

# Conceptualising Graduation from Agricultural Input Subsidies in Malawi

**Ephraim W. Chirwa, Andrew Dorward and Mirriam Matita**

December 2011

## Abstract

The government of Malawi has been implementing a large-scale Farm Input Subsidy Programme (FISP) since 2005/06 as an intervention aimed at improving food security by addressing resource poor smallholder farmers' affordability constraints in purchasing inorganic fertilizers. However, in the design of the programme, there is lack of articulation on the graduation of some farmers from the subsidy over time. This paper considers ways in which the concept of graduation may be usefully applied to the FISP and sets out a broad conceptualisation of graduation for potential application in programme design and implementation.

## 1. Introduction

Since the 2005/06 agricultural season, the Government of Malawi (GOM) has been implementing a large-scale targeted Farm Input Subsidy Programme (FISP). The main objective of the programme is to raise incomes and household food security of up to 2 million (out of 3.4 million) smallholder farmers through improvements in their agricultural productivity. The programme targets smallholder farmers who have land but cannot afford to purchase inputs (principally maize seed and fertilisers) at market prices. In the medium-term investment plan for the agricultural sector drawn up by the Government of Malawi, the agricultural input subsidy is identified as the main strategy for revitalizing the performance of the agricultural sector and reducing poverty in Malawi (GOM 2007). Due to the high incidence of poverty and food insecurity among Malawi's rural population, agricultural input subsidies can be seen within this as, in part at least, a social protection instrument, as they improve access and availability of food to vulnerable groups (Dorward et al. 2006).

This paper considers ways in which the concept of graduation may be usefully applied to the FISP. We begin with a broad discussion of the conceptualisation of graduation, first within the social protection literature and then within the context of an agricultural input subsidy programme. This provides the foundation for considering ways in which the issue of graduation might be addressed, first in programme design and implementation and second in programme evaluation.

The paper draws upon a considerable amount of information that is available regarding FISP and is set within a context of continuing evolution of the programme. The FISP has been evaluated since the 2006/07 programme using the 2004/05 Integrated Household Survey as the baseline, with two further rounds of data collection in 2007 and 2009 (ICL et al. 2007; SOAS et al. 2009; Dorward and Chirwa 2009; Dorward et al. 2010). This has generated three panels of households at national level with about 1,400 households being followed across all three surveys. Since 2005/06, several changes have taken place in the scope, scale and implementation of the programme. These include

changes in the volume of subsidised inputs disbursed, a switch from a focus on multiple crops to only maize inputs, the use of open meeting community-based targeting of beneficiaries, and variations in involvement of the private sector (Dorward and Chirwa 2009). Furthermore, there is considerable variation between different areas within years as regards targeting criteria and mechanisms used in determining which farmers receive subsidised inputs, how many receive inputs, and how much inputs they receive (with sharing of bags causing many households to receive one instead of the prescribed two bags of fertiliser) (Dorward et al., 2010). Household surveys also find that although recipients are found among both poor and non-poor households, the non-poor with better asset endowments are somewhat more likely to receive subsidy coupons, though the extent of this declined between 2006/7 and 2009/9 (ICL et al. 2007; Chirwa et al. 2010). Survey data also show that over time the displacement of commercial sales by subsidised sales has fallen, suggesting that smallholder farmers are increasingly purchasing fertilizers at market prices to supplement their subsidized fertilizers (Ricker-Gilbert and Jayne 2010). Chirwa et al. (2010) also find that some recipient households in the panel have had regular access to subsidized fertilizers since the programme started while others have had only intermittent access.

Graduation has emerged as an issue in debates about the future of the programme at the interface of a number of issues. The high costs of the programme, particularly in 2008/9 when FISP accounted for 16.2% of the national budget and 6.6% of GNP (Dorward and Chirwa 2009), posed serious questions about the fiscal and macro-economic sustainability of the programme and hence a search by some commentators for some means of 'graduation' that would allow its scaling down. Subsequent falls in fertiliser prices and reining back of the scale of the programme have led to marked reductions in programme cost, but government continues to look for high levels of effectiveness and efficiency from the programme. This also raises questions about the scope for focusing the subsidy on a smaller, and possibly reducing, subset of beneficiaries whose use of subsidies is both effective and efficient. These debates, however, raise a number of issues regarding the objectives against which effectiveness and efficiency can be judged (for example agricultural production, economic growth, national or household food security, poverty reduction or social protection objectives) and the means by which these objectives are achieved (for example are the latter objectives achieved by households producing more food or being able to buy food at lower prices?). Another set of (empirical) questions arise regarding first the actual impacts of the programme on households and the economies in which they live (in terms of improved livelihood resources and opportunities), and second the determinants of and interactions between these impacts.

## 2. Conceptualising Graduation from Social Protection

The concept of graduation in social protection is relatively recent and has been linked to issues of impact, dependency, exit and sustainability in the social protection discourse. It is typical in social protection interventions to raise issues of the extent to which the financial transfers to beneficiaries should and can enable them to exit from the programme of assistance and hence reduce the scope of social protection over time. Graduation from social protection has important implications for outreach and cost effectiveness as it allows providers to scale down their operations and reduce costs over time. Governments with tight budgets may be more willing to support social protection if access is time-bound or if there are clear prospects of a higher proportion of the target beneficiaries voluntarily exiting over time. The issue of graduation from social protection also arises due to the need to avoid 'dependency syndrome' among the beneficiaries (Devereux 2010).

### 2.1 Definition of Graduation from Social Protection

It is widely acknowledged in the literature that graduation is a difficult concept to define in the context of social protection interventions. Holmes and Slater (2008) define graduation from social protection as 'the movement of households from a state of high vulnerability to shocks and stresses to one of increased resilience to such shocks and stresses, increased investment in productive assets and subsequent improved livelihood security'. Devereux (2010) notes that graduation should be a dynamic concept, 'sustainable graduation', that embodies increased capacity to generate future streams of income and resilience against future shocks. Slater (2009) also argues that the broad concept of graduation involves poor households moving out of poverty and away from dependency on social protection, to more sustainable, independent livelihood activities.

Another useful way of conceptualising graduation is the use of social protection transfers to achieve a shift in livelihood activities with 'stepping up' (intensification and increased productivity in existing activities) and 'stepping out' (into new more productive activities), and reduced emphasis on 'hanging in' (avoidance of 'falling down and out') (see Dorward et al. 2006; Dorward 2009). This is related to shifts in emphasis in social protection programmes from welfare oriented safety nets to insurance and resilience based instruments (Dorward et al. 2006).

Graduation can be viewed from two different perspectives in the design of social protection interventions: open-ended and time-bound access to social protection. Open-ended social protection interventions are not designed with any expectation of graduation, and the concept of graduation is flexible,

implying that graduation from social protection may occur voluntarily or not at all (as for example with pension programmes).

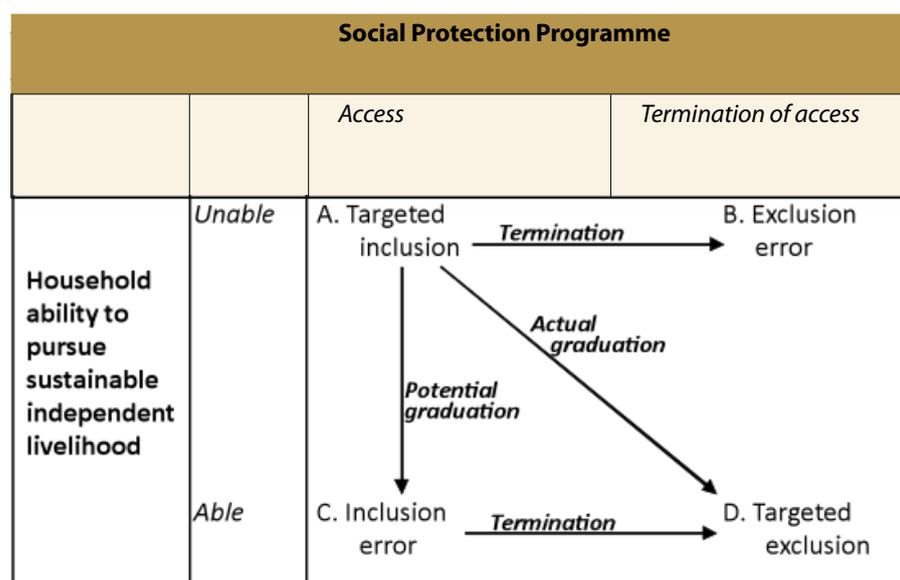
Time-bound programmes, on the other hand, can embody graduation by defining the period over which beneficiaries can receive assistance, after which they are expected to graduate into livelihoods which are both independent of social protection and sustainable (to use Slater's conceptualisation). According to Devereux (2010), graduation embodies the time-bound notion of social transfers as temporary programmes, often with complementary capacity building measures, that should enable beneficiaries to support themselves after receiving transfers for a period of time. In such cases, it is assumed that a large proportion of beneficiaries will have built their capabilities to embark on sustainable and independent livelihoods after the social assistance ends. These livelihoods may be different from those that they engaged in before, or involve some transformation of current or previous livelihoods in ways that improve their productivity and resilience in the face of stresses and shocks.

Complementary capacity building measures implemented in time-bound social protection interventions often include training of beneficiaries in sustainable, independent livelihoods. For instance, the Productive Safety Net Programme in Ethiopia, which incorporates the protective, preventive and promotional aspects of social protection, intends to graduate beneficiaries out of the programme within 5 years of implementation (Devereux, 2009). In the Challenging the Frontiers of Poverty Reduction – Targeting the Ultra Poor Programme (CFPR-TUP) in Bangladesh, the safety net is linked with access to microfinance in an explicit graduation model, in that the ultra-poor are provided with a safety net in the initial phase, improved access to health services, and skills training in enterprise development prior to qualifying for access to microfinance (Matin et al. 2008; Hashemi and Umaira 2010). This implies that the concept of graduation involves a process of building sufficient assets for the poor to enable them to participate more actively in productive activities. CPRC (2007) also notes that many of the conditional cash transfer programmes in Latin America are time-bound, intending that beneficiaries graduate after some period of access to social protection.

Graduation is therefore viewed as the potential to embark on sustainable, independent livelihoods without social protection. The expectation is that given sufficient assistance, beneficiaries may begin to engage in new livelihood activities by investing some of the transfers into productive activities. It is the incomes earned from these productive investments that will enable beneficiaries to graduate from social protection.

It is necessary here to distinguish between graduation as a process of becoming able to pursue an independent sustainable livelihood (which we term potential graduation) and actual graduation, with the termination of support but continued successful pursuit of an

Figure 1. Termination, potential graduation and actual graduation



independent sustainable livelihood. This distinction is explored in figure 1, where a movement from left to right (from A or C to B or D) represents the termination either of access to programme benefits or of a programme itself, a movement from A to C downwards represents potential graduation, and a movement from A to D represents actual graduation.

At least two scales of graduation are implicit in these models:

- Household graduation, where individual households develop capabilities to ‘step up’ and or ‘step out’ to engage in independent and sustainable livelihood activities, and
- programme graduation, where a sufficient number or proportion of households in a population develop such capabilities, allowing the termination of a social protection programme – which may or may not be replaced by another smaller and possibly open-ended programme, which may be focussed on households for whom graduation is either not possible or much more difficult.

The administration of social protection programmes across and within different administrative or livelihood zones allows for (multiple) scales of ‘area graduation’ intermediate between household and programme graduation (for example by village, ward or district). Recognition of multiple scales of graduation raises important issues regarding the relationships between these different scales (shown in figure 2) and the criteria that may be used to determine graduation.

The most obvious relationship is the dependence of area or programme graduation upon household graduation – or more generally of higher level graduation on lower level graduation (shown as upward arrows on the left of figure 2). Thus higher level graduation (rather than termination, as discussed below) depends upon

prior lower level graduation since area graduation can only occur if some minimum scale of lower level graduation has occurred. This raises questions about criteria used at different scales, in both the definition of household graduation and the required number or % of households graduating (or conversely maximum number or % of ungraduated households) for area and/or programme graduation.

We must also consider how graduation of lower level units (households within areas or areas within programmes) may depend upon graduation of higher level units (areas containing households or programmes containing areas). We need to distinguish here between termination of social protection (the removal of social protection interventions from households that cannot pursue sustainable independent livelihoods) and graduation (the removal of social protection interventions from households that can now pursue sustainable independent livelihoods). Termination at lower units of analysis may result from termination at higher units of analysis as a result of, for example, budgetary constraints, time-bound programmes or policy change (shown by the solid down arrows in the right and middle of figure 2). Termination may, however, also occur for lower units as a result of graduation at higher units of analysis where the graduation criterion is not graduation by 100% of lower level units (shown by the downward diagonal arrows in figure 2). In this sense termination, not graduation, for lower units is affected by graduation by higher units.

There are, however, two ways in which lower units’ potential (and possibly actual) graduation may depend upon continuation rather than graduation or termination of higher units (shown by the crossed and dotted downward arrows to otherwise graduating areas and households in figure 2). The first arises where there are significant indirect effects from social protection interventions, the second where social protection programme provide public goods. We provide two

examples of indirect effects. The insurance effect arises when the presence of a programme provides households with insurance against livelihoods shocks and stresses and allow them to take 'stepping up' and 'stepping out' investment risks even when they are not direct beneficiaries of a programme. Their pursuit of (and hence graduation to) independent sustainable livelihoods may then be dependent on the presence of a social protection programme rather than on their direct receipt of benefits from it. As a result, households that appear to have graduated from the programme may still in fact be dependent upon its existence, though not, under normal circumstances, on their direct engagement with it, as they are only willing to take the risks involved in this livelihood if they know that they can rely on help from the programme if things go wrong. In this situation the termination of a programme will cause them to abandon the new higher return but more risky livelihood and withdraw back to low productivity 'hanging in' activities (the Faustian bargain described by Wood 2003). Area or programme termination or graduation then undermines households' stepping up and/or stepping out to sustainable livelihoods independent of social protection.

Another example of indirect effects arises where there are significant multiplier effects from households' receipt of social protection transfers, for example where cash transfers lead to greater demand by recipient households of particular services whose supply provides income for other households. Where this is the case then graduation of higher units with termination of significant numbers of lower units may lead to a reduction in these multipliers and undermine the livelihoods of households who appeared to have achieved independent sustainable livelihoods. (This may also occur without termination if large numbers of lower units graduate and the switch

from dependent to independent livelihoods is associated with reductions in expenditure patterns which supported graduation). These processes are shown by the dotted arrows marked with crosses in figure 2.

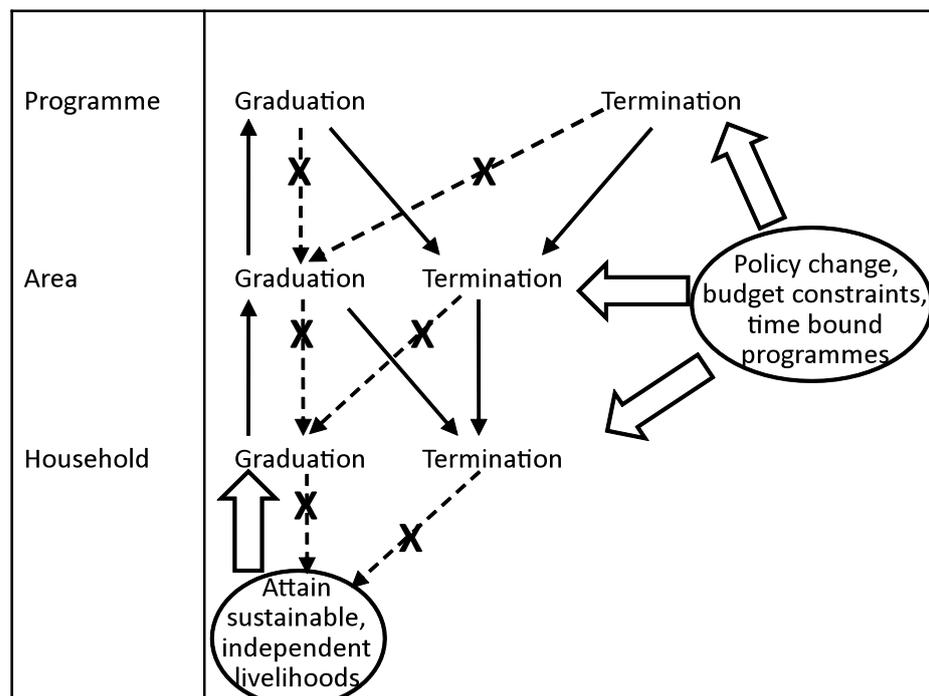
Social protection programmes normally provide private goods and services (which are consumed by individuals for their own benefits) but these may also generate positive externalities (as with the multipliers discussed above, or through social or environmental effects, though these may also be negative). Social protection programmes may also explicitly provide public goods for communities or wider groups, where for example they attempt to strengthen communal social protection mechanisms. By definition such programmes are delivered to intermediate or higher units (not households) but affect the livelihoods and welfare of lower units.

Graduation itself is therefore the removal of access to a social protection programme that does not leave current beneficiaries supported by the programme unable to pursue sustainable independent livelihoods. This definition, with its simple core requirement that graduation does not abandon beneficiaries to return to previous low levels of welfare, can be applied at different scales of analysis (individual, household, area or programme).

## 2.2 Measurement Issues

One of the major practical and theoretical challenges with graduation is how to define and measure graduation criteria, or how to determine the point at which beneficiaries can be weaned off a social assistance intervention with some minimum acceptable standard of welfare or probability of achieving a stable or upward

Figure 2 Multi-scale relationships between social protection graduation and termination



welfare or livelihood trajectory. Devereux (2010) argues that graduation criteria are difficult to define and operationalize, with difficulties in identifying both indicators or variables and critical attainments of welfare and self-reliance. This may require, for example, threshold values of incomes and assets that will not result in graduating households reverting back to situations of vulnerability.

While the practical determination of formal graduation from social protection in social protection programmes requires precise specification of both variables and thresholds defining graduation, prior investigation needed to develop this specification can to some extent separate the choice of variables and thresholds.

One variable used in investigating graduation from social protection is the extent to which transfers allow beneficiaries to cross the income poverty line (Devereux 2010). Another approach is to assess transfer contributions to building and accumulation of household control and access to assets (physical, social, human, financial and natural capital) which are necessary for sustainable livelihoods and assist the poor and vulnerable to move out of poverty, and cope better with shocks and stresses. Slater and McCord (2009) argue that asset accumulation is needed if graduation out of poverty is the desired outcome. The literature on poverty traps also emphasizes the importance of accumulation of assets as necessary for sustainable mobility out of poverty (Carter and Barrett 2006; Carter and May 2001; Adato et al. 2006). Barrett et al. (2006) argue that because assets generate incomes for households, asset dynamics underpin structural income dynamics. Carter and Barrett (2006) also argue that with low assets households earn low returns on their asset holdings, which perpetuates their poverty because they earn less investible surplus after meeting their immediate consumption needs. This then suggests that thresholds for achieving independent sustainable livelihoods cannot be defined in terms of (essentially arbitrary) income poverty lines, but by the crossing of asset and income thresholds associated with poverty traps. These are likely to vary with household structures (for example gender composition and dependency ratios), with socio-economic and cultural context, with livelihood strategies and opportunities, and with complex interactions between the different forms of capital listed above. A more fundamental issue that is raised here, however, is that graduation measures need to be concerned with achievement of conditions (inputs and processes) necessary for the pursuit of sustainable independent livelihoods rather than the achievement of welfare outcomes which tell us little about livelihoods, independence, or sustainability.

A further complexity arises with the conceptualisation of poverty traps operating at wider scales of analysis in local economies (Rodenstein-Rodan 1943; Dorward et al. 2005a, 2005b, 2009a). This is linked to earlier discussion of the different scales or units of graduation, and with the consideration of the variables and thresholds used for determining area and programme graduation. We return to consider these issues in more detail later, in the

context of graduation from input subsidy programmes, but note here that changes in income levels are likely to be less useful than consideration of volumes of livelihood activities at these wider scales (Dorward 2009) or, perhaps more importantly, changes in volumes of stepping up and stepping out activities. Even without these considerations, however, determination of potential graduation for areas and programmes is likely to involve some threshold number or percentage of beneficiary graduation (or non-graduation) at area or programme level, since programmes are unlikely to be cost effective and sustainable if over time they serve fewer and fewer beneficiaries.

### 2.3 Conditions Facilitating (or Impeding) Graduation

The extent to which social protection interventions enable beneficiaries to graduate from dependency on social transfers depend on many factors. These factors include targeting, the value and nature of the benefits, the duration of access, and access to other complementary interventions. First, the extent and severity of poverty and the nature of the target groups matter for the effectiveness of social protection programmes. It is generally argued that extremely poor and unproductive households, such as the elderly, may require open-ended, indefinite social protection and are not expected to graduate from time-bound social protection. Conversely, there is a higher likelihood that a relatively high proportion of beneficiaries can graduate from social protection programmes if the target group is the productive poor.

Holmes and Slater (2008) argue that 'the prospects for graduation from social protection depend on the conditions in which the poor live, the form and the value of the benefits from social protection'. In this the value and nature of the benefits of social transfers is one of the critical factors in facilitating the graduation of beneficiaries, but the determination of the benefits in turn requires a clear understanding of the nature and severity of poverty and vulnerability, and the socio-cultural environment. If benefits just meet subsistence needs of the beneficiaries, there may be very little prospect of graduation (Slater 2009). As Davies (2009) notes, the size of social transfers is rarely sufficient to enable significant reduction in poverty, although there tends to be a reduction in the severity of poverty, unless transfers raise the incomes of large numbers of poor people whose incomes lie just below the poverty line. Social protection interventions that provide benefits that allow both livelihood protection and livelihood promotion are more likely to succeed in increasing incomes of the target groups; hence enabling graduation. Others, such as Devereux (2006), have argued that the predictability of social transfers is also important in changing beneficiary behaviour.

Related to the issue of the value of the benefits is the issue of duration of access to social transfers by target households. The duration over which benefits are received by beneficiaries and how such resources are

spent also determine the extent to which beneficiaries can graduate from social protection interventions (Slater and McCord 2009). Some social protection programmes are implemented as short-term interventions, and unless their transfers are massive, the extent to which this can facilitate graduation is limited. For example, Chirwa et al. (2002) found that recent participation in a public works programme implemented over 1 to 3 months had greater impact on well-being for participation within the past year than participation two or more years ago, suggesting little long term benefits from such participation.

Another important factor that can facilitate graduation of beneficiaries from social protection interventions is the existence of other complementary interventions that build the capacity of beneficiaries to undertake independent livelihood activities. Holmes and Slater (2008) note that livelihood promotion measures, such as predictable transfers or programmes linked to training can facilitate investments by vulnerable households in productive assets or skills development, enabling them to increase their incomes. CPRC (2007) notes that integrating social protection interventions into a wider rural development programme can enhance the effectiveness of social protection. The BRAC CFPR-TUP programme in Bangladesh, that builds the capacity of the poor to access financial services through a combination of social transfers and training in enterprise management, offers higher prospects of graduation from social protection (Matin et al 2008; Hashemi and Umaira 2010).

A final factor that needs to be considered in examination of conditions facilitating graduation is the state of the economy in which graduating beneficiaries are embedded. If this is large and healthy relative to the number of people receiving social protection then less attention needs to be paid to our earlier consideration of negative feedbacks from programme termination and the effects of poverty traps operating at wider scales of analysis in local economies. Multi-scale interactions will, however, be much more important if beneficiaries make up a large part of the local or wider economy and/or the economy is poorly developed, with thin markets for goods and services which poor households and graduating beneficiaries produce and consume.

## 2.4 Socio-political Issues

A final comment is needed on the importance of social and political influences on processes and decisions in graduation from social protection. The discussion in this section has taken a very technical view regarding determination of influences affecting the ways that social protection leads to potential graduation, considering the specification of variables and thresholds for determining termination decisions based on the achieving actual graduation, and the relationships between these processes and decisions at different scales of analysis and administration. These termination decisions are, however, highly political, in terms of local, national and bureaucratic policies concerned with, respectively, questions about which people and groups of people

benefit from social protection transfers; which areas, constituencies and ethnic groups benefit from social protection programmes; and how limited government and donor resources are allocated between agencies and sectors. These issues also need to be taken into account in the design, implementation and evaluation of graduation and termination in social protection programmes.

## 3. Conceptualising Graduation from Agricultural Input Subsidies

### 3.1 Relationships between agricultural input subsidies and social protection

Dorward et al (2006) and Dorward et al (2008) identify five types of linkage between agriculture and social protection:

- a. Social protection (inter alia) from agriculture and agricultural growth
- b. Social protection independent of agricultural growth
- c. Social protection for (inter alia) agricultural growth
- d. Social protection through (inter alia) agriculture
- e. Social protection with (inter alia) agriculture

The differentiation between (a), (d) and (e) is primarily one of emphasis, with (a) describing state-led programmes conceived and implemented primarily as agricultural development programmes, (d) describing programmes conceived and implemented primarily as social protection interventions but operating through agricultural instruments, and (e) describing programmes which explicitly address both agricultural development and social protection objectives. Dorward et al. (2009b) argue that in many ways Malawi's agricultural policies have moved in turn from (a) in the 1970s through (b) in the early 1990s liberalisation of agriculture to (c) in the late 1990s to (d) with the Targeted Input Programme (TIP) in the early 2000s and finally to (e) with the FISP since 2005/6. Although the FISP is implemented by the Ministry of Agriculture and Food Security primarily as an agricultural development programme, its increasing emphasis on targeting the poor is seen by many observers as also and perhaps largely fulfilling a social protection role. The distinction between social protection and agricultural development objectives is also blurred by increasing emphasis within social protection on its promotional and transformative roles in encouraging growth (Dorward et al 2006; Devereux and Sabates-Wheeler 2004).

The close relationship between social protection and agricultural development objectives is, as we will see below, closely related to the potential growth, agricultural development, and livelihood outcomes from the programme. This then has significant implications for potential graduation processes.

### 3.2 Potential Contributions of FISP to Growth, Agricultural Development, and Livelihoods

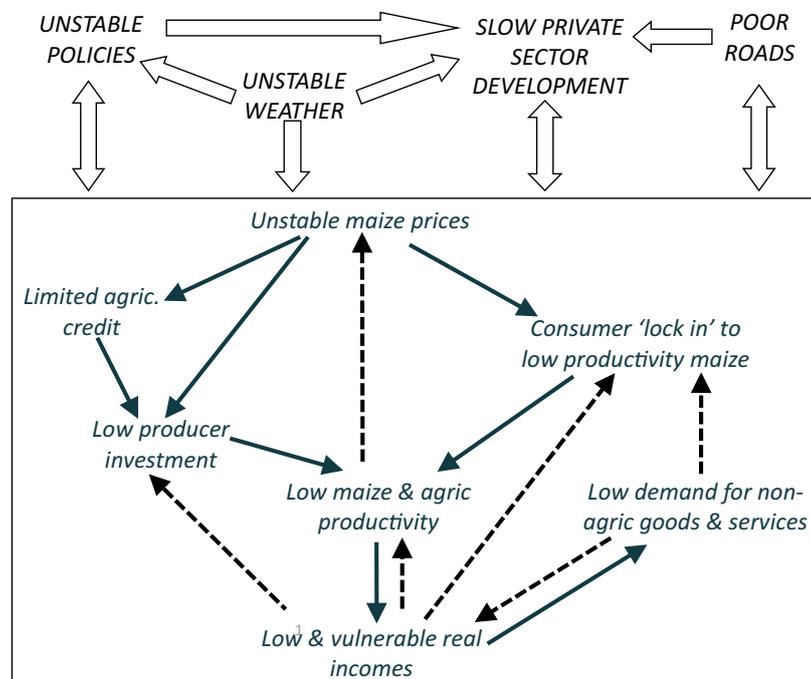
Understanding the constraints limiting agricultural and livelihood development is an essential starting point for understanding FISP's potential to address these constraints and promote sustained growth and welfare.

Dorward and Chirwa (2011) building on SOAS et al. (2008) characterise the Malawian economy as suffering from a 'low maize productivity trap' whereby large inter-year maize price instability means that fear of low maize prices deters less poor, potential maize surplus farmers from investing in high yielding seeds and inputs for surplus maize production while fear of high maize prices forces poor, maize deficit farmers to grow as much maize as they can, even though they cannot afford to purchase high yielding seeds and fertiliser. The result is that large amounts of cultivated land in Malawi are used for maize production with very low yields, and this depresses land and labour productivity across the agricultural sector and indeed across the whole economy. Consequent low farm incomes lead to poverty, tie resources into the agricultural sector, and depress both supply and demand for non-agricultural goods and services. This is illustrated in figure 3.

agricultural input and output market trap where low volumes lead to thin markets, with high transaction risks and costs depressing market investments (see Dorward et al. 2005a, 2005b, 2009a).

Dorward and Chirwa (2011) unpick the farm / household constraints to increased investment in maize production (particularly in inorganic fertilisers) by separating these into profitability constraints, which affect less poor potential surplus producers, and affordability constraints, which affect poor deficit producers who make up 60% of Malawian smallholder farmers (SOAS et al.2008). Profitability constraints exist because with high prices of fertilizers and low maize prices, it becomes unprofitable to grow maize for sale. Higher maize prices may be one way of improving profitability, but such high prices are also bad for the many smallholder farmers who are net buyers of maize. Lower fertiliser marketing and transport costs could help here. However, this needs expanded demand for fertilisers across the country and it is difficult to achieve this where most farmers are constrained by affordability problems. Poor farmers have very limited working capital for consumption and production between harvests and have very limited access to agricultural credit or ability to repay loans for food production inputs.

Figure 3 Vicious Circle of the Low Productivity Maize Production Trap\*



\* Dotted arrows represent feedback effects

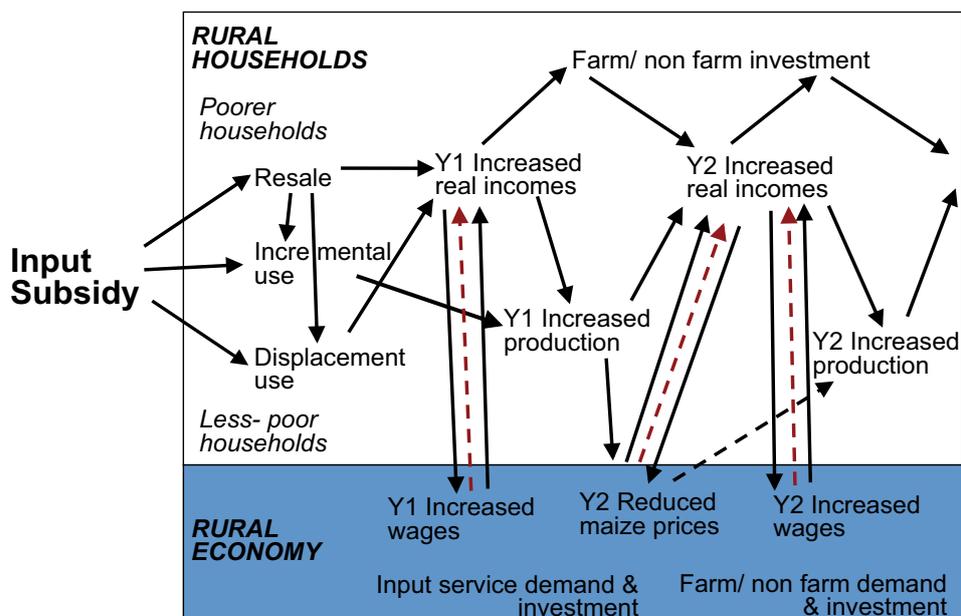
We should note immediately that this analysis of the low maize productivity trap is essentially about a farm/household poverty trap, but this is intrinsically linked to a wider local and national scale cross-sectoral or macro poverty trap of low productivity, low supply and low demand. Also linked at a meso-sectoral scale is an

Substantial input price reductions through the FISP provide a means for addressing problems of both profitability and affordability, with different impacts on different types of households. Understanding these different impacts, and how they impact on wider non-agricultural incomes and markets, is important for

assessing potential processes for graduation from agricultural input subsidies. SOAS et al. (2008) presents a framework for understanding the different direct and indirect impacts of input subsidies on different households in a rural economy, as presented in Figure 4.

consequent increases in real incomes for all poorer (net food buying) households, as well as for households benefiting from higher production. Lower maize prices during the following season should then have similar effects to those described earlier for households receiving subsidised inputs with responses (a) and (c). Higher input

Figure 4 Framework for Understanding Household and local economy Impacts of Input Subsidies



**Note:** dotted lines represent negative effects for less poor maize surplus households  
**Source:** SOAS et al. (2008)

Critical to understanding the impact of subsidies on different households is an understanding of differences in the seasonal finance constraints they face. Receipt of subsidised inputs (or input vouchers) may lead to three different responses: (a) sale of the inputs (vouchers); (b) their use to increase input application (i.e. use when inputs would not otherwise have been used) and (c) their use instead of inputs that would otherwise have been purchased with household working capital. Responses (a) and (c) represent an effective transfer of income to poor and less poor households, respectively. For poor households this is likely to reduce their need to hire labour out to meet pre-harvest consumption needs, and thereby contract the supply of casual wage labour, while for less poor households this may increase the capital available and demand for hiring in labour, and thereby expand the demand of casual wage labour (see Dorward 2011 for an exposition of the effects of pre-seasonal finance constraints on farm household behaviour and welfare). The tightening of demand and supply should lead to higher pre-harvest wages, benefiting poorer farmers.

Response (b) should lead to increased maize production at the end of the season, increasing maize stocks and market supplies, and lowering maize prices, with

use should also lead increased demand and supply for input services, and higher real incomes should lead to increased investment in farm and non-farm activities, and to increased demand for farm and non-farm produce and services.

These arguments suggest that the FISP can address the different household, meso-sectoral and cross-sectoral or macro constraints causing the low maize productivity trap, provided that other events do not cause maize prices to rise. Evidence presented in Dorward and Chirwa (2011) on real wages and more recent anecdotal reports of increased supply and demand in horticultural production both support this analysis of FISP outcomes. The latter reports of diversification into horticultural production highlight an apparently paradoxical feature of the role of the FSIP in combating the 'low maize productivity trap' (LMPT): although the FISP has been largely pushing inputs for increasing maize productivity ('stepping up' to use terminology introduced earlier), it should actually increase diversification of agriculture ('stepping out' of maize into horticulture and other high value products such as livestock) and of rural economies ('stepping out' of agriculture). Such 'stepping up' and 'stepping out' is a normal process of structural change in the growth of any poor agricultural economy (a relative

shift out of low productivity staple food production into higher productivity staple, horticultural and livestock production and into non-agricultural activities).

Finally, it should be noted that all of the benefits of the programme (increasing maize productivity and diversification) should be strengthened by complementary investments that promote higher responses to fertilisers and/ or lower transport and market costs.

## 4. Graduation Pathways for the Malawi Farm Input Subsidy Programme

Discussion of graduation processes in social protection programmes in section 2 emphasised the processes of stepping up and stepping out; multi-scale aspects of interactions between graduation and termination; alternative income, livelihood activity and asset variables and thresholds in defining potential graduation; the importance of a range of different conditions facilitating (or impeding) graduation (including the depth and incidence of poverty among beneficiaries and non-beneficiaries; the value, nature and duration of benefits; complementary services, and the wider socio-economic environment); and socio-political factors. Graduation was defined as the removal of access to a social protection programme that does not leave current beneficiaries supported by the programme unable to pursue sustainable independent livelihoods.

Discussion of the FISP in section 3 raised similar issues regarding stepping up and stepping out processes; multi-scale interactions; changes in livelihood activities as critical elements in potential graduation; and the importance of complementary services and the wider socio-economic environment. Issues which were implicitly rather than explicitly considered include effects on livelihoods of the depth and incidence of poverty among beneficiaries and non-beneficiaries; and the value, nature and duration of subsidised benefits. No consideration has been given to alternative income and asset variables and thresholds or livelihood activity changes in defining potential graduation and in implementing graduation and termination in the FISP. Socio-political considerations in this have also not been considered.

We now consider a definition of graduation specific to the FISP, and this leads to identification of specific graduation processes and pathways, bringing together insights from graduation processes in social protection programmes with our understanding of the role of FISP in combating the LMPT.

Discussion of subsidy programme contributions to development as discussed in section 3 suggest that the core requirement for graduation from the subsidy programme is that removal of access to the subsidy programme does not reduce land, labour and capital productivity in maize production<sup>1</sup>. This provides a new

definition of graduation analogous to our definition for social protection and opens up different ways both of viewing graduation processes and of defining and monitoring 'potential graduation' at higher (area) and lower (household) levels. This is because it allows us to identify a number of higher and lower level 'potential graduation conditions' which are required in some combination as a result of and during the implementation of the FISP for subsequent graduation. These comprise:

1. Fall in unsubsidised input prices compared to pre-programme prices
2. Reduced requirements for purchase of previously subsidised inputs due to increased efficiency in use
3. Reduced requirements for purchase of previously subsidised inputs due to substitution by cheaper inputs
4. Increase in working capital among poor beneficiary households for cash purchase of previously subsidised inputs
5. Poor beneficiary households' diversification out of maize production through either transfer of land to other high value production use (diversification or stepping out of maize within agriculture) or transfer of land to other users with diversification or stepping out of agriculture into non-farm activities
6. Access to low cost credit by poor beneficiary households for purchase of previously subsidised inputs.

These conditions share a number of features.

- None of these potential and desirable changes can be ruled out as irrelevant or impossible, nor can any be identified as being of paramount importance.
- They are all dependent on multi-scale processes of stepping up and stepping out to create the systemic conditions under which sufficient change can be achieved for them to contribute to graduation by some households.
- They can all benefit from promotion in design and implementation.

We can, however, note that they are likely to vary in the extent to which they will be accessible to different households and in the speed at which necessary changes will happen. These changes also, of course, require different types of promotion in programme design and implementation and in complementary investments. Table 1 summarises the likely processes and requirements needed for each of the 'potential graduation conditions' listed above. The final column of the table classifies them by the speed at which it is reasonable for the changes to become effective in promoting potential graduation. This will depend upon households' initial structures and resource holdings, their receipt of subsidised inputs over

**Table 1 Processes, requirements and sequencing of changes**

Potential graduation Conditions	Likely processes and requirements	Order
1. Reduced input prices	Efficient & competitive importers, supplier(s), transporters; improved transport infrastructure	1
2. Increased efficiency in input use	Improved agronomy, complementary seed, inorganic & organic fertilisers, soil management. Investment in agricultural research and extension	1
3. Substitution by cheaper inputs	Increased legume cultivation with rotational fallows. Good legume seed supply, produce demand & markets; Stable & reliable low maize prices & high maize productivity for transition before subsidy removal	1
4. Increase working capital for input purchases	Increased incomes, diversified incomes with reduced income seasonality.	1
5. Diversification out of maize production	Stable & reliable low maize prices, strong demand for high value farm products and/or non-farm goods & services, land markets & safety nets	2
6. Access to low cost credit for input purchases	Increased & diversified incomes, innovative & low cost micro-finance systems.	2

the life of the subsidy programme, events and shocks affecting their welfare and resources, and changes in the local and wider socio-economic environment – which will depend in part upon subsidy implementation and responses within their own communities and beyond.

Most of the entries in table 1 require little elaboration. For (1), there is a large number of reports on the potential for reducing prices for inorganic fertilisers by improving transport systems and management during importation and distribution, by switching from 23:21:12 to a cheaper but equally effective formulation, and possibly by investing in a fertiliser blending plant in Malawi (Munthali 2007). Increasing working capital of beneficiary households (4) is the most commonly considered pathway for potential graduation in social protection programmes (as discussed earlier), but its effectiveness in actually allowing potential graduation is also recognised to be very dependent upon the household's initial asset status relative to some threshold needed for sustainable independent livelihoods, and upon structural issues (such as household composition) and exposure to adverse shocks (again, as discussed earlier). Diversification out of maize production is likely to take some time as it depends upon wider structural change and developing confidence of low and stable maize prices in consumer markets. It is, however, likely to be a pre-condition for the development of access to low cost credit (6), since this is only likely to be possible with some form of micro-finance system where borrowers engage in different micro-enterprises with different seasonal patterns of income and expenditure and different risks (for example Dorward et al. 2001).

Turning now to consider (2) – 'increased efficiency in input use' – there is considerable evidence on the potential for raising returns to fertiliser use by greater use of high yielding seed, more timely planting, more effective soil health management, timely weeding, more effective fertiliser application methods, and greater use of complementary organic fertilisers (for example Maize Productivity Task Force 1997; Snapp et al. 2010).

Organic fertilisers and legume intercropping and rotations can also substitute for and augment inorganic fertilisers – listed under (3) above, 'substitution by cheaper inputs'. Major difficulties with the adoption of such systems have been the labour and/or land requirements for fallows, for tree planting and maintenance, and for growing green manures and mulches (for example Barrett et al. 2002). These labour and land requirements are particularly problematic and high for land- and labour-constrained poor households who suffer most from the Low Maize Productivity Trap. Such households might be expected to gain significant benefits from an improved maize / semi-perennial legume (pigeon pea and groundnut intercrop) rotation system which can offer equivalent maize production to unfertilised maize but with added legume sales and high protein consumption (Snapp et al. 2010). However, adoption of these systems faces significant transition problems as a result of lost maize production when introducing a legume crop in the first year of a rotation. Participation in the subsidy programme, however, offers opportunities to address this problem in three ways:

1. By increasing maize productivity on people's land, the programme should help farmers to get more maize from their land, so that if they allocate say 1/3 of their land to ground nuts/pigeon peas in year 1 and use fertiliser on the other 2/3 of their land they could still have roughly the same or more maize as they would with all their land under maize without the subsidy, plus the legume. In year 2 they could do the same but because of the benefits from the land rotated under the previous year, they would get more maize, and by year 4 they would have got all their land into the rotation.
2. By reducing the price of maize and raising wages, the programme should also make farmers less desperate to grow all their own maize, allowing them to buy any shortfall for less. This should reduce the risks of not producing enough maize during the transition.

3. By raising real incomes the programme should increase the demand for legumes within households and in the wider market, raising the value to households of their legume production.

## 5. Programme Design and Implementation to Promote Graduation

The identification of the different graduation pathways in the previous section has immediate implications for two aspects of programme design and implementation: first the programme should be implemented in ways that actively promote these graduation pathways, and second actual graduation procedures should be built into programme implementation.

Interventions needed to promote graduation pathways vary between pathways and generally align with and strengthen the importance of existing programme or development objectives. Thus interventions to promote lower input prices and to increase efficiency in input use and substitution by cheaper inputs should all raise the efficiency of the programme. Similarly, increases in working capital among poor beneficiary households should be aligned with (and possibly be an achievement indicator for) programme objectives. Encouraging diversification out of maize and agriculture and promoting access to low cost credit are valuable general objectives for rural development, but are not so obviously complementary to the FISP, and may therefore need special (and specialised) attention.

As regards actual graduation (and termination) procedures, three broad approaches may be followed, singly or in any combination: (a) reductions in subsidy per household; (b) reduction in the number of areas or districts served by the programme with phased withdrawal of the programme from particular areas or districts; (c) withdrawal of the programme from particular households. Options (b) and (c) require criteria for determining graduation or termination of the subsidy by area or household. Criteria are likely to include budgetary constraints, political factors, efficiency differentials, and potential graduation. Potential graduation may be measured using variables related to the potential graduation changes identified in table 1<sup>2</sup>. Attention should also be paid to questions about sequencing and relationships between area graduation/termination and household graduation, as discussed earlier in section 2.1.

## 6. Summary

This paper has considered ways in which the concept of graduation may be usefully applied to the Malawi Farm Input Subsidy Programme. Initial consideration of the concept of graduation in social protection programmes led to

- a) a definition of graduation as removal of access to a social protection programme that does not leave current beneficiaries supported by the programme unable to pursue sustainable independent livelihoods,
- b) a distinction between graduation and termination of access which makes beneficiaries worse off, and
- c) consideration of differences and inter-relationships between graduation and termination at different scales, such as household, area and programme.

These conceptual issues suggest that measures of graduation should use variables and thresholds which measure assets and activities supporting sustainable independent livelihoods rather than income measures, and such measures need to take account of different opportunities, threats and difficulties facing different people in different contexts.

Application of these lessons to graduation in agricultural input subsidy programmes like the Malawi FISP requires some understanding first of the relationship between social protection and agriculture (characterised as social protection through agriculture), and second of the processes by which the Malawi FISP promotes sustainable independent livelihoods. This allowed a definition of graduation as removal of access to the subsidy programme that does not reduce land, labour and capital productivity in maize production. 'Potential graduation conditions' which promote these include reduced input prices, increased efficiency in input use, substitution by cheaper inputs, increased working capital for input purchases, diversification out of maize production, and access to low cost credit for input purchases. Identification of these potential graduation conditions is valuable in suggesting types of change that programme designers and implementers should seek to promote, as well as variables that may be used in making decisions about graduation criteria and processes. Further work is needed to determine how some of these changes may be promoted (although some suggestions are put forward in section 4), and what criteria (variables and thresholds) may be best for judging potential graduation.

## End Notes

This paper is an extended version of a policy paper in the Evaluation of the Malawi Farm Input Subsidy Programme funded by the Department for International Development (DFID), Malawi. We acknowledge the financial support provided by DFID. The views expressed in this paper are those of the authors and the usual disclaimer applies.

- <sup>1</sup> Ideally one would identify the critical resource here, but for many communities land is critically short, while for poor households capital and labour are critically short, but these are exchangeable through the labour market.
- <sup>2</sup> These may also be appropriate variables in analysis of targeting effectiveness and programme efficiency, since provision of subsidised inputs in areas and to households that are potential graduates suggests ineffective targeting and inefficiency, in that delivery of subsidised inputs to potential graduates will not generally achieve immediate programme objectives of raising maize productivity.

## References

- Adato, M., Carter, M.R. and May, J. (2006) 'Exploring Poverty Traps and Social Exclusion in South Africa Using Qualitative and Quantitative Data', *Journal of Development Studies*, 42(2): 226–247.
- Barrett, C.B., Place, F., Aboud, A.A. eds (2002) *Natural Resources Management in African Agriculture* (CAB Intl, Oxon, UK).
- Barrett, C.B., Marenya, P.P., McPeak, J., Minten, B., Murithi, F., Olouch-Kosura, W., Place, F., Randrianarisoa, J.G., Rasambainarivo, J. and Wangila, J. (2006) 'Welfare Dynamics in Rural Kenya and Madagascar', *Journal of Development Studies*, 42(2): 248–277.
- Carter, M.R. and Barrett, C.B. (2006) 'The Economics of poverty Traps and Persistent Poverty: An Asset-Based Approach', *Journal of Development Studies*, 42(2): 178–199.
- Carter, M.R. and May, J. (2001) 'One Kind of Freedom: Poverty Dynamics in Post-apartheid South Africa', *World Development*, 29(12): 1987–2006.
- Chirwa, E., Matita, M. and Dorward, A. (2010) *Factors Influencing Access to Agricultural Input Subsidy Coupons in Malawi*. FAC Working Paper (unpublished), Brighton, UK: Future Agricultures Consortium.
- Chirwa, E. W., Zgovu, E. K. and Mvula, P. M. (2002) 'Participation and Impact of Poverty-Oriented Public Works Projects in Rural Malawi', *Development Policy Review*, 20(2): 159–176.
- CPRC (Chronic Poverty Research Centre) (2007) *Tackling Obstacles to Social Protection for Chronically Poor People*, CPRC Policy Brief No. 3, Manchester, UK: Chronic Poverty Research Centre.
- Davies, M. (2009) *DFID Social Transfers Evaluation Summary Report*, IDS Research Report No. 60, Brighton, UK: Institute of Development Studies, University of Sussex.
- Devereux, S. (2009) *Agriculture and Social Protection in Ethiopia: The Politics of Land and Graduation*. FAC Policy Brief No. 29, Brighton, UK: Future Agricultures Consortium.
- Devereux, S. (2010) *Dependency and Graduation*. *Frontiers of Social Protection Brief No. 5*, Johannesburg, South Africa: Regional Hunger and Vulnerability Programme.
- Devereux, S., Baulch, B., Macauslan, I., Phiri, A. and Sabates-Wheeler, R. (2006) *Vulnerability and Social Protection in Malawi*. IDS Discussion Paper 387, Brighton, UK: Institute of Development Studies, University of Sussex.
- Devereux, S., Dorward, A., Sabates-Wheeler, R., Poulton, C., Guenther, B. and Al-Hassan, R. (2008) 'Linking Social Protection and Support to Small Farmer Development', paper prepared for the Food and Agriculture Organisation, Rome, Italy.
- Dorward, A., Moyo, S., Coetzee, G., Kydd, J. and Poulton, C. (2001) 'Seasonal finance for staple crop production: problems and potential for rural livelihoods in sub Saharan Africa', DFID Policy Research Programme project 'Diverse income sources and seasonal finance for smallholder agriculture: applying a livelihoods approach in South Africa'. Wye: Imperial College.
- Dorward, A.R., Kydd, J.G., Morrison, J.A. and Poulton, C.D. (2005a) 'Institutions, markets and economic coordination: linking development policy to theory and praxis', *Development and Change*, 36(1): 1–25.
- Dorward, A.R., Kydd, J.G. and Poulton, C.D. (2005b) 'Beyond Liberalisation: Developmental Coordination Policies for African Smallholder Agriculture', *IDS Bulletin*, 36(2): 80–85.
- Dorward, A., Sabates-Wheeler, R., MacAuslan, I., Buckley, C. P., Kydd, J. and Chirwa, E. (2006) *Promoting Agriculture for Social Protection or Social Protection for Agriculture: Strategic Policy and Research Issues*. FAC Discussion Paper, Brighton, UK: Future Agricultures Consortium.
- Dorward, A. (2009) 'Integrating Contested Aspirations, Processes and Policy: Development as Hanging in, Stepping up and Stepping out', *Development Policy Review*, 27(2): 131–146.
- Dorward, A. and Chirwa, E. (2009) 'The Agricultural Input Subsidy Programme 2005 to 2008: Achievements and Challenges', paper presented to Malawi Government and DFID (Malawi), Lilongwe, Malawi: Malawi Government and DFID (Malawi).
- Dorward, A. and Chirwa, E. (2011) 'The agricultural input subsidy programme 2005/06 to 2008/09', *International Journal of Agricultural Sustainability*, 9(1): 232–247.
- Dorward, A., Kydd, J., Poulton, C. and Bezemer, D. (2009a) 'Coordination Risk and Cost Impacts on Economic Development in Poor Rural Areas', *Journal of Development Studies*, 45(1): 1–20.
- Dorward, A., Guenther, B. and Sabates-Wheeler, R. (2009b) *Agriculture and Social Protection in Malawi*. FAC Working Paper No. SP02, Brighton, UK: Future Agricultures Consortium.
- Dorward, A., Chirwa, E. and Slater, R. (2010) 'Evaluation of the 2008/09 agricultural Input Subsidy Programme, Malawi: Report on Programme Implementation', report presented to Malawi Government and DFID (Malawi), Lilongwe, Malawi: Malawi Government and DFID (Malawi).
- Giesbert, L. and Schindler, K. (2010) 'Assets, Shocks and Poverty Traps in Rural Mozambique', paper presented at the CPRC 2010 Conference "Ten Years of 'War against Poverty': What Have We Learned since 2000 and What Should We Do 2010–2020?" University of Manchester. Available at [http://www.chronicpoverty.org/uploads/publication\\_files/giesbertschindler\\_assets\\_mozambique.pdf](http://www.chronicpoverty.org/uploads/publication_files/giesbertschindler_assets_mozambique.pdf). Accessed 8 November 2010.

- GOM (Government of Malawi) (2007) 'The Agricultural Development Programme', Lilongwe, Malawi: Ministry of Agriculture and Food Security, Government of Malawi.
- Hashemi, S. M. and Umaira, W. (2010) New Pathways for the Poorest: The Graduation Model from BRAC, BRAC Development Institute, Dhaka. Available at [http://www.chronicpoverty.org/uploads/publication\\_files/hashemi\\_umaira\\_brac.pdf](http://www.chronicpoverty.org/uploads/publication_files/hashemi_umaira_brac.pdf) (Accessed 15 October 2010).
- Holmes, R. and Slater, R. (2008) Social Protection for Low Capacity Households in Zambia. Project Briefing No. 11, London, UK: Overseas Development Institute.
- Imperial College of London (ICL), Wadonda Consult, Michigan State University and Overseas Development Institute (2007) 'Evaluation of the 2006/7 Agricultural Input Supply Program, Malawi'. Report presented to. Malawi Government and DFID (Malawi), Lilongwe, Malawi: Malawi Government and DFID (Malawi).
- Maize Productivity Task Force (1997) 'The 1995/6 Fertiliser Verification Trial - Malawi: Economic Analysis of Results for Policy Discussion', (unpublished mimeo), report by Action Group 1. Lilongwe, Malawi: Ministry of Agriculture and Livestock Development, Government of Malawi.
- Matin, I., Sulaiman, M. and Rabbani, M. (2008) Crafting a Graduation Pathway for the Ultra Poor: Lessons and Evidence from a BRAC programme. CPRC Working Paper No. 109, Manchester, UK: Chronic Poverty Research Centre.
- Moser, C. and Felton, A. (2007) The Construction of an Asset Index Measuring Asset Accumulation in Ecuador. CPRC Working Paper No. 87, Manchester, UK: Chronic Poverty Research Centre.
- Moser, C. and Felton, A. (2010) The Gendered Nature of Asset Accumulation in Urban Contexts: Longitudinal Results from Guayaquil, Ecuador. Working Paper No. 2010/17, Helsinki, Finland; UNU-WIDER.
- Munthali, M. W. (2007) 'Integrated Soil Fertility Management Technologies: A Counteract to Existing Milestone in Obtaining Achievable Economical Crop Yields in Cultivated Lands of Poor Smallholder Farmers in Malawi', in Bationo, A., Waswa, B., Kihara, J and Kimetu, J. (eds). *Advances in Integrated Soil Fertility Management in sub-Saharan Africa: Challenges and Opportunities*. Springer Netherlands: 533–536.
- Naschold, F. (2009) "Poor stays poor" Household Asset Poverty Traps in Rural Semi-arid India', paper submitted to the Northeast Universities Development Consortium Conference 2009, Tufts University, November 7–8, 2009.
- Poulton, C. D., Dorward, A. R. and Kydd, J. G. (2010) 'The Future of Small Farms: New Directions for Services, Institutions and Intermediation', *World Development*, 38(10): 1413–1428.
- Quisumbing, A. and Baulch, B. (2009) Assets and Poverty Traps in Rural Bangladesh. CPRC Working Paper No. 143, Manchester, UK: Chronic Poverty Research Centre.
- Ricker-Gilbert, J. and Jayne, T. (2010) 'The Impact of Fertilizer Subsidies on Displacement and Total Fertilizer Use'. Stakeholder FISP Evaluation Workshop PowerPoint Presentation, May, Lilongwe, Malawi.
- Rodenstein-Rodan, P. (1943) 'Problems of Industrialisation of Eastern and Southeastern Europe', *Economic Journal*, 53(210-211): 202–211.
- Sahn, D. and Stifel, D. (2000) Assets as a Measure of Household Welfare in Developing Countries, Working Paper 00-11, Washington, D.C, USA: Center for Social Development, Washington University.
- SOAS (School of Oriental and African Studies), Wadonda Consult, Michigan State University and Overseas Development Institute (2008) 'Evaluation of the 2006/7 Agricultural Input Supply Program, Malawi', Report presented to. Malawi Government and DFID (Malawi), Lilongwe, Malawi: Malawi Government and DFID (Malawi).
- Slater, R. (2009) Cash Transfers: Graduation and Growth. Project Briefing No. 29, London, UK: Overseas Development Institute, London.
- Slater, R. and McCord, A. (2009) 'Social Protection, Rural Development and Food Security: Issues Paper on the Role of Social Protection in Rural Development', London, UK: Overseas Development Institute (Accessed 13 October 2010).
- Snapp, S., Blackie, M., Gilbert, R.A., Bezner-Kerr, R. and Kanyama-Phiri, G. Y. (2010) 'Biodiversity can support a greener revolution in Africa', *Proceedings of the National Academy of Science*, early edition: 1–6.
- Wood, G. (2003) 'Staying Secure, Staying Poor: The "Faustian Bargain"', *World Development*, 31(3): 455–71.

This **Working Paper** was written by **Ephraim W. Chirwa, Andrew Dorward and Mirriam Matita** for the **Future Agricultures Consortium**. The series editor is **Beatrice Ouma and Elaine Mercer**. Further information about this series of Working Papers at: [www.future-agricultures.org](http://www.future-agricultures.org)

The Future Agricultures Consortium aims to encourage critical debate and policy dialogue on the future of agriculture in Africa. The Consortium is a partnership between research-based organisations across Africa and in the UK. Future Agricultures Consortium Secretariat at the University of Sussex, Brighton BN1 9RE UK T +44 (0) 1273 915670 E [info@future-agricultures.org](mailto:info@future-agricultures.org)

*Readers are encouraged to quote or reproduce material from Future Agricultures Briefings in their own publications. In return, the Future Agricultures Consortium requests due acknowledgement and a copy of the publication.*