultural growth policies, when implemented simultaneously.

Scenario 6: Cash transfers (40%), productive asset transfers (40%), and public investment in roads (20%)

Scenario 6 focuses on the development of the road and transport infrastructure to favour domestic trade and improve the integration of rural markets to the Cambodian economy. The lack of rural roads and transport infrastructure hinders the functioning of rural markets and prevents price regulation, especially between provinces with surplus and deficit agricultural production. It also prevents the integration of the rural markets to the domestic economy and to regional trade (World Bank 2015). The lack of rural transport infrastructure also induces high transport costs in Cambodia, as illustrated Table 17 which offers a regional comparison with neighbouring Vietnam and Thailand. According to the Asian Development Bank survey of 18 communes in Battambang, Kampong Thom, and Takeo provinces, only one had an asphalt road in 2013 (ADB, 2014a).

Table 17: Road transport costs in Cambodia and neighbouring countries, $100km/ton



Source: World Bank (2015)

Scenario 6 represents a combination of graduation package A with a public intervention consisting in investment in roads and transport infrastructure. The total budget is divided between these two respective measures along 80/20 ratio. There is a large body of theoretical and empirical research on the impact of such public investment on the economy. In a seminal paper, Aschauer (1989) investigated productivity gains from such productive public investment in the United States between 1950 and 1985, which he estimated to be significant on national Total Factor Productivity (TFP). Anderson et al (2006) reviews methodologies and results from research on this topic, underlining the positive and significant impact of this category of public investment on TFP at the macroeconomic level. In this scenario, it is assumed that public investment in roads and transport infrastructure improves TFP in the trade and transport sector with a return on investment equal to 0.2%. This assumption is relatively modest compared to the literature's estimates for three reasons:

- First, the simulation assumes that only the trade and transport sectors benefit from productivity increases, resulting from the public investment interventions;
- Second, a very conservative investment return is assumed, compared to existing empirical estimates; and
- Third, the initial low level of development of the roads and transport network in Cambodia, in comparison to the panel of countries studied in the literature, suggests potential returns at the higher range of existing estimates.

Table 18 presents some of the main results from Scenario 6. Linking markets and reducing transport costs benefit most sectors in the economy, facilitates domestic and regional trade and relieves inflationary pressures, limiting increases in the consumer price index (CPI). Under this scenario, rural and urban households' consumption benefits from the improved capacity of the agricultural sector, which results from the productive transfer component of the graduation package (Table 19 and 20).

Table 18: Selected results from Scenario 6, in % change

Real household consumption			Agr. production	Agr. import	Consumer price index	Real GDP
Beneficiaries	All Poor	All HH	0.81%	-0.04%	0.00%	0.22%
17.8%	5.8%	0.6%				

Combining graduation packages with such public investment appears to be an efficient strategy to simultaneously support demand and the supply in the poorest parts of Cambodia. The complementarity of these two sets of rural development strategies leads to a strong combination of poverty reduction and economic growth, with results comparable to those in scenario 2 (Graduation package A alone) in both respects.

Table 19: Number of poor in Scenario 6

Change in number of extreme poor			Number of extreme poor			
Urban	Targeted	Total	Urban	Targeted	Rural	Total
2,344	360,130	362,475	404,625	639,844	1,986,345	2,390,970

Table 20: New poverty rates in Scenario 6

Poverty rate				Change in poverty rate			
Urban	Targeted	Rural	Total	Urban	Targeted	Rural	Total
13.59%	63.99%	17.08%	16.37%	-0.58%	-36.01%	-15.35%	-13.16%

Scenario 7: Cash transfers (40%), productive asset transfers (40%), and public investment in agricultural infrastructure (20%)

SScenario 7 focuses on public investment that supports agricultural productivity through productive assets and water-management systems and rural infrastructure, which impacts have been proven substantial in Cambodia over the past decade. As one of four pillars identified to allow the structural transformation of the agricultural sector, such investment is considered essential in

sustaining Cambodia's current achievement (World Bank, 2015). The public investment component of this scenario follows along these lines, consisting of increased agricultural 'public goods' investment – specifically through irrigation, rehabilitation of existing water management systems, extension, soil nutriment management–all measures detailed and described in the National Strategic Development Plan (NSDP) for 2014-2018.

Irrigation and water management infrastructures are largely inadequate in rural Cambodia, with only 8% of the arable land estimated to be irrigated during the dry season, making agricultural production highly dependent on rainfall every year. This ratio of irrigated to arable land is the lowest in Asia (Table 21).

Table 21: Irrigated areas and arable land in Asia

Country	Actually Irrigated Areas (ha) 2011-2012	Arable Land (ha) 2011	Share of Irrigated Areas in Arable Land (%)
Cambodia	317.225	4.000.000	7.9
China	54.218.976	111.598.500	48.6
Indonesia*	6.722.299	23.500.000	28.6
Malaysia*	340.717	1.800.000	18.9
Myanmar*	2.083.000	10.786.000	19.3
Philippines*	1.879.084	5.400.000	34.8
South Korea	880.400	1.492.000	59.0
Thailand	5.059.914	15.760.000	32.1
Vietname*	4.585.500	6.500.000	70.5

Source: World Bank, 2015

The results from Scenario 7 are substantial in order of magnitude. When such investment is combined with Graduation Package A, agricultural production increases by 1.35% in the first year of implementation. The redirection of agricultural exports to satisfy the new demand by beneficiaries is significantly more modest than any other preceding scenarios and the consumer price index decreases by 0.09% across the economy (Table 22). The real GDP increases by 0.35%, which represents a significant return from public investment in both public and private goods, and is the highest of all the scenarios. This indicates a strong synergy between interventions that support the agricultural sector at the microeconomic level and at a larger scale through structural transformation.

Table 22: Selected results from Scenario 7, % change

Real household consumption			Agr. production	Agr. import	Consumer price index	Real GDP
Beneficiaries	All Poor	All HH	1.35%	-0.08%	-0.09%	0.35%
17.9%	6.0%	0.8%				

Still more surprisingly, the results from the micro simulations indicate a poverty reduction of 36% among the targeted group: the same indicator increased by about 37% under Scenario 2, where the targeted households received double the current transfers (Tables 23 and 24). This confirms the strong potential of rural sector development in Cambodia, as a driver for both poverty reduction and macroeconomic growth, as discussed in Section 1.

Table 23: Number of poor in Scenario 7

Changes in number of extreme poor			Number of extreme poor			
Urban	Targeted	Total	Urban	Targeted	Rural	Total
2,344	360,130	362,475	404,625	639,844	1,986,345	2,390,970

Remarkably, this intervention also generates spill overs to non-beneficiaries, through the increase in the agricultural production and decrease in the CPI, and resultantly urban poverty is reduced by 0.6% after one year of programme implementation.

Table 24: New poverty rate in Scenario 7

Poverty rate				Change in poverty rate			
Urban	Targeted	Rural	Total	Urban	Targeted	Rural	Total
13.59%	63.99%	17.08%	16.37%	-0.58%	-36.01%	-15.35%	-13.16%

The categories of public investment implemented in Scenario 6 and 7 have two specificities. First due to their costs, long-term return and institutional capacity they require, they mostly can only be paid for and implemented by public institutions – as per the definition of public goods. Their economic impact also persists over a relatively longer period than typical private investments. Second, they benefit the entire local community, and in the same way those at the bottom and at the top of the income distribution.

The simulation results confirm their significant potential for boosting Cambodia's economic growth but also for poverty reduction especially when combined with interventions that directly target the extreme poor and enable them to engage in agricultural productive activities. In the short term, Scenario 6 and 7 have the strongest potential impacts on economic growth. Like it was the case with the basic graduation packages (A and B), the return on investment would need to be evaluated and analysed over a longer time period to better understand the full prospects for rural Cambodian households. As was the case with graduation packages, it is likely that the cumulative benefits of these programmes will surpass their costs, but also, we can expect a significant impact on Cambodia's agricultural growth trajectory, which is needed to sustain poverty reduction.

KEY CONSIDERATIONS FOR FURTHER RESEARCH

The results on the potential benefits of the graduation approach are remarkably positive and promising but some cautious requires in their interpretation. Although based on Cambodia specific data from household surveys, official statistics and national accounts, these findings are generated by a simulation exercise, relying partly on a theoretical framework. Nevertheless, the results align well with the existing microeconomic estimates of the multiple benefits of graduation packages for households living in extreme poverty (Balboni et al., 2015). This study also provides a general equilibrium perspective on the potentials of scaling up this type of intervention, extending participation in the programmes to a large share of eligible households throughout the country. This is the first macroeconomic analysis of this kind and its findings suggest significant potential spill-overs on the local and wider economy, to an extend that exceeds existing empirical estimates of the multiplier effects of cash transfer interventions.

It would be pertinent and valuable to complement this analytical approach with testing from field experiments and pilots. This is first to validate and refine some hypotheses on household behaviour and second to analyse the market failures and economic specificities to justify the use of in-kind and mixed transfers as opposed to cash only equivalent. It would also be highly policy relevant to investigate whether the gains of graduation packages relative to cash transfers weaken for households higher up the income distribution.

Photo: Cheng Yongsreng

4 Section

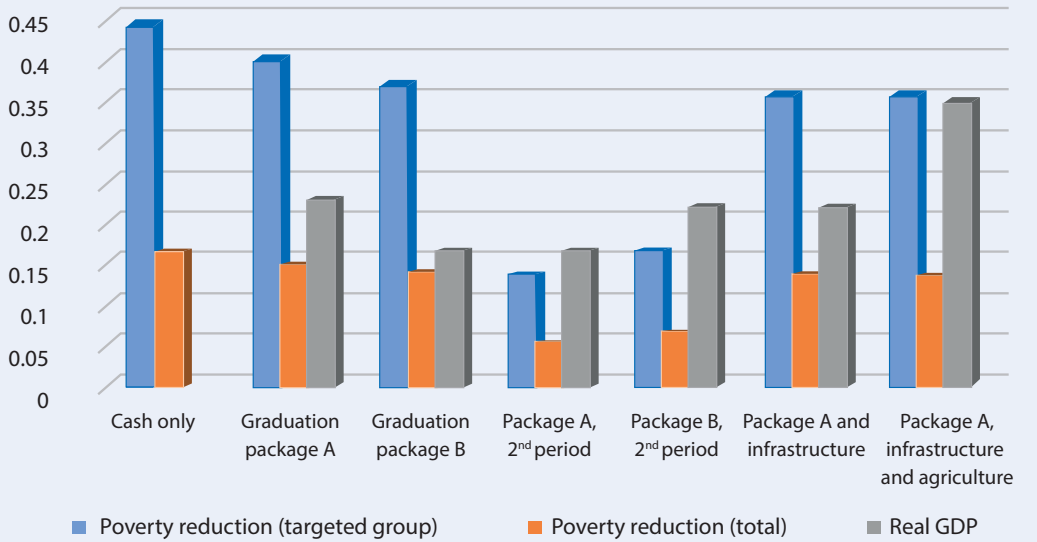
CONCLUSIONS AND POLICY RECOMMENDATIONS

This study provides empirical evidence of the multiple benefits of social-protection graduation packages relative to conventional safety-net programmes. Through human and physical capital accumulation, they allow participants to develop their productive activities, and their productivity. Hence, they enable poor households to generate income from self-employment and participate in local economies, while also help them cover their subsistent needs. More specifically, results show that a significant share of their new disposable income comes from productive activities fostered by the graduation scheme. This outcome contradicts the dependency arguments sometimes associated with social protection schemes, and would allow a shift away from negative perceptions of 'assistance' programmes graduation interventions become tools of economic empowerment of the extreme poor.

In the case of Cambodia, these interventions seem particularly promising given the rural poverty profile and the well-established potential of direct support to the agricultural sector. While conventional safety net interventions were not proven to stimulate the domestic economy, in contrast, every graduation package and intervention modelled, both reduced poverty and boosted the economy.

The comparison of simulation results reveals that the progarmme that produces the highest poverty reduction in the first year, the cash-only transfers, is also the one with the lowest impact on economic growth (Scenario 1). In turn, every scenario that included a graduation component appears to stimulate the Cambodian economy (albeit to varying degrees). Table 25 illustrates the trade-offs that policy makers could face when designing a comprehensive social protection programme reliant on a graduation approach.

Table 25: Percentage changes in poverty reduction and real GDP across all scenarios



(See also Table 4 for the full details of the scenarios)

The simulation results reported here reveal that both poverty and economic growth impacts were likely to last beyond the programme implementation period, as the catalytic effects of productive assets and skills transfers persist after programmes end. This study finds that, at an equal level of funding, their cumulative effects on poverty reduction over two years are likely to exceed those of direct cash transfers.

These results confirm the need to adopt a dynamic and long-term perspective in cost-benefit and impact evaluation of graduation packages (Karlan et al., 2013), especially since their up-front costs are typically higher than conventional safety net programmes. The poverty gap prevailing at the beginning of the programme is likely to influence greatly the impact of graduation packages on poverty incidence. While this might be true for any safety net programme, the policy implications for graduation models should be acknowledged, as they might impact the choice between the number of beneficiaries, the size of the transfers they each receive and programme duration. While the poverty rates fall significantly in the modelled scenarios that included a graduation intervention, it is likely that the distance to the poverty line of those participants that did not graduate after one year, would also be drastically reduced. Further years of programme participation might induce higher poverty impacts compared to the initial year of programming. Therefore, it is not only the initial poverty rates that needs to be accounted for in policy design, but also the distance (the gaps) between the poor households and the poverty line.

While graduation packages directly tackle a number of economic and social constraints faced by those who can engage in productive activities, it should be noted that there will always be a need for safety nets for those (the elderly, people with disabilities) who cannot. The results indicate that a transfer of productive assets could lead to larger consumption gains for extreme-poor households, and should therefore be considered as an efficient intervention in the design of a comprehensive Social Protection Floor.

It is also important underline that successful implementation of such graduation programmes, would require Cambodia's institutional and administrative capacity to be strengthened – if not restructured. While these issues are beyond the scope of this study, it should be noted that the transfer of productive assets is likely to be the least straightforward package component to administer. One avenue to facilitate and reduce the cost of such a measure could be for the government to implement a scheme that provides programme participants with access to funding for their investment. These policy modalities and options for implementation require further analysis and research. This paper shows that the prospects and potentials of including a graduation approach in safety net programming in Cambodia are substantial and promising. Integrating them to rural development policies could be proven even more substantial, given the local synergies and multiplier effects identified in this study.

The advent of the National Social Protection Policy Framework, and the associated expansion in the resources available, and in the social protection system, makes this study's findings all the more pertinent for policymakers. The NSPPF provides opportunities in the short run for undertaking field based testing (with support of development partners), and in longer term, to roll out graduation-based packages as key component of a future system.

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APPENDIX

Table A1: Social Accounting Matrix accounts

Main accounts	Description of disaggregated accounts
Production activities	Agriculture, hunting, forestry and fishing
	Agricultural production by Households Group 4
	Mining
	Food products, beverages and tobacco
	Textiles, textile products, leather and footwear
	Wood, metal, rubber & other materials
	Petroleum products
	Machinery & equipment
	Computer and electronic equipment
	Motors, vehicles & transport equipment
	Other manufacturing
	Electricity, gas and water supply
	Construction
	Wholesale and retail
	Hotels & restaurants
	Transport and trade services
	Posts & telecommunications
	Real estate services, financial intermediation
	Public administration
	Education services
	Health services
	Other services

Commodities	Agriculture, hunting, forestry and fishing
	Mining
	Food products, beverages and tobacco
	Textiles, textile products, leather and footwear
	Wood, metal, rubber & other materials
	Petroleum products
	Machinery & equipment
	Computer and electronic equipment
	Motors, vehicles & transport equipment
	Other manufacturing
	Electricity, gas and water supply
	Construction
	Wholesale and retail
	Hotels & restaurants
	Transport and trade services
	Posts & telecommunications
	Real estate services, financial intermediation
	Public administration
	Education services
	Health services
	Other services

Factors	Agricultural labour
	Agricultural labour- targeted households
	Non-agricultural labour
	Agricultural capital
	Agricultural capital-targeted households
	Non-agricultural capital
	Land
Households	Urban non poor
	Urban poor
	Rural non poor
	Rural poor
	Rural poor- targeted
Other institutions	Enterprises
	Enterprises- targeted households
	Government account
	Rest of the world account
Taxes	Activity taxes
	Institution taxes
	Import taxes
Others	Savings and investment account
	Changes in stocks

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