Risk Management in the Agricultural Sector
The Role of Agricultural Insurance

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Abstract

The agricultural sector is characterized by a strong exposure to risk. Just what farmers do to moderate the effects of risk is remarkably similar at all economic levels and throughout the world. The incidence of risk in agriculture is important to policy-makers at national and international levels. Fluctuations in producers’ incomes and the threat of catastrophic losses in particular can present difficult welfare problems for producers, national governments and the international community.

This paper is based on a review of the most recent literature on the subject. After providing an introductory remark on risk management strategies by farmers, it deals with current practices and new trends in providing insurance services both in developed and developing economies. The review is basically concerned with national policies in providing agricultural insurance rather than the detailed technical aspects of implementing various insurance schemes.

In the interlinked world of international trade and associated services the role of international conventions and agreements also bears on national and regional policies. For this reason the paper makes a brief reference to the WTO Agreement on Agriculture and its influence on national policy directions. This point deserves further attention and elaboration by national experts preparing Iran for its eventual membership of the World Trade Organization. Following a reworded adage that “history does not repeat itself if we learn from past experience”, the last section of this paper summarizes international lessons of experience. These lessons may be treated as a menu of options to influence on-farm and
national risk management strategies for the agricultural sector.

**Key words:** Risk management strategies, agricultural insurance, government support, private sector.
Risk Management Strategies by Agricultural Producers

Risk in agriculture is pervasive. Several risk and vulnerability assessments have shown that commodity price, yield (mainly due to weather) and health risks are the most important risks that rural households face. Social and personal risks include problems such as theft of crops and livestock, fire due to the negligence of farmers or their neighbours, family illness and loss of labour, and failure in the functioning of social and physical infrastructure. Human health problems, for example, emanating from HIV/AIDS is having devastating effects on the rural economy in parts of Africa. Risk is an unavoidable but manageable element in the business of agricultural production and marketing.

Changes in yields and output prices generate high variability in farming household income. This leads to complications in both short-term production and long-term planning. Agricultural producers are constantly faced with decisions on whether to expand or reduce production, whether to invest in the acquisition of new fixed and movable assets and whether to change the composition and intensity of agricultural inputs. The ultimate inescapable but very crucial decision by a farmer is whether to stay in farming or to exit. This last resort decision is certainly of great concern to policy makers. In the absence of labour-absorbing sectors in the rest of the economy the exodus of farmers out of rural areas can have dire socio-politico-economic consequences for many governments.

Downward production/price levels significantly reduce income in the short-term and there can be serious repercussions in the absence of effective risk management tools. The situation is further aggravated when downward trends are the result of systemic\(^1\) shocks to the whole sector (i.e. widespread within or across regions in a country such as; drought, frost, hail, flood, extensive pest attacks, earthquake). Such negative shocks can, for example, affect farmers’ ability to repay

\(^1\) As opposed to risks like fire and burglary, systemic (or covariate) risks are dependent risks, i.e. a lot of people suffer from a loss at the same time.
financial obligations and in the worst cases lead to massive welfare loss. In either case financial institutions dealing with the agricultural sector will experience some degree of destabilizing effect in the flow of their financial resources.

Risk management approaches can be distinguished according to whether undertaken before (i.e. mitigating) or after (i.e. coping with) the event. In order to mitigate the inherent risks common to agriculture, agricultural producers use an array of risk management strategies and techniques such as: (i) crop diversification; (ii) maintaining financial reserves; (iii) reliance on off-farm employment and income generation; (iv) advance sale of their produce; and (v) vertical integration whereby producers retain ownership or control of a commodity across two or more phases of production and marketing. Physical risk management techniques tend to achieve better results on higher value products which are grown under more controlled conditions (e.g. flowers and other crops grown in glasshouses) than broad-based field crops.

Not all physical and individual risk management techniques are one hundred per cent effective. There is a need for complementary services such as facilitating access of agricultural producers to financial markets. A comprehensive set of financial services would include both banking and insurance. Banking and insurance involve underwriting risks of individuals. Banking services enable the farmers to apply mitigating strategies through investment in fixed and variable assets and improvement in farm technology and farming practices. On the other hand insurance services facilitate coping strategies by farmers for specified risks - absorbing the shock of adverse events – in order to smooth out consumption and investment patterns. To alleviate losses
from natural hazards, some countries have also resorted to public sector interventions in an ad-hoc or organized manner such as establishment of drought relief funds, direct compensation, credit guarantee funds and full or partial debt forgiveness of farmers’ owing to official sources.

Overview of Current Practices of Agricultural Insurance

A- Developed Economies

The United States and the European Union (EU) are two of the world’s largest agricultural producing, consuming and trading entities. Farms in the United States and the EU have increased agricultural output over the decades as a result of technological change, increased efficiency, better skills in the management of farm operations and the positive impact of government programmes.

Insurance programmes vary from country to country in levels of government support and in the specific production perils covered, reflecting the variety of crops grown and growing conditions in various countries. In some countries government-subsidized insurance policies covering multiple perils are available for many crops, while in others
private insurers deal with a small number of perils (most often hail) for only a few crops.

Currently, a range of agricultural insurance options, covering production risks such as crop yield shortfalls, are available in the United States and Europe. An important distinction in the nature of coverage offered under alternative crop insurance plans pertains to the type of hazards that are insured against. Some forms of insurance are specific peril, meaning that only losses from a pre-specified peril are insurable. An important example is hail insurance. Crops are also insured against multiple causes of loss such as, for example, hail and fire. Finally some agricultural insurance plans provide multiple-peril\(^2\) coverage. For example, the US federal crop insurance programme is designed to insure yields of farm producers over an entire growing season on an all-risk basis. The United States of America has a long experience in public involvement in agricultural insurance. Congress first authorized federal crop insurance in the 1930s along with other initiatives to help agriculture recover from the combined effects of the Great Depression\(^3\) and the Dust Bowl disaster\(^4\). Since 1980 the principal form of crop loss

\(^2\) Multiple-peril contracts provide protection against most naturally occurring perils such as drought, excessive moisture, floods, hail, high winds and other natural catastrophes.

\(^3\) The Great Depression in the United States occurred from 1929 to 1941, with the worst part during the first three and a half years. Rising levels of unemployment and widespread poverty was a consequence of falling level of economic output. The situation was aggravated by the dust bowl phenomenon (see footnote 4) which led to large migrations from affected areas in mid-America to more prosperous places like California and from the rural south to the industrial north.

\(^4\) Lured by the promise of rich, plentiful soil, thousands of settlers came to the Southern Plains of the United States bringing farming techniques that worked well in the North and East. During the years when there was adequate rainfall, the land produced bountiful crops. But as the droughts of the early 1930s deepened the farmers kept plowing and planting and nothing would grow. The Plains winds whipped across the fields raising billowing clouds of dust to the sky that led observers to rename the region “the Dust Bowl”. The ground cover that held the topsoil in place was gone. The event is remembered for its grave environmental and economic impact.
assistance in the U.S. has been provided through the Federal Crop Insurance Program. It was intended to replace the disaster program with a subsidized insurance program farmers could depend on in the event of crop losses. Crop insurance was seen as preferable to disaster assistance because it was less costly and hence could be provided to more producers, was less likely to encourage moral hazard, and was less likely to encourage producers to plant crops on marginal lands. The Federal Crop Insurance Program is a public–private partnership administered by the Risk Management Agency (RMA) of the US Department of Agriculture. Crop insurance policies are delivered, serviced and underwritten by private insurance companies.

According to the US Department of Agriculture, program cost, design and effectiveness are concerns in current risk management policies in the U.S. In the case of crop insurance, the goals of broad availability, high participation, sound actuarial performance and low programme cost have proved difficult to achieve simultaneously. Availability,

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5 In the insurance industry, moral hazard refers to an individual’s change in behaviour after having taken out an insurance policy. The change in behaviour results in an increase in the potential magnitude and/or probability of a loss. To minimize moral hazard insurance companies generally use tools which include: deductibles or co-payment (the insured has to bear part of the loss); no claim bonus (premium discounts when over a certain period of time no claims are made); checks to verify whether the insured takes the precautionary measures agreed upon to prevent losses; and indemnification based on an objective index which cannot be influenced by the insured.

6 The Program considerably expanded over the years and in 2002 consisted of several insurance products available for over 100 commodities (crop and livestock). The range of risk management programs includes: Multiple Peril Crop Insurance (MPCI); revenue insurance; yield disaster payments; non-insured assistance program; emergency loans; emergency feed assistance; emergency conservation program; loan deficiency payment; marketing loans; market loss assistance payment. At least one crop insurance option is available in almost 3100 US counties.

7 One measure of actuarial soundness is the loss ratio, calculated as indemnities paid divided by total premiums collected. A loss ratio greater than one indicates that the program paid more in indemnities than was collected in premiums.
participation and actuarial performance improved through the 1990s but program cost increased at the same time\(^8\).

Commentators have questioned the efficiency, equity and cost effectiveness of the U.S. program. The total net government costs (total costs less premium paid by the producers) have ranged from US dollar 1 100 million and US dollar 1 700 million during the period 1995 to 1999 and were expected to stay at the same level in 2000\(^9\). Loss ratios\(^{10}\) have persistently been above one for most states and for all crops in the last 20 years. All in all, the system is not financially self-sufficient. In aggregate terms the indemnity/producer-paid premium ratio has averaged 1.77, implying that $1 of premium has bought $1.77 of expected indemnity benefit, on average. Those who participate tend to be large, highly educated and well capitalized farmers\(^{11}\).

While there is considerable variation in agricultural insurance programmes across Europe, they are generally smaller and more limited in scope than the United States. The European Union (EU) member states (that is, EU membership prior to enlargement of May 2004) have developed different systems to cope with risk exposure. Greece has a predominantly public system. The state, through its public insurance organization, collects contributions, administers the programme and


\(^{10}\) For a definition of actuarial soundness on which the loss ratio is calculated see footnote 7.

guarantees coverage of public losses. The role of the private sector is limited to schemes not covered by the public system. Spain and Portugal have public–private partnership systems where the state has a key role, providing both premium subsidies and re-insurance. The private insurance industry is integrated into the system, administering the whole programme and covering a share of the risk.

In Spain, for example, multiple–peril crop yield insurance is available through a public-private system. Coverage is available for a large number of crops including fruits and vegetables. Farmers choose the level of coverage and the perils to be covered; the government provides premium subsidies and reinsurance. An association of insurance companies, Agroseguro, has an administrative role in the programme and pools risk. Public support accounts for all costs including administrative costs. Participation in agricultural insurance by producers in Spain is high relative to many European countries; for example, about 70 percent of the acres planted to cereals are insured.

In contrast to Spain many other European countries have developed systems of agricultural insurance that receive less government subsidization and cover fewer crops. Perils covered are usually limited to a few named perils, such as hail and frost only, or coverage is limited to specific product qualities, such as sugar content for sugar beet and
starch content for potatoes. Germany and the Netherlands have agricultural insurance schemes that in most cases are limited to hail and plant disease coverage and are operated without subsidies.

Italy, France, Austria and Germany have systems of agricultural insurance which are predominantly private. The four countries, however, differ considerably as regards subsidies for the insurance premia. While Germany is not providing any premium subsidies, Italy grants considerable amounts of premium subsidies to the farming sector. In the United Kingdom, commercial coverage for crop insurance is available against certain national disasters including hail. The perceived lack of greater use of financial risk management instruments in the UK is attributed, *inter alia*, to the benefits received by farmers through the Common Agricultural Policy (CAP) in the form of inflated prices paid by the consumers. In addition the UK Exchequer paid over 2.6 billion Pound Sterling to UK farmers in 1999, against the aggregate income of 2.3 billion Pound Sterling of the agricultural industry in the same year12.

Even with heavy subsidies on crop insurance in the EU and the United States farmer participation is still not high enough to prevent governments from giving free disaster aid13. The magnitude of agricultural subsidies in high-income countries is reported to be more than US$ 300 billion in 2002, or roughly six times the total amount of aid to developing countries. The average European cow receives US$ 2.50 per day in government subsidies and the average Japanese cow receives US$ 7.5 in subsidies, while 75 percent of people in Africa live on less than US$ 2 per day14.

12 Risk Management in Agriculture, A discussion Paper prepared by the Ministry of Agriculture, Fisheries and Food, UK, January 2001,


14 Stern Nicolas, Senior Vice President and Chief Economist, the World Bank, Dynamic Development: Innovation and Inclusion, Munich Lectures in Economics, Center for Economic Studies, Ludwig Maximilian University, Munich, November 19, 2002.
B- Developing Economies

Many developing countries also have well-established public-private agricultural insurance programmes emulating the models from developed economies. However, their overall financial performance has been poor and in some instances far from popular with farmers. These problems are exacerbated with relatively higher numbers of smallholder farmers, weak institutional capacity, weak infrastructure and lack of information. Private insurers have not been able to cope with systemic\textsuperscript{15}, non-diversifiable risk in crop yields stemming from natural disasters affecting a large number of farms over a widespread region.

Traditionally, agricultural insurance received little support from international financing institutions. However, since the late 1990s – due to diminishing government subsidies – there has been renewed interest among policy-makers and external donors in using agricultural insurance as an important risk management tool. Index-based insurance, which is known for innovative approaches in this field, offers some hope in overcoming the problems of traditional approaches, especially for reducing transaction costs and issues related to asymmetric information\textsuperscript{16}.

The International Finance Corporation (IFC) of the World Bank group is working towards assisting developing countries in having access to the newly developed weather markets. In this role IFC plans to take a financial interest in these markets, increasing the likelihood of their success. A specially funded project was also awarded to a working group within the World Bank. This project has investigated the feasibility of developing weather-based index contracts for four countries: Ethiopia, Morocco, Nicaragua and Tunisia. Since the project began, several of the professionals involved have begun similar

\textsuperscript{15} For a definition of systemic risk see footnote 1

\textsuperscript{16} Asymmetric information relates to the problem that the buyer of insurance and the insurance company do not have the same information as regards the probability of losses occurring. This can lead to what is termed as adverse selection whereby those who are more at risk buy more insurance. The other consequence of asymmetric information is a change in the behaviour of the insured known as moral hazard (see footnote 5).
investigations in other countries including Argentina, India, Mexico, Mongolia and Turkey. There is already growing international interest in weather insurance.

Weather-based index contracts establish indemnity payments based on the occurrence of a pre-specified climatic event(s) such as temperature, rainfall and wind in a pre-specified area. Area-specific yield-based index contracts establish indemnity payments based on average area yield in a pre-specified area. This area will have defined geographic boundaries and the contract is set up in relation to a specified average area yield. If the average yield for a given agricultural product falls below a certain level, indemnity payments are triggered to the holder of the contract. Most of these new instruments are tied to the performance of some statistic (index) where the probability distribution can be estimated and the event measured. Technical innovation such as weather measuring satellites, satellite imagery, ground level real time weather monitoring and early warning computer models have been deployed to ameliorate some of the high cost barriers to agricultural insurance. It should be noted that various area-based insurance schemes have been offered in Canada (Quebec), Sweden, India and (since 1993) in the United States.

For example, a pilot programme in India shows how non-irrigated farms in a developing country can protect their livelihood. One of India’s largest micro finance institutions, BASIX (a non-government organization), having worked on crop insurance pilot projects for a few years, launched India’s first rainfall insurance programme in July 2003. BASIX operates through its KSB Bank (Krishna Bhima Samruddhi Local Area Bank). This experimental scheme is implemented in Mahabubnagar at the eastern end of Andra Pradesh. The district has experienced three successive droughts during the last years. With support from the World Bank and IFC, Indian insurer ICICI Lombard conceptualized and modeled the “rainfall insurance” policies and sought out reinsurance. The KBS Bank bought a bulk insurance policy from

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17 For a comprehensive account of index-based insurance see Jerry R. Skees, in Risk management Challenges in Rural Financial Markets: Blending Risk Management Innovation with Rural Finance, prepared for presentation at: Paving the way forward for Rural Finance, An International conference on Best Practices, June 2-4 2003, Washington DC. The paper is also posted at jskees@globalagrisk.com
ICICI Lombard and sold to around 250 individual farmers policies for small, medium and large groundnut and castor farms. Small farmers are defined as households farming less than 2 acres, medium–sized farmers farm between 2 and 5 acres, and large farmers farm more than 5 acres.

The Mongolia Sustainable Livelihood Project was financed by the World Bank to reduce vulnerability of rural livelihoods in a manner that can be scaled up. Among other objectives the project targets natural disasters risk including drought and *dzud* (winter disaster) through an integrated approach. It includes risk forecasting and contingency planning such as an index-based livelihood insurance scheme, meteorological monitoring and an early warning system. An index-based livestock insurance scheme is being developed on the basis of which eligible participating private insurance companies would offer insurance to individual herders, herding households and juridical persons owning livestock to cover systemic risk arising from *dzud*, drought or other weather–related events. The index is based on objective, third party verifiable indicators such as weather data and livestock mortality rates. Indemnities would be triggered once the index exceeds a certain threshold for a given locality.

In 2001, the Mexican agricultural insurance programme (Agroasemex) used the weather markets to reinsure part of their multiple crop insurance programmes. By using weather indices that were based on temperature and rainfall in the major production regions, a weather index was created that was highly correlated with Mexican crop insurance loss experience. This method of reinsurance is reported to be more efficient than traditional insurance. In collaboration with the International Food Policy Research Institute (IFPRI), the World Bank has conducted a feasibility study in Morocco to test rainfall-based insurance. Based on the positive results of this study recommendations have been made to launch rainfall insurance contracts on a pilot basis in a few selected provinces of Morocco.

A potential disadvantage associated with index-based insurance plans relates to the fact that indemnity payments may not be perfectly correlated with the individual loss and thus there may be what is known
as “basis risk”. As a result, an individual farmer may suffer a loss and not be eligible for an indemnity payment. The degree of correlation between an individual farmer’s yield and the index that forms the basis of the area-wide plan is a key factor in determining the extent to which an individual’s yield risk is covered by the insurance plan.

**Shifting Strategies**

The WTO (World Trade Organization) replaced GATT (General Agreement on Tariffs and Trade) in 1993. Its aim is to lower trade barriers among nations in favour of a more open international trade system. WTO’s Agreement on Agriculture basically aims at fewer subsidies, lower guaranteed prices and lower tariffs. These essential measures are expected to boost international trade in agriculture. These measures will entail more exposure to unpredictable competitive markets and harder economic conditions for the farming communities particularly in the high-income countries. As a result farm level and national risk management strategies are being re-considered to comply with the new realities of international economic trends and policies.

In fact state intervention is already on the decline in agriculture worldwide following the wave of liberalization policies, which has influenced all sectors of economic activities. However, agriculture is more sensitive than other sectors. Even the highly industrialized countries rely on agriculture to feed their populations. Unsatisfactory performance of the sector will have adverse effects on the socio-economic conditions and – not least important – on the environmental balance needed to maintain long-term sustainability.

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18 A basis risk occurs when an insured has a loss and does not receive an insurance payment sufficient to cover the loss. It also occurs when an insured has a loss and receives a payment that exceeds the amount of loss.
productivity. Neglect of the agricultural sector can lead to the loss of traditional agricultural expertise and the most valuable local knowledge and technology. Accordingly, governments are keen to offer at least some degree of protection of their traditional agriculture to maintain a vibrant agricultural sector and to check acceleration in the trend towards urbanization.

As a result national risk management strategies have and are being adjusted to comply with the GATT/WTO framework. Included in these adjustments are income protection, assistance in the event of natural catastrophes and income subsidies, which are independent of production and yield. The EU has, therefore, formulated “Agenda 2000 and its successor Agenda 2003” for agricultural policy reforms, shifting away from price support to direct payment. It is very encouraging to note that some research work in Iran has advocated launching of income insurance schemes for selected commodities on a pilot basis. Such experiments, if successful, could be expanded to deal with risk management in Iranian agriculture. Such a tool could also be used as an instrument for compliance with WTO requirements – once Iran joins this organization.

Moreover, as the European Union reduces price support for some commodities and contemplates further reforms, its producers and policy makers are relying more on risk management instruments in agricultural commodity exchange markets. Many of the new European agricultural futures and

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20 Trading in futures enables shifting risk from a firm that desires less risk (the hedger) to someone who is willing to accept the risk in exchange for a profit. A
option markets were introduced after reductions in price supports for major commodities resulting from successive reforms of the Common Agricultural Policy and implementation of the WTO Agreement on Agriculture. The initial steps to launch a limited agricultural commodities market in the Tehran Stock Exchange should be viewed as a welcome development as it might pave the way for more diversified risk management strategies.

Recent innovations in the capital markets could provide alternatives for dealing with natural disaster risks. These innovations could potentially make insurance for natural disasters more affordable and accessible even in developing countries. The common mechanism is to share catastrophic risk with another insurance entity by what is known as reinsurance. The local insurance provider pays a premium to the global reinsurer who agrees to pay for all losses beyond a certain threshold. As long as the global reinsurer has a mixed portfolio across the world, then what were correlated risks at the local level becomes independent risk at the global level.

hedger can be a farmer, a trader or a processor, who wants to “lock in” a price for a commodity he is going to sell or buy on the spot market at a later stage.

21 An option gives the holder the right (without incurring obligation) to take a futures position at a specified price (called the “strike” price) at a specific time. As opposed to futures, options giving the right to sell a futures contract do not constrain potential profits resulting from increasing prices. Such options give security against the implications of decreasing prices. The costs of achieving this security are reflected in the price to be paid for the option.

22 Information on inclusion of agricultural commodities in the Tehran Stock Exchange is based on the economic news of BBCPERSIAN.com

23 See also article by Jerry R.Skees, referred to in footnote 17.
Lessons of Experiences; Opportunities and Challenges for Developing Economies

The existing literature on agricultural insurance covers a range of subjects with numerous examples, studies and evaluation of current practices in the United States and to a lesser extent the western European countries. Developing country experiences are usually presented to international or regional conferences and are largely descriptive material with limited analytical content. Analytical work is mostly found in professional journals with a significant theoretical orientation. There are also studies sponsored by international organizations with specific policy advocacy; in some instances they are more prescriptive than diagnostic with uniform recommendations as though “one size fits all”.

By and large studies by US scholars do not support heavy government involvement in agricultural insurance on the grounds of financial sustainability and distribution of benefits to the vulnerable groups. It is argued that heavy government involvement in agricultural insurance is conducive to the operation of pressure groups and economic rent seekers. Commentators on US crop insurance also maintain that the presence of the government in the market is sufficient to discourage participation of the private sector. Multiple-peril crop insurance is particularly pointed out as being unattractive to private insurers as it is difficult to clearly differentiate the impact of natural hazards on crop losses from those of poor management. Looked at from a different perspective some have argued that multiple-peril crop insurance only covers variations in natural hazards and not the price risk which particularly affects smaller farmers.

Developing economies are at differing stages of building modern risk management institutions and related financial instruments. The degree of success has been influenced by various factors largely related to the macroeconomic environment and the associated rules and regulations for its support. The main pre-requisites for the development of modern tools are the prevalence of a market driven economic system, operation of sound financial markets and the existence of a strong regulatory framework to guide integrity of contracts and to ensure implementation of contractual rights and obligations. While national development strategies of the last twenty years have focused on market –based
reforms, they have often failed to establish the institutional infrastructure and policy framework to make markets work. Experience of the fast advancing economies shows that government and markets have been complementing each other; each providing a check on, and facilitating the functioning of the other.

Any government insurance programme must be considered within the broader political economy of the country. The model of crop insurance in the majority of developed and developing economies involves central government providing a combination of: (i) subsidies on premium to farmers; (ii) operational subsidies to private insurers to cover some of the high administrative costs associated with agriculture and (iii) subsidized re-insurance. Since many governments in developing countries are confronted with a recurrent budget deficit and are concerned with managing inflationary pressures, their agricultural insurance programmes will have to be carefully planned and targeted.

Targeted operation necessitates differentiation of economic, financial and welfare aspects of insurance schemes so that they can be more effectively implemented through their respective instruments and the pool of expertise. For example, insurance schemes could be designed to encourage innovation in agriculture, support specific national agricultural programmes, protect financial institutions from excessive risks in their lending portfolio and help the vulnerable groups. Each of these schemes requires specific devices and clearly earmarked financial allocations. Variations in ecology may also necessitate location-specific policy instruments or allowance for adjusting national policies at the regional level. This latter point may be of particular relevance to large countries like Iran endowed with diverse climatic conditions. Equally important for Iran would be availability of pre-planned schemes with the readily accessible financial resources to deal with the consequences of the losses to local agriculture in the event of earthquakes.

While a government insurance program might be relatively simple at the outset, changing demands and the need to respond to program deficiencies are likely to increase their complexity and decrease transparency over time. Some of the systems of crop insurance are so complex that few people understand them fully. Complex systems of agricultural insurance are likely to dissuade farmers from participating
and are more prone to misuse and mismanagement. Another point to bear in mind is that even if an insurance system benefits from considerable public support it cannot be expected that the take-up rate will be universal. The reason is that farmers’ needs vary widely and a system can never be tailored to meet the needs of everyone. Therefore, communication means will have to be developed by responsible authorities to explain options and limitations in order to manage the expectations of the farming community.

Despite considerable criticism leveled against government involvement in agricultural insurance the majority of studies acknowledge, explicitly or implicitly, the important role and responsibility of the government particularly in situations of systemic risks. For a system of agricultural insurance to be comprehensive (in terms of diversity of services and participation) state involvement is necessary since private companies alone do not have sufficient incentive nor the means to provide such services. Moreover, government-backed insurance programmes have served as a substitute means of transferring payments to farmers and maintaining farm income levels in a post-Uruguay Round of Trade Negotiations policy regime. This is in response to the agreement on agriculture whereby its signatories are expected to reduce and phase out price support to farmers.

As is the case in the US and many European countries, the model of public-private partnership offers a good starting point to encourage participation of private insurers. This could begin with administrative decentralization whereby the private operators act as retailers of government insurance services. Obviously the terms and conditions of such a partnership will have to be defined in each country given the prevailing circumstances and in a manner that it is not completely risk-free for the private insurers. Otherwise it is difficult to expect the private sector not to become an extended arm of the government.

A general outline for such a partnership will involve defining eligible insurance contracts that the private sector might conclude with prospective clients (scope of operation). Concurrently rules for risk-sharing and the thresholds that trigger financial contribution of each party will have to be determined. Private companies should be expected to retain a percentage of premiums in the form of cash and/or near-
liquid assets to meet a portion of the ultimate losses. To observe
compliance with financial rules would necessitate regular and thorough
audit of the accounts by independent auditors tailored to the
requirements of the sponsoring government institution (s).

In public–private partnership, in addition to allowing sufficient degree
doing risk for the private sector, it is necessary to encourage competition
among private companies in order to: effectively monitor risky
policyholders, carefully scrutinize claims of questionable losses and
improve their own practices and performance. This calls for putting in
place an effective monitoring system with simple monitoring indicators.
For developing countries, it is difficult to envisage operational assistance
to private companies as it would be rather cumbersome to monitor the
use of such resources. It is, however, possible for the government to
assist in the development of human resources by supporting training
programmes. Such programmes will enhance national capacity
irrespective of the lateral movement of the trained professionals within
national boundaries.

In principle, those farmers with the riskiest yields should pay the largest
premium. However, individual farm data are almost always missing.
Consequently, aggregate data can often be used either to develop
individual insurance coverage, where the individual indemnity depends
on individual loss, or indexed-based coverage, where the individual
indemnity is based on some indices correlated with the individual loss.
Area yields and weather parameters are cases in point. As mentioned
earlier in this paper, index –based insurance schemes are being
implemented and/or experimented within a number of countries.
Exchange visits with selected countries could be organized through
international organizations or through bilateral arrangements. To induce
more financial stability in the emerging insurance market in developing
economies, multi-year contracts could be considered with well-
established agricultural enterprises. This approach can more readily be
adopted if agricultural insurance is being implemented within the
purview of an agricultural credit institution as the business of clients
with financial institutions is normally on a multi-year basis.

Insurance contract designs are driven by the availability of data. It is
costly for private insurers to assemble a sufficiently adequate database to
enable new insurance programmes to be put on a sound footing from an early stage of their operation. To ameliorate high start up costs there may well be a role for the public sector in promoting and maintaining adequate data sources. The insurance of commercial crops, especially those that involve substantial cash investment for their production and require a well-established marketing and processing channel, is generally more attractive and particularly encourages participation of private insurers. Due to high transaction costs, small and semi-subsistent farmers may not be so attractive to private insurers as prime clients.

The most formidable task confronting governments in developing countries is providing services to increase productivity and the well-being of the small and semi-subsistent farmers. The problem largely arises not so much because this category of agricultural producers are inefficient but from their sheer number and geographical dispersion. Apart from targeted relief operations in the event of natural hazards, a plausible approach for semi-subsistence farmers would be to simultaneously enhance their resilience to cope with risks by improving their own traditional risk coping strategies.

In other words, the use of financial instruments such as agricultural insurance should not be seen as a substitute for addressing fundamental technical and farm management problems of smallholder producers. An obvious example in drought-prone areas is development of drought-resistant seeds for planting and training farmers in the associated crop husbandry practices. This can be supported by the installation of early warning systems to advise farmers on the time of planting and related cultural practices. Such efforts ought to be supported by improvements in soil and water management, small-scale irrigation systems and technical imperatives for watershed management.

In addition to technical considerations, it is important to fully understand the social and economic risk management strategies of small farmers. The local knowledge thus acquired and documented will form a valuable heritage of national agricultural systems as well as an input to formulate the related technical and policy options. Based on local knowledge and risk coping strategies governments can then facilitate the effectiveness of farmers’ own efforts. In the Iranian situation, for example, the “Tagha’vi” system was practiced in some areas as self-help informal
groups to provide mutual assistance to group members in adverse situations. The fundamentals of this practice were very much akin to the concept of mutual funds whereby members both contributed to and benefited from a common group fund. Local initiatives of this type may provide signposts for possible replication and up scaling. As an incentive for the mobilization of local resources, the government might consider providing matching funds to facilitate their take off and proliferation.

Another example is the traditional practice of income diversification by farmers by relying on off-farm income generating activities. Development of micro-enterprises and small-scale industries are classic cases in point. Farmers have been using this strategy to boost incomes in good years and act as a cushion in adverse seasons to enable them to ride over unexpected shocks in their farming income. In several countries, particularly in Asia, this has been pursued by pro-active government policies such as facilitating access of rural entrepreneurs to financial resources, skills training, appropriate technology and raw material.

Mature practices can be found in India, Bangladesh and elsewhere. To support generation of off-farm income, fairly elaborate micro finance institutions have been operating in these countries. These institutions are mainly operated by non-governmental organizations (NGOs) and are supervised by the monetary and banking authorities of their respective countries. Incidentally once a well functioning rural micro finance institution is in place it is possible to consider insurance schemes even for small and semi-subsistence farmers benefiting from integration of insurance with finance and the concomitant reduced transaction costs for the delivery of both services.

No matter how well a system is established, be it agricultural insurance or other risk management devices, there is always a need to install built in mechanisms to monitor progress and to carry out occasional evaluations. This is particularly true when new and innovative ideas are being tried out. Evaluations may be undertaken by the agencies implementing a programme (self-evaluation). However, to obtain a more objective analysis and better transparency it is always advisable to assign evaluation work to independent parties outside the administrative jurisdiction of the implementing agency.
Evaluations should be designed to answer two basic questions: (a) are we doing the right thing? and (b) are we doing it right? Development literature has abundant conceptual and real life examples of monitoring and evaluation (M&E). Use of the Logical Framework (LogFrame) technique as a management tool for the design and implementation of new ideas is suggested for laying the foundation for a meaningful M&E system and subsequent evaluation of insurance programmes. The Logframe approach was developed so that planners could organize and build consensus on the hierarchy of objectives among stakeholders, identify verifiable indicators, monitor progress and carry out periodic evaluations against the stated objectives during and after the implementation of a programme.

Menu of Options

To recapitulate the basic arguments discussed in this paper, it is possible to draw up a menu of options to enhance the risk management strategies of the agricultural sector as follows:

- Due to the strong exposure of agriculture to natural hazards, governments will have to be involved in risk management strategies as part of their wider strategic framework for agricultural development. This has and is still practiced in both developed and developing economies.

- Participation of the private sector could be facilitated by public-private partnership. Initial support from the government would be necessary through bearing some initial costs such as collection of basic data, training of staff and provision of risk sharing facility such as reinsurance.

- In addition to risk sharing mechanisms there will have to be sufficient number of private companies to ensure competition so that a single company or collusion of a limited number of companies cannot corner the market.

- Depending on the priorities of a government, insurance schemes are launched to serve a variety of objectives including economic, financial
and welfare aspects of agricultural producers. Prior to allocating insurance schemes to the private sector there is need to define the objective and prospective clientele of each scheme. Clear differentiation of objectives and areas of responsibility would make it possible to monitor and assess the outcome of various arrangements between the government and private sector.

- Limited or single peril insurance contracts and capital-intensive agricultural enterprises are more conducive to the participation of the private sector for ease of differentiating the causes of damage and administration. It is also possible to expect the private sector to offer services to programmes of special interest to the government provided that prior agreements are reached on the risk sharing mechanism. In any event a major prerequisite is the existence of a strong regulatory framework to safeguard the rights and obligations of each party (including government, private sector and policy holders).
- New initiatives in other countries such as index-based insurance deserve attention for possible replication/adaptation. Transfer of knowledge and know-how from these schemes could be arranged bilaterally with host countries or through tri-partite arrangements with international organizations.
- Extensive training and awareness-building are required to inform agricultural producers of various insurance packages in order to make agricultural insurance a demand-driven exercise and to manage expectations of benefits derived from insurance schemes.
- The WTO Agreement on Agriculture contains various measures for compliance by member states. Therefore formulation of new, and modification of existing, agricultural insurance packages should be aligned with other agricultural policies in order to balance Iran’s overall position in its negotiations with WTO in the event of Iran’s ultimate joining that organization.
- Financial instruments such as agricultural insurance should not be seen as a substitute for addressing fundamental technical and farm management problems particularly those for smallholder producers. As part of the national heritage traditional risk-coping strategies of the farmers will have to be studied and strengthened in order to increase their resilience and to reduce the burden on the government in the event of widespread disasters.
New and innovative programmes can be better assessed if they contain built-in mechanisms to objectively evaluate their progress and impact. The use of the Logical Framework (LogFrame) technique offers a possible tool for achieving this objective.

Bibliography

A History of Crop and Livestock Insurance of Iran, Celebrations of the 20th Anniversary of Agricultural Insurance in the Islamic Republic of Iran (undated, in English).


Food and Agricultural Organization (FAO), Third expert consultation on crop insurance, Rome, Italy 5-7 May 1992.


International Fund for Agricultural Development (IFAD), Rural Enterprise Policy, 2003.


