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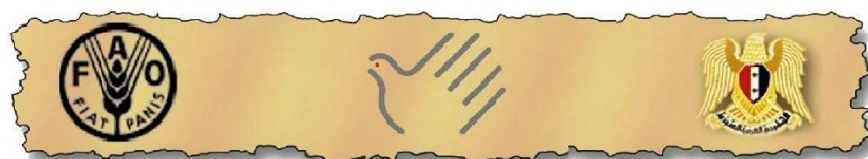
TRAINING MATERIALS

Agricultural Policies in Developing Countries

Carlo Cafiero

With the support of

Project GCP/SYR/006/ITA - Phase II



Food and Agriculture
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Ministry of Agriculture
and Agrarian Reform

Foreword

The present volume is part of the series “Training Materials”, published by the National Agriculture Policy Center (NAPC) with the support of the FAO Project GCP/SYR/OO6/ITA. The series includes notes and handouts produced as part of the training activities carried out at the NAPC by the international experts recruited by the Project. Even though they cannot be considered as comprehensive textbooks, the NAPC decided to make these materials available for a wider public, considering them as a useful reference for the study and the practice of agricultural economics and policy analysis.

The FAO Project, which is generously funded by the Italian Government and executed in close coordination with the Syrian Ministry of Agriculture and Agrarian Reform (MAAR) has been supporting the establishment of a cadre of professional agricultural policy analysts for the NAPC and other institutions involved in the Syrian agricultural policy making process. This undertaking encompassed an intensive training activity articulated over two programs involving, in a five year period, a total of about 130 officials of the MAAR. Each training program comprised a set of intensive courses to provide theoretical background and familiarize with issues, concepts, methods and tools needed to carry out policy analyses. The set of courses was completed by on-the-job research experiences on issues of relevance for Syrian agricultural development, whose results have been published by the NAPC’s Working Papers series. The formal training programs were also accompanied by seminars, shorter intensive courses and participation in research activities, which are still on-going as part of NAPC’s staff capacity building process.

Training was part of a wider undertaking in institutions’ building for agricultural policy analysis. Indeed, the Project has been providing support to the institutional development of the NAPC, its technical capacity to analyze, formulate and monitor agricultural policies, and its capacity to maintain and develop a comprehensive set of statistical information for the economic analysis of policies (the Syrian Agriculture Database).

This volume presents part of the training material of the program of study on “Agricultural Policies in Developing Countries” delivered by Dr Carlo Cafiero. The objective of this training material is to acquaint the reader with the phenomena, problems, concepts and present setting of agricultural policy making in developing countries. It provides a comprehensive conceptual framework and an overview of country experiences concerning agricultural policy design, analysis and implementation in developing countries. Furthermore, it introduces the reader to the use of standard analytical tools (namely PAM and graphical partial equilibrium analysis), applying these tools to the concepts illustrated.

Available at NAPC, the training material also includes in electronic format the slides of the seminar delivered by Dr Carlo Cafiero on *storage and commodity market equilibrium: implications for policy analysis*.

Damascus, December 2003

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Chapter 1 - The role of agriculture in the economy

Agriculture is broadly conceived as the set of activities that use land and other natural resources to produce food, fiber and animal products that can be used for direct consumption (self-consumption) or for sale, either as food or as input to the manufacturing industry.

Forestry, fishing and hunting are usually included in the agricultural sector.

Agriculture is a fundamentally different production activity than manufacture (what we call also industrial production). What makes it different is the unavoidable dependence on the natural environment for production. Production in agriculture is mainly the result of biological phenomena, whose evolution is mainly out of the direct human control. Crop production, for example, takes time and there is very little men can do to change it, given that the vegetative cycle of many crops is defined by the natural cycle of daylight and temperature. Also, animal production requires the growing cycle of livestock, which is pretty much defined by nature.

This timing of production and its dependence on natural phenomena has consequences on the economic outcome of the production that deserve to be underlined. First, agricultural production is sensibly more uncertain than that in any other sector of the economy. Input in the production process need to be committed well in advance, and there is little or no power for farmers to reverse the decisions on the inputs when they discover that output production may be either less than expected or valued less of what it was supposed to be. Only if agricultural products can be stored there exists some flexibility, for example, in avoiding marketing the product in periods of low demand. And even in such cases, storing always present an additional cost. (Compare this with the industry, where production is carried on according to cycles which do not depend on nature and which can be tuned according to the evolution of demand.)

Second, the schedule of phases in the vegetative or animal growing cycle does not permit workers' specialization, as it is possible, for example, in industrial production.

In other words, especially in family farms (see below), workers need to move from one task to another during the year, and they cannot exploit the increase in productivity of labor common of the industrial production activity, when workers can specialize in one single activity.

Moreover, there may be period of the year in which the requirement of labor is below the family's supply, and this may have negative consequences on the overall productivity of agricultural labor, especially when employment opportunities outside the farm are limited or inexistent¹.

¹ A discussion of the characteristics of agricultural production relevant to the policy can be found in: N. Georgescu Roegen, *The Agrarian Economy*.

1.1. The contribution of agriculture to the whole economy

The relative weight of the agricultural sector in the economy varies from country to country and in general is between 3 and 40 % of the total value of production, and may count for as much as 70% of total labor.

Why there is such a relationship between the value of agricultural production and the level of income? The answer is linked to the so-called Engel's law according to which: "*the poorer a family is, the greater the proportion of the total expenditure which must be used to procure food*".

Whereas at very low income levels, all of the income must be spent in providing for basic needs (such as food, basic clothing and housing), as personal income increases, a smaller proportion of it will be devoted to basic needs, and part of it will be diverted to more luxurious goods (for example education, communication, transportation, personal care, travel, etc.)

One other interesting observation is that the incidence of agriculture in terms of labor force is always higher than the incidence in terms of GDP. (*What does that mean in terms of the relative level of income for agricultural laborer?*)

Agriculture is more important than what might appear from the figures in the previous table, even for developed countries. The reasons are to be found in the role that agriculture plays within the broader economy. It is only when agriculture is able to provide abundant food for the entire population of a country that the country can start a process of economic development. Moreover, modern agriculture is usually an important component of the demand for industrial products and for other services. Finally, agriculture provides inputs to the food industry.

When considered in its entirety, the *agribusiness* weighs for more than 30 percent even in highly industrialized economies.

Table 1. Relative weight of the three main sectors in the economy

Measure	Bangladesh	Low-Income Economies	Lower Middle-Income Economies	Upper Middle-Income Economies	High Income Industrial Market Economies
Average GNP per capita (1982 dollars)	140	280	840	2,490	11,070
Proportion of GDP by sector					
- agriculture	47	37	23	11	3
- industry	14	32	35	41	36
- services	39	31	42	48	61
Proportion of labor force by sector					
- agriculture	74	72	56	30	6
- industry	11	13	16	28	38
- services	15	15	28	42	56

Source: Stevens and Jabara, tables 3.5 and 3.6 pages 50-51. Data from the World Bank's World Development report 1984.

When studying agricultural policies, it is very important to understand the characteristics of the *agricultural system*. How production is organized in terms of number and size of farms, availability of infrastructures, technology level, institutional settings, marketing arrangements, availability of reliable outlets for farm's resources, etc. (See Stevens and Jabara, table 4.1 page 86 - see also the project report entitled: *Country Profile: the state of food and agriculture in Syria*.)

The reason why it is so important to understand the structure of the agricultural sector, is that the same policy action can have very different effects depending upon how the production sector is organized. For example, if there are limited infrastructures for processing and transporting vegetables product, high prices for vegetables may not be sufficient in effectively stimulating vegetable production.

Two main aspects are common to many traditional agricultural systems across the World:

- family production organization
- size of operations

Family production organization (peasant organization) means that agriculture gives employment opportunities to members of the household, which may or may not have other employment opportunities available to them, and the output of the production process can be self consumed before being destined to the market for sale. You have probably already seen the characteristics of agricultural household production in one of the previous courses, so it is not necessary to repeat them here. What is relevant from the point of view of this course are the implications that household production can have for policy:

- when self-consumption is a relevant share of production, output price policies may be less effective in enhancing farmers' income
- economy wide policies or industrial sector policies aimed at developing other sectors, such as industry or services, may have the indirect effect of releasing labor force from the farm sector and thus increase incomes for those who remain
- reaction to price policies may be different by peasants when compared to fully commercial farms (see Ellis, pages 13-14)

The second point I wish to underline is that traditional agriculture usually operates through small size farms. Dimension of the operation can be measured in several ways: amount of land, value of production or number of labor units employed. While the amount of land per farm or the value of total production per farm varies, the number of labor unit employed is quite constant over time and space, i.e., in different regions of the world and in different periods in time.

Small farms mean that the agricultural sector is highly competitive. In other words, farmers usually cannot exercise market power to increase prices or profits, and this have strong consequences on how the rents generated by high consumption prices may be appropriated by the various actors in the food marketing chain.

1.2. Agriculture and economic development

Agriculture plays a crucial role in the development of an economy. In the past, this role has been incorrectly intended simply as that of a provider of surplus labor and capital to the industry, which was seen as the real engine of economic development.

This view was supported by the observation that progress in agriculture productivity could allow workers to leave the sector without penalizing agricultural production. Moreover, at early stages of economic development, agricultural products are the only products that can be exported to earn foreign exchange needed for investments in the industrial sector.

Trying to accelerate the growth of the industrial sector has led to an implicit taxation on the agricultural sector, and the level of real prices for agricultural product have been declining to the point that, today, many countries are struggling to try and arrest such decline.

Sometime agricultural incomes have declined to the point that farmers have been brought into poverty conditions.

The experience of many countries has now shown that such a strategy to economic development is usually inferior to a different approach to economic development, where agriculture takes central stage.

In fact, by directly supporting agriculture growth, the entire economy can benefit, first, towards alleviation of poverty in both the rural and urban sectors, and second, because income in rural sector has a higher multiplier than income in the urban sector, given the higher propensity to

spend of rural populations and the composition of their expenditure, oriented towards domestic products (Norton, page 1-9)

This explains the emphasis that virtually all countries, both developing and developed, put today on their agricultural policies.

A successful agricultural policy, however, needs to be carefully designed and implemented to be effective. To do so requires a sound understanding of the objectives that such a policy wants to pursue and of the constraints that the sector faces. Only with such knowledge it is possible to choose the appropriate instruments that constitute the actual policy.

In this course, you will learn how to analyze agricultural policy. The main objective will be that of providing you with the analytical skills required to understand the effects of various policy interventions.

Chapter 2 - Economic analysis of public policies

2.1. The neoclassical view of market economies

The extent of public intervention in agriculture may vary from direct control of the means of production, as in centrally planned economies, to indirect intervention via the market, by creation of incentives. We will discuss mainly of policies as types of state intervention in the market economy.

What we mean by market economy needs for some clarification. The “market” is a broad concept that includes the activities of purchase and sale transactions of commodities which together leads to price formation, therefore, it has not to be intended as the actual physical place where the transactions is realized. Market economies are those where prices are the result of the interaction of production and consumption decisions of households and individuals, rather than being institutionally set values.

Nevertheless, there are large numbers of ways in which the government can affect, and in some ways effectively set the price levels even in market economies. We will discuss some of them and will see how many of those policies will have unavoidable side effects, in terms, for example, of public expenditure or of inducing a difference between the price paid by consumers and that received by producers.

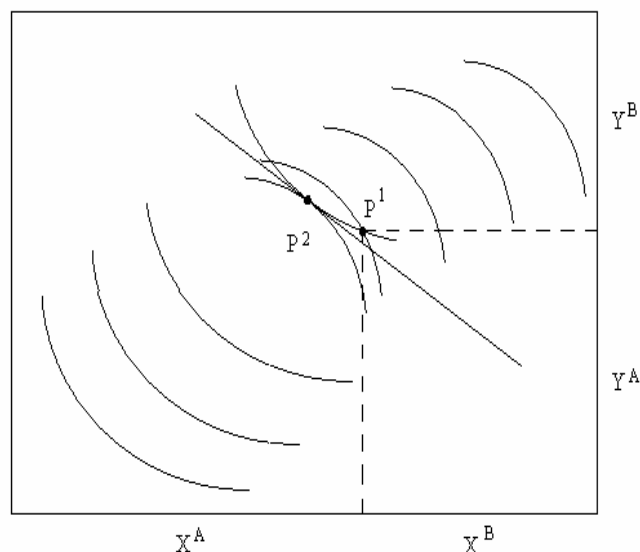
Consider a very simple economy, made of just two individuals, say A and B. Each of them is endowed with a given amount of one of two goods, X and Y, so that X^A and Y^A are the endowments of individual A, and X^B and Y^B are the endowments of individual B.

The total wealth of this economy will thus be given by the quantities $X = X^A + X^B$, and $Y = Y^A + Y^B$.

Let us assume also that the two individuals have preferences over the two goods, defined by the respective utility functions $U^A(X,Y)$ and $U^B(X,Y)$. How can we describe a possible equilibrium of this economy? In other words, if these people are left free to exchange their possessions, will they find an agreement on a rate at which to exchange, say, good X for good Y, (that is, a *price* for Y in terms of X) and how much will they actually trade?

The answer can be found by using the usual theory of consumer behavior you have been presented and an analytical device named the Edgeworth Box.

Imagine to draw a rectangular box whose dimensions are exactly X and Y. Then, the initial endowment can simply be represented by a point in the box where with coordinates X^A and Y^A (when measured from the lower left corner) or X^B and Y^B (if measured from the upper right corner).

Figure 2.1. The Edgeworth Box

If you consider the origin in the lower left corner, the box can be considered simply as the space of consumption opportunities for individual A, and you could draw the indifference curves for A as you learned in the microeconomics course. When instead the origin is put in the upper right corner, the indifference curves for individual B can be depicted as if they were “upside down”, because moving from right to left and from up to down would mean to increase the availability of goods for individual B, and thus making him better off.

With reference to Figure 2.1, the initial endowment for our simple economy is represented by point P^1 .

There will be indifference curves passing through point P^1 for both individual A and individual B. Imagine now moving along the indifference curve of individual A from point P^1 to point P^2 .

What does it mean in terms of *re-allocation* of the two goods? Well, it means that some of good X has been transferred from A to B in exchange for some of good Y.

In fact, at point P^2 , A will have more of Y and less of X.

But notice that we are still on the same indifference curve for A, which means that A’s level of utility is not changed. Individual A is as better off at point P^2 as he was at point P^1 . However, point P^2 corresponds to a higher indifference curve for individual B than before. Moving from point P^1 to point P^2 has caused an increase in the utility level for B.

This simple example was meant to show that point P^1 was not an *optimal* allocation of the resources, because there are other points, such as P^2 , in which the utility of one of the members of the economy can be increased without reducing the utility of the other member.

Points such P^2 are called *equilibriums* of the economy, or also *optimal allocation* points.

The attribute *optimal* corresponds exactly to what is defined as a “Pareto optimum” point, that is a point from where it is impossible to move without reducing the utility of at least one individual.

At point P^2 , the marginal rate of substitution of good X for good Y is the same for both A and B. In other words, the two members of our simple economy have found an agreement on a rate at which to exchange X for Y, that is, they have found an equilibrium *price*.

The fundamental view of a market economy, according to neoclassical economics, is a condition for which all people in the economy are left free to exchange of whatever they want in order to

increase their individual utility. If nothing prevents the exchanges from taking place, whenever two individuals would find it *profitable* to engage in an exchange (as it was for our individuals A and B in moving from point P^1 to point P^2) they will do so.

Once there are no opportunities left for mutually beneficial exchanges, the economy would reach what is called a *competitive equilibrium*, which is optimal (according to the Pareto criterion) by definition.

2.2. Fundamental theorems of welfare economics

The analytical model we have presented in the previous section has been extended to more complex cases in which there are more than 2 individuals, in which *production* is allowed, in the sense that the original endowments of factors of production (land, labor, natural resources) can be used for transformation in other goods which are then used for consumption. A competitive equilibrium, in such more general case, implies that

- The rate of transformation of any two factors of production is the same in all production activities;
- The marginal rate of substitution of any two consumption goods is the same for all consumption activities;
- The set of those rates of transformation and marginal rates of substitution constitutes the equilibrium set of competitive prices of the economy.

We will not go into the details of the analytical proofs of such statements, but the basic concept is the same which characterizes our simple example above: ***if nothing prevents individuals from engaging in exchange and production activities, they would do so until all opportunities for additional mutually advantageous exchanges are exhausted.*** When this happens, a ***competitive equilibrium*** has been reached and, by definition, it will correspond to a Pareto optimal allocation of the resources in the economy.

Sometimes, this last concept is presented in economics books as a “theorem”. It is named the *first fundamental theorem of welfare economics*, and reads more or less as:

“Under a set of specific assumptions, any competitive equilibrium is Pareto optimal”.

It should be clear, however, that the correspondence between competitive equilibrium and Pareto optimality is warranted by definition of the competitive equilibrium, and does not need to be demonstrated, as a real theorem would need.

More interesting is probably the second fundamental theorem of welfare economics, according to which: “for any initial endowment of resources, there exists at least one competitive equilibrium”, meaning that it does not matter where you start from, in terms of initial endowment of the resource, the economy can always reach a competitive equilibrium, that is an “optimal” allocation of the resources.

I am putting the word optimal between quotes, because I want to emphasize that it is a very specific kind of optimality, and something that may correspond to situations that none of us will probably consider “optimal” by any means.

As an example, let us return for a moment to our economy made of only two people, and consider an initial endowment of $X^A = X$, $X^B = 0$; $Y^A = Y$ and $Y^B = 0$. (In other words, A gets everything, and B gets nothing). This allocation would correspond to the point at the upper right corner of the Edgeworth box. It is easy to see that such a point is indeed a “competitive equilibrium”, because given the total availability of resources, it is never going to be in A’s individual interest to move from there. It would mean to give up of one or both of the goods, with nothing in exchange for it. In other words, there is no way of moving from such a point without making

A worse off, and in this sense the point is Pareto optimal. Yet, I am sure that none of us would consider such a situation as “optimal”².

The concept of Pareto optimality, in practice, corresponds to a concept of **economic efficiency**: a situation that is not Pareto optimal, is certainly an inefficient arrangement, in the sense that there exist alternative distributions and uses of the resources that can lead to overall higher levels of aggregate utility for the society as a whole.

The above discussion is meant to illustrate how limited the concept of competitive equilibrium might be. It is only concerned with efficiency, and cannot accommodate possible concerns about the **distribution of utility** among individuals, something that is included under the category of equity concerns.

Nevertheless, the concept of economic efficiency has been repeatedly invoked by some economists as the fundamental justification for the *laissez faire* view of state intervention in the economy, a view that dates back at least as far as the time when Adam Smith wrote his treaty on the wealth of the nations.

Since then, it has been the flag of many politicians and economists, especially of those critics of the centrally planned economies of the communist type. A number of other politicians and economists have opposed such view, and have instead proposed an active role for the state in the economy. Next session will illustrate the arguments brought to sustain such alternative view of the role of the state intervention.

2.3. Market failures and reasons for public intervention

It is a fact that free market and *laissez faire* types of economic policies have often led to situations considered sub-optimal from many points of view, even from purely efficiency considerations.

Some economists then, by fundamentally accepting the theoretical argument included in the neoclassical theory of competitive equilibrium, have tried to study in more detail, possible reasons for why the claimed superiority of the free market may fail to manifest itself.

The reasons that have been found that prevent the economy to settle on efficient, competitive equilibriums, have been termed as **market failures**, which imply the existence of something that prevents the agents in the economy from engaging in all of the actually profitable trades.

As a result, whenever one of this failures exists, the economy will reach equilibriums which are not competitive, and thus, not necessarily efficient.

Some of the market failures recognized in the economic literature can be listed as:

- Lack of competition
- Presence of externalities and incomplete property rights
- Presence of public goods and common property resources
- Incomplete and asymmetric information

2.4. Non-competitive markets

Whenever there is market power on one side of the transaction, the resulting price does not equates the marginal cost of production, something that is needed to achieve competitive efficiency. Part of the revenues from selling the product when in a monopoly position, will be pure

² The reason why none of us would consider a situation in which one gets everything and the other one gets nothing as optimal is because, when considering human life, we would also take a certain degree of equity as a fundamental requirement. For extended discussions on the debate over equity and efficiency in economics, see the work of the Indian economist and philosopher Amartya Sen.

rent, rather than normal returns to the factors of production, so that one of the needed conditions for efficiency breaks down. As a result, less of the product is sold and at a higher price.

2.5. Presence of externalities and incomplete property rights

An externality is the effect of some production or consumption activity on other agents that those directly involved in the transaction. Usually, the external benefit or costs associated with the externality are not recognized or borne by the agents involved in the transaction, and as such, their existence is not reflected in the equilibrium price, which fails to capture the external benefits or the external cost, resulting in a socially inefficient allocation of the resources.

Ronald Coase has connected the problem of externalities to the problem of incomplete property rights by suggesting that any inefficiency induced by the presence of externalities could be corrected by the appropriate definition of property rights, which would allow the internalization of external effects.

The most common example is that of a factory whose activity releases pollution in the air, which causes damage to the population. This is an externality if the firm owner is not held responsible for the damages caused on the general population by the pollution. The inefficient outcome is that too much pollution will be produced because who produced it does not pay the relative cost for the society, and society cannot force the firm to reduce the pollution because there is no such thing as the property right over clean air.

2.6. Public goods and common property resources

When a good is characterized by non-excludability, non-rivalry is defined as a *public* good, as opposed to *private* good. For public goods it is not possible to define private property rights, and thus the incentives to trade them are inexistent. If left to the private initiative, there will be under-provision of public goods such as public defense, schooling and generalized health care (such as immunization programs), natural environment protection, etc. The reason is that no private operator will find it profitable to provide a good that other people can enjoy without paying for it.

2.7. Incomplete and asymmetric information

The theorems of welfare economics are based on the assumption that individuals are aware of all of the trade opportunities that there exist in the economy, so that they can recognize and exploit those mutually beneficial.

This is a very strong assumption that is not true in practice. For example, the *uncertainty in production* we discussed yesterday may prevent producers from making the most efficient decision regarding the use of inputs. And that is simply because of incomplete information on the probability of occurring of the bad weather. Also, when some goods' benefits extend over long period of time (for example, the exploitation of forestry or other natural resources such as oil reserves) ignorance on the potential *future benefits* of those resources may lead to over exploitation in the present.

These are all cases of incomplete information, when the benefits or the costs of a given economic action are not fully known by the agents that have to decide.

Very common is also the presence of *asymmetric information*, namely the fact that the two agents involved in the transaction might have different levels of knowledge about the benefits and costs involved in the transaction.

Asymmetric information leads to the phenomena known as *moral hazard* and *adverse selection*, which are studied extensively for the design of contracts in general, and insurance and la-

bor contracts in particular. The presence of asymmetric information causes additional costs, related to the need for *monitoring* the activity of the insured or of the worker, which would not exist if information were symmetric.

2.8. Government intervention in the economy

Government intervention may be justified to correct for market failures and to increase efficiency. Levying taxes on polluting activities, for example, may be intended to correct for the presence of externalities. Public provision of public goods may correct for the under provision of such goods by private operators. Public contracts and subsidized insurance may correct for the presence of asymmetric information, and so on. For any market failure, one can think of a form of public intervention that in principle might compensate for the negative effect.

Notice, however, that correction of market failures only allows for achieving *efficiency* in the use of the resources. These types of intervention do not address problems of unequal distribution of the net benefits – i.e. the *equity* concern.

This leads to a whole range of other possible forms of public intervention whose objective is direct or indirect *redistribution* of income to achieve a higher level of equity in the society.

To summarize, it is clear that the *laissez faire* or non-intervention of the government in the operation of the market is very unlikely to achieve even just the efficient economic use of the resources, not to mention equity. For this reason, even in capitalistic economies, the extent of state involvement in the economy can be very high, as opposed to the traditional view that large involvement of the state in the economy is typical of socialist economies.

In short, state involvement in the economy may be needed:

- to correct for market failures;
- to achieve non efficiency objectives.

However, large involvement of the government does not necessarily implies better outcomes in terms of efficiency and equity. The concept of *state* that we are assuming throughout the discussion is a very idealistic and abstract one: we imagine the state as a benevolent, well informed and technically equipped agent, who can correct for market failures without inducing other forms of “failures”. In reality, the government and the state are made of people who can suffer of the same information problems that affect common citizens. The state, in other words, can be as inefficient as the private market because of many phenomena, which have been named “state failures” (Ellis, p. 10-13). The most widely discussed form of state failure in the recent literature on economic development is the so-called “rent-seeking” or directly unproductive profit-seeking (DUP) activities.

In the analysis of policies, we must be aware of these problems. In other words, in evaluating policies one should ask:

- Does the policy address equity objectives, efficiency objectives, or both?
- If it addresses efficiency, which form of market failure it tries to correct for?
- If the policy requires direct involvement of the state in the market, are there other less intrusive, more private means of achieving the same objective?
- If not, which potential forms of “state failure” might be involved and how can they be prevented?

Chapter 3 - Introduction to welfare economics

We have seen in the previous section that there are many reasons why the government should intervene in the economy. The next step will be to try and understand what happens to all of the agents involved, when the government takes actions to modify the natural outcome of a certain market. The fundamental question we will be concerned with is: “*Who gains? Who loose? And by how much?*” The answer to this question is the core of the policy incidence analysis.

Two concepts of welfare economics will be mostly used throughout this course to answer the fundamental question and we will illustrate them first.

3.1. Demand functions and consumer surplus.

You are familiar, by now, with the economic theory of consumer behavior. The solution to the utility maximization problem subject to a budget constraint leads to the derivation of an individual’s **demand function**, that is, a relationship between quantity consumed and price.

Using general notation, the problem of:

$$\begin{aligned} &\max U(x_1, x_2, \dots, x_N) \\ &\text{subject to:} \end{aligned}$$

$$p_1x_1 + p_2x_2 + \dots + p_Nx_N < y$$

leads to a solution in terms of the optimal quantity demanded of all goods:

$$x_1^* = f_1(p_1, p_2, \dots, p_N, y)$$

$$x_2^* = f_2(p_1, p_2, \dots, p_N, y)$$

...

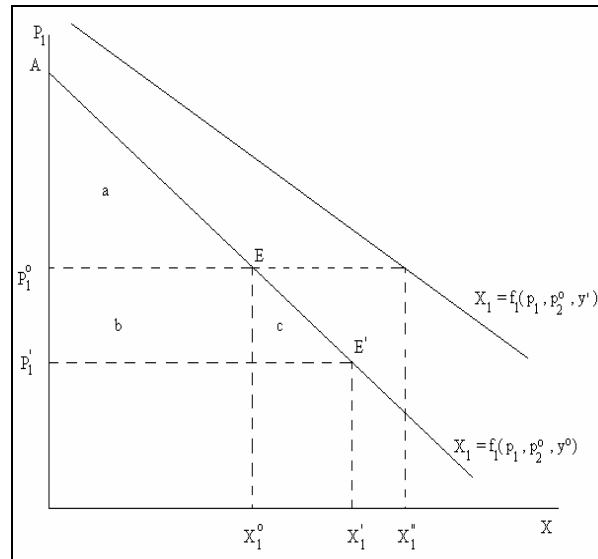
$$x_N^* = f_N(p_1, p_2, \dots, p_N, y)$$

which is a system of demand functions, where the quantity demanded of a certain good is expressed as a function of the price of that good, the prices of other goods, and the level of income.

Any demand function can be represented in a graph³, and this graph can be used to determine what happens to the quantity demanded if one of the independent variables change. For example, with reference to Figure 3.1 which depicts the demand function for the good x_1 , suppose that the consumer faces a price level p_1^o . Suppose also that the level of the only other good is p_2^o , and the income is y^o .

³ Notice that usually the graph is depicted with the quantity, that is the *dependent variable*, on the horizontal axis, something unusual for a mathematical function.

Figure 3.1. Demand function and consumer's surplus



Then, the quantity consumed will be $x_1^o = f_1(p_1^o, p_2^o, y^o)$, as indicated by point E in the graph.

What happens if, for any reason, the price falls to a level p_1' ?

Usually, what we would expect is that, given a lower price, the consumer will demand more of the good. The demand function tells us that he will demand a quantity $x_1' = f_1(p_1', p_2^o, y^o) > x_1^o$.

How can we analyze the effect of a change in the level of income? We have to realize that an increase in income from, say y^o to y' , will determine a shift of the demand function from $x_1 = f_1(p_1, p_2^o, y^o)$ to $x_1 = f_1(p_1, p_2^o, y')$. Thus, if the price of good x_1 remains p_1^o , the new quantity demanded will be

$$x_1'' = f_1(p_1^o, p_2^o, y') > x_1^o$$

We could do the same exercise by changing the price of the other good, p_2 and predict what would be the change induced in the demand for x_1 . In short, by knowing the demand function, we can predict the change in the quantity demanded induced by any change in prices and/or in income. However, observing just how the quantity demanded changes does not tell us what happens in terms of utility, that is, if after the change the consumer is better off, worse off, or has the same utility as before. For this reason, economists have defined the so-called *consumer surplus* which is intended as a monetary measure of the utility associated with a certain consumption choice.

Let us look again at the graph in Figure 3.1. If the price of good 1 is p_1^o , the consumer would buy x_1^o and will spend a total of $p_1^o x_1^o$. However, if the price were higher, the consumer would have still bought some of the good, which means that the consumer were willing to pay more than p_1^o for quantities of the good less than x_1^o . This means also that, by buying all of x_1^o at the price p_1^o , the consumer is receiving a benefit equal to the area comprised between the demand function and the horizontal line passing through p_1^o , which is indicated as area a in the graph. This area defines the *consumer's surplus*, which is a monetary measure of the utility associated with the purchase of a good at a fixed price⁴.

⁴ For an extended discussion of the properties of consumer's surplus as a monetary measure of utility, see any advanced microeconomics book, such as Hal Varian's *Microeconomic Analysis*. Complete reference is also provided by welfare economics textbooks such as Just, Hueth and Shmitz's *Applied Welfare Economics and Public Policy*.

With this concept, we are now able to answer the question: what happens to the consumer's welfare when the price of good 1 changes from p_1^o to p_1 ? The effect of this change in price is an *increase* in consumer's surplus from area a to area $a + b + c$, that is a net increase of area $b + c$.

Notice that this increase in consumer's surplus can be seen as composed by two parts: area b , which is the surplus derived to the consumer because he can now buy the old amount x_1^o at a lower price, and area c , which is generated because now the consumer will buy more of the good.

(As an exercise, you can try to identify what is the change in consumer's surplus induced by the increase in income from y^o to y)

3.2. Correct measures of welfare change: the equivalent and compensating variations.

The consumer's surplus is an appealing measure of welfare change in terms of money because it is easily computed once the elasticity of demand is known.

However, its definition as the area underneath the ordinary demand presents some theoretical problems, and its use may determine some errors in assessing the actual monetary value of changes in income.

Fortunately, economists have devised two alternative measures of welfare change, called the *equivalent variation* and the *compensating variation*.

To describe them consider first what a correct measure of welfare change for a consumer should be. It should measure the change in the level of utility caused by the policy that one wants to evaluate. To measure the change in utility *level*, however, as measured by the difference in the values of the utility function, would give an undetermined answer, given that utility function is an *ordinal measure*. In other words, utility functions serve only to rank possible choices, and two different utility functions that generate the same ranking are perfectly equivalent even if they express utility levels on different scales.

As an example, suppose there are only two goods and you have two different utility functions, defined respectively as:

$$U(x_1, x_2) = (x_1 x_2)^2$$

and

$$V(x_1, x_2) = x_1 x_2.$$

It is easy to prove that this two utility functions generates *the same ranking*⁵ of all possible consumption bundles (x, y) . For example, consider the values reported in the following table:

x_1	x_2	$U(x_1, x_2)$	$V(x_1, x_2)$	Rank
1	2	4	2	3
3	1	9	3	2
2	2	16	4	1
1	1	1	1	4

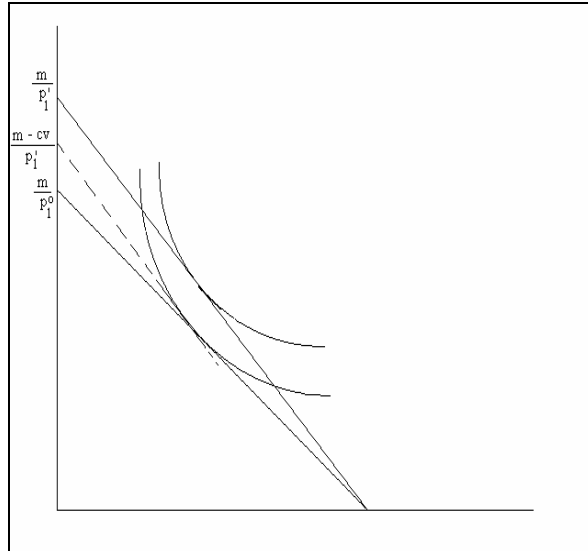
As can be seen, the ranking of alternatives induced by the two utility functions is the same, even though the *level* of utility is measured by different numbers. If we were to measure the change in utility induced by adding one unit of good y to the bundle $(1, 1)$, we will have:

$$\Delta U = U(1, 2) - U(1, 1) = 4 - 1 = 3$$

$$\Delta V = V(1, 2) - V(1, 1) = 2 - 1 = 1.$$

⁵ From a mathematical point of view, the two functions generate the same ranking of utility because, conditional on positive amounts of x_1 and x_2 , they are *monotonic transforms* of each other.

Figure 3.2. The compensating variation of a reduction in price



For this reason, we cannot simply use the difference in the value of the utility function as an index of the change in welfare.

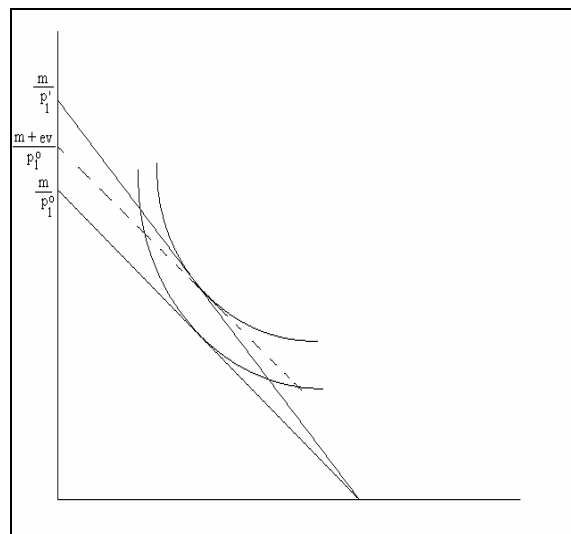
Two better measures are the **equivalent variation** and the **compensating variation**.

The equivalent variation of a certain policy (for example, a change in the price levels) is defined as the amount of money which, when paid to the consumer, will achieve the same change in utility caused by the policy.

Its measure can be seen graphically on figure 3.2 above.

In the graph, we are considering a reduction of price from p_1^0 to p_1' . As a consequence, the budget line would rotate and the consumer would reach a higher indifference curve. The equivalent variation, EV , is the quantity of money which, added to income while keeping the price constant to the original level, would bring the consumer to the same higher indifference curve.

Figure 3.3. The equivalent variation for a reduction in price



The *compensating variation* of a certain policy, instead, is defined as the amount of money which, when taken away from the consumer after the policy implementation, would bring the consumer back to the old utility level. The graph in Figure 3.3 illustrates the compensating variation for a reduction in price from p_1^0 to p_1^1 .

It can be shown that the *EV* and *CV* can be measured as areas to the left of the *compensated demand functions* and included between the two price levels. The difference between *EV* and *CV* is in which of the utility level is taken as a reference: for *EV*. We consider the final utility level u^1 , while for *CV* we consider the initial utility level, u^0 . (See Figure 3.4)

3.3. The relationship between change in consumer surplus, ΔCS , equivalent variation, *EV*, and compensating variation, *CV*.

There is a precise relationship between the change in consumer surplus, the equivalent variation and the compensating variation, which can be seen on the graph in Figure 3.4.

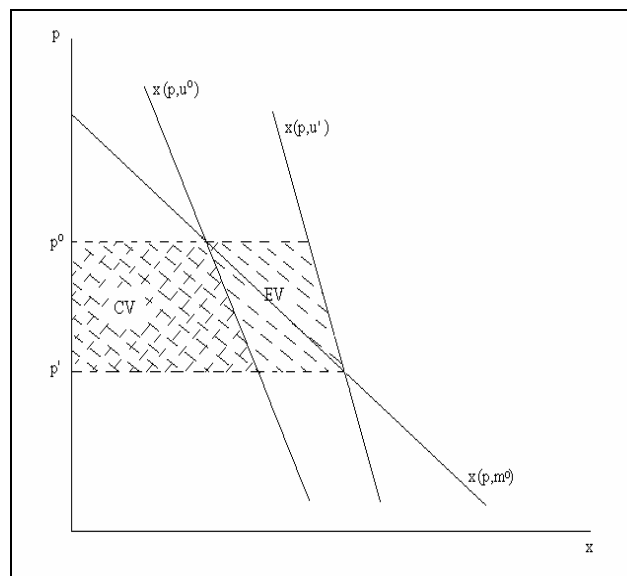
For a reduction in prices, which means a positive effect on utility, the change in consumer's surplus is always larger than the compensating variation, and smaller than the equivalent variation. On the other hand, it can be shown that for policies that determine a reduction in utility, the change in consumer's surplus is larger than the equivalent variation, and smaller than the compensating variation. In other words:

$$CV < \Delta CS < EV, \text{ for policies that increase utility}$$

$$EV < \Delta CS < CV, \text{ for policies that decrease utility}$$

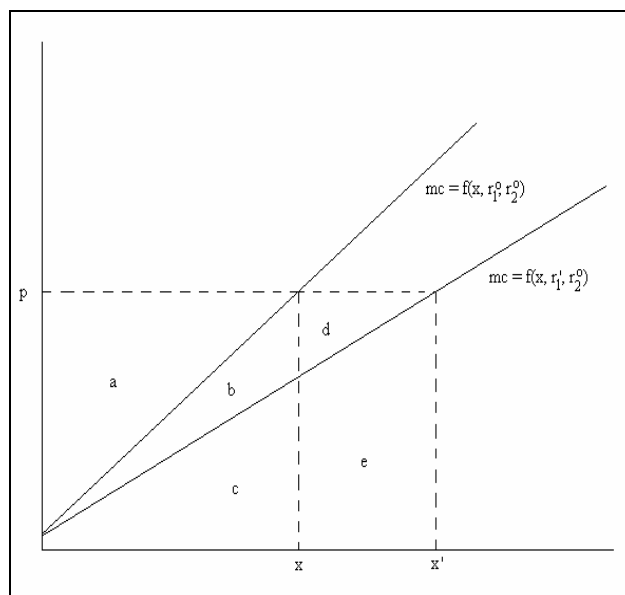
The difference between the change in consumer surplus and the two correct measures of welfare change, *EV* and *CV*, depends on the income effect: if the income effect is large, then approximating either the *CV* or the *EV* with the change in consumer surplus will determine a sensible error.

Figure 3.4. Change in consumer surplus, equivalent and compensating variation for a reduction in price.



One other question is related to which one of the two measures, *EV* or *CV*, one wants to use. Recall that the difference between the two is the utility level taken as reference: the *CV* is calculated with reference to the initial utility level, u^0 , the *EV* with reference to the new utility level, u^1 . Thus, using the *CV* as a measure of welfare change, implicitly amounts at assuming that consumers have the right to the *ante-policy* situation and to the initial level of utility. Using the *EV*,

Figure 3.5. Marginal cost curves and producer's surplus.



on the contrary, is equivalent to assume that consumers have the right to the *post-policy*, final level of utility.

One point worth of attention in the context of a course on agricultural policies in developing countries is that, by using ΔCS instead of CV as a measure of welfare change, one *overestimates the benefits* and *underestimates the costs* of the policy to the consumers. And, as we have seen, the bias will be relevant whenever the income effect of the change is higher. For agricultural prices, for example, the bias will be higher for poor consumers which spend most of their income in agricultural products.

In the rest of this notes, we will continue to use the change in consumer surplus to indicate the effects of policy on consumers. We have to remember, however, that it could mean an imprecise assessment of the actual welfare effect in the cases noted above.

3.4. Marginal cost, supply function and producer's surplus.

In the market, the counterpart of consumers are the firms. Each firm, in a competitive industry, will have a *supply function*, that is, a relationship between quantity offered for sale on the market and price. From the course in production economics, you know that the quantity offered by a profit maximizing, competitive firm, is the quantity for which price equals marginal cost. This means that the supply function coincides with the marginal cost function of the firm, which in general is a function of the level of output and of the prices of the inputs: $mc = f(x, r_1, r_2, \dots, r_M)$

The graph in Figure 3.5 represent one such function, where, for simplicity, only two inputs are considered.

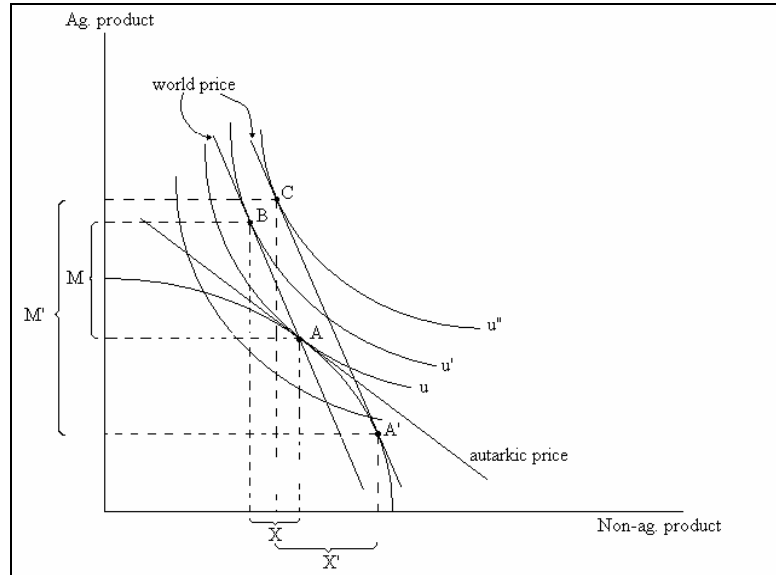
Let us consider first the case when the prices of the two inputs are fixed at levels r_1^0 and r_2^0 .

When price is p , the firm will supply an amount $x : f(p, r_1^0, r_2^0) = p$. The total revenues from this choice will be equal to the area $a + b + c$. However, area $b + c$ corresponds to the total variable cost⁶ of producing an amount x , so that only the area a is actual benefits (more precisely, it in-

⁶ The fact that the area underneath the marginal cost corresponds to the total cost can be proved by recalling that the marginal cost is defined as the derivative of the total cost. By integrating the marginal cost, then, one obtains the total cost. If you are not familiar with integrals, just take it as a fact that the area below the graph of a function does indeed correspond to the integral of that function.

cludes profits and returns to the fixed factors of production, as land and fixed investments). Such area can be used as a monetary measure of the benefits that the firm will receive by selling the amount x at price p .

Figure 3.6. The transformation curve and the autarkic equilibrium



The area a in the graph, that is the area comprised between the horizontal line passing through the price level and the marginal cost curve, defines the *producer's surplus*.

With this definition, we can now try and calculate what happens if, for example, the price of one of the inputs falls, say from r_1^o to r_1' . The new marginal cost curve will now become $mc = f(x, r_1', r_2^o)$, the quantity offered for sale will increase up to x' , and the producer's surplus will increase by the area $b + d$. Notice that we can interpret this change in consumer's surplus as made of two components: the area b , which correspond to the reduction in costs to produce the old amount x , plus the area d , which is additional surplus generated by the fact that now the firm will increase production up to x' .

(As an exercise, you can determine the change in producer's surplus caused by an increase in the output's price.)

3.5. A note on aggregation and on the difference between profits and rents

In the previous discussion on consumer's and producer's surplus, we have considered an individual consumer and a single firm, respectively. The theoretical basis for considering consumer's surplus as a monetary measure of utility, in fact, is rigorously valid only for an individual demand. And, analogously, the supply function corresponds to the marginal cost only for an individual, competitive firm.

However, when we will analyze policies, we will often refer to the entire market: rather than the *individual* demand and supply function, we will consider the *aggregate* or *market* demand and supply. It is then reasonable to ask whether we can still use the definitions of consumer's and producer's surpluses as the areas between demand function and price and between price and marginal cost as legitimate measures of welfare change.

It turns out that it is still legitimate to do so, under some restrictive assumptions. In particular, under the assumption that all consumers are identical, the area beneath the market demand function and above the price level is a valid monetary measure of the sum of individuals' utility. In general, we should remember that direct comparison of utility is not legitimate, given that

utility is only an *ordinal measure*. By simply summing up the individual consumer's surpluses, as we implicitly do when we measure the aggregate consumers' surplus as the area beneath the market demand, we are neglecting the possibility that consumers are different, and that the same reduction in income, for example, might be more onerous for poor consumers than for rich ones.

In other words, by only measuring the aggregate consumers' surplus, we neglect possible *equity* issues.

Things are less problematic for the aggregate supply function: provided the production sector is competitive, the aggregate supply is simply the horizontal sum of the individual supply functions, even if firms are different in the structure of their marginal costs.

A different issue that deserves consideration, however, is the difference between profits and returns to the fixed factors of production, or what we can call *rents*. In the long run, a competitive industry will have no profits, and all the area above the marginal cost curve is simply rents that represent returns to the fixed factors. If the entrepreneur is also the owner of the fixed factor of production (for example, if the farmers own the land he cultivates), then there is no practical difference between profits and rents: both will reward the same individual. When, instead, land is owned by a landlord who rents it to the farmer, and if supply of land is inelastic, any change in producer's surplus will eventually be completely transferred to the landlord. Once again, there may be equity issues to be taken under consideration (see Ellis, page 41).

3.6. Comparative advantages and gains from trade

One last chapter in welfare economics I would like to introduce in this course covers the concept of *comparative advantages* and of *gains from trade* and from *specialization*. To illustrate it, we will use the concepts of products transformation curve and indifference curves that you have been presented in microeconomics.

Suppose that there is a fixed amount of two resources in the economy: land and labor. And suppose also that land and labor can be used to produce agricultural and industrial products.

The transformation curve depicted in the graph of Figure 3.7, represents the efficient combinations of agricultural and industrial production that can be obtained in the economy by using the fixed amount of available land and labor.

If the structure of the preferences of the country can be represented by the set of indifference curves depicted in the figure, then the maximum social welfare will be achieved, in autarky, at point A, which corresponds to the highest possible indifference curve that the Country can reach, given the availability of resources and the technology.

The common tangent to the transformation curve and the indifference curve represents also the autarkic price ratio of agricultural and non-agricultural products.

Now, suppose that on the world market the relative price of agricultural and non agricultural product is different, for example as indicated by the steeper line labeled "world price". This would mean that on the world market, agricultural product is valued relatively less of what it is valued in the domestic market, and that the country has a *comparative advantage* in the production of non-agricultural products.

If the Country opens to international trade, then, it would be convenient to start selling some of the non-agricultural product on the world market, and import some agricultural product. This exchange, which corresponds to moving *consumption* from point A to point B, by exporting an amount X of non-agricultural products, and importing an amount M of agricultural products, which would allow for an increase in social welfare, from u to u' . This increase in welfare can be considered as *gains from trade*, which can be obtained even if the Country does not change its production schedule.

With an open market, however, there are additional gains that can be exploited through *specialization*. If the country rearranges its production activities, and moves on point A' along the transformation curve, it will be possible to increase exports up to X' and imports up to M', with a further improvement in social welfare up to the point *u*". This further gains are due to *specialization* of production in the activity for which the country has a comparative advantage.

Gains from trade and specialization are always present in an open economy. The only condition under which there are no such gains is when *domestic prices are equal to world prices*. For this reason, it is usually conceived that the opportunity cost for domestic resources in an economy is measured by the respective price on the world market. World prices thus constitute a benchmark, that is a reference point, for assessing how much prices within a country are distorted (this is at the core of analyses carried on with use of the Policy Analysis Matrix, as we will see below.)

Chapter 4 - Introduction to Policy Analysis

After the presentation of the theoretical tools needed, we are ready to embark upon the study of the process of policy analysis, which will cover the remaining part of this course.

Policy analysis can be described as the *technical and economic work that considers alternative policy instruments, assesses and compares them in terms of net benefits, and, at a later stage, evaluates the impact of the chosen policy and infers lessons for the future from its implementation* (Ellis, p. 23).

It is thus the task of policy analysts, who are not necessarily those responsible for the eventual policy implementation, which is the responsibility of policy makers. Nevertheless, the role of policy analysts is very important in guiding the decision process that policy makers would accomplish.

Proper policy analysis requires a sound understanding of the conditions of the sector for which the policy is intended, as of the general conditions of the economy as a whole. Also, a sound knowledge of the technological and natural processes involved in the production processes is a significant advantage in that it helps assessing the physical effects of public intervention, together with the monetary ones. As clearly described by Ellis (p.29), “ [...] for example, a proposed policy to raise the price of a staple food, like maize, has impacts on the volume of maize production, the quantity of maize that is sold in the market rather than retained for home consumption, the demand by farmers for variable inputs like fertilizers used in maize production, and the demand by consumers of maize flour.”

As you can see, agronomical, economic, and social aspects of the sector are involved in determining the overall effects of a price policy.

No single course such as this one can provide all of the information needed to actually carry out a comprehensive policy analysis. What we aim at achieving, is the formulation of a structured way of thinking about agricultural policies, a framework that when needed, can be used as a reference to carry on all the phases of the analysis.

4.1 Alternative frameworks for policy analysis: demand and supply analyses vs. the Policy Analysis Matrix

There are various possible frameworks for policy analysis among those based on economic theory.

The most common framework is the one we have as implicitly assumed in all of the examples we have presented until now, based on supply and demand schedules.

To follow this framework, an analyst first identifies the relevant market (as for example the domestic market for maize consumption, or the regional market for aggregate agricultural production, or also the market for labor in a rural community, and so on). Then, he needs to specify the

demand and supply functions. This is potentially the most demanding task of the analysis. Demand and supply functions can, in principle, be estimated by using observed data on past outcomes of a given market (time series data), by using data on several different economic unities (cross-sectional data), or both (panel data). However, estimation of supply and demand schedules consistent with economic theory poses many challenges and requires abundant data. Moreover, usually requires time that the analyst might not have. For this reason, usually it is the case that analysts rely on second hand sources of elasticity estimations from various other sources.

An excellent detailed description of this framework, based on microeconomic analysis of individual behavior, is contained in the manual by Elisabeth Sadoulet and Alain de Janvry (1995) entitled: *“Quantitative Development Analysis”*. In the book, the authors start from the analysis of the behavior of the individual agents involved in the sector (farmers, consumers, the government) to build the needed aggregate relationships that allow for the desired level of analysis (market, sector, or national).

An alternative framework for policy analysis, the so called *Policy Analysis Matrix*, introduced by Monke and Pearson (1991), avoid the need to estimate the microeconomic relationships that form the basis of market supply and demand schedule. Rather, the framework is based on the construction of *representative productions systems*, whose performance is analyzed by *budget analysis*.

In PAM studies, the focus is on a commodity by commodity basis. Each commodity can be the described by the chain of production, processing and marketing activities that bring the commodity to the final consumers.

The performance of the whole system can be measured by the result it achieves in terms of *profits*, that is the difference between revenues and costs. Revenues are simply the product of quantity and price of the consumption good, as registered on the final market. Costs are the sum of the products of the quantity and price of all inputs utilized along the commodity chain, from the farm, to the processing industry, to the marketing activity.

The key intuition in the use of the PAM for policy analysis is that the overall effect of policies and other market distortions that affect a given commodity system, can be captured by the induced difference in prices.

As we have seen in the section on comparative advantages and gains from trade, in a situation of liberalized trade, to *produce* where the marginal rate of transformation equals the ratio of world prices (see the graph in figure 3.7), and then to *exchange goods* on the world market at such prices would allow the maximization of the overall welfare of the country. The statement is conditional on many simplified assumptions, the most important of which is the absence of transaction costs on both the domestic and the international markets. Nevertheless, it indicates that *the presence of a difference between the prevailing prices within the country and the world prices indicates potential departure from the most efficient allocation of resources*.

By evaluating the relevant quantities in the budgets of a PAM first at *private* prices (that is at the prices actually faced by the agents) and then at their *opportunity cost* (which often is directly linked to the world price), analysts can measure the impact of the entire set of policies and all other distortions that influence the market for a commodity.

We will spend some time in this course in describing and discussing in detail the PAM approach to policy analysis, not because we think it is the only or even the best way of evaluating the effects of agricultural policy⁷. Nevertheless we believe that the PAM approach can be extremely

⁷ In fact, there are some reasons why the PAM approach to policy evaluation might be criticized. It takes as a reference point the ideal situation that would emerge in a completely free trade market, where all market clear and there are no distortions. Some opponents of the PAM approach, consider such a situation only an ideal abstraction that bears no resemblance with the actual environment in which policy can take place (see for example Sadoulet and de-Janvry, 1995, page 6).

useful in the overall policy debate. First, because it is conceptually very simple, and easy to understand. Second, and most important, because in the process of building and evaluating the result of a PAM analysis, the analyst is forced to carefully examine many relevant technical and social aspects of the productive systems being analyzed.

4.2 Phases of policy analysis

Following Colman and Young, as quoted by Ellis (p. 30), one of the possible characterization of the phases of the process of policy analysis is as follows:

- (a) Evaluation of price effects, meaning not just own price effects in a single market but also the impact on closely related markets;
- (b) Production effects, including the quantities of outputs and inputs;
- (c) Consumption effects, meaning the demand impact of the policy in affected markets;
- (d) Trade or balance of payments effects, including effects on imports, exports, foreign exchange reserves and the exchange rate;
- (e) Budget effects, meaning the impact on government tax receipts and public expenditure;
- (f) Income distribution effects, meaning the impact of policies on equity;
- (g) Social welfare effects, meaning the identification of the gainers and the losers of policy interventions, as well as measurement of the overall impact on social welfare.

As can be seen, the task is quite complex, that is why sometimes we need to make some simplifying assumptions that allow for reduction of the dimensions of the analysis.

The main simplifications that are usually considered when proceeding with the economic analysis of policies are the following:

- (a) performing a *partial equilibrium* rather than a *general equilibrium* analysis
- (b) performing a *comparative static* evaluation rather than a *dynamic* analysis
- (c) performing a *commodity oriented* analysis instead of a *sector* analysis
- (d) analyzing the effects of a *single policy* considered in isolation from all other policies that are in place at a given time, instead of the combined effects of *all policies* affecting a specific commodity chain, a region, or the whole agricultural sector of a Country.

We will discuss them in detail

4.2.1. *Partial vs. general equilibrium analysis*

A partial equilibrium analysis will limit the scope of the analysis to a *single market*, or at most, to a limited set of tightly connected markets. For example, when considering the effects of a policy that modifies the price of maize, to perform a general equilibrium analysis, one should consider all the effects that such a policy will have on:

- the production of maize by farmers
- the consumption of maize by final consumers

My personal criticism is founded more on rhetorical grounds. It is my opinion that to consider as an 'ideal' point the efficient outcome of free markets, might bring too much emphasis on *efficiency* objectives, as opposed to non efficiency ones. To be fair to the proponents of the PAM approach, I recognize that they allow for the presence of non efficiency objective when they affirm that 'nonefficiency objectives are [...] considered as potential justifications for policies that support inefficient production systems' (Monke and Pearson, 1989, page x). However, such a statement subtly implies that the government should always try and achieve non efficiency objectives (such as an equal distribution of income) through other interventions that do not distort the productive systems, avoiding to discuss the social, political and technical difficulties that such a strategy would imply. Use of the PAM, in other words, may lead to the selection of set of policies that can only be justified on the ground of only potential Pareto improvements, whose benefits are likely to remain potential and never manifest themselves.

- the market for other grains that can be substitutes for maize consumption
- the demand of maize by livestock operations that use maize as a fodder for animals
- the market of other feed crops that may be substitute for maize in animal production
- the production of alternative crops that may compete with maize for the agricultural land

and so on. The list may be very long so that the analysis would be very demanding.

In some cases, it may suffice to limit the analysis to just the first two elements: production and consumption of maize, on the account that the other effect may be negligible when compared with the direct effects.

This might increase the feasibility of the analysis, even though we must keep in mind that simplification always implies some lost of information, and we must be careful in deciding when the information we lose is not going to change the overall judgment about a policy.

From the economic point of view, different markets can be linked from the consumption side, from the production side, or from both.

From the consumption side, the relevant relationships are those of *complementarity* and *substitutability*. Recall from the course on consumer theory, that two goods are complement if the cross price elasticity is negative, meaning that if the price of one good increases, the consumption of the second good decreases. Alternatively, two goods are said to be substitutes if the cross-price elasticity is positive, that is when the consumption of one good increases following an increase in the price of the other good.

From the production point of view, *markets for outputs are linked to the markets for inputs* used in the production function. In fact, the derived demand for inputs depends directly on the output price.

Moreover, different product may be *joint in production*, and thus any change in the production of one output will necessarily affect the production of the other.

Finally, different products may be linked with each other because their production *compete for the use of a common factor*, such as land.

All of these connections makes it often necessary to extend the analysis of the effects of a given policy to several markets, thus moving towards a *general equilibrium analysis*. One important point to notice is that, when markets are *only vertically linked*, the analysis in *any* of the markets will yield a correct measure of total benefits. However, the *distribution of the benefits* can be only appreciated by working through the analysis of all the markets.

As an example (see Figure 4.1), consider the following discussion⁸.

Suppose that land, labor and other farm inputs are used to produce an agricultural commodity. Then, this commodity, together with other marketing inputs, is used to supply a final commodity to the consumers on the retail market.

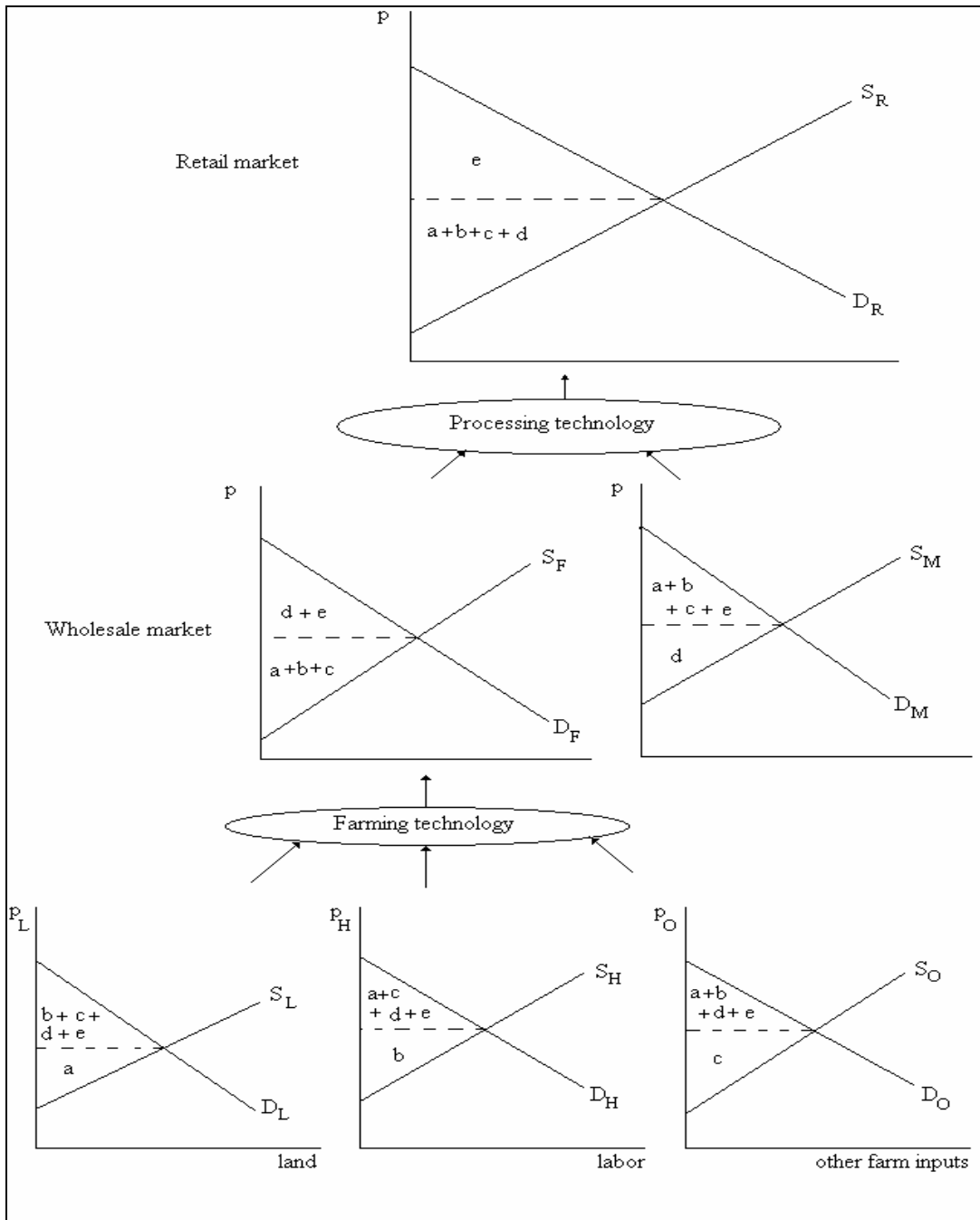
If one analyzes the equilibrium on the retail market, the area identified as consumer's surplus (area *e*) accrues to consumers, whereas the area identified as producer's surplus will include surpluses accruing to different *functions* in the production chain, that is: surplus to the owners of farm labor (*a*), land (*b*) and other farm inputs (*c*), and to providers of marketing inputs (*d*).

To see why it is so, consider that the sale of the product in the retail market will induce a derived demand for farm output and for marketing inputs. If one analyzes the wholesale market of the agricultural product, then the consumer's surplus measured under the demand expressed by the

⁸ This discussion is taken and adapted from: Julian Alston and Jennifer James (forthcoming), *The Incidence of Agricultural Policies* Draft chapter for the Handbook of Agricultural Economics, edited by Bruce Gardner and Gordon Rausser for North Holland Publishers.

marketing firms will include the consumer's surplus of final consumers plus the surplus to the suppliers of the marketing inputs.

Figure 4.1. Distribution of welfare in a multi-market model



On the other hand, if one focuses on the derived demand for marketing inputs, then the area underneath the derived demand function for marketing inputs will include returns to final consumers and to all the suppliers of inputs into the agricultural process.

The analysis could also be carried at the level of the markets for agricultural inputs. In each of those markets, the area identified as producer's surplus will correspond to the net returns to the

suppliers of the particular input, whereas the area identified as consumer's surplus will include the benefits to all others⁹.

The discussion serves also to highlight the difference between *personal* incidence and *functional* incidence or distribution of welfare. In economics, we usually perform functional incidence analysis. That is, we measure the welfare that accrues to people in their economic functions of producers, consumers, taxpayers and owners of fixed resources, not as specific individuals. For example, consumers are always also taxpayers, whereas peasant farmers are at the same time producers and consumers of the good. This means, for example, that if we wanted to perform an analysis of the personal welfare effect of a subsidy on agricultural products on such farmers, we should add the benefits that accrue to them as producers, and subtract the welfare loss to be credited with them as consumers.

Eventually, what would really matter from the social point of view is the personal incidence. However, to assess personal incidence one needs a detailed description of the ownership of factors of production, something that is rarely available.

4.2.2 Comparative static vs. dynamic analysis

In the discussions we have conducted so far, and in most of those we will carry on in the next sections of this course, we assume a static framework.

For example, when defining the concept of change in producer's surplus due to a subsidy on price, for example, we assumed a fixed supply function. Under such modeling choice however, there is a precise restrictive assumption of the dynamics of supply, namely, that the supply function would not change as a consequence of the presence of the subsidy. This may be true only if there are technological or resource availability constraints that prevent the agricultural supply from increasing. In all other instances, we would expect that the presence of the subsidy will attract more resources in the sector, by shifting the supply function to the right. At the same time, other phenomena such as the development of new technologies, will contribute to increase productivity and supply.

This means that the elasticity of supply is either zero or very low because of technological and resource constraints), otherwise, when the analysis is conducted at a level that no such constraints are in effect, the elasticity is positive and increasing over time.

Recognition of this fact has very important consequences for the analysis of the welfare effects of policies especially of those which apparently are designed to improve the conditions of agricultural producers, as we will discuss next.

Suppose we want to analyze the effects of a price subsidy on the agricultural product. When the elasticity of supply is zero because of the presence of some limiting resource, such as for example, a fixed amount of land, any producer's surplus will end up paying just for land rents. The reason is that the higher price will induce a higher derived demand for land. In turn, the higher demand for land, faced with a perfectly inelastic supply will result in a higher price for land. The additional cost for land will erode all the benefits from a higher output price, and who really benefits from the subsidy are land owners. This discussion, when properly understood, has interesting implications for the effects of *removing a subsidy* to agriculture, something that is becoming more and more common under the rules of the World Trade Organization. The consequence will be that, where there exists an active market for land, young farmer who bought the land when the subsidy program were in place, had already paid in terms of higher land price the capitalized value of the benefits due to the program. When the program is eliminated, they suffer a real loss in terms of depreciation of their land assets.

⁹ For a more technical discussion on the analysis of welfare distribution in vertically linked markets, see R.E. Just and D.L. Hueth (1979) "Multimarket welfare measurement", *American Economic Review* 69, p.947-954.

The other case is when the elasticity of supply is positive and increasing over time. In the short run, the supply elasticity may be low to increase as we move towards longer run. To perform a static analysis of welfare distribution, thus, implicitly amounts at fixing a particular length of run.

Consider again the potential benefits of a fixed, per unit price support. Depending upon the elasticity of supply, the distribution of the benefits will change. A larger share would go to consumers the higher is the elasticity of supply. In the extreme case of a perfectly elastic supply function, all of the benefits will go to the consumers.

Combining the results of this two cases, the picture one can draw is that in the long run, any support to agricultural production will end up either paying rents to the owner of the fixed resources, or being enjoyed by consumers through lower prices for agricultural products. The hypotheses that led to such conclusion are not so extreme as one could think. The explanation for this result can be found by considering that, by its very nature, labor, the other factor of production of which the agricultural sector is rich especially in developing countries, cannot appropriate any long run benefit from sector support.

The point I want to make with the entire discussion on the dynamics of response of supply and of the incidence of agricultural policies, is that by only conducting comparative static analyses, there exist the risk of over estimating the benefits in terms of returns to labor and underestimating those in terms of returns to land and other fixed factors or of returns to consumers deriving from a policy of support to agriculture.

Conversely, the same type of myopic analysis might have led to underestimate the costs of policies of taxing agriculture to finance industry and the consumers in urban areas, so common in the past decades in many developing countries.

Chapter 5 - The *Policy Analysis Matrix*: A measure of the overall effects of policies

In this section we will describe in some detail the process of building and analyzing a Policy Analysis Matrix, which has been introduced to the profession of agricultural economists by Eric A. Monke of the University of Arizona and Scott R. Pearson of Stanford University's Food Research Institute.

A PAM can be considered as a way of organizing budget data on representative commodity systems. The way in which data are gathered, processed and organized, allows for evaluation of the impact of the set of all policies and market distortions on a given *representative commodity system*. Collecting and adding PAM's for several commodity systems, then, can extend the analysis to the agricultural sector of a region or of the entire country.

The emphasis, thus, is on a commodity-by-commodity basis, and the main requirement is to be able to correctly identify only few *representative* systems.

There are typically three rows and four columns in the PAM for a representative system (see table 2.1. in Monke and Pearson, 1989): The first row contains actual values of **revenues** (*A*) and **costs**, divided in payments to **tradable inputs** (*B*) and to **domestic factors** (*C*). Actual values means that the values are obtained by direct collection of current data on quantities and prices as they manifest themselves in the economy. The difference between revenues and costs measures **private profits** ($D = A - B - C$).

Notice that costs are classified in only two categories: tradable goods (that is, goods that can be potentially traded on international markets) and non-tradable domestic factors (namely: land, capital and labor). Intermediate goods that are not directly tradable must be disaggregated in their basic components, so that any cost item can be either classified as due to a tradable input (oil, fertilizers, chemicals, etc.) or to domestic factors.

The value in *D* thus measures the overall **private profitability** of the particular commodity system under analysis. The main intuition behind the PAM analysis is that this observed profitability can either be the 'natural' result of fundamental economic forces in the economy, or an 'artificial' result induced by policy transfers.

To assess to what extent private profitability is due to market forces, the second row of the matrix aims at representing the ideal, most efficient level of profitability of the commodity system. It is built by evaluating the budgets at so-called *social prices*. Social prices are defined as those that express the opportunity cost of the goods or the resources¹⁰ in an undistorted economy. To build the second row of the PAM, then amounts at identifying the social prices, and at predicting how quantities would change under those prices.

¹⁰ This definition of social prices correspond to the definition of *economic* or *shadow prices* of Ellis (p. 55), who defines social prices as those adjusted to take into account also equity objectives.

Table 2. The Policy Analysis Matrix

	<i>Revenues</i>	Costs		<i>Profits</i>
		<i>Tradable inputs</i>	<i>Domestic factors</i>	
<i>Private prices</i>	A	B	C	D
<i>Social prices</i>	E	F	G	H
<i>Effects of divergences and efficient policy</i>	I	J	K	L

The values in the second row express revenues (E), costs for tradable goods (F) and costs for domestic factors (G) all evaluated as if social prices prevailed. The difference between revenues and costs yields **social profitability** ($H = E - F - G$) and expresses the ideal potential level of profits that the commodity system could generate.

By comparing the private with the social profitability, then, the analyst can judge whether the commodity system under analysis is subsidized or penalized under the prevailing set of policies. To this aim, the third row of the PAM contains the differences between the values in the first and in the second row.

The values in this row express the overall effect of policy and other distortion that affect the production of the particular commodity. The difference between private and social values can be considered as *transfers*.

We can distinguish between **revenue transfers** ($I = A - E$), **tradable cost transfers** ($J = B - F$), **domestic factor transfers** ($K = C - G$), and **total transfers** ($L = I - J - K = D - H$).

For example, a positive value for L means that private profits in the commodity system being examined (D) are higher than what they would be if the economy were at its efficient equilibrium (H). In other words, the sector is *subsidized* as a result of the set of policies being in place. The overall effect, L , is also equal to the difference between the level of output transfers minus the sum of input and factor transfers ($L = I - J - K$), so that one can identify whether the distortion is due to revenue transfers, tradable cost transfers, and/or factor transfers.

As a result, the analysis of a commodity system through the PAM can highlight the relative position of the system in terms of implicit taxation or subsidization. But nothing can be said on the non-efficiency effects of such transfers. In other words, the PAM can tell that a given set of policies will induce inefficiencies in the economy and can quantify those inefficiencies, also by pointing to the main sources of inefficiencies (whether they are mainly due to revenues, tradable costs, or domestic transfers), but tells nothing on how to eliminate such inefficiencies without compromising the non-efficiency objectives of the policy.

One way in which the PAM could be used, in principle, to suggest ways of improving the conditions of the economy is through *simulations*. If one is able to imagine alternative set of policies, one can build simulated budgets under these hypothetical conditions, and observe how the level of distortions might change.

However, the simulation results are strongly dependent on the ability of forecasting how the entries in the first row of the PAM would change under the set of hypothetical policies, an exercise that usually has a high degree of imprecision.

To conclude this introduction, we can summarize by saying that the PAM approach for policy analysis can:

- measure the efficiency cost of existing policies and market failures;
- compare the relative position of different commodity systems in terms of net transfers;
- help to highlight the efficiency cost of policies that may have equity objectives;

However, it cannot directly isolate the causes of inefficiency, so that an informed decision on how to change the policies that are in place need additional information that can be obtained only by more specific analysis of benefits and costs of each individual policy, as for example traditional partial equilibrium analyses of single policies.

In the following part of this section we will discuss in detail how to build and analyze a PAM, whereas the remaining sections of the course will be devoted to more traditional partial equilibrium analyses of several kinds of common agricultural policies.

In the following subsections we will discuss the separate phases in which the process of constructing a PAM can be divided. These phases are:

1. identifying the representative systems
2. constructing the baseline budgets, under private prices
3. determining the social prices for goods and factors
4. constructing the budgets under social prices
5. evaluating the results

5.1. Identification of representative systems

As we have seen, the PAM is best organized in terms of *commodity systems*, which are defined as the vertically integrated chains of production activities that go from the farm production to the retail market for consumption, including any processing and marketing activity that may exist in between.

The analysis could be national in scope, even though it is usually carried over at a *regional* or *sub-regional* level (different regional analyses can then be aggregated to yield results on larger territorial aggregates).

Once defined the region of interest, the next step is to identify a *representative system* of farm production, processing and marketing activity to analyze. Usually, the commodity system would be comprised of many farms, a few processing plants and some marketing firms (including wholesale distribution, transport and retail).

Farms could differ in size (small, medium or large farms), in type of conduction (peasant farms, cooperatives, corporate owned farms, etc) and in the level of resource endowments (irrigated or not, mechanized or not and so on). Each type of farm would need to be represented in the system, if one wants to provide a full account of the farm production component. Usually, one representative farm per type is described, and then the results of the representative farms are aggregated with weights corresponding to the relative share of production due to each type.

To identify the representative farms, one can rely on available statistical data (such as agricultural census data), when they exist. In case no statistical data are available, one can rely on experts that have a sound knowledge of the farming sector under study, possibly by supplementing the information provided with ad hoc surveys.

The objective is to try and identify the smallest number of representative farms that is able to account for the highest share of agricultural production in the region.

Processing and marketing activities are usually more homogeneous and more easily described in terms of their technical and economic structure.

5.2. Construction of the baseline budgets

The baseline budgets are an account of the economic results of the production activities of the system.

The accounting equation defines profits as the difference between revenues and costs.

profit = revenues – costs

Revenues, in turn, are the sum of the products between prices and quantities of all the final outputs $\sum p_i^p q_i^p$, where the superscript p is used to indicate that these are *private* values. Analogously, costs are the sum of products between prices and quantities of inputs. Inputs are divided in tradable and non-tradable (i.e., domestic factors of production), so that the accounting equation can be written as:

$$profit = \sum p_i^p q_i^p - \sum s_j^p q_j^p - \sum r_k^p q_k^p$$

where s_j^p are the private prices of tradable inputs, and r_k^p are the private prices of domestic factors of production.

Basically, to construct a budget means to provide a detailed account of all inputs used in the production process and of the outputs produced.

For agricultural productions, it may be convenient to organize the data according to the various operations that are performed during the production cycle of a crop. In this way it is usually easier to correctly account for labor and machinery use.

Many details need to be considered in accounting for the costs at the farm level, such as for example how to calculate annual costs for fixed inputs, or how to impute a cost for live animals. We will not go into the detail of describing these costs, because it could cover an entire course¹¹.

The only point I want to make is that it may be a demanding task and that the overall quality of the results depends on how carefully this step of the analysis is performed.

5.3. Social evaluation of tradable goods

Once the baseline results are completed, the analyst needs to build the second row of the PAM, which requires to quantify *social prices* and to modify the relevant quantities according to the possible incentives that are determined by the system of social prices. Social prices are intended to express the *opportunity cost* of the goods.

Opportunity cost for a good is what the good could earn in the next best alternative use.

For tradable outputs and inputs, the opportunity cost can be considered the *effective* world price, as measured by the border price and adjusted for eventual costs that are needed to transfer the good from the production or consumption site to the nearest commercial border. The rationale for such a definition of opportunity cost is that under free trade, efficiency would be reached by trading the commodities at the prevailing world price.

The world price is usually available as the Cost, Insurance and Freight (C.I.F.) price for imports, or as Free-On-Board (F.O.B.) price for exports. The difference between the two prices is insurance and handling needed at the entry/exit point:

$$C.I.F. = F.O.B. + Insurance + Freight$$

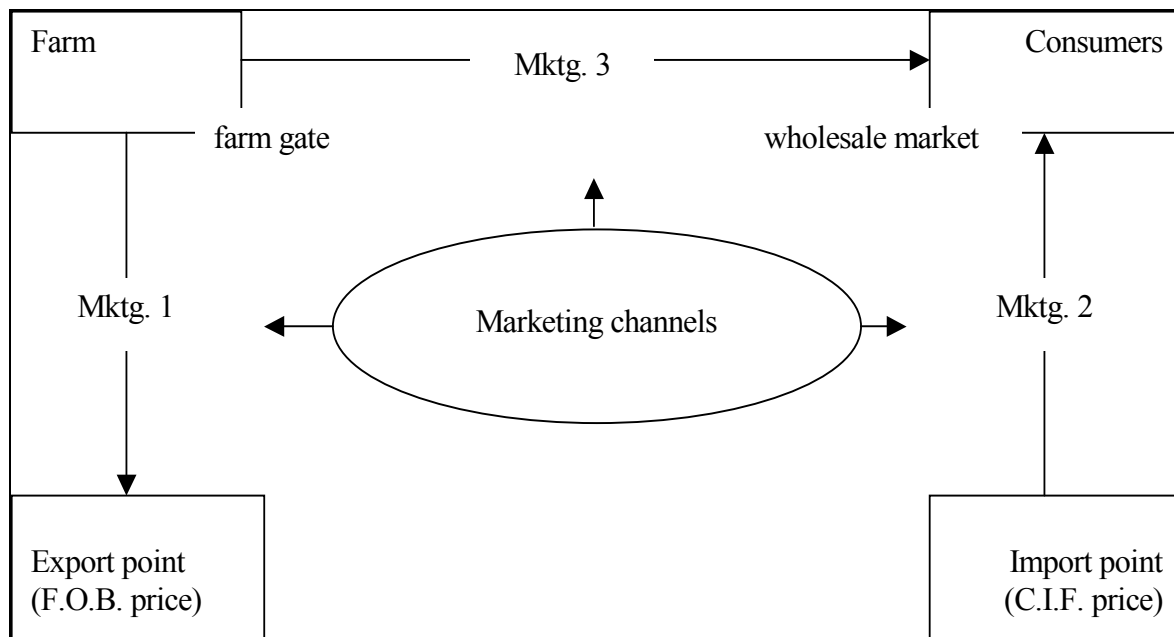
To express the effective opportunity cost of the good, these prices need to be adjusted to take into account marketing costs.

Marketing costs are the costs that are needed to bring the commodity from the point where it is produced or made available through imports, to the point where it is consumed or sold as export.

To understand the adjustments needed to express the effective world price, consider the diagram in Figure 5.1.

It indicates the steps that a product needs to take to be imported or to be exported.

¹¹ To appreciate the difficulties of the task, see the attached example of budget for a crop farm.

Figure 5.1. The marketing channel

To be competitive on the world market and to be exported, the marginal cost of the product at the farm gate must be lower than the export price net of all marketing costs needed to take it from the farm gate to the border (mktg. 1). Under these conditions, the good will be exported. On the other hand, goods for domestic consumption are imported when the marginal cost of production, inclusive of the marketing costs from the farm to the wholesale market (mktg. 3), is higher than the import price plus the marketing costs from the border to the wholesale market (mktg. 2).

The relative magnitude of marginal cost of production, marketing cost and border prices determines whether a product is traded or not.

Conditions for a good to be traded:

exports:

$$\text{F.O.B.} - \text{mktg. 1} > \text{mg. cost}$$

imports:

$$\text{C.I.F.} + \text{mktg. 2} - \text{mktg. 3} < \text{mg. cost}$$

When:

$$\text{C.I.F.} + \text{mktg. 2} - \text{mktg. 3} > \text{mg. cost} > \text{F.O.B.} - \text{mktg. 1}$$

the good is non-traded.

The effective C.I.F. and F.O.B. prices can also be altered by Government intervention, through direct imposition of levies or payment of subsidies.

For example, a subsidy on exports will increase the C.I.F. price, whereas a tax on imports will increase the F.O.B. price.

Also, the government may indirectly alter the effective border price by the exchange rate. For example, a *devaluation* of the local currency would have the same effect of a tax on imports and a subsidy on exports.

A good which is potentially tradable, may become non-traded because of:

- high production costs,
- high marketing costs,
- government intervention

Usually, C.I.F. and F.O.B. prices are expressed in foreign exchange (usually, in U.S. dollars). To compare them with domestic production and marketing costs, they must be converted to local currency (i.e. in Syrian Pounds).

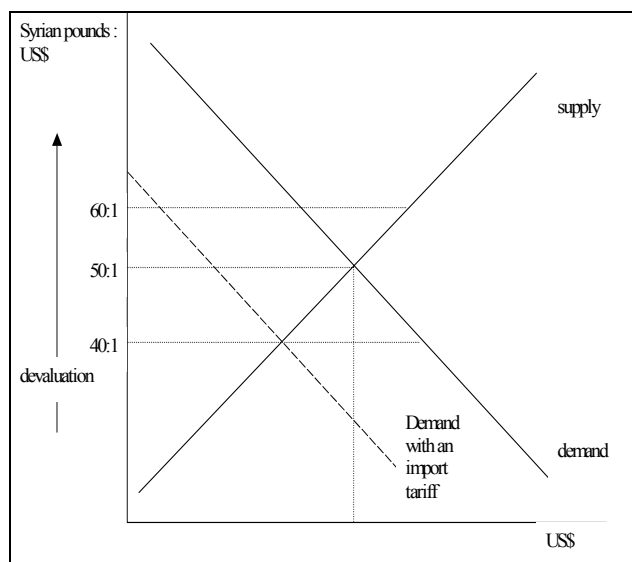
Which exchange rate to use is a critical point in the determination of social prices.

Under free market for the foreign currency, the exchange rate should express the relative scarcity of foreign exchange needed to buy imports. Demand for foreign exchange is expressed by importers, whereas supply of foreign exchange is generated by exports.

The correct exchange rate is the one that balances demand and supply of foreign exchange, as for example would be a rate of 50:1 (that is, 50 Syrian Pounds are required for 1 US dollar) in the graph of Figure 5.2.

If, for any reason, the exchange rate is set at a different level, there will be either excess supply or excess demand of foreign exchange. Such disequilibria cannot be sustained for long periods.

Figure 5.2. The exchange rate market



Suppose for example the government sets the official exchange rate at 40:1 (that is, the Syrian Pound is overvalued relative to its free market rate). As a consequence, there will be an excess demand for US dollars: people that need foreign exchange to buy import, would be willing to pay more than the official rate, however because those who export good only receive the official rate, there will be a shortage of current exchange. To sustain such a rate, the governments needs to engage in other activities, such as *rationing*, that is directly controlling the supply of foreign exchange, or indirectly modify supply and demand of foreign exchange by engaging in trade price policies.

For example, the government could impose a tariff on imports, so that the incentives to import are lowered and the demand for foreign exchange shifts to the left.

Whenever the official rate is set very far from the true equilibrium, unofficial markets may develop, which would compensate for the rationing, for example, by providing foreign currency at a higher price. The presence of illegal markets for foreign exchanges is thus a symptom that the official rate is not a good indication of the actual value of the domestic currency relative to the foreign currency.

If the official rates overvalues the domestic currency, to price import and exports at the official rates would be equivalent to undervalue exports and to overvalue imports.

For all these reasons, the official exchange rate should never be used to convert CIF and FOB prices in domestic currency.

The market exchange rate, when available, should be used. When a market rate is not available, neighboring countries values of the exchange rate could be used instead.

(See also the discussion in Tsakok (1990, pages 33-41))

As we said, the market exchange rate that prevails in a country can be affected by policy restrictions on import or output. However, if one is only interested in comparing the long run profitability of different sectors, use of such exchange rate can be appropriate¹².

In all other instances (for example, when the analyst is interested in the short-run effects of policies¹³), use of a distorted market exchange rate may not be adequate, and one needs to estimate the SER.

5.4. Social evaluation of domestic factors and non-tradable commodities and services¹⁴

When world prices cannot be taken as a reference, the assessment of the correct social price is more difficult.

For non-tradable commodities and services, such as, for example, electricity, water, marketing activities, legal services, etc., the domestic, private valuation of these goods and services may be distorted by any action that shifts their demand.

Their value, thus, should be decomposed in their tradable and factor components, so that one can use the shadow values of the previous section for the tradable component, and the shadow price of factors for the second component¹⁵.

We will discuss the social valuation of factors next.

In principle, the social evaluation of domestic factors of production (land, capital and labor) could be performed by applying general equilibrium principles.

When competition in factor markets eliminates any excess profit, the value of production in any sector must equal the weighted sum of the factors of production used in those sectors, with weights equal to the efficient prices of the factors.

For example, in an economy with two outputs, Q_1 and Q_2 , which uses labor, L , and capital, K , the following identities will hold:

$$\begin{aligned} w L_1 + r K_1 &= P_1 Q_1 \\ w L_2 + r K_2 &= P_2 Q_2 \end{aligned}$$

from which:

$$\begin{aligned} w L_1/Q_1 + r K_1/Q_1 &= P_1 \\ w L_2/Q_2 + r K_2/Q_2 &= P_2 \end{aligned}$$

¹² See the discussion in Monke and Pearson (1989, pp. 103-106). The basic argument is that, even though the market exchange rate can be distorted by government policies, the distortion will affect all tradable outputs, tradable inputs and domestic factors in the same proportion, and the relative profitability of different systems will not be altered.

¹³ In such cases, use of a distorted exchange rate may lead to errors given that the short-run responsiveness of tradable inputs and outputs is higher than that of domestic factors.

¹⁴ For this section, see Monke and Pearson (1989, chapter 7) and Tsakok, (1990, pages 107-117).

¹⁵ This is indeed one problematic aspect of the PAM analysis, which becomes relevant when non-tradable goods and services are a relevant share of costs of a commodity system.

if constant returns to scale can be assumed, the ratios L_1/Q_1 , K_1/Q_1 , L_2/Q_2 , and K_2/Q_2 are constant input/output coefficient and we can indicate them as l_1 (i.e., the amount of labor needed to produce one unit of output in the first sector), k_1 , l_2 , and k_2 respectively:

$$\begin{aligned}w l_1 + r k_1 &= P_1 \\w l_2 + r k_2 &= P_2\end{aligned}$$

Then the equilibrium factor prices can be calculated as:

$$\begin{aligned}w &= (P_1 k_2 - P_2 k_1) / (l_1 k_2 - l_2 k_1) \\r &= (P_2 l_1 - P_1 l_2) / (l_1 k_2 - l_2 k_1)\end{aligned}$$

The simple general equilibrium model can be generalized to any degree of detail (see Monke and Pearson, 1989, p. 101-103). However, estimation of the general equilibrium model usually requires considerable amount of data and is usually unfeasible for many practical policy analyses.

An alternative approach is to explicitly consider the divergences that are known to affect factor prices.

First, distortion may be present in the factor markets. A possible list includes:

- proportional taxes and subsidies (as for example social security taxes)
- direct regulation of factor prices (such as minimum wage, rent control, etc.)
- market failures (such as market segmentation and transaction costs)

Second, distortions in commodity markets may affect factor prices: for example, if labor intensive industries are supported relative to capital intensive industries, total demand for labor may increase while demand for capital may decrease. As a consequence, wage rates might increase whereas interest rates may decrease. In general, however, given the different level of support to various industries and the varying degree of labor intensity, the effects coming from different sectors that use the same factor might offset each other, and have limited effect on the equilibrium price of factor markets.

Finally, macroeconomic policy can affect the interest rate, thus changing the price of land and labor relative to capital. How this would affect the price for these other two factors depends on the pattern of complementarity or substitution between factors.

In general, we can conclude by quoting Monke and Pearson who say that:

“social valuation of domestic factors is the most difficult aspect of social cost accounting. The critical first step in estimating the social prices of factors is the development of a consistent framework in which to identify divergences. The exercise of quantification becomes a series of sequential adjustments to private market factor prices to recognize the effects of commodity market divergences and the indirect effects of macroeconomic distortions and input substitution. As in all shadow pricing methods, complete knowledge of the response of commodity systems to price changes is necessary to derive exact estimates of social values.

Empirical estimates of social factor prices are thus approximations, and the analyst will be forced to make arbitrary judgments about what constitutes large and small changes.” (Monke and Pearson, 1989, pp. 126-127)

This comment makes it clear that the values of wage rates and of interest rate used in calculation of the second row of the PAM are very critical points of the overall analysis. Unfortunately, results may depend heavily on these prices, and thus the overall analysis may be faulted by the wrong selection of these prices.

One advantage of the PAM framework, however, is that, once the budgets are determined in all other quantities, it allows for easy recalculation of budgets under different scenarios in terms of wage and interest rates, so that a sensitivity analysis of the results can be performed.

Chapter 6 - The rationale for agricultural policy and the role of the state in the economy

In this second part of the course, we will discuss the problems of design, implementation and analysis of the principal agricultural policies in developing countries.

The first part served the purpose of providing us with the tools needed for understanding the economic effects of policy that interests the agricultural sector.

Now, we are ready to analyze in detail several of the policies that have been implemented in many developing countries. In particular, we will refer to the experience of the Syrian Arab Republic as described by the document prepared by the National Agricultural Policy Center (NAPC, 2001) and entitled “Country Profile”.

Before entering in the details of the description of agricultural policies, however, we will present a brief discussion of the history of public intervention in agriculture (Norton, 2002). The discussion will be oriented towards an understanding of *if* and *when* government intervention in agriculture can be justified.

In the second section, we will analyze the policies, which are classified in three main categories: policies that *affect producer’s incentives*, policies that grants *access to resources*, and policies that *influence access to factor’s markets*, as in Norton (2002).

Policy is the *course of action chosen by government towards an aspect of the economy, including the goals that the government seeks to achieve, and the choice of methods to pursue those goals* (Ellis, 1991 p. 8)

Government is the group of people in charge of running a country, and who are responsible for making policy decisions.

The **State** is defined as the *whole set of public institutions responsible for the administration and enforcement of policy decision*

To describe the policy process, we can say that the government decides on the actions to be taken to reach some implicit or explicit objectives and then it is the responsibility of the state apparatus to implement those actions and to monitor their results.

Agriculture is traditionally characterized by heavy government intervention, in both developing and developed countries. But it is fair to ask: Why do we have agricultural policies? Why the government may decide to take actions that alter the natural functioning of the markets?

Several reasons have been suggested. Some of them are related to the concept of *economic efficiency* and the supposed superiority of competitive equilibrium. The role of economic policy, then, should be that of removing all obstacles that prevents markets from reaching a competitive equilibrium. Other reasons are based on **equity concerns**, that is concerns about the equal distribution of wealth among all citizens.

6.1. The new-institutional view of agricultural policy

Markets are economic institutions that permit trade. At the beginning of the economic development of a country, government action may be needed to favor the *emergence* of markets that do not exist. For example, a fundamental precondition for a market to exist is that property rights are well defined and enforced. It is obvious to consider that, in order to trade something, the property right must be clearly defined. Usually, it is the government responsibility to assign and enforce property rights. Land reform policies, for example, are still a very important task for the governments in many developing countries.

Even where markets are well developed, however, there may be the need for government intervention to achieve the efficiency predicted by the classical theory of general equilibrium. The presence of *transaction costs*, in fact, may prevent some of the potential beneficial trades from taking place.

That of *transaction costs* is a very general concept, that may be used to define a very broad set of phenomena, including asymmetric information, strategic behavior, geographical distances and lack of infrastructure.

Transaction costs are *all costs that must be paid when operating a transaction*. They include transportation, administrative costs, information gathering, etc.

The new-institutional view of economic policy considers *institutions* as the response of the economy to the presence of transaction costs. The correspondent view of the role of the state in the economy, hence, is that of favoring the creation and functioning of all the institutions (including markets among them). According to the transaction cost interpretation of market failures, the role of the government should be that of *reducing* or *eliminating transaction costs*.

Institutions are *sets of rules and agreements that regulates economic activity*

6.2. Efficiency vs. equity

Efficiency should not be the only concern of public officials. One other justification for state intervention in the economy is to provide an equal distribution of resources among the population. For example, progressive tax systems have the explicit goal of reducing the differences in disposable income, by raising higher proportional taxes to the highest income levels. Also, the provision of essential social services -- such as education and health services -- at a reduced cost to part of the population has the main objective of reducing disparities in income.

Agricultural policies too may have distributional effects. Low food prices, for example, have a larger beneficial impact on poor consumers than on rich consumers. Unfortunately, there are trade-offs between efficiency and equity objectives: by keeping agricultural prices at a low level, for example, investments are discouraged, and the growth of the sector in the long run is compromised.

One of the objectives of this course is to learn how to identify such trade offs.

6.3. The role of the state in a market economy

In the past years, all across the world, governments have been heavily involved in the agricultural sector, both in developing and in developed countries. Most of the intervention was direct regulation of both prices and resource use. Governments had several institutions in place to:

- regulate domestic prices of agricultural outputs and inputs (through taxes, subsidies, centralized purchases and use of buffer stocks, etc)
- control the use and the price of factors
- limit import or exports, either directly or indirectly through the exchange rate.

Even though such measures are still in place in many countries, experience has shown that such a heavy intervention may be unsustainable in the long run.

The conditions that a viable strategy of sectoral policy should obey are (Norton, 2001 chapter 2, page 11):

- **economic sustainability.** The policy must prove to be economically advantageous. A policy which cannot be proven to be linked to any clearly identifiable economic benefit for the economy, is not going to be supported for long time
- **social and political sustainability.** The benefits must be shared by large part of the population, which in the less developed countries correspond to the poorest part of the population. In absence of large consensus, no policy can be sustained for long time, lest the risk of social uprising and revolts.
- **fiscal sustainability.** Many policies have an explicit budgetary cost. Policy whose source of financing is not clearly identified should not be undertaken.
- **institutional sustainability.** Many policies needs the development and activity of institutions to support them. When the institutional capacity to support the policies is low, the effectiveness of the policy is strongly undermined.
- **environmental sustainability.** Finally, and very important, all economic policy should be assessed also in terms of their long run impact on the environment. Water reserves, fisheries stocks, forests and soil should be protected against overexploitation by avoiding policies that do not create the correct incentives towards the conservation of the natural environment.

Sustainability. The concept of sustainability refers to *the long term viability of a set of action.*

Most analysts agree that a *modern view of the role of the state in the economy* should not be that of heavy, direct intervention through prices and regulation. Rather, it should be that of:

- monitoring the functioning of the markets, in order to identify the possible presence of distortions and possible lack of competition
- providing energy, communication and transportation services when the extent of the market is not large enough to justify private provision of those services
- reducing transaction costs
- redistributing income across different sectors of the population (for example from urban to rural, from rich to poor, from the coastal areas to the interior, etc.)

In other words, the government should assist and support the functioning of the private sector by providing the infrastructural and institutional framework within which the private economy can function at its best, and should constantly monitor such functioning, by preventing the concentration of economic power in the hands of few large private agents¹⁶.

6.4. Analysis of specific agricultural policies

Agricultural policies can be classified in several ways, depending on their objectives, the instruments used, the commodity system they are primarily focused on, etc.

¹⁶ Rather than *efficiency*, it is my opinion that the most likely result of completely free market operation, is that of the *consolidation of larger and larger concentration of market power in the hands of few firms*, national or multinational in scope. The economies of scale that are observable in many sectors, and that leads to high concentration in sectors such as grains storage, food processing and distribution, and, in general, industrial production, are due to the presence of transaction costs. One of the ways in which the effect of transaction costs can be overcome is by “internalizing the market” by integrating vertically the two counterparts, as pointed out by Ronald Coase in his 1929 article “The theory of the firm”.

We will use the classification suggested by Norton (2002), which classifies policies in three categories:

- ***Policies that affect producer's incentives***, which include:
 - Output price policies
 - Trade and exchange rate policies
 - Other policies that influence incentives
- ***Policies that grant producers access to resources***, among which we can identify:
 - Food policy and food security
 - Land tenure policies
 - Water access policies and irrigation
 - Agricultural technology policies
- ***Policies that influence access to factors' markets***, most importantly:
 - Labor market
 - Credit market

Such a classification is more in line with the modern view of government intervention in the agricultural sector we described in the previous section, and gives emphasis to the institutional role of policy.

6.5. Policies that influence producer incentives

Economic activities are guided by **prices**. For this reason, one of the most important ways of trying and affect economic activity is through the modification of prices and the policies that aim at modifying producer incentives can be described as *price policies*.

Which prices are really important for farmers? The result of any firm is measured by profits, which depends on both outputs' and inputs' prices.

Thus, what really matters for the incentives for farmers is the *relative trend of output versus input prices*, rather than the absolute value of output and input prices. In other words, only if *output prices rise proportionally more than inputs' prices*, there is an increase in profits.

For example, when we discuss the effects of higher input prices on a graph with a fixed supply function, we implicitly assume that inputs' prices remain unchanged. Only if all other prices are kept constant, an increase in output price means an increase in the relative terms of trade between outputs and inputs.

To highlight the difference between absolute and relative prices, we call *real prices* those expressed in relative terms.

Usually, real prices are obtained by dividing the absolute, or *nominal* price levels by an index of all prices. A change in real price for agricultural products, thus means that agricultural prices are changed *relatively to the general level of prices in the economy*.

To discuss of possible policies to alter real agricultural prices, we need to understand what is that determines them. In other words, we need to understand how prices form.

6.5.1. The determinants of agricultural prices

The most obvious determinant of prices is the balance of demand and supply. Even though a perfect explanation of the mechanisms by which demand and supply meets is not available, it is a fact that the overall level of prices is the result of the encounter of demand and supply. Even though in short periods of time there may be a difference between supply and demand, *excess supply and excess demand are not sustainable in the long run*.

As a result, if for example there is an increase in the demand for agricultural products, eventually this will generate pressures towards an increase in prices. Also, and very important for agriculture, a shortage in supply (as for example as a consequence of bad harvests) for a product which is mainly oriented towards domestic markets, will necessarily cause an increase in prices.

The effects of changes in supply and in demand on the level of prices depends heavily on the relative magnitude of the elasticity of supply and demand. For example, a given increase in the demand for agricultural product will cause a higher increase in price, the lower is the elasticity of supply.

Also, a reduction in supply will be a higher effect on prices, the more inelastic is the demand.

Changes in supply and demand due to seasonal variation or to the weather usually determine short-run fluctuations, which have effects on the stability of income.

Terms of trade: it is a measure of the relative price of one sector of production. It is calculated as the ratio between an index of average price for the sector one is concerned, and an index of average price of the rest of the economy.

More important for the level of income is the long-run price trend. It is a well known fact that, in the long-run, the relative price of agricultural products tends to decline. The reason for such a trend is to be found in the *income elasticity of food products*, which is almost always less than one. Norton reports that the income elasticity of food demand, on average across countries tends to be consistent with values of 0.6 to 0.7. This means, for example, that an aggregate real income growth in the economy of 5% in one year will result in an increase in food demand of only 3 to 3.5% per year.

The effect on prices depends on how fast is the growth of agricultural production, and on whether or not import can compensate for the higher demand. If productivity of agriculture grows by more than 3 – 3.5%, the result will be that of declining agricultural prices.

The most fundamental determinants of increase in the demand for basic agricultural products is population growth, whereas the force that drives increase in productivity is technological progress. On a global scale, especially, at least until the eighteenth century, innovations in agriculture is what permitted population growth, so that the two figures were tightly linked.

With the industrial revolution and the mechanization of agriculture, agricultural productivity started growing faster than agricultural demand, with the result of declining real prices known as the *farm problem* which has affected many of what are now developed countries.

The above discussion was centered on a global, worldwide perspective. Focusing more at the an individual country level, the real price for agricultural product is tightly linked to the evolution of the world price. In other words, especially if a country is 'small' when compared with the world market, domestic dynamics of productivity and demand may have only a limited effect on the evolution of agricultural terms of trade, which are determined mainly by the world price levels.

This is important for developing countries, where the high rates of increase in food demand, driven by population growth, which could have sustained stable relative prices for agriculture, have failed to do so because of the increases in imports. International trade has had the effect of preventing the domestic agricultural sector from benefiting from increased food demand. The constantly declining world price has forced the agricultural sector to accept lower real prices of what a closed economy could have achieved, thus reducing the incentives for increased production and increasing dependence on imports, in a self-fulfilling spiral of declining prices and increased agricultural imports.

The decline of agricultural relative prices on the world market has been exacerbated by the high levels of subsidies that large developed economies (the U.S. and the European Community, above all) have granted to their producers.

A developing country open to international trade, thus, finds itself in the conditions of high dependence on import and lack of incentives for domestic agriculture.

Agricultural price policies are one of the instruments that could be used to break such a spiral, which should thus be considered as one the main objective of a strategy based on this kind of policies.

6.5.2 Objectives of price policies

In principle, price policies could be aimed at:

- increasing prices
- decrease prices
- stabilize prices

The objectives are always related to more general economic growth and income distribution objectives which can be reached by a combination of different instruments on different markets.

Chapter 7 - Instruments of agricultural price policies

Given that most agricultural products are tradable, in absence of any restriction to trade or other policies, agricultural output prices will be determined by the world price levels, which, for a small country, are to be considered as exogenous.

The objectives of price policies, thus, should be pursued through attempts at modifying the *effective* prices faced by farmers and consumers, which constitutes the real incentives.

The main instruments to modify the price faced by producers and consumers are:

- Trade policies
- Exchange rate policy
- Sectoral policies
 - o Price controls
 - o Farm support prices
 - o Public Storage
 - o Input markets

In addition, general economy-wide policies such as *fiscal policy* and *macroeconomic policy* can also have large influences on the incentive prices.

7.1. Trade policies

With the term trade policies we indicate the set of public intervention intended at modify the *volumes* of import and/or exports.

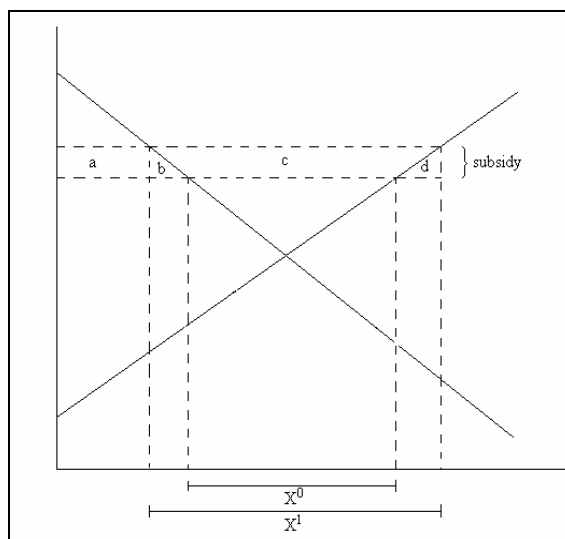
By modifying the volume of international trade, these policies effectively drive a wedge between domestic prices and world prices.

We have described in the previous half of the course the basic theory of gains from trade, and have assumed that, when a country opens to trade, the world price becomes the price to which both producers and consumers respond.

Now, we will analyze the effects of trade policies in more detail, and will discover that, sometimes, restrictions to international trade may be beneficial for a country, thus revising the general conclusion of the theory of international trade.

In particular, we will see that some form of trade regulation may be needed to offset the negative effects of declining world agricultural prices.

It must be noted that all forms of trade restriction have been at the center of intense debate during the last 70 years. The recent GATT agreement on agriculture and the new WTO that has emerged, has imposed, at least in principle, strong limitations to the extent of trade protection that member countries are allowed.

Figure 7.1. The effects of a subsidy on exports

In principle, trade restrictions are detrimental in the long run, because they achieve protection for producers at a high cost. Moreover, the protected sectors tend to be less competitive on the world market, when compared with producers from the rest of the world which face lower prices.

Nevertheless, some form of protection may be needed by developing countries to offset the effects of subsidies paid by rich economies to their exports, which contribute to keep world price artificially low.

The negative effects of low prices for staple food (such as rice or wheat) are particularly strong for poor rural families which base most of their income on the production of such foods.

Until developing countries will be able to strengthening their position by joint participation in the international trade negotiation, the challenge they have to face is to ensure adequate incentives to the domestic agricultural sector “without falling into the self-defeating trap of protectionism.” (Norton, 2002, chapter 4, p.6)

One way of doing so could be through an intelligent combination of import tariffs and export subsidies, designed and implemented with mechanisms that would ensure the benefits to be targeted to the producers of agricultural products for which the country has a real comparative advantage.

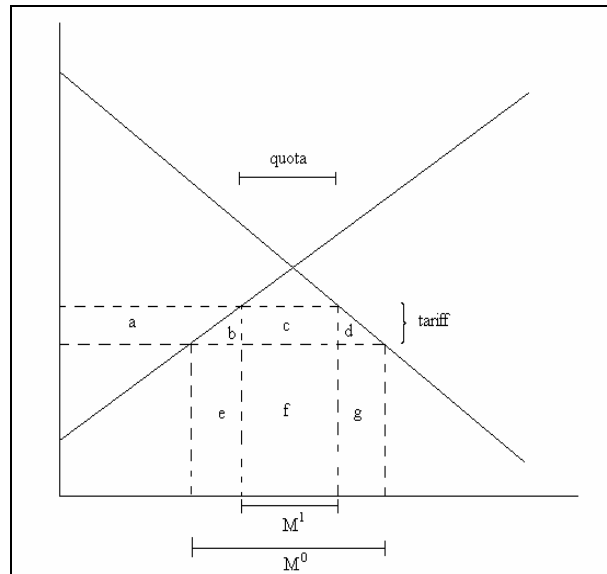
7.1.1. Tariffs

Tariffs are taxes levied on imports, so that the effective domestic price becomes higher than the world price.

In general, the effect of a tariff is to *provide economic protection for domestic production*, because it makes imported products more expensive in the domestic markets

The graph in Figure 7.1 illustrates the effects of imposition of a tariff on imports. The effective, domestic price will be raised above the world price by the amount of the tariff. As a result: domestic production will increase, domestic consumption will decrease and the level of imports will reduce from M^0 to M^1 .

(When a tariff is larger than the difference between autarkic price and world price, it is said a prohibitive tariff, and have the effect of eliminating all imports.)

Figure 7.2. The effects of a tariff and of an equivalent quota on imports

Producers of import substitutes will gain (a), and consumer will lose (a + b + c + d) when compared with the free trade situation.

Also, the government will earn revenues from the tariff equal to the area (c) in the graph and the net efficiency loss is equal to area (b + d).

We can have *generalized or uniform tariffs*, which would cover all tradable goods by the same percentage (i.e. all import prices are raised by 5%), or *specific tariffs*, differentiated by product or sector (for example, agricultural products have a tariff of 3% while industrial products of 6%).

A generalized tariff scheme can be easier to implement, and it should cause less distortion. In fact, a uniform tariff on all tradable goods will not change the *relative* prices of those goods, and the comparative advantages in the production of some product will be saved.

Specific tariffs, instead, can be used to alter the relative profitability of some products and sectors against others. While such diversified tariffs could be beneficial in the short run to protect specific sectors, in the long run they have the potentially negative effect of reducing competitiveness of the protected sector. In fact, the least competitive sector is the one which will have the stronger interest to obtain a preferential tariff (Norton, 2002 page 4-8).

Tariffs are thus a powerful mechanism to protect sectors that produce import substitutes, and are justified whenever world price level is objectively too low to warrant the right incentives to the agricultural production.

In general, however, a Country should not fall in the trap of raising prohibitive tariffs and go back to extreme protectionisms. Norton suggests that three principles should guide the setting of tariffs:

- 1) tariff rates should not be high in general, and if they are, a program should be put in place to scale them downward over time
- 2) their rates should be relatively uniform over sectors and products
- 3) the tariff system should be relatively stable over time, except for the downward adjustments planned years in advance.

7.1.2. Quotas and other non-tariff trade restrictions

An alternative type of intervention on trade is to restrict the volume of import or export through *quotas*.

The effect of a quota on import is the same of an equivalent tariff, as is illustrated in Figure 7.1.

The only apparent difference is that the government will not earn the tax revenue. However, if the quota is enforced through the issuance of licenses, there will be rents generated by the possess of the license that are quantitatively equivalent to the area (c).

Apart from explicit quotas, there are many other forms of restrictions on trade.

7.1.3. Export incentives

Rather than by reducing imports, one other set of trade policies that can be used to raise incentives for agriculture concerns enhancing exports.

A subsidy on exports has the effect of raising the effective price for producers and consumers, as illustrated in the graph of Figure 7.2.

The level of exports will increase from X^0 to X^1 , the benefits for producers will be $(a+b+c+d)$, whereas consumers will sustain a loss of $(-a-b)$. The government expenditure will amount at an area equal to $(-a-b-c-d)$, so that the overall, net effect of the policy will be a loss of welfare equal to area $(-b-d)$.

Direct subsidies on export, as can be seen, are very expensive for the government budget. Usually they cannot be used extensively, unless an equivalent amount of import tariffs is available to finance them.

Also, given that usually the export subsidies are paid to the exporters, whenever there is concentration in the distribution sector (i.e. monopsony power on the part of exporters), the benefits will not reach the farmers.

For this reason, if the government want to really target the farmers, the right to the subsidy should be given directly to the producers, for example through a system of transferable permits (See Norton, 2002, page 4-15)

7.1.4. The experience of the Syrian Arab Republic

What is the experience of Syria with regards to trade policy?

In the past, foreign trade in Syria was completely controlled by the Government. No private operator could either import or export goods.

Starting from 1987, a process of gradual economic liberalization, aiming at promoting private sector's contribution to both production and external trade, was undertaken (NAPC, 2002), and some progress has been made.

Today, the state of trade policy can be described as a “complex and segmented regulatory and institutional system: product specific tariff and non-tariff measures, product heterogeneous currency regulations linking import and export operations, a system of specialized state trading enterprises acting, in some cases, as legal monopolies.” (De Benedictis, 2000, p. 23)

Overall, the main policy affecting agricultural trade has been a system of differentiated exchange rates, the functioning of which will be analyzed in the next lecture. Also the complex exchange rates regime is undergoing a reform process. Nevertheless, it can be said that it still dominates other policies.

Here we will discuss all other forms of trade policy. To do so, we will refer to some of the policy studies produced within the activities of the project GPC/SYR/006/ITA of the FAO.

Following is an excerpt from the FAO Project GPC/SYR/006/ITA report entitled “Taxation and Net Transfers to the Agricultural Sector”, by Peter Wehrheim:

Tariff and non-tariff barriers to trade

Development of trade regime and trade structure

Before 1985 all import and export operations were controlled by the state. Since 1985 private traders were allowed to import industrial inputs. After 1987 more substantial reforms were implemented in an attempt to liberalize Syria's trade regime. One part of these reforms was to allow private traders to export agricultural commodities.

Today trade for some agricultural products such as **fruits** and **vegetables** is dominated by private traders. Trade with **strategic crops**, particularly, cereals, cotton, tobacco, and sugar remains widely in the hand of state organizations. [...] Total manufacturing trade [represents a high share of public exports while state agencies have reduced their import operations in the course of the 90s already. However, the use of foreign currency earnings remained restricted by various regulations. Furthermore, in 1991 a law (No 10) was passed which gave more concessions to foreign traders. Because of these changes exports diversified substantially as private traders were successful in exporting fruits, vegetable, and other food commodities to Arab Gulf countries and garments to European countries. GDP also grew in this period. However, in the second half of the 1990s the Syrian economy experienced a depression again. Only at the end of the 1990s new reforms were initiated to liberalize the trade system further. However, they were not yet sufficient to remove the trade restrictions which are still in place today. Therefore, since the 1990s major policy reforms have been pursued and are still being implemented today.

The trade structure of Syria changed in the 90s to some extent but with the exception of 1997 Syria had a negative trade balance in each year. The major share of its commodity imports accrued from oil and oil exports. The major share of imports was realized by the manufacturing sector.

Import tariffs.

Imports of agro-food commodities are subject to two types of tariffs. First, a ‘product-specific import tariff’ which differs between 1 and 150%. Table 3.4-1 gives an overview of the import tariffs for agricultural commodities which were applied in early 2001.

They have been effective throughout most of the 1990s. The highest import tariff rates are applied for premium food items such as caviar (100%). This seems to be excessively high. Furthermore, tariff variation is very high! While tariff rates might differ it would be better to keep tariff variation as low as possible. The experience from Chile, for instance, shows that the introduction of a more ‘uniform tariff schedule’ has not only significantly reduced the incentives for corruption but it has also contributed to export growth.

Second, an additional ‘general import tariff’ which varies between 6-35% and which increases under-proportionally with the level of the product-specific import tariff (see Table 3.4-2). This additional tariff is supposed to collect fees that in turn are used for various government expenditures (e.g. defense, consumption, schooling, harbor, transportation etc.). Law No.1 from 1980 specified some exemptions from the need to pay the ‘general import tariff’.

Imports of important consumer products such as flour, for instance, were exempted from these additional tariff payments.

Again no data was made available on the extent of annual tariff revenues that has been collected with this tariff. If the tariff levels which are reported in Table 3.4-2 have actually been applied the ‘general import tariff’ should have been a significant source of additional import protection. Furthermore, the revenues collected with the ‘general import tariff’ must have been substantial as well.

From an economic point of view the application of such a ‘general import tariff’ reduced the transparency of Syria's trade system. If revenue objectives were the major reason for imposing this additional customs tariff it would have been more beneficial from the beginning on to raise product-specific import tariffs instead of imposing an additional tariff.

Because of the obvious disadvantages inherent in the 'general import tariff' scheme it has been liberalized in early 2001. A first decree reduced the level of the 'general import tariff' for all product groups to 1%. A second decree which at the time this study was written but has not been signed yet, foresees the complete abolishment of the 'general import tariff'.

These measures are significant steps towards further liberalization of Syria's trade regime. As long as this reduction in trade protection is not compensated for by increasing the product-specific import tariff, the economic effects should be measurable in the future. The difference between domestic and world market prices should narrow. Furthermore, domestic prices for imported commodities should decrease, which in turn will be particularly beneficial for those consumers who rely on imported food commodities to a great extent.

Non-tariff import constraints. Non tariff import constraints for agricultural commodities amount in Syria. In an attempt to protect producers of fruits and vegetables – which is likely to be one sub-sector of agriculture which enjoys relatively high comparative advantages – a total import ban for fruits and vegetables has been in force during the 90s. Imports of vegetables and fruits from Lebanon and Jordan were allowed in certain periods of the year according to an agricultural production calendar. Furthermore, "Five Star Hotels" were allowed to import tropical fruits some of which can be found today in food retail markets of Damascus.

Import-export-symmetry. After 1987 the private sector was allowed to import production inputs and agricultural raw materials and processed food stuffs subject to the condition of having earned the mandatory foreign exchange in export operations. However, the exporter was allowed to use a specific share of his export earnings only for importing commodities.

This share differs according to the exported commodity. For example, in the case of wool exports (from sheep), 75% of export earnings may be used for importing agricultural commodities, only. Resolutions which became effective in 1999 allowed such "import-export-symmetries" also in the case of flour. Private mills and

pasta factories were allowed to import flour but had to earn the foreign exchange by exporting the respective commodities again.

Another example is related to trade in sheep meat. Syria seems to have a comparative advantage in the production of Awas sheep which enjoys high demand particularly in Gulf countries. The export value of Awas sheep was US\$ 46 Mio. in 1997, 49 in 1998, and 55 in 1999. However, exports of the Awas sheep were substantially constraint by imposing an "import-export-symmetry" on it: for each quantity of Awas sheep exported the exporter had to import the double quantity of sheep meat of lower quality. The rationale for this arrangement was determined by food security concerns. Recently, this regulation was given up allowing for any amounts of exports of Awas sheep the exporters wishes to make (Decision No. 1 of the Prime Minister, April 7th, 2000). However, it is obvious that any such constraints prevent that Syria can better exploit its comparative advantage and realize its full export potential. Another example for an obligatory "import-export-symmetry" was imposed when bananas were imported. Such imports were subject to exports of apples and citrus fruits in respective quantities.

Approval by the Ministry. Only products for which no import ban exists can be imported. Most import operation need approval by the Ministry of Agriculture and Agrarian Reform. The Ministry also assures that the import operation satisfies the sanitary and phyto-sanitary standards as defined by the Syrian Government. Some agro-food imports are exempted from the obligation of being approved by the Ministry of Agriculture (see Table 3.4-3). The more bureaucratic such procedures will be the higher the incentives for corruption will get.

Therefore, it seems to be important that the customs codes defines clearly the conditions for any such import operations leaving only few decisions at the discretion of administrators in the Ministry and at the Customs offices.

Export policies. One of the major recent objectives of Syria's foreign trade policy is to encourage the exports of commodities and services and to diversify the structure of exports.

In an attempt to support this objective, in 1986, the Export Committee was established. This Committee is chaired by the Deputy Prime Minister for economic affairs and its secretariat is attached to the Ministry of Economics and Foreign Trade. The Supreme Agricultural Council and various other government institutions and Ministries engaged in export activities are represented in this committee.

The Export Committee is responsible in designing export policies, identifying the commodities to be exported by each para-statal or ministry, and supervising the export operations. It also decides on export promotion programs and measures to eliminate export constraints. More recently it also attempted to change the general export strategy: instead of merely disposing of surplus quantities not needed for domestic consumption on international markets, it encouraged the production of commodities specifically tuned for international markets. This seems to be particularly important because in export markets quality standards matter today more than ever before.

Private sector engagement in agricultural export operations. Ever since the liberalization of the Syrian economy has been initiated in 1987, the Export Committee in accordance with the guidelines designed by the Government of Syria started to ease export operations of agro-food products by the private sector. Today the private sector is allowed to engage in the following export operations:

- fruits and vegetables;
- all other minor agricultural crops
- strategic crops (including wheat, cotton, sugar, and tobacco) except flour exports which need specific approval
- Live animals except wild birds which have been domesticated
- Meat, and other animal products contingent to the approval of the Ministry of Agriculture and Agrarian Reforms

However, various restrictions are still in force which constitute serious constraints for private export operations. For most products mentioned above, the exporter needs to get an export license. Exports of fruits and vegetables are permitted without getting an export license.

[...]

Export taxes. According to Syria's legislation an agricultural production tax is levied on all agricultural commodities which are exported. Effectively this constitutes an export tax.

Generally, this tax ranges between 9.5 and 12% of the production value. The products can be categorized as follows:

- Products on which an production tax of 12% of their average price at the time of export is levied. This product group includes fresh and processed vegetables and fruits, olives, olive oil and other products made from olives (a total of 88 commodities).
- Products on which an export tax of 9-9.5% of their average price at the time of exports is levied (see Table A- xx in the Appendix).

However, there have been various exemptions from these export taxes in the recent past.

Particularly dry and frozen vegetables of superior quality standards and in recent years all fruits and vegetable products have been exempted from the export tax. In 1996, olive oil and in the year 2000 cotton has been exempted from the export tax. In 2001, government decree No. 15 exempted all agricultural commodities from this export tax.

Additionally, all export operation were subject to the following general export policies:

- An "income tax" of 1% of all export revenues is levied on all earnings from exports.
- Tax on foreign currency earnings of 10 Piasters per dollar.

These policies were valid until 2001. However, in the meantime a new reform package has been passed by the Government of Syria which foresees to discontinue the payment of export taxes and fees on foreign currency earnings from export operations.

Export "encouragement". In compliance with the government's objectives, the Export Committee initiated various measures to ease export operations of agricultural commodities.

The following measures seem to be particularly relevant:

- Production taxes imposed on cotton exports were eliminated. At the same time, cotton, cotton seeds, yarns and cloth for textiles were exempted from agricultural production taxes when being processed and exported by domestic textile plants (Law No. 7 of 1999).

While no explicit export subsidies were used exports of vegetables and fruits were supported via various “encouragement”:

- Export of vegetables and fruits were also exempted from agricultural production taxes.
- The income tax on export profits was reduced from 1.9% to 1% (Executive instructions No. 9124/9/2 of 1997).
- The tax on export earnings was reduced to 10 Piasters per Dollar.
- Eliminating the commission of 5% imposed by the local administration on sales in the wholesale markets (Suk El Hal).

Other measures of “export encouragement” included a reduction of air freight rates for vegetables and fruits, especially citrus fruits. Furthermore, imports of machines used for packing, grading, and sorting of fruits and vegetables were made easier.

Additionally, olive and olive oil exports were supposed to be encouraged. For this purpose various working groups were established to explore the options of enhancing olive oil exports.

One of the working groups was concerned with reducing the import tariffs for glass bottles.

Another working group was supposed to establish a laboratory with which the compliance of Syrian olive oils with international standards could be checked. Moreover, the export-oriented oil processing mills got access to preferential loans.

[...]

Negotiations of regional trade agreements. Similar to other countries, Syria aspires to improve its trade relations with important trade partners by negotiating and implementing bi- and multilateral trade agreements. Three examples are particularly important:

- **The multilateral Arab Free Trade Agreement:** In 1998 an Arab free trade agreement was signed between Syria and other Arab countries, specifically Saudi Arabia, United Arab Emirates and Iraq. The objective of this agreement was to reduce customs tariffs for agricultural products by 10% annually and an complete abolishment of respective tariffs by the year 2007. However, the agreement permitted each country to protect some sensitive products for at least some time each year.
- **Bilateral agreements with Arab countries:** no free trade agreement has been concluded yet with these two neighboring countries yet. However, agreements were signed which were first steps in such a direction. With Lebanon an agreement was signed granting customs tariff exemption to most agricultural products except for some sensitive ones.
- **A full elimination of agricultural tariffs was envisaged by the year 2004.** With Jordan, some tariff-free quotas were negotiated, while quantities exceeding these tariff quotas continue to be subject to normal tariffs. Furthermore, the Ministry of Economics and Foreign Trade negotiates with Lebanon and Egypt to exempt olive oil imports from Syria from customs fees.
- **Bilateral agreement with the European Union:** Similarly to other non-EU Mediterranean countries (e.g. Morocco, Tunisia, etc.) Syria aspires to sign a bilateral trade agreement with the EU which will ensure better market access particularly for agro-food products and textiles. 6 Part of the regional trade agreement with the EU is the negotiation of export quotas. For instance, the Ministry of Economics and Foreign Trade has started initiatives to negotiate with the EU over the terms of export quotas for olives and olive oil. Respective negotiations are still on-going and an agreement is expected in the next rounds.

It should be noted that some of the above mentioned regulations are not in accordance with the principles of the World Trade Organization (WTO). For instance, the tariff-exemptions with Lebanon would violate the WTO’s most-favored-nation-principle according to which any customs concession granted to one trading partner also have to be granted to all WTO members. Exceptions from this rule are possible when two or more countries sign a free trade agreement of which the WTO is notified. Furthermore, according to Article XXIV of the GATT agreement such regional trade agreement must include “substantially all trade”. This implies that “sensitive products” such as agricultural commodities may not be excluded from the free trade agreement [...]. Hence, if Syria will become a member of the WTO in the future these re

gional trade agreements will be under the scrutiny of the WTO members which might result in the need to adapt them to WTO standards.

7.2. Exchange rate policy

the **exchange rate** is the *price of foreign currency*. It is usually expressed as the amount of domestic currency needed to buy one unit of foreign currency (for example, 50 Syrian Pound for 1 US dollar).

As any price, its efficient level should be formed by the balance of supply and demand.

Supply of foreign currency is provided by exporters, who sell their product abroad and are being paid with foreign currency, whereas demand is generated by importers, who need foreign currency to pay for their purchases on the world market.

An increase in the nominal value of the exchange rate thus defined, is called a *devaluation* or a *depreciation* (if more Syrian Pounds are required to buy one dollar, we say that the Syrian Pound is depreciated, i.e., it has lost value). On the contrary, a reduction in the nominal value of the exchange rate is an *appreciation* or *evaluation* of the domestic currency.

A value of the exchange rate above its efficient level is an *undervaluation* of the domestic currency, while an exchange rate below its efficient level indicates *overvaluation*.

There is a precise relationship between the exchange rate and the general price level in the country and abroad.

The principle of Purchasing Power Parity (PPP) states that the exchange rate should adjust to maintain the parity of purchasing power.

To understand how does it work, consider the following example.

At a given moment in time, one kilo of bread is worth 50 Pounds in Syria and 1 Dollar in the US. An exchange rate of 50 SP/US\$ keeps the parity of purchasing power, because the same amount of SP would be required to buy one kilo of bread both in Syria and in the US.

Suppose now that Syria experiences an inflation of 10%, while in the US prices rise by only 5%. Now, one kilo of bread will cost 55 SP in Syria, and 1.05 dollars in the US.

To maintain parity of purchasing power, the exchange rate should depreciate to $55/1.05 = 52.4$ SP/US\$.

As the example shows, high domestic inflation will push towards depreciation (i.e. more domestic currency for one unit of foreign currency).

As a result, if the government tries keeping a fixed exchange rate while there is an inflation differential, the result will be overvaluation.

In a free trade regime, the dynamics of imports and exports should guarantee purchasing power parity. However, there are natural economic reasons why this equilibrium may break down. For example, If a Country finds consistent reserves of oil or gas that suddenly increase the levels of exports, this “excess supply” of foreign exchange may support the exchange rate by preventing its depreciation.

This phenomenon is known as the “Dutch disease” and can be due to various forms of excess supply of foreign currency, such as remittances from emigrants, or subsidized exports.

Keeping the exchange rate at an overvalued level determines a bias against exporting sectors, which become less competitive on the world markets whereas imported goods become more expensive.

For example, in Estonia, producers prices dropped by 50% in four years because of a fixed exchange rate with the Deutsch Mark.

Also, because of the Dutch disease, when Nigeria became an oil exporter, it went from being a large net exporter of agricultural products to being a net importer.

7.2.1. Exchange rate regimes and policies to modify the exchange rate.

Depending upon how the exchange rate is set in the economy, we may have different regimes

- Market exchange rate. Free fluctuation of the market exchange rate. In principle, it should oscillate to keep PPP. Nevertheless, it can *be indirectly modified by changing the levels of supply and demand of foreign currency or by changing the interest rate and modifying the flows of capitals*

- Official exchange rate. The level is set by government decree. A reduction of the nominal rate is an *appreciation*, an increase in the nominal rate is a *depreciation* or *devaluation*. Then the official exchange rate can be *pegged* to some foreign currency.

In most developing countries, appreciation is negative for agriculture whereas depreciation can be beneficial (for example India in the 1990's or the CFA devaluation of the 1994 for African countries such as Côte d'Ivoire, Senegal and Mali). However, in the long run it is not possible to achieve real growth by continuously devaluating the domestic currency.

According to Norton, ***“the exchange rate is the most powerful influence on relative prices within an economy, and its effects on real agricultural prices normally far outweighs the effects of other kinds of price interventions”***

because *“agriculture is typically a sector which is most exposed to the influence of foreign trade: almost all of its products are either exported or importable, or they are close substitutes in production or consumption with products which are importable or exportable. Hence, agricultural prices are largely determined by those of international markets and by the filter through which the latter are transmitted to the domestic economy, which is the exchange rate. In contrast, the infrastructure and service sectors largely produce outputs that are neither imported nor exported, so their domestic prices can rise with inflation, while those of agriculture are held down by the external influences and an appreciating exchange rate.”* (Norton, 2002 page 4-24)

As a result, an intelligent policy should carefully coordinate exchange rate policies with all other price control and trade policies.

7.2.2. Experience of the Syrian Arab Republic

Following is an excerpt from cited Peter Wehrheim's report that discusses the Syrian exchange rate regime and its reform.

Syria's exchange rate policies are likely to be the single most important macroeconomic policy affecting the development of the country's agricultural sector. In fact, they have the potential to overcompensate the effects of various sector-specific policies. [...]

Reforms of exchange rate policies. Generally, Syria has implemented a system of multiple and fixed exchange rates. For agriculture, exchange rates for the imports of agricultural inputs, for the imports and exports of agricultural commodities were defined. However, in many cases these were accounting artifices only! For instance, imports of agricultural food staples had to be made at the free market exchange rate while the total value of imports in SYP was evaluated at the exchange rate for agricultural imports. Furthermore, the use of foreign currency has been restricted by controls (see following section). During the most recent period Syria has made substantial progress in reducing the exchange rate distortions. [...]: first, a unification of the various exchange rates, and secondly, a devaluation of all exchanges rates and thereby, bringing them closer to the prevailing market exchange rate.

The unification of the exchange rates which are relevant for agriculture started in the early 1990s. In 1992 the exchange rate at which pesticides had to be imported was increased from 11.25 to 40 SYP/US\$. In 1994, an adjustment of similar magnitude followed with respect to the exchange rate at which fertilizers were imported. Finally, in the year 2000 all remaining exchange rates were adjusted from the previous value of 11.25 to 46.5 SYP/US\$. Hence, it is obvious that the unification of exchange rates has also resulted in a significant (nominal) devaluation of the Syrian Pound in relation to the US\$ and other western currencies.

This review indicates that the unification of exchange rates was mostly done by one major first adjustment which was followed by gradual steps of further devaluation. In fact, this process continues and in May 2001 a decree has been prepared with which a further devaluation of the official exchange rate to 48.5 SYP/US\$ was issued. The objective of this decree is to devalue the official exchange rate of the SYP to the US\$ to reach its free market equivalent. By doing so the gap that still exists with respect to the free market exchange rate and the neighboring countries exchange rates has been further reduced. Because of relatively moderate inflation rates the substantial nominal devaluation which has been implemented during the last years has also resulted in a devaluation of the real exchange rate.

Nevertheless, pressure to devalue the Syrian currency might continue for various reasons in the future. In fact, **the current exchange rate is likely to be the most important factor that discriminates against (taxes) the agricultural sector of Syria.** Further devaluation would offer the possibility to reduce this form of discrimination (taxation). Further devaluation could, in fact, open “windows of opportunities” for Syria’s agricultural sector for various reasons. For export oriented sectors such as agriculture a gradual devaluation of the national currencies has shown positive effects in the past. In many countries of Latin America, for instance, the devaluation of the domestic currencies has removed the effective taxation of agriculture and kick-started agricultural development. Various economic reasons explain this: first a devaluation enhances not only the competitiveness of domestic agricultural raw products but also that of domestically processed food commodities within the domestic economy.

Secondly, it enhances the competitiveness of Syria’s agricultural exports in international markets because domestic producers would receive higher revenues in Syrian Pounds. However, without any quantitative assessment it is difficult to speculate about the specific degree of exchange rate adjustments that will occur under a more flexible system in the future. Theoretically various demand and supply factors would affect the ‘market’ for the Syrian currency if the exchange rate would be allowed to adjust freely to respective market conditions. Generally, the following factors are expected to have substantial effects on the exchange rate of a country: the growth rate of the economy, the level of inflation, the level of interest rates as well as psychological factors which shape the expectations of potential investors. The relative differences in the development of these variables between the country under consideration and other countries will be decisive for the development of the country’s exchange rate over time. More specifically and given the trade structure of Syria the following factors would play a prominent role in the determination of the country’s exchange rate under a flexible system: development of import demand after further liberalization of Syria’s trade regime; development of export demand particularly for raw oil from Syria; the balance of capital transfers of Syria (the balance of remittances of workers from abroad, capital exports to other countries and capital imports in the form of foreign direct investment). These and other factors would influence the “price” of Syria’s currency in the future. All of them are related to the overall competitiveness of the Syrian economy. Without being able to quantify these factors, the experience from other countries of income levels that are comparable to the one of Syria and even of higher income suggests that the pressure to devalue the SYP further is likely to continue in the future.

Given the fact that Syria’s government currently still determines the exchange rate, due consideration should be given to continue the gradual devaluation of the SYP. Given the economic situation of Syria, a gradual devaluation seems to be superior to a sudden devaluation for two major reasons: first it might reduce the pressure on the SYP once a full liberalization of the exchange rate regime will be implemented. Second, it would dampen the negative social consequences that can be associated with sudden devaluation as they have been experienced by some economies of South East Asia and by Russia in the course of the last world financial crisis in 1997/1998. As Syria is also importing various staple commodities (e.g. sugar, rice, vegetable oils, and dairy products) the price for these food items would increase suddenly following a strong devaluation. If the devaluation would take place gradually households have more time to adjust to the respective change of food prices. Therefore, it is recommended to adjust the exchange rate in the future further and in gradual steps.

Currency restrictions and other export constraints.

Furthermore, the use of foreign currency revenues on both the import and the export side has been controlled in the 1990s. Foreign currency earning from exports, for instance, could be used in either one of the following three ways: first, the revenues can be used for the imports of products which are not on the list of (agricultural) products prohibited to be imported; second, the foreign exchange revenues can be sold to other dealers or the Commercial Bank of Syria; third, it can be saved in a foreign currency account and used later on. At the same time, the exporter was obliged to exchange 25% of its foreign currency earnings at the neighboring country exchange rate. In the beginning of the 1990s this exchange rate was at 42 SYR/US\$ and devalued to 46.5 SYP/US\$ in 2000. It is now equivalent with the free market exchange rate. During most of the 90s the neighboring country exchange rate was below the black-market as it prevailed in Damascus and therefore continues to discriminate against exporters.

In turn, on the import side each importer had to prove that the foreign currency needed for imports were earned from exports. Another peculiarity was applied to imports of important food staples such as wheat, sugar, rice etc. While the exchange rate at which the foreign currency had to be bought was the market exchange rate (about 50 SYP/US\$), the calculation of import tariffs was based on the exchange rate for agricultural imports which was equivalent to the official exchange rate (11.25 SYP/US\$ between 1990 and 1999). Hence, the product-specific tariffs were calculated on a much lower import value (in SYP). This effectively reduced the level of import tariffs and thereby effectively subsidized agricultural imports.

Such exchange rate and currency regulations reduce the transparency of agricultural imports and export regulations. While it has to be acknowledged that the exchange rate unification and realignment that has been implemented during the last two years has reduced the respective distortions already it is recommended to abolish such regulatory constraints all together.

7.3. Sectoral policies

The trade and exchange rate policies we have discussed in the previous section are probably the most effective ways for governments to affect farm prices.

In the past, however, it has been common for government also to issue sectoral policies to the explicit aim of altering the price level of agricultural products.

A list of these instruments can be the following:

- administered prices
- minimum guaranteed prices
- price stabilization schemes
- commodity taxes

The justifications that have been provided for such interventions comprise:

- keep the price for food low to the benefit of consumers
- increase farmers' income
- stabilize farmers' income to offset the high variability of agricultural production
- provide fiscal revenue

After years of experience with price control schemes in various parts of the world, the conclusion that can be drawn is that they are almost always the less efficient way of achieving the stated objective. For this reason, they are gradually being abandoned all over the world.

7.3.1. Administered prices.

With this term we indicate all the policy interventions that aim at keeping the market price for a commodity at a predetermined level, which is somewhat independent of the real balance of supply and demand.

It has been used especially for food price, on the account that they should be kept low to benefit poor consumers, which are those for which food expenditure is the higher share of their budget.

To directly control prices, the government needs to put a complex administrative structure, which ensures that no sale is made at a different price than that fixed by the government. In Syria, for example, in the case of cotton, sugar beet and tobacco, farmers have to sell their production to the state processing plants.

Administered prices presents many problems.

First, it is operationally difficult to maintain efficient planning of the program. Often there will be either excess supply or excess demand of the commodity at the administered price, given that it is difficult for the government to correctly assess the balance of supply and demand. Excess supply will be witnessed by increasing private and public stocks, whereas excess demand will show with queuing, the classic symptom of shortages.

Second, to ensure a fixed price, also trade restrictions must be in place, with additional administrative costs.

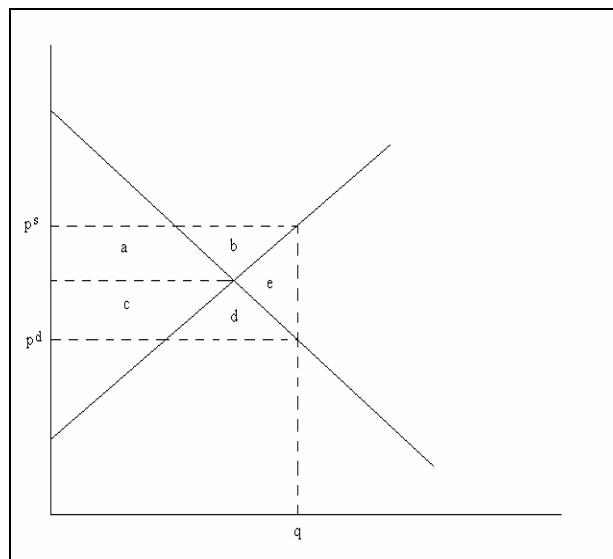
Third, and most importantly, fixed prices almost certainly will lead to a misallocation of resources, given that they will alter the relative terms of trade among products and sectors.

7.3.2. Minimum guaranteed prices.

With this instrument, designed to protect farmer incomes from falling, the government tries to ensure that the price received by producers does not fall below a predetermined minimum level, while it is left free to increase at any level.

It is also a very difficult scheme to implement, because it requires that the government be ready to buy any excess supply at the guaranteed level of price.

Figure 7.3 Minimum guaranteed price



With reference to Figure 7.3, suppose that the minimum guaranteed price is p^s , above the market equilibrium price. To enforce it, the government must commit to buy any excess supply that is produced at that price. Production will be q , and the government will buy all of it paying p^s . Then, the government might sell the amount to the consumers, which will be willing to pay p^c . As a result, producer surplus will increase by $(a+b)$, consumer surplus will increase by $(c+d)$,

while the government's net expenditure will be $(-a-b-c-d-e)$. The overall, net efficiency loss will be $(-e)$.

This type of intervention is sometime referred to as a *deficiency payment*, given that it is equivalent for the producers to sell their production on the market, at price p^d , and then the government would pay the difference between whatever this market price and a fixed level of support price, p^s .

Guaranteed prices are usually utilized to ensure an adequate remuneration to farmers' resources. A problem then is to decide which level of minimum guaranteed price is adequate. Usually, one operational procedure is to try to set a support price at a level which covers the estimated *average* cost of production of the crop concerned, and to raise the price from year to year as *average* costs increase, something that is equivalent to rewarding inefficiency. Also, when determining the cost of production, a normal remuneration to land and family labor should be included. Land values, however, depends on the output price, and by linking the price to the average cost one could induce circular upward spiral in cost and price levels.

The most relevant problem with guaranteed price is that usually it sets the wrong incentives for production, which will tend to specialize towards the supported production, thus making the intervention more expensive for the government. For this reason, many countries find it necessary to try and control also the quantity being produced, with additional administrative costs.

In the European Union, operation of a scheme of guaranteed price has led to shift from a position of net importers of cereals to one of the main exporters on the world market.

The European Union started with a program of *variable levies* on imports, designed to keep border prices equivalent to domestic support prices. Imports were subject to a tariff that varied depending on the difference between the domestic target price and the world price (in this way, both price support and *stabilization* was achieved).

Over time, the support price induced a steady increase in production so that the European Union started experiencing an excess supply. The increased excess supply of cereals has forced the introduction of subsidies to export (called *export restitutions*) to be able to sell it on the world market.

Recently the system of guaranteed price in Europe has been eliminated, mostly because of the high budgetary cost and of the pressure that came from the WTO.

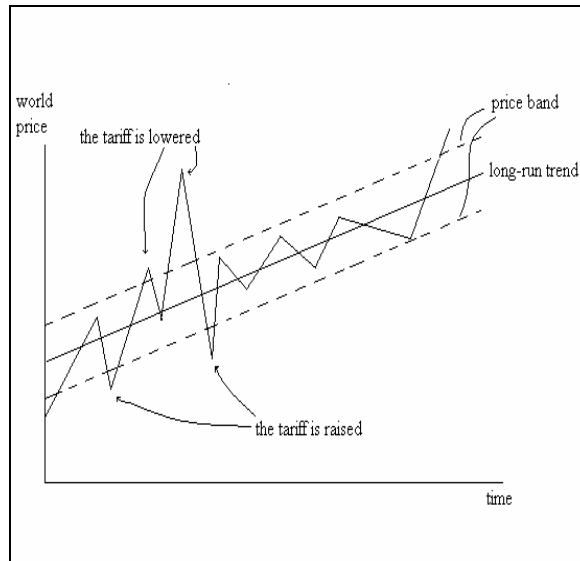
As a general conclusion on price support schemes, we can say that, when possible, direct price support schemes should be eliminated, because they alter the relative patterns of comparative advantages.

In contingent circumstances, indirect ways of sustaining agricultural production should be employed, such as combined import tariff and export subsidies schemes, or a policy of limited exchange rate devaluation, should be preferred to direct control schemes.

7.3.3. *Price stabilization.*

One other reason for government intervention on domestic prices is to *stabilize* the price. The argument here is that unstable prices might cause unstable incomes for farmers, something that is deemed to be dangerous.

However, it must be noted that it is not necessarily true that variable prices implies variable incomes: in fact, one of the main reasons of variable price is the fluctuation in production due to weather variability: the price tends to be high when production is low and vice versa. This means that *revenues* are much more stable than prices, providing what is called a *natural hedge*. Only when price levels are uncorrelated with domestic production, a stabilizing scheme for prices will help stabilizing incomes. This happens for example for tradable goods whose price is determined on the world market.

Figure 7.4. A price band scheme

The simplest price stabilization scheme that has been used in many countries is the use of *buffer stocks*.

The idea here is that the government would fix a lower and an upper bound for prices, being ready to buy commodity at the lower price whenever the market price should fall below the minimum price, thus building up stocks to release on the market when the price is at the higher level.

In order to effectively manage a buffer stock scheme, the levels of price bounds should be accurately set. If the lower price is set too high, for example, the risk is that the public stock would increase too much. In general, the government must be ready to maintain large reserves, with correspondingly high administrative costs.

Rather than with buffer stocks, stabilization of prices could be achieved more effectively by the use of *price band* schemes. Price bands are a system of variable tariffs on imports. When the international price rises above its historical trend line by more than a pre established percentage or amount, then the corresponding tariff is lowered. When, instead, world price falls below the long run trend, the tariff is raised. (See Figure 7.4)

In this way, domestic prices are stabilized relative to the international price, without inducing distortions in the relative comparative advantage.

Price bands should not be confused with the *variable levy* system employed by the European Union. The variable levy is designed to ensure that border prices are equivalent to domestic support prices. Under a price band, there need not be a support price, as the movements in the tariff are not linked to any domestic price, but only to the historical pattern of international prices.

7.3.4. Commodity taxes

Agricultural commodities can be subject to consumption or production taxes in order to provide fiscal revenue to the government, as an alternative to income tax.

For example, it has been a common practice to tax export crops in countries where income tax systems are not well developed.

One of the justifications for commodity taxes is that they would not alter production very much. However, commodity tax (in the same way as unequal tariffs) would distort incentives by breaking the linkage between domestic price ratios and external relative prices.

As an alternative, if for distributive reasons or for fiscal revenue needs a country wants to directly tax the agricultural sector, a tax on primary factors (land, labor, capital) or on income would be a better option. It would not change the relative profitability of crops and would not distort resource allocation.

7.3.5. *Input policy*

Up to now, we discussed policy principally aimed at changing the *output* price. There are also options for the government to affect the incentives to producers through input price and availability. We will briefly discuss now the set of input policies.

One most obvious way of supporting producers is by granting subsidies on input prices.

Payments for variable inputs such as fertilizers, pesticides, other chemicals, but also water and electricity are what constitute a farm's costs. By subsidizing the price of inputs, the farm's cost will be reduced. As a consequence, production would increase and, if the output price is maintained constant, producers' surplus will increase.

When input subsidy is extended to the entire sector, however, it is not clear whether producers will gain or not. It depends on the relative elasticity of supply and demand. In fact, if the demand function is very inelastic, the benefits from input subsidies could be transferred completely to consumers.

Among inputs, agrochemicals (such as fertilizers and pesticides) and seeds deserve a special discussion.

In the chemical industry usually there are large *economies of scale*. For this reason, traditionally the chemical industry is publicly operated as a *natural monopoly*, because a single large firm can achieve lower marginal cost than many smaller firms. Being controlled by the government, it is easier to provide such inputs to farmers at a reduced price when the government wants to support and increase agricultural production. However, it is crucial that the distribution of agrochemical is efficient if the subsidy has to express its full benefits in terms of increased production.

In the history of agricultural development, the availability of new and improved varieties has been one of the successful elements that allowed productivity growth. However, to switch to the new variety, usually requires a complete *change of technology*, such as for example, to abandon the tradition of utilizing self produced seed and to buy commercial, certified seed.

Small farmers might have problems in adopting the new technology, and the provision of subsidized inputs may be required to provide incentives for the adoption. For example, farmers may be risk averse, and would underestimate the benefits of the new technology. Also, the adoption of new technology may need to be accompanied by improved knowledge on input use and cropping technology.

For all of these reasons, input subsidies and input distribution on the part of the government are best designed within a more general

input package transfer, which includes seeds, fertilizers, pesticides and the technical knowledge on the best agricultural practice.

One other aspect of subsidized inputs is related to the potential distortion they induce in resource allocation. By providing cheap pesticides, an incentive is created, for example, to substitute chemicals for labor. In agricultural system with abundant labor, this may go against the country's comparative advantages.

7.3.6. *The Experience of the Syrian Arab Republic.*

Following is an excerpt from the report entitled “*Agricultural input liberalization*”, by N.S. Parthasarathy and produced within the Project FAO GPC/SYR/006/ITA. It describes the Syrian condition of the main agricultural inputs’ market.

FERTILIZERS

Fertilizer Production and Delivery System

About 60% of total fertilizer requirement are produced locally at the only manufacturing unit located at Homs and the balance is met by imports. The Agricultural Cooperative Bank distributes imported and locally produced material to farmers directly and through cooperatives.

The ACB is both dispenser of farm loans and distributor of inputs. The quantity of fertilizer and other inputs are pre-determined according to a recommended crop plan (earlier it was a mandatory plan subject to severe

penalties for non-adherence but now made “indicative”) and formalized by the issue of a crop license to every farm at the beginning of each crop year.

Farmers wishing to purchase fertilizer on cash terms also need crop licenses indicating the quantity of fertilizer they are entitled to.

Fertilizer Production – Role of GFC and GECM

The General Fertilizer Company, located in Homs, is a public sector organization and is the only fertilizer manufacturing unit in Syria. It has an annual installed capacity of 120,000 tons of ammonium nitrate, 330,000 tons of urea and 450,000 tons of triple superphosphate. The plant is located centrally with good and easy reach to most fertilizer consuming parts of the country. The source of natural gas is about 700 km at Hassake and is piped to the fertilizer unit and the neighboring refinery. Rock Phosphate deposits are also nearby at Palmyrah. Power supply is not a problem and is available at 97 piastres per kWh. The capacity of the ammonia plant is not matched by capacities in the downstream ammonium nitrate and urea plants, which seems to be the major reason for under utilization. These plants as well as the sulfuric acid and phosphoric acid plants need revamping requiring further investment. Considering the local availability of rock phosphate and natural gas (sulfur is imported from nearby sources) and the inherent comparative advantage that the country has for manufacture of nitrogenous and phosphatic fertilizer it is worthwhile investing in this unit and expanding it further.

Fertilizer Importation – Role of GEZA

Fertilizer import is entrusted to the public sector organization called the Foreign Trade Organization for Import of Chemicals and Foodstuffs – referred to as GEZA. Private sector is not permitted to import fertilizers. A few weeks ago, however, a decree has been published allowing private sector entry for fertilizer import. GEZA hands over the shipping document itself to ACB duly endorsed in favor of the latter. As such GEZA’s role is confined to calling for tenders, obtaining the best price and terms, concluding the contract and following up the shipping schedule to ensure conformity with the program laid down by MAAR., national peasant bureau, ACB and GFU

Fertilizer Distribution

Private sector is not involved in distribution except at retail level. Retail outlets run by agricultural engineers are registered EITHER with the agriculture engineers’ syndicate or with the farmers’ union in the Governorate. Most of these outlets are predominantly engaged in sales of plant protection products and vegetable seeds. To deal in fertilizer, they have to enter into a contract with the syndicate whereby, against the syndicate’s guarantee, ACB extends credit not exceeding SP 300,000 for working capital and in return for this support these outlets (called joint ventures) pay 40% of the profit to the syndicate.

Judging by field reports the possibility of leaks in the system leading to informal flow of material to the market for sale at higher prices cannot be ruled out. In times of planting, especially in zone 1 where pressure of demand builds up with rains, private prices sometimes command premiums of SP 800-1000 per ton. The restrictive distribution system tends to create these “rents” in fertilizer prices even under conditions of plentiful availability at the macro level.

SEED**Seed Usage**

A notable feature of the seed production and delivery system in Syria is the high seed replacement ratio for wheat. Considering that in respect of self-pollinated crops farmers ordinarily tend to plant home-saved seeds and do not replace them with fresh processed seeds from outside the high ratio is commendable.

Seed Production and Delivery System

Seeds for all strategic crops – wheat, barley, lentils, chickpeas, cotton, and sugar beet – are produced only by GOSM, public sector organization, for distribution through their branches and through ACB warehouses. Hybrid seeds for vegetables are imported and marketed by private sector seed companies through a network of stockists spread across the country.

State nurseries in seventy locations with a combined area of 50,000 dunnams under the control of the Directorate of Agricultural Affairs raise seedlings for fruit trees. The seedlings are distributed to farmers direct and through extension units at nominal prices that reflect a subsidy of about 50% (for instance, olive seedlings sold for SP 13 against the cost of SP 25). The seedlings are sold both for new plantings in reclamation areas in hilly areas and for replacement in old areas.

Government's encouragement of forest tree planting through supply of free seedlings is an important initiative in the seed sector. The Directorate of Forestry has 40 nurseries raising seedlings for free supply to public organizations and at a very nominal cost of SP 1 per seedling to the public against the average cost of SP 15. Of the total forest area of 461,000 ha natural forests occupy 232,000 ha and the rest are man-made forest.

Seed Processing

In the prevalent system the processing unit is not responsible for the genetic purity of the material they process. GOSM's technical staff is expected to test this in farmers' fields. The processor is also not responsible for the germination and as such they do not have laboratory facilities for these tests. The quality of seed produced by GOSM is tested and passed by its own quality control department. The large capacities of the processing plants increase capital cost (about SP 80-90 million each) and, thereby, the cost of seed, especially as the operation is of a seasonal nature leading to unavoidable under utilization of capacity. Smaller decentralized units seem to be a more practical proposition. These could also fall within reach of average sized town entrepreneurs and encourage private sector participation. The following weaknesses were reported during field visits. (a) At times wheat and cottonseed availability from the official source is found inadequate during planting and farmers resort to the private market to meet their needs. (b) Farmers complain of lack of uniformity of species and yields not being up to expectations. This was also mentioned of fruit seedlings.

PLANT PROTECTION PRODUCTS**Plant Protection Product Usage**

The usage of plant protection products is under two sectors – the public system for control of pests on a community scale where government takes responsibility to protect crops against migratory pests and, second, private sector marketing of products where responsibility for protection rests with individual farmers. About 60% of the chemicals imported and distributed by the government are herbicides, especially for wheat. Private-sector market for plant protection products has been registering a steady growth resulting in a reversal of shares between the two sectors from 1987. Although figures for the last two years are unavailable experts in the industry estimate that demand in the private sector market has been growing at 15-25% per year.

Delivery System

Private-sector market being well defined there is a smooth flow of material from the importer through the dealer network to farmers. Broadly, public procurement covers the strategic crops –wheat barley, lentils, chickpea, cotton and sugar beet – and the private sector covers the non-strategic crops. Apart from fixing prices, government allows a free hand to distributors retaining responsibility for demand estimation, registration, licensing and quality enforcement.

PRICING PROCEDURES

[...] Government fixes prices for all inputs based on production or procurement cost

Chapter 8 - Policies to favor access to resources

8.1. Land tenure policies

Among the factors of production, land is the one with which agricultural production is more strongly dependent.

Of the resources of a country, also land is the one whose quantity cannot be changed. While population growth and capital accumulation ensure that the total quantity of labor and capital increases over time, the amount of land in a country cannot grow. The only way in which the fixed availability of land can contribute to general economic growth of a country, thus, is through increased productivity.

As we will see, productivity of land is directly linked to the land tenure system, and this is why we study the forms of tenure and the policies that can change them

By **tenure** we mean the bundle of rights an individual, household or community may have with respect to land, or water or other resource for that matter. It includes property rights but also use rights of a permanent or a seasonal nature. With *land tenure* we restrict the meaning to rights related to land, their origin and their operation (Forni, 2000).

Land reforms are large political and social processes that aim at changing the land tenure systems.

They have *political objectives*, *social objectives*, *economic objectives* and, more recently *environmental objectives*.

The political objectives refers to the attempt to change the structure of power in the country, and it can be the platform of liberal as well as of socialist political groups.

The main social objective is usually 'social justice', because an unequal distribution of the most important resource of a country is seen as unjust by all possible perspectives.

We will focus here mostly on the economic objectives of land tenure reforms, and will briefly discuss also of the increasingly important environmental objectives.

The two most important economic objectives are

- 1) reduction of absolute poverty, and
- 2) increase of agricultural productivity.

Land reform can alleviate the problem of poverty. Many forms of old land tenancy were characterized by strong exploitation of labor on the part of landlords, which made them close to slavery. For these reasons, under feudal estates, large shares of the population remain under the poverty level and to endow them with land may be the first step to escape it.

In many developing countries the higher share of poverty is found among the landless rural population, and the main reason for land reform is to reduce the number of poor.

When poverty is less of an issue, the main economic objective of land reform is to have a positive impact on the productivity of land.

Productivity of land is a natural characteristic only up to a certain point. Some soils are better than others for natural reasons, such as chemical composition, depth, slope, etc. However, even the better soil will lose productivity if it is not well managed over time. For this reason, what is relevant for productivity is the security of the right on land use. Only when a farmer is guaranteed on the continued right to the product of the land, there will be enough incentives to keep and increase land productivity.

Also, productivity of land depends on use. Land can be used for many different activities and to increase the overall productivity, land should be transferred smoothly from less to more productive uses.

Finally, the third element that contributes to productivity of land is the improvement of land quality through fixed investments.

One important element related to land quality is the irreversibility of land degradation. Many of the damages that can cause loss of productivity are irreversible. In other words, land is not a fully renewable resource. It is true that a slightly depleted soil can regenerate if left fallow, if subject to organic fertilization and if protected from erosion, however, when the damage is intense, regeneration may require too long a time to be considered an option.

Soil erosion, that is the depletion of the top part of the soil, which is the one that really allow for agricultural production, can lead to permanent loss of productivity, as it is witnessed for example by the land which is denuded of the vegetation as in the hillsides of Haiti or in many parts of the Amazon Basin, where deforestation has broken the natural cycle of nutrient accumulation.

Such damages have global environmental effects, such as water supply depletion, endanger to biodiversity, and local or global climate changes.

Therefore, the broad policy objectives of equity and efficiency of land use, translate in the *operational* objectives of:

- provide equitable access to land
- secure the rights over land use
- allow for smoothly functioning of land markets and other allocative mechanisms
- grant farmers access to investment capital
- prevent over exploitation.

Access to land is achieved through one of three instruments:

- a) *land settlement*, which means occupation of land over which no one has yet claimed rights
- b) *land redistribution*, which implies expropriation of the fundamental rights on the land from those who currently have it, compensation for such rights, and assignment of the expropriated rights to other people
- c) *tenancy reform*, which means to change the rules concerning legal and illegal types of contracts between landowner and tenants.

As can be seen, access to land does not necessarily requires the property right over land, provided efficient land markets are operational. Nevertheless, for a market to function, the rights have to be clearly determined and protected by institutions such as laws and regulation.

There exist several different forms of land rights that can be classified in six basic types (Norton, 2002, page 5-15 to 5-17):

- **Open access land.** When no one can claim ownership of the land, but also no one can be excluded from access to it. It is more common for marine resources, even though it may characterize some forest or range lands.
- **Communal land.** It is similar to open access land, but access is limited to members of a specified community, and the use may be regulated by community restrictions. Usually their use is defined in customary land regimes, based on historical traditions.
- **Collective land.** Usually ownership of the land is of the state and land is used for joint production activities by a group of farm families. Decisions on what to produce and how to manage the land is left to the central authority, as in the collective farms of the former Soviet Union.
- **Individual land rights under associative tenure.** These rights embrace individual plots in both customary and collective tenure regimes. For example, individual households can be assigned the right to decide what to grow on limited plots of land within a communal or collective land area.
- **Private land rights.** This is the most common form of land rights in modern economies, and they include private ownership as well as usufructuary rights such as rental, leasing and sharecropping. Private owners can voluntarily decide to pool their lands in *cooperatives* or other forms of joint operation.
- **State land.** Is when the state (any local or central authority) maintains the ownership right to the land.

For farming activities, what is relevant, is the ***security of the right to the income derived from the land***, rather than the full ownership. Full ownership is related more to the role of land as a *reserve of capital*. For example, ownership of the land allows to use it as a collateral for access to credit, whereas rented land cannot be used for such purpose.

Land tenure policies are thus aimed at establishing and maintaining security of the rights over land use. The fundamental initial policy question, thus, is: ‘what should the nature of land rights be?’, ‘Should the customary land tenure regimes be retained, or rather there should be a tenure reform?’, ‘How can the rights agreed upon be protected?’, and, most importantly, how can be assured that the rights over land use can be transferred so that land can mostly be used in the higher productive way?

The issue, once again, is not that of substituting the state to the market, but rather how the state can assist land markets in working smoothly.

As general conclusions that can be drawn from the analysis of the experiences with land tenure systems in various parts of the world, the following points can be underlined (Norton, 2002).

Community management of **communal lands** in developing countries often tend to be weak, and communal lands tend to become degraded faster than private lands.

Despite being present in many countries around the world, the empirical evidence on the form of **collectivized farms** is strongly negative. Experience from many countries (El Salvador, Honduras, Peru, China, Hungary, Ethiopia, Vietnam, Cuba, Nicaragua, etc.) has shown that collective farms are unable of granting high returns to land because of

- i) lack of ownership of the property and hence the inability of the farm members to exercise the normal options of sale, rental and mortgaging
- ii) a pattern of state interference in the management of the units has prevented the land from being destined to the best use
- iii) the lack of an adequate internal structure of incentives to encourage farmers to work as diligently on collective plots as on their own.

Also the experience with **state land** presents a history of limited success. The government may want to retain ownership of the land for several reasons:

- historical reasons
- ideological principles
- concern that privatization may lead to concentration of landholdings in relatively few hands
- concern that private ownership might encourage speculative holding of land that is left idle
- concern on possible overexploitation of land because of failure to recognize negative externalities.

In general, however, the state has not proven to be a capable manager of agricultural lands. Usually state officials who make decisions on what to produce and how to do, lack the correct information on actual land productivity. Also, there are limited options for the managers that cannot rent, buy or sell land or decide on needed investments. As a result, lower productivity usually overcome the potential beneficial effects of state ownership.

Private rights over land seem to be the form of land rights that allows for the higher level of productivity. There are several important functions that the public authority can play in protecting private rights, which thus are the main instruments of modern land tenure policy. First, **titling** of the land can be done to recognize ownership. The construction of a land cadastre, that is a record of land ownership titles, is a very important step in any land tenure policy.

Second, legislation may be put in place to **allow and regulate rent, lease and sharecropping** contracts. Such form of contracts are common because they bring about four principal benefits:

- i) Even low income families, which do not have enough money to buy land, can gain access to additional land
- ii) Rental of share tenancy arrangements transfer the use of the plot of land from the hands of somebody who is less interested or capable of using to another party who is more interested or capable, thus it is very likely that the short-run productivity would increase (however, long-run productivity may be compromised if the rental agreement does not last long enough to internalize the long term returns.)
- iii) The option of temporarily renting out land reduces income risks to landowner, because they can secure at least a minimal flow of income in case that health, family finances or other factors prevent the landowner from being able to cultivate the land. If rental was not possible, the only option would be that of selling the land, thus losing also the capital reserve that land represents.
- iv) Rental or sharecropping contracts are likely to overcome the problem of asymmetric information on work effort for large landowners, by avoiding the supervision costs required for hired labor.

Third, the government can **reduce transaction costs for land sale**, for example by removing size constraints to the sale of land or by regulating inheritance rules. In fact, intensive land privatization, when markets for land sale do not work smoothly because of transaction costs, may lead to the problem of fragmentation, with the result of average size of the farm too small to exploit economies of scale due to mechanization.

Following is an excerpt from the report by Nadia Forni on “Land Tenure Systems Structural Features and Policies”, published by the Project FAO GCP/SYR/006/ITA.

Summary

Relations between people and land in Syria take a multitude of forms, evolved during the history of the country. Customary and formal legal systems play a complementary role.

Pressure on land is increasing in line with high population growth and is at the root of illegal occupations and conflicts between non cultivating owners of the land and would be cultivators.

Better definition of rights and duties of each party is needed together with an increasing reliance on the informal conflict resolution mechanisms at the grassroots level.

The proportion of agricultural households without any access to land or fixed employment is growing. Such landless population may find relief in the labor market but is in insecure conditions and vulnerable to economic change.

The traditional labor organization system is efficient but few workers are registered as they work on very short contracts. Hence they are insecure. Most agricultural wage laborers, within Syria, are females, while their men folk prefer to access foreign labor markets with higher wage rates.

Effects on women of their income earning capacities are not well known, as no focused study has yet been undertaken on this subject.

The state has a very important role as an ultimate owner of a large part of the territory. The operation of much of the agriculturally useful surface is in private hands, but the state has final control and an important role of arbiter. This applies to land use rights in the badia as well as to coordination of land reform beneficiaries. Improved monitoring systems and further devolution of responsibility to the users of the land may decrease the administrative burden of the state, without impairing its ultimate function of control.

Land tenure issues as well as analyses of the land and labor market are very important but as yet little research has been conducted on them. Much more attention is needed to these issues as well as more generally to an analysis of socio-economic change in the villages of Syria.

[...]

Public and private land. Land tenure in forest areas, pastoral areas, agricultural areas

In terms of land use, and irrespective of whether private or public, the country profile (FAO 1999) reports that out of the total of 18.5 mill ha: 6.0 are cultivable land, 3.7 uncultivable, 8.3 pasture and steppe, .5 forest. The first item from the tenure point of view is to a large extent private, while the second item, uncultivable land, is shared between private and public with a greater portion belonging to the public sector. There is some overlapping between pasture and steppe land on the one hand and uncultivable land on the other which explains some difference in the statistical breakdown in different sources. Communal pastures and forests are mainly state controlled.

In terms of property and tenure it is estimated that out of the total Syrian land area (18.5 mill ha) 62 percent (11.5 mill ha) comes under the general term of state land. The remaining 38 percent of the territory or about 7 million hectares are privately owned and operated. This includes cultivable as well as some uncultivable land.

Under the general term of state land are included natural resources and utilities for collective use, state land cultivated for agricultural purposes in state farms and similar enterprises as well as land distributed under various title or rented, under land reform and assimilated programmes. The difference between these various types of land from the point of management and from the point of view of individual rights to them, is so great that it is not unusual in Syria to hear that there are in the country three types of land: state, land reform and private. The first two do however technically fall together under the term state land, as will be illustrated further below.

Table 2.1 State Land and private land, year 2000 (million ha)

State land		Private land		Total land	
area	%	area	%	area	%
11.464	62	7.054	38	18.518	100

Source MAAR

It may be useful to stress that the breakdown in terms of land use and in terms of ownership (private or state) are only partially coinciding. In particular: cultivable land exists under both state and private control, some pasture have come under private control and even in the uncultivable land category including lakes, buildings, roads, many areas even if allocated to public use, are still nominally private.

Private land

Private land includes cultivated land, in rainfed or irrigated conditions, in addition to fallow and some uncultivated and uncultivable land. With increasing population and pressure on land the tendency has been

for using all available resources and in a more intensive way: uncultivated land in private areas is almost stable (around .5 million ha) and areas left fallow are in sensible decrease since the late eighties.

Private land is used for crop and animal production in holdings owned, and/or operated, either by individuals or companies. It occurs under a variety of tenures and systems of management, with a predominance of direct operation by owners or through sharecroppers. On the other hand, crop and animal production is also taking place under different categories of what is defined as 'state land'.

State land

Currently in Syria the general category of state land includes:

- i. *agricultural land rented or allocated to individuals*, for instance to land reform beneficiaries, and which is privately operated;
- ii. *state farms*;
- iii. *forest land*;
- iv. *pasture land* in the steppe used by herders under traditional rights of access;
- v. *state land* used for roads or any other public purpose as well as uncultivable areas such as wastelands, rivers and lakes.

Lands under i and ii are used for defined agricultural production purposes and managed in the form of holdings, [...] item iii is managed by the state with limited rights of use by certain population groups; item iv according to some statistics accounts for as much as 55 percent (10.2 mill ha) of total land area, and close to 8 million ha according to more conservative definitions; it includes the desert and semi-desert area or badia to which mobile herders have traditional access rights, but also some marginal agricultural areas in zone 4.

The specifically Syrian definition of state lands warrants some further attention. Based on characteristics of access, legal delimitation of the territory and type of management, the first two categories above - rented or allocated agricultural land and state farms, tend to coincide with cultivable land under the category of **registered state property**, whereas all the rest falls under the category of **unregistered open access and communal resources**. Starting from the latter these categories can be defined as follows:

- 1. *communal resources for general use of the population* and not registered against an individual or collective name. Within this general category are included areas open to the whole population, such as lakes or rocky areas as well as pastoral areas. From the tenure point of view this would include open access areas as well as common property traditional access areas. From the land use point of view it tends to overlap with categories, iii, iv and v above, namely forests, grazing areas, public utilities and unproductive natural resources;
- 2. *registered state property*. This includes:
 - 2.1 areas registered under state property prior to the land reform of 1958, out of which some were distributed, with land use rights, or rented to individual operators; in the subsequent pages these areas will be sometimes referred to as original state lands (as opposed to the land reform areas expropriated from private owners and put under state control for reallocation);
 - 2.2 areas expropriated from private owners above ceilings defined by the land reform of 1958 and later amendments, and subsequently distributed, rented or transferred.

The area recorded under these categories is reported in table 2.2.

Table 2.2 Registered and unregistered state land (million ha)

Unregistered open access and communal resources	7.675
Registered state land	
Registered state property (not related to land reform)	2.399
Registered areas after confiscation through land ref.	1.390
Subtotal registered	3.789
Total	11.464

Source MAAR 2000

[There is a] complex system that evolved over time in Syria to directly manage state land -as in the case of state farms, rent it out to farmers, allocate it to individual beneficiaries as owners-like possessors, or allocate it for different types of public use.

This has permitted to give direction and support to a large mass of small individual land recipients as well as to large scale public holdings. It however implies also heavy demands on public sector establishment for monitoring purposes.

The large share of land defined as 'state land' in comparison to fully private land highlights the importance of land use rights as opposed to full property in Syrian agriculture at large. In fact a simple subdivision of land into public and private reflects ultimate ownership but not different types of access rights.

A large but not precisely defined portion of agricultural activities, particularly with reference to grazing, but also to some extent to forest and crop production, takes place under communal tenures which stretch across public and private land. Migrant herders have traditional communal access rights to much of the *badia* areas and some communal rights exist in forest areas.

Communal lands in cropping areas, the already mentioned *musha* land, exist nowadays at a much reduced level than at historical times and tend to be included in the overall category of private land, but are communally monitored and in some cases communally operated. Finally, land reform beneficiaries have many rights common to full owners, but also limitations due to their rights to possess but not to alienate.

The relevance of use rights, as opposed to property, is highest among pastoralists in the *badia*, which cover such a large proportion of the country, even if sparsely populated.

Stalemate in pastoral areas

Traditional communal access rights to pastoral areas have often come under threat. Pastoral areas are officially considered state land and the population use rights to them are not codified. Also, the border between land suitable or non suitable for cultivation, based on rainfall, is not rigid and there have been many attempts to extend the cultivated areas and to acquire private rights to formerly communal land.

[...]

The expansion of the land frontier has been particularly noticeable in the sixties. According to some authors [...] in this period most of the arid zones pastures located in the 200 to 350 mm of rainfall were put under cultivation and came under private possession. The putting under cultivation of marginal land, mainly for barley, continued being the way for acquiring private rights up until the early nineties when legislation was enacted for the protection of rangelands ('decision' n.17 of 1992, and 'decision' n.27 of 1995). This legislation banned cultivation under both irrigated and non irrigated conditions in the steppe, but still recognized the private possession on the areas previously cultivated. This means that at present there are portions of the *badia* which are under private possession even if not open to cultivation but only to grazing. [...]

For most of the rangelands communal rights are traditionally recognized by the users, who are at least nominally part of the country's cooperative system, but free riding cannot be legally sanctioned as communal rights are not officially recognized. The situation is particularly critical where pasture users come from different groups with sometimes conflicting claims. As these claims emerge from the customary system, government monitoring tends to ignore them. A greater role might be played by the cooperatives in sorting out local situations before agreements on grazing management programmes.

[...]

Farming areas: land owners and land operators

Tenure in the cultivated areas is characterized by the importance of *holders whose main occupation is not farming*. This includes absentee owners as well as *part time farmers* with a prevalent non farming occupation. Census figures indicate that in 1981 more than one third (36.2 percent in 1981) of total holders did not have farming as a predominant occupation. In 1994 they had decreased to 28.6 percent, however in actual number they had increased from 148 thousand to 164 thousand (table 2.3). According to undocumented estimates this category can be considered to be mainly composed of absentee owners. [...]

Several waves of migration have swollen the number of absentees. In fact the latter include members of the urban middle classes with some agricultural property, but also relatively poor farmers unable to make a living out of agriculture and attracted by better opportunities in neighboring countries or in the cities. Properties were in most cases given for cultivation on the basis of informal sharecropping agreements.

Finally, in the eighties increasing availability of infrastructure brought improvements to the basic livelihoods in rural areas. This took place for instance through electrification and improved road links. Such

improvements permitted a gradual return to the villages of many holders as part time farmers who regularly commute to cities, even at substantial distances. Such a phenomenon is typical of all peri-urban areas in the country. Part-time farmers enjoy all the benefits of full time farmers in terms of government services and subsidized inputs.

The return to their home base of many part-time farmers may also be a partial explanation to increasing conflicts between owners and operating farmers where the former want to recover possession of their property and the latter are not willing to terminate the existing sharecropping or labor agreements. Hence the phenomenon of return to the land may have side effects on an already saturated land and labor market.

Table 2.3 Farmers operated holdings and total holdings. Holdings with and without land, 1981 and 1994

Census year	a	b	c	d	e	f	g
1981	261 386	63.8	148 106		36.2	409 492	76 199 485 691
1994	409 142	71.4	164 051		28.6	573 193	40 464 613 657

a) Landed holders With farming as a main occupation

b) Landed holders with farming as a main occupation as % of total holders with land

c) Landed holders whose main occupation is not farming

d) Landed holders whose main occupation is not farming as % of total holders with land

e) Total holders with land

f) Holders without land

g) Grand total of holders

Source: 1981 and 1994 Census of agriculture

The number of holders without land was 8 percent of total in 1981 and less than 7 in 1994. Holders without land, in the census, reflect mainly livestock holders without a fixed land base, a likely underestimate of the total production units in the badia. This statistic cannot be taken as a proxy of landless farmers and is therefore of limited relevance for a discussion on access to land.

Concluding, with the practical disappearance of traditional large scale land owners families in the wake of the agrarian reform, ***Syrian agriculture is characterized mainly by small holders whose main occupation is farming, but also by a substantial number of small owners who do not directly operate their farms.*** These owners are often of farming origin themselves but have moved away from farming as they have entered other activities. They cannot be compared to the absentee owners of the past, who relied on a layer of intermediaries, because of their more direct involvement in management, and thus their greater potential in promoting innovation and investment. However, owners on the one hand and sharecroppers and tenants on the other increasingly compete for more control over the land they respectively own and operate. This is expressed in increasing conflict which calls for some improved regulations, for both social peace and investment promotion.

It is in theory possible to group households partaking in farm operations, and agricultural production in general, into many overlapping categories. These are:

- i. landed holders whose main occupation is not farming (mainly absentees);
- ii. landed holders with farming as a main occupation, i.e. owner-operators;
- iii. sharecroppers and tenants having a written or oral agreement with the owner of the land;
- iv. land reform beneficiaries and state land distribution beneficiaries: owners-like possessors of holdings assigned to them and for which they pay a yearly fee up to concurrence of one fourth of the value of the assigned land;
- v. tenants on public land, renting in lands belonging to the old state land establishment or to the expropriated land reform areas not distributed to beneficiaries;
- vi. squatters on public land -a category of workers aiming at becoming legal tenants and for which regularization is on-going;
- vii. squatters on private land, who are mainly sharecroppers whose contract has expired and whose rights are awaiting arbitration;
- viii. laborers in state farms, joint ventures or larger private farms with a permanent contract, which is a very small category as most contracts are for short term casual labor;
- ix. landless and near landless laborers, mainly descending from small owner or sharecropping households with inadequate land base to redistribute to children.

However, these groups can be overlapping: for instance one household may be owner operators in one holding and sharecroppers in another. That is the groups are not discrete and also their interests often overlap.

From the management point of view, apart from absentee owners in category i., and categories viii. and ix. who are permanent and casual labor working under instructions, all other categories, ii. to vii., function as farm operating households with different degrees of independence from the ultimate owner of the land.

The evolution of agricultural holdings size. The geographical dimension

The number of holdings in Syria has been increasing side by side with population growth and consequent pressure on land. The notion of holding stretches across private and public land, it includes a large number of small farms but also large scale state farms as well as commercial type joint ventures. Seven joint ventures with mixed private and public financing existed in year 2000 with a total of 7242 ha and an average of 1035 -affected by the largest unit which controlled 2462 ha. Nonetheless the bulk of holdings is small in scale and traditional in system of management with more than half, 56 percent, of all holdings having an area of 2 ha and below. See table 2.4

Table 2.4 Percentage distribution of land holdings by major class size

Size classes	% Distribution
Up to 1 ha	34
1-2 ha	22
2-4 ha	11
4-6 ha	12
6-10 ha	7
10-20 ha	9
20 and more ha	5

Source. 1994 Census of agriculture

[...]

The situation is differentiated over the national territory. Against a decrease between 1970 and 1981 and then a levelling, there are examples of dramatic decreases as in the *mohafadha* of Sweida where average holding size decreased from 12.2 to 7.6 ha. On the other hand in the coastal region very small holdings were and continue to prevail: in Tartous for instance the already small average holding of 2.7 ha in 1970 only decreased to 1.8 ha in 1994, meaning that some sort of minimum threshold of operation had been reached. There are however also cases such as the Rakka mohafadha where an above national average of holding of 22.1 ha in 1970 increased to 27.9 in 1994, probably indicating some land consolidation.

Table 2.5 Average size of holding by Mohafadha in 1970, 1981 and 1994, ha

<i>Mohafadha</i>	1970	1981	1994
Damascus city	6.9	6.9	3.0
Damascus countryside	3.8	3.9	3.4
Aleppo	14.2	10.9	12.3
Homs	12.6	8.3	8.4
Hama	10.0	7.3	6.8
Lattakia	2.4	4.7	2.0
Deir-ez-zor	9.5	3.6	5.3
Idlib	6.7	5.2	5.5
Al Hassakeh	36.9	19.1	18.3
Al Rakka	22.1	22.8	27.9
Al Sweida	12.2	8.0	7.6
Daraa	13.2	9.9	7.0
Tartous	2.7	2.1	1.8
Quneitra	8.6	6.3	4.9
TOTAL	11.8	8.5	8.5

Source. Elaboration from censuses 1970,1981,1994. In Agricultural census 1994 T 5/4.

Subdivision of holdings into a number of parcels and their geographical peeks are a connected issue. According to the 1994 census, tables 9 and 10, the total number of holders was 573 193, and out of these 90 percent were in the category 'holders owning all land'. This majority category can be used to illustrate the situation of number of parcels per holding and variation within the territory.

The average for the whole country was 3 parcels per holding with a predictable minimum -1.1 parcels- in the very small holdings of up to .1 ha, and maximum of 4.6 parcels in the largest size class of 300 ha. There are however also peaks of 3.7 in the 6 to 10 ha category. What is more noteworthy however is the geographical dimension: in Hama the average parcels per holding were 3, in Sweida 4, in Tartous 4.8; on the other hand parcels per holding were fewer in the North East (1.8 in Hasake and Rakka). In the areas where small scale mixed cropping is predominant fragmentation in several plots is, predictably, higher than in the grain areas of the North East. For instance in Rakka the average size of parcel was 14.1 ha with an average size of holding of 27.9 ha. In Tartous the average size of parcels is 0.37 ha and of holdings 1.80 ha (cf Faki 2000 table 17)

Land tenure policies and their evolution

A strong emphasis on legal structures is traditional in Syria as in other Mediterranean countries.

The policy discourse is mainly presented or supported by a series of laws and decrees.

Policy evolution is also very much influenced by identification of issues by MAAR staff and thus by sectoral priorities. Positions expressed by the Peasant Union or Chamber of Agriculture are also reflected during this process. However a major responsibility is placed on the line ministries. Technicians both at headquarters and the field are often promoters of changes which are then reflected in legal instruments. These may emanate directly from Government, as it is the case with decrees or pass through the more complex process of discussion in Parliament.

Law 134 of 1958, usually referred to as the Agricultural Relations Law, gives the overall legal framework for all relations between employers and workers in the agricultural sector as well as between land owners and tenants. It includes two rather separate parts: a labor relations framework, chapters 1 and 2 or the first 160 articles, and a land owners-sharecroppers relations framework, chapter 3 to 5, articles 161 to 269. The first part follows international patterns of workers rights and labor protection rules. The second refers mainly to sharecropping agreements between operators and land owners. Discussions started in late year 2000 in the Parliament for introducing amendments to the law and make it more relevant to the current situation in the country.

The labor-employer relations described in the law comply with advanced international labor legislation, but they may not totally reflect the current employer/laborer relations in Syria where the percentage of labor contracts actually registered is low.

In the land related section the level of detail prescribed by the law, with reference to sharecropping and leasing regulations, is rather high and may not always reflect actual agreements prevailing in the field.

As for leasing, this is actually foreseen as a legal contract between the owner of the land and an operating farmer, see art. 161. There is no clear indication of limitations to enter into such agreements although they are not frequently used. One shortcoming may be identified in the duration, one year renewable, which is common both to renting and sharecropping contracts. This is not locally perceived as a problem as contracts are renewable. ***It is nonetheless likely to affect any longer term planning and may be at the root of insecurity for both partners.***

The law, art. 172, also states that oral contracts are not valid after the enactment of the law, which may explain the many cases in which the occupier claims rights to possess the land. Agreements between owners and farmers are rarely registered and therefore the law functions only as a general frame of reference.

Arbitration committees exist for conflict resolution at the Governorate and higher levels. The committees include representatives of MAAR, Ministry of Social Affairs and Labor as well as farmers organizations. They are often asked to discuss cases where no contract exist and all information is circumstantial, presented by the parties themselves. The problem may thus not be in the letter of the law but rather in the lack of clarity and insufficient social control over the implementation of contracts.

Passing from the private to the public sector, law 252 of 1959 regulates state properties and defines the management of the state lands. Decree n 166 of 1968 defines the modalities for distribution of land to farmers as rights users. This legislation involves also distribution to needy farmers, with emphasis on directly operating households, and is closely linked to the land reform implementation system. There are however some differences: for instance application for ownership is possible after 10 years of registration

in the case of original state lands and 20 years for a title of owners-like possession in the case of land reform beneficiaries.

Law 161 of 1958 deals with land reform, the modalities for expropriation and for distribution to farmers. The ceilings for land property were later amended by a number of decrees, the latest of which is Decree n. 31 of 1980. The ceilings for ownership are related to land potential and take into account irrigation and rainfall. They go from a minimum of 15 ha in highly productive irrigated and tree cropping areas, 45 in well-irrigated areas, 55 ha in high rainfall (exceeding 500 mm) rainfed areas, and up to 200 ha in the marginal rainfed areas of the north east.

The land reform law gives the beneficiaries owners-like possession but no right of sale, and tied cropping systems. The size of distributed plots was related to size of households and was thus aiming at covering basic needs of the households. The holding was expected to remain one undivided management unit, but no mechanism for compensation between heirs of the household was foreseen. In fact the process of implementation has included several steps. In some cases the existence of a variety of decrees and amendments has brought to some difference in implementation at the governorate level. For instance it was reported that in the Idlib governorate law 66 of 1969 was applied in distribution to households, which was done irrespective of family size. In addition there was provision for compensation among brothers.

With respect to land ceilings established by land reform, according to some views the ceilings on maximum ownership by different types of land may come into discussion and possibly be removed.

However, as of early 2001, they legally exist and exception to ceilings in operation are possible only for joint ventures. Ceilings apply to ownership and not to operation and therefore there is no legal obstacle to establishment of larger scale operations, except that the short duration of contracts for land leasing has implication for insecurity and high transaction costs. In fact contracts are automatically renewed, but are potentially open to frequent renegotiation.

The role of mass organizations in policy making and implementation

The Peasant Union (PU) with close to a million members, in most cases representing households -but there can be more than one member per household, is the most powerful and ramified organization of farmers. It represents both owners of land, non owning operators and agricultural workers. Its base units are the 'cooperatives' which can be established at the village level provided there are 30 members. Local cooperatives join in a league at the *mantika* level. Above this level there are Peasant Union governorate and central federations. The central level of the PU participates to the highest level policy making in the Supreme Agricultural Council.

In year 2000 there were more than 500 cooperatives in Syria. One of their major roles in the villages is the collection of land reform beneficiaries' yearly fees, assistance to them in obtaining credit from the agricultural bank and access to subsidized feed. According to the government guidelines funds collected are to be locally invested for development projects and hence would have a role in promoting local rural development programmes.

The financial and organizational role of the cooperatives is complemented by the technical role of MAAR, through the extension branches mainly, in defining cropping plans. In this connection those farmers who are not land reform beneficiaries may find it equally useful to belong to the cooperative.

The PU is thus representing different categories of agriculturists and their families, from landholder to landless laborer. The relative weight in PU's membership of land reform beneficiaries and other farmers who do not fully own the land they operate make the organization particularly attentive to the problems faced by these categories. This is not however to the exclusion of more general concerns for all rural households.

The Chamber of agriculture with 400 thousand members, in 13 governorate level Chambers, tends to cater more for owners of the land and entrepreneurs in the agricultural field. Chambers of Agriculture are present in all governorates with a central federal office in Damascus. Membership is voluntary for anybody involved in agriculture, from land operators to equipment owners or agriculture-related shop owners. It caters for the information and research needs of this wide membership and answers membership requests. Its major activities are information and assistance to private farmers and other agricultural entrepreneurs in promoting their productive performance.

A number of sectoral committees, established at members' request, function at the governorate as well as at the central level. These committees meet regularly and highlight members needs. On this basis the Chambers representatives inform MAAR and the special agricultural committees within the Parliament of their desiderata.

There is a limited overlap between membership of the PU and the Chambers, i.e. farmers may be members of both organizations. In year 2001 a process of general elections at all levels was going on to improve representativeness of the Chambers' leadership.

The most important role of both PU and Chambers of Agriculture, in connection to land tenure, concerns conflict resolution and their intervention both informal and formal through the arbitration committees. They participate in the arbitration committees on land and labour relations at all levels as well in informal arbitration at the village level.

Land allocation: breakdown of state land (according to law 252) and of confiscated land (land reform law 161 of 1958 and decree 31 of 1980).

Since the late fifties 303 thousand ha of original state land have been distributed to farmers with a possibility of redemption after 10 years of registration. This took place mainly in rainfed, lower quality, land areas of zone 4.

In a similar way 554 thousand hectares were distributed to users out of the expropriated private lands following the 1958 land reform. These latter lands can be redeemed after twenty years of registration. Land reform distribution took place mainly in better agricultural areas in zones 1,2, and 3.

In both cases yearly fees are paid by the recipients. According to limited information obtained in the field beneficiaries of state land distribution, obtain an 'ownership' title allowing sale and subdivision.

This is not the case for land reform beneficiaries whose rights do not include sale and subdivision.

At any rate land distributed to operating farmers accounts for only part of the destination of the total stock of registered state lands.

Table 2.6 gives the breakdown of the total of registered state land, (cf. also table 2.2 in section 2.2 above), according to destination and type of users.

Table 2.6 Allocation of original state land and land expropriated according to land reform law

Type Of Allocation	Land Reform Land Ha	% Breakdown	Original State Land Ha	% Breakdown
Distributed to farm beneficiaries	554 744	40	303 444	12
Public sector (includes municipalities)	140 491	10	307 196	12
Sold	5 685	--	444 812	19
Rented	448 094	32	490 584	20
Vacant wasteland	240 685	17	852 936	36
Total (errors due to rounding)	1 389 699	100	2 398 972	100

Source MAAR 2000

From among original state land 444 thousand ha in addition to 6 thousand from the land reform areas were sold. These land were sold mainly to achieve a degree of stabilization for farmers and to improve land exploitation through giving ownership rights. They were also in some cases sold to help in land consolidation and to farmers who were not able to obtain allocation under the general distribution rules. They have however a tied type of land use, and should still be considered in the broad category of owners-like possessors rather than owners.

The current policies in the early year 2001 are in favor of allocating most of the total registered state land, i.e. land reform and original state land, to individual farmers. The structure and priorities for distribution used for land reform beneficiaries would apply also for future distribution.

As the table shows 40 percent of the land reform land was distributed to farmers. This happened mainly before 1974, at which time increasing attention was given to the needs of public organizations, for production as well as for research and development purposes. Redistribution to farmers started again, later.

The priorities for selection of land reform beneficiaries were: to be peasants holding Syrian nationality, residing in the locality where the land is available, not reaching the legal property ceilings with priority for anybody already operating the land open for distribution, additional priority was given according to poverty and number of dependants. In the case number of eligible farmers in a location was limited, distribution included peasants from neighboring villages.

The law was to be implemented in a way to create small holdings not to exceed 8 ha in irrigated or tree crop areas, 30 ha in rainfed conditions with more than 350 mm, and up to 45 ha in rainfed areas with 350 mm or less.

One problem faced by land reform beneficiaries are **the high transaction cost**, involving also time and effort, to apply for final title. In any case, this refers to usufructuary rights and not to fully disposable private property.

Registration is the first step needed. (Apparently there are still some limited cases where this has not been completed). Applications for final title can be made twenty years after registration and after payment of the yearly dues.

The prescribed path seems to be fraught with difficulties. This is especially true because the share of the assets within the household of the original beneficiary, and his heirs, needs to be sorted out first.

Fragmentation of holdings is a serious problem in Syrian agriculture because of the traditional inheritance systems giving equal rights to each son. But the situation is further exacerbated in land reform areas where exchanges and sales between heirs are not permitted. [...]

Original state land and land reform land. Distribution to beneficiaries versus renting

In addition to distribution to private beneficiaries and to public sector organizations, original state and land reform land was also destined to be rented out to private operators.

The priorities for obtaining land for rent are analogous to the requisites to become a beneficiary of land distribution. The complex system of renting, which includes de facto tolerated squatters paying fees is illustrated in section 2.5.2.

Table 2.7 State Land area distributed or rented versus number of households

Total state area rented out (000 ha):	929
Number of agricultural households renting state land (000):	69
Average area per household ha 13:	
Total area expropriated by the state and distributed to farmers (000 ha)	858
Number of agricultural households benefiting from distribution (000)	99
Average area per household ha	9

Source MAAR 2000

It may be underlined, as shown in table 2.7, that the overall magnitude of state land under rental agreements, 929 thousand hectares, exceeds the one allocated to distribution beneficiaries, 858 thousand hectares. Renting affects 69 thousand agricultural households as compared to the 99 000 households benefiting from land distributed. No breakdown was available of beneficiaries of original state land and land reform land.

State farms

State farms cover a large part of the public sector allocation and the new trend in policy is towards their privatization. Land allocated to state farms comes from two major sources: the first is original state property, the second is land confiscated from private owners following land reform.

As of 2001 a total of 112,420 hectares were in 12 state farms or an average of 9,400 hectares each.

Ninety percent of this area comes from confiscated private land in excess of land reform ceilings. It is currently planned to redistribute this area to individual operators. It is expected that only about 10 percent of the area presently in state farms will be kept for demonstration and research purposes.

This leaves about a 100 thousand ha which should be redistributed according to the same priorities as land reform areas i.e. privileging local, land-poor, directly operating farmers. If the average allocation per beneficiaries falls within the average range of the previous distribution (9 ha) and of renters (13 ha) this would mean at least 10 thousand beneficiaries.

After privatization of state farms the remaining area under state control is likely to be much less relevant than today for agricultural policies and production. In fact the remaining areas allocated to the public sector include extensive surfaces for non agricultural purposes, e.g. for military training.

The land market

The land cadastre, established in 1926 during the French mandate, is said to be relatively up to date, in terms of formal and registered transactions. However, the land market is largely informal, that is many transactions are not registered.

[...] It was the Turkish and later French attempts to set up a land register that were used by the local notables and sheikhs to register vast amounts of land under their name. Thus regularization programmes sometimes have unwanted consequences. This was also alleged to be the main reason for the already mentioned decline of musha communal land which had been up till then redistributed periodically to village households to give them a chance to access different qualities of land. As already mentioned in section 2.1 some powerful families had come to legally own latifundia while the peasants became their sharecroppers. This is the situation which the 1958 land reform law and related legislation was meant to redress.

The current land market in Syria in theory only concerns fully owned private holdings as redistributed reform land is not open for sale since possession does not correspond to legal ownership. In actual fact, as will be recalled in section 3 and annex 3 when dealing with the field survey, there are parallel land markets regulated by custom also for land reform areas and for musha, collective, land. As there is no possibility of registration and the land remains collectively owned, what is transacted in the market are actually land use rights. These transactions are sanctioned by local social institutions and are invisible to the law.

The market for fully owned land is extremely variable because of the tendency to invest in land as a security and for social purposes. Namely, in some areas migrant remittances are said to inflate land prices. It would seem thus that land monetary value is only partly defined by production potential.

Land prices are also affected by location in areas close to larger towns.

The figures in table 2.8 are derived from a limited number of observations. They may nonetheless be interesting as they show the great variation in the market. (Some more detail is available in Annex 3).

Table 2.8 Selected land market prices, (000) Syp per ha

Location	Irrigated	Rainfed
Hama Gov	80-700	8-400
Idlib Gov	400-500	150-350
Hasake Gov	150-300	100-120

Source Field Survey 2000/2001

The subdivision between irrigated and rainfed land in terms of prices does not reflect the fact that some rainfed land, sold at prices close to the irrigated one, is of high quality and in high rainfall (zone1) areas.

Land for sale is costly because it is scarce. At any rate land purchase is not a preferred strategy for larger entrepreneurs, partly because it would absorb large capitals which could be invested elsewhere, but also because there is a history in Syria of a series of land ceilings under which expropriation took place without having the time to dispose of the excess areas. It may therefore appear safer not to own that much land, and put your capital elsewhere. Land purchase is on the other hand a preferred strategy for very small owners or landless households desiring a minimal security. However prices of land and lack of an adequate credit system discourage acquisition of property by many such potential buyers.

In such situations land markets easily become segmented with the poorer section of the rural producers participating into one market and the elites to another. Procedures tend to be costly and the institutions are unable to serve all sections of the rural population (cf. Riddell 2000).

Finally, market values of land are also affected by the potential for reclamation or development. In some potentially good areas such as in Hasake where the tendency is to convert rainfed areas to irrigation, investors are trying to obtain large plots in the size of 10 to 20 ha each in view of the investment for irrigation system and mechanical cultivation. This is reflected in price of land which is higher per ha in the case of larger plots i.e. consolidation pays.

As for land reform areas a land market cannot officially exist. In these areas sales are said to take place but mainly between brothers and other legal heirs to the holding. There are statistics in each governorate

of beneficiaries losing their rights because of illegal sales. In these cases the holding is confiscated by the state and reallocated. However, this does not seem to be enough of a deterrent to sales. Limited information from Idlib and Hama suggest, in the tree-crop area, values some 30 percent lower than similar land. The differences in rainfed and irrigated areas are sometimes substantial, about 50 percent, but sometimes only marginally different (cf. Annex 3 table A 3.3).

This may mean that prices are affected by the local perception of the risk involved in the transaction.

In fact, beside the risk implicit in these transactions, one should also consider that what is sold is not full property but rather rights of use. The differences in price do not therefore appear surprising.

Some more in depth investigation may be useful to clarify the mechanisms of price setting. A regularization of these type of transactions, namely the ones between brothers is being discussed at some governorate level, and may result in the market movements becoming open and controllable.

Such cases of innovative interpretations of the law would suggest a de facto legal decentralization adjusted to local needs, which is in line with the tendency currently prevailing in many European countries.

Types of contractual agreements concerning land

In spite of the existence of a detailed legal framework contractual agreements between owners of the land and tenants are often of a general nature and oral only. Specific clauses are not discussed and agreed.

Duration of contracts is set by the law at one year only, although renewable. On the one hand this signifies precariousness for the farmer who fears eviction. On the other, renewability tends to make these short and precarious contracts a continuing feature where the owner of the land fears usurpation by

the tenant. Hence a vicious circle which leads to insecurity and conflict and diverts attention from production and investment.

But let us first look into the type of contracts we are dealing with and the specific forms they take in Syria.

It is possible to group the very many types of contracts involving land and labor into three main types.

The first occurs where an owner contracts in labor. The owner may be an owner operator and provide his labor together with the labor of his/her household in addition to hiring outside labor for operations his family labour would be unwilling or unable to perform. On the other hand there are also cases where the owner may not be providing any of his or his household's labor and he would be using hired labor only. For both types of owners contracts are negotiated in the labor market.

The second occurs when the land owner is not directly operating his land, but rather he is renting it out to an operating farmer. A contract is therefore negotiated in the land market. This group includes systems of land leasing and fixed tenancy where the rent, which may be paid in cash or kind, is fixed, i.e. does not vary with the output.

The third occurs when an owner enters into an agreement with an operating farmer whereby each will receive a portion of the product obtained. The two parts agree on the inputs to be provided by each including labor and other production inputs. These types of contract include all systems of sharecropping and involve both the land and the labor market.

In terms of risk the owner hiring laborers is facing the risk alone, as wages will not vary in relation to profits or losses. In the case of leasing the tenant faces the whole risk as the rent paid will not change with the product. In the case of sharecropping the risk is shared.

The situation of squatters, currently at the center of the debate in Syria, does not fit in theory into any of the types of contracts described above since squatters are by definition illegal occupiers.

However, in the traditional systems of access to land prevailing during the Ottoman Empire, and described by Lemel (1988) with the example of Turkey, there were traditional access rights for the landless to unused land. These were temporary agreements which could be equated to customary contracts, justified by the need to ensure subsistence for the whole community. These traditional access rights were extinguished with the formalization of individual rights.

The experience of the field investigation [...] shows that tenure relations in Syria are rarely of one type only. Multiple tenure is common in the villages. It is not unusual for one household to operate one small

piece of land in private ownership, be a squatter on another, and be a land reform beneficiary on a third. [...]

Sharecropping

Sharecropping systems are extremely varied in Syria. According to the agricultural relations law different cropping systems in irrigated or rainfed area are supposed to correspond to different sharing agreements. In some cases the agreement concerns purely labour, such as in the case of the muraba'a, described in section 2.6. In other cases there is a mixture of labour, land and other inputs coming into play.

Sharecropping systems have evolved over time. They are common particularly in the better lands where there is an interest for investment by non operating farmers. They are rare in marginal areas, e.g. zone 4.

Table 2.9 summarizes the main types of sharecropping as given in the law.

Table 2.9 A selection of crop sharing stipulations between owner of the land and farmer

Type of agriculture	Share of owner	Share of farmer
Rainfed	20	80
Flood irrigation	33	67
Pump irrigation	20	80
Irrigated cotton	75	25
Rainfed cotton	40	60
Fruit crops	80	20
Vegetable	35	65
Olives	75	25

Source: Law n.134 of 1958 on Agricultural Relations Organization in the Syrian Arab Republic

The law's intention is clearly to establish a close control grid on as many type of agreements as possible. However these are all affected by local uses and a variety of inputs sharing customs which can hardly be all covered in a legal instrument.

In the actual operation of the system the shares of the owner and of the farmer vary widely over the territory and are even fluctuating year by year depending on anticipated market values of the main crops grown. In addition the share of the crops is closely linked with the sharing of inputs, which varies.

There are, therefore, many variations to the concept of sharecropping and its application. But, there tends to be a common pattern within a certain area and an accepted sharecropping market.

As mentioned, the relation between owners and operating farmers are valid one year, renewable.

(The sharecropper in local terminology is usually defined as the farmer, I will therefore adopt this terminology for simplicity). In practice the more frequent system is sharecropping built on the following premises, with local variations:

- the farmer provides his and his family's labour. If the farmer is fully responsible for all inputs he will pay a 20 percent share of the product to the owner of the land. However if the owner provides water and or other inputs he will receive a bigger share of the product, up to 60 percent. A 50-50 share is common when it is the owner who provides mechanical cultivation and fuel as well as fertilizer, but there is also some input sharing with participation of the farmer. When the farmer contributes labour only he usually receives 20 percent of the crop.

This is the so called labor sharecropper who is very close to a pure laborer, with little participation in management. The only difference with a laborer is in the form of payment, which is variable and measured in terms of a share of the crops.

Shares are also defined by crop. In the case of Hasake, for instance, it was reported that sharecropping agreements, in terms of amount of the shares, are defined for each crop according to market expectations. The agreements are purely verbal without reference to the law, actually the shares for the sharecropper were said to be generally higher than those foreseen in the law.

Widespread land occupation was reported in several governorates, for instance in Hama. The so called squatters seem to be in fact mainly sharecroppers whose (yearly) contracts have expired and who refuse to leave. It is alleged that the tendency is to request a 50-50 share with all inputs paid by the owner. The latter are however said to be generally unwilling to adhere to this request. Sometime the compensation requested by the occupying farmer is even more substantial, and is to be paid in land.

Articles 173 and following of the land relation law regulate termination of sharecropping contracts.

This however leaves some loopholes for continued occupation by tenants or sharecroppers whose contract has expired. According to the interpretation confirmed by Ajamiya (2000) the terminated farmer can return to the land if the owner has not been operating the land himself or with his family for a year after termination. This implies that the owner can only get the land back if he wants to operate himself i.e. he cannot change tenants except for grave negligence of the latter. This amounts to say that if the farmer is evicted on the basis of the owner wanting to return to direct operation and then he does not, the farmer can occupy the land, become a squatter and have a legal backing to do so. During local conflict resolution attempts it is not infrequent that the farmer requests a part of the land as compensation for work done and in exchange for returning the rest of the holding to the owner.

Some consideration needs to be given also to the nature of the landowners whose land is occupied.

There seem to be few absentee land owners in the traditional meaning of the word, the current absentee is often a non operating peasant who has another job. Therefore the picture of a classical confrontation between absentee landlords and invading landless would be misleading, and the potential role of local institutions in guaranteeing agreements could be high as they all belong to similar social strata.

Finally, it is worth stressing again that there are many different connotations of sharecropping in the country. In Hasake, for instance, sharecropping duration is in general three years, in spite of the one year renewable timing according to the law. This longer duration underlines the fact that in Hasake the sharecropper is the stronger partner in the bargain, as he tends to be an entrepreneur trying to enlarge the size of his operation. The building up of more substantial land operation is done through taking land in as a sharecropper, in addition sometimes to land owned. The system has become known as 'inverse sharecropping'.

In Hasake's 'inverse sharecropping' the power role is reversed –hence the name. The owner of the land (the weaker party) provides only fixed capital inputs, i.e. physical structures such as wells, and land, whereas the 'farmer' or sharecropper provides all the variable inputs. The owner of the land gets up to 15 percent for irrigated land, with all inputs the responsibility of the sharecropper. The sharecropper is unlikely to occupy the land and become a squatter, as it happens in other parts of Syria since he is the one who actually decides whether he wants to continue with the sharecropping agreement and at which terms. The overall share is defined by agreements between the parties which are locally accepted and backed by social institutions.

Fixed rent tenancy (leasing)

Tenancies or leases, i.e. the renting of land by an owner to a farmer -against a fixed amount in cash or kind unrelated to yields, imply occupation rights for the farmer for a given period of time. The important issues involved are duration and security as well as the degree of permissible involvement of the owner in the management of the land once it is leased out.

The agricultural relations law indicates the legal framework for renting, in the same way as for sharecropping. However in Syria renting is common when the renting out partner is the state but rather uncommon when both parties are private.

In private areas it was reported that the few existing leasing agreements apply to rainfed rather than to irrigated areas. Some instances of leasing in pistachio plantations were reported to happen at a cost 1000 Syrian pounds per year per ha in the coastal areas' mountain zone.

The lack of popularity of rent in private areas is mainly connected to risk and to perceived loss of control by the owner in favor of the renting farmer.

In principle, frequent presence is needed by the owner in the case of labour contracts and, for at least the major operational decisions, in the case of sharecropping. This presence is not necessary in case the land is rented out. However, the Syrian owner, even when living elsewhere and unable to participate in the day to day operations, tends to be reluctant to rent out his land. This may in fact be perceived as absenteeism and an opening for illegal occupancy, which is not easy to reverse.

According to local perception and experience, when a contract involves only labour the 'farmer' is easier to evict. It is less easy when it involves an agreed relation with land as it is the case with sharecropping, and it is most difficult in the case of land rented out.

It should be underlined that the common problem in all these cases is the lack of a written contract which makes provision of evidence of agreement difficult to prove during later conflicts. As a result, renting as a way to invest in agriculture by an entrepreneur wishing to increase his land operation without investing scarce capital in land purchasing, is unusual.

An exception is the situation of the so called ‘investors’ contracts popular in the Hasake area and the North East in general. Investors’ contracts are normally registered in the civil courts and do not come under the jurisprudence of the arbitration committees co-sponsored by MAAR and the Ministry of Social Affairs.

These agreements defy precise classification, and to some extent substitute a banking system, with a pawn-broker type of arrangement. An ‘investor’ is an entrepreneur having capitals that he cannot easily place in the official financial system and who does not want to immobilise his resources for too long, and thus enters into an agreement with an owner of land who needs credit. The investor may give the owner of the land a relatively large sum of money, for instance three times the normal amount for renting land, paying for 2 to 3 years in advance. In exchange he uses the land for this period. At the end of the period the owner has his land returned if he pays back the full amount of cash he has received. If the amount of cash advanced is closer to what would normally be paid for renting the land, then the amount the owner will have to return to the investor at the end of the period will be much lower. Only a closer look at the system could indicate what types of interest rates are involved.

The system is used in zones 1, 2, and 3, i.e. excluding the marginal rainfed areas. The ‘investors’ are often outsiders, e.g. from the Aleppo area, and register their contracts for a three year duration.

There are variations in the total cash advance by the investor to the owner of the land, according to individual needs. In case the owner and the investor agree on yearly payments, the agreement is close to a normal lease, or when in kind, to local agreements of the ‘inverse sharecropper’ described in section 2.5.1. Average level of this yearly payments are said to be as follows:

Zone 1: 40-50% of total production paid to landowner or 2000 Syp per ha

Zone 2: 25-30% of total production paid to landowner or 750-1000 per ha

Zone 3: 15-20% of total production for the landowner or 500 per ha

In case of harvest failure due to natural conditions the investor does not pay, i.e. the owner participates in the risk.

Another system related to renting also functions in Hasake by the way of auctions. It is mainly used for renting religious endowment land, i.e. wakf and (Christian) church land for several years. It could be investigated whether the system would be applicable to other types of private or public lands.

Leasing contracts are widely used in the public sector both in the original state land and land confiscated in compliance with the land reform regulations. Leasing is also often used as a tool for regularization of state land occupation, thereby providing a title of occupancy sanctioned by the payment of a limited rent.

Rental payments for private and public land

Preliminary information collected on rental payments for different types of land refers to rental price on public land either with a regular contract or without a contract, by tolerated squatters.

Table 2.10 Rented area and average rental values by origin of registered public land

Type of land	With contract (ha)	Average rent (Syp / year x ha)	Without contract (ha)	Average rent (Syp / year x ha)
Original state land	247 300	579	295 874	1 082
Land reform land	370 488	790	77 606	558
Total	617 788	706	373 480	973

Source MAAR 2000

An accurate breakdown of agricultural households renting state land with or without a contract is not available. The government is involved in an effort of regularization of rental contracts so as to avoid illegal occupancy. At present all those illegal occupants, squatters, who regularly pay their fees are considered for a contract, eventually.

There is a total of 69 000 households currently renting state land. Since well over one third of the rented state area is occupied by paying squatters it may be assumed that about one third of the said total agricultural households, or some 23 000, may be in the category of paying squatters. In view of the government concern to solve this problem the speed at which land occupation was taking place in the past is likely to diminish because of increased controls.

In terms of amount of rent the average does not vary very much between original state land and land reform land but rather between tenants with or without contracts. Where there is no contract the rent is calculated on similar types of land in the vicinity, but there are cases where this amount is doubled in line with type and fertility of the soil. The doubling of the rent in some cases refers also to change of land type after reclamation.

[...]

[There is] substantial difference [in the rental values] between state and private land with the latter more expensive for presumably comparable land quality. It also confirms the premium on irrigated land whether private or public and the link between rent level and production potential, as represented by agro-ecological zones. The difference between state and private agreements is that eventually state contracts tend to be written and remain stable whereas contracts among privates are more risky in the sense that they are often renegotiated. There is therefore a rent situation in the case of state tenants.

8.2. Agricultural and rural credit policies

8.2.1. *Relevance of credit for agriculture*

Farmers need funds for three reasons:

- **working capital.** Given that the production is obtained only by the end of season, while costs are sustained throughout all of the season, farmers need to anticipate money.
- **consumption smoothing.** Agricultural production is highly variable from year to year, whereas consumption need to be kept constant. Farmers may need to borrow money during bad years and save money during good years.
- **investments.** When an investment is realized, its cost is paid at the beginning, while the benefits are only obtained later on during many years.

For all these motives, farmers might use personal *savings*. However, especially for investments, personal savings are not sufficient, or they require long time before an investment can be done. Also, saved capitals are immobilized and thus they cannot be put in productive use until a sufficient amount has been accumulated. Finally, who has the ability to save, usually is who do not need the capital for making investments.

Within the economy, high productivity could be achieved by allowing a *market for credit*, that is to allow for the possibility for capitals to be moved from those who have saved it to those who are in need of it.

8.2.2. *Markets for credit*

In any economy, a market for credit always exist, either formally or informally.

Those who have availability of excess capitals may find ways of lending it to those who are in need, in exchange for a compensation. Usually, the formal credit is only possible when there is personal knowledge and reciprocal trust between the private lender and the borrower.

Rarely, however, the spontaneous forms of credit can be sufficient, because the potential lender and the potential borrower can fail to meet, or they may lack the personal relation needed for allowing the trade.

For this reason, usually we witness the appearance of *financial intermediaries*, whose function is to allow for supply of and demand for credit to meet. In modern economies the role of financial intermediation is played by the *banking system*.

When supply and demand meet, the *market interest rate* should be the level that clears the market, that is at which there is neither excess supply nor excess demand.

However, when there is a financial intermediary sector, there is always a *margin* between the interest rate paid when borrowing money and that received when lending money. The margin should cover all the *costs* of the intermediary, such as the salary of the people who works in the bank, the security guards needed to protect the money. Many of the costs can be characterized as transaction costs (see below).

Usually, the financial intermediary sector (either formal or informal) is highly monopolized. As a consequence, the margin is likely to include a more or less relevant *monopoly rent* in addition to the operational costs.

To avoid such rents, usually governments have decided to intervene directly, through state ownership of the banking sector, or through heavy regulation of the banking system operation.

8.2.3. *Transaction costs in credit markets and small farms' credit problems*

Operational costs are not the only costs that financial intermediaries have to pay. The most relevant part of the costs is linked to the transaction costs generated by the administrative and legal system needed to permit the operation of credit.

The main reason for transaction costs in the credit market is the *risk of defaulting* on the part of the borrower. To cover the risk of default, the financial intermediary will charge a *risk premium* above the interest rate, so that the interest paid by borrower may be much higher of that received by the lender.

Also, to reduce the risk of defaulting, real guarantees can be asked in form of collaterals, which also cause a cost to the borrower.

Finally, highly sophisticated form of legal contracts and administrative procedures may be needed.

When measured as a percentage of the amount of the credit transaction, all of the transaction costs tend to be higher for small credits.

The presence of transaction costs has two consequences: they reduce the effective interest rate that saver can receive for their money and increase the interest rate that borrower have to pay when they borrow money. As a consequence, the credit market can be strongly limited up to total disappearance, for two reasons: first because there will be *insufficient supply* of capital from those who have savings, and second, because there will be *limited demand* from those who need capital.

8.2.4. *Traditional intervention of the state in the rural finance sector: the 'old credit policy'*

Almost all governments throughout the world have deemed as important for rural development to provide credit to farmers.

Experience has showed that almost everywhere, availability of credit to farmers were insufficient.

Traditionally, the governments have operated by directly taking over the role of financial intermediary in agriculture through *state agricultural banks* (for example, the Agricultural Cooperative Bank in Syria).

Then they would try and increase the amount of credit by giving credit at low nominal interest rates.

The reason for this type of incentive is the belief that the demand for credit by farmers is highly elastic, that is, it is highly sensitive to the interest rate.

Many objections can be done to this way of providing credit: first, even though the nominal interest rate may be low, the incidence of transaction costs may be such that the *effective cost* of borrowed money may still be very high especially for small farmers.

Second, a system that lends money at a low interest rate, cannot provide enough incentives to savers for providing an adequate supply of capitals, so that it can be viable only thanks to continued external subsidies.

One other common objective of traditional credit policy in agriculture has been the attempt to *target credit* both *to user* (for example small farmers instead of large farmers) and *to use* (for example, by providing in kind credit: if the credit is intended to finance the purchase of inputs, the state bank can provide directly the input instead of the money needed to buy the input).

These targeting is achieved through mechanisms that can be easily avoided: for example, to favor small farmers, the government can impose a limit on the maximum amount that can be borrowed with one contract. However, this is not enough to really avoid that available money will be directed to large farms: large credit, in fact, could be done simply by signing several contracts, with the only effect of increasing transaction costs.

Also, if the farmer needs money for consumption rather than to buy inputs, he can always re-sell the inputs given by the government in order to get cash. Again, the only effect would be that of increasing transaction costs by forcing the farmer to incur in one more transaction.

Finally, to reduce the risk of default, credit provision can be linked to crop marketing. In the case of Syria, the repayment of the credit usually takes the form of a deduction from the price received by the farmer for the output, which is sold through the same institution that provides credit (the Agricultural Cooperative Bank).

8.2.5. *New objectives and instruments of credit policy.*

The experience of subsidized credit to agriculture in many countries has been negative. Rarely, the system of credit is considered sufficient by farmers, and always it has implied such a high burden on the government budget, to become unsustainable.

What could be done, then, to increase availability of credit to rural households within a self-sustainable system?

The first objective should be that of *local saving mobilization*. The view that farmers cannot save can easily be proven wrong by observing that farmers are able to smooth consumption even in face of large variability of production. If they could not save in one way or another, how could they survive periods of low harvests, or even eat something while waiting for the next harvest to come? Clearly, farmer must be able to save something.

Often, what prevents farmers from relying on *formal saving* (such as bank saving accounts) is the high cost of doing so. Their saving potential often involves very small amounts, so that they cannot afford to pay the transaction costs associated with formal credit (including time and distance cost to reach a bank branch, lack of trust based on limited information on the reliability of the system, etc.)

Peasants do not save formally for lack of suitable opportunities rather than because of low saving capacity. Households prefer to keep their assets in cattle, in grain stocks, or in gold rather than in the bank, especially when the bank appear to be untrustworthy.

The second objective should be that of *reducing the margin* of the financial intermediary, especially by *reducing transaction costs*.

What really counts for the farmers incentive is the *effective* interest rate. Rather than lowering the nominal interest rate on borrowings, much more demand would be stimulated by reducing transaction costs.

If administrative costs of the banking system are inflated by high overheads, over employment, poor motivation of the bank officials, and similar inefficiencies, the effective interest rate to be paid by farmers is necessarily high.

What is most challenging however, is the reduction of the transaction costs due to the risk involved in any credit contract.

First, the amount of administrative costs and paperwork should be reduced, for both formal saving and borrowing. Door-to-door collection of regularly scheduled small amounts of saving, for example, could be a viable option for rural villages where there is no local branch of the bank.

Also, administrative costs can be reduced by reducing bureaucracy and paperwork to the minimum; by providing incentives and promotion structures according to the performances of officers (in attracting savers, making loans, recovering overdue payments, etc.), by decentralizing decision-making to branch offices, and so on (Ellis, 1991 p.167-168).

Usually the main justification that banks throughout the world provide for their high overhead is that they are a requirement for compensating the cost due to the low rates of loan recovery.

One worthwhile objective for public intervention in the credit market, thus, is to try an to *increase the rate of loan recovery*, so that the banks cannot use it an excuse to justify high margin, which could simply hide monopoly rents.

8.2.6. *Experiences of successful rural credit initiatives*

There are now several experience of successful strategies for setting viable rural finance systems.

Saving mobilization has proven a powerful mechanism for inducing the development of viable credit systems.

In Indonesia, massive local savings mobilization has been possible through the correct incentives since 1986. A successful US-Aid supported project in Peru (BANCOOP) has shown since 1979-81 that savings could be effectively mobilized. The Banco Agricola in the Dominican Republic increased their deposits by more than twenty times between 1984 and 1987, simply by devising a safe and convenient system of liquidity store (passbook saving services)

Also reduction of the default rates has been possible. One fruitful way this has been done is through *group lending schemes*, where responsibility for loan repayment is given to a group of farmers rather than to the individual farmer.

This has been done, for example in the Grameen Bank in Bangladesh, which has proven to be a very successful institution. Groups are formed according to predetermined criteria reflecting homogeneity of interests (in the Grameen Bank case, for example only farms with less than 0.5 acres of land could enter in a group); usually they are small groups so that everyone knows what the others are doing (only five members in the Grameen Bank case); and they take collective responsibility for ensuring that loans are properly utilized and repayments are made. The penalty for default is that the entire group is prevented from further borrowing, thus powerful *social pressure* ensures compliance with group responsibilities.

The Grameen bank in Bangladesh is the first of a series of *micro-finance initiatives*, that are initiatives primarily intended to serve the needs of small rural borrowers.

The evidence is, today, overwhelmingly in favor of the success of initiatives as such, showing that even among small and relatively poor farms there is the potential to save. If the savings are effectively mobilized, and transaction costs are reduced or eliminated, capital can become a much more effective factor of production of what has been in the past for the agricultural sector.

8.2.7. *Reforming the traditional credit system*

Despite their success, however, Micro-finance initiatives cannot be the answer to the entire agricultural sector needs for credit.

Medium size farms are usually in the position of being too large to access to microfinance and too small to have access to formal credit.

More needs to be done in terms of reforming the traditional, formal banking system to make it more effective in providing credit to agriculture in many developing countries.

Authorization of *rural banks*, that is commercial banks specifically devoted to the needs of the agricultural sector, are a viable initiative, provided the main problems of agricultural credit are assessed.

The main problems are related to:

- *covariant risk* in yields, that makes it very likely that all of the farmers in one area will have need for credit at the same time, or that they can have difficulties in repaying loans is a generalized drought or other widespread reduction in production occurs;
- *limited local availability of savings*, which need to be provided enough incentive to be mobilized;
- *lack of flexibility* in matching the needs of farmers with the appropriate interest rate and terms for repayments.
- lack of *initial investment funds* to set up the rural bank.

Possible actions to solve these and other problems affecting rural banks include (Norton, 2002, page 7-58):

- to extend the user base to wide geographical area, so that covariant risk is reduced;
- adopt techniques for selecting clients and creating incentives for repayment similar to those adopted by micro-finance institutions, such as group lending, or linking access to credit to the past repayment record;
- decentralize loan decision-making as much as possible to local branches, even forming loan committees composed of local citizens.
- develop modern information systems so that loan officers can follow up with clients if loan payments are late by even one day;
- consider innovative forms of collateral, such as *antichresis* or movable property;

antichresis is an alternative way of using land as a collateral. It requires the *temporary transfer of control over land to the creditor*, in case of loan faulting. The transfer would only last until the loan is repaid out of the harvests from the land. The creditor may also choose to hire the debtor to work in the land while the control lasts, so that the debtor is not deprived of means of subsistence while the debt is fully paid.

- provide incentives to loan officers for good client selection and loan recovery rates;
- provide a multiplicity of financial services to the rural population;
- use donor funds or other external funds to start up the financial company. Also, over time ownership of the bank should be transferred to farmers. (In the case of Bancafé in Honduras, and the Banco Ganadero in Colombia, the institutions were transformed from governmental to

private. The shares of the private company were purchased by farmers over time, so that property is now fully private)

As can be seen, many options are available to create and sustain a viable system of rural finance. Unfortunately, the experiences of such systems are still too limited throughout developing countries. Often, the financial sector is either still highly controlled by the government, or it is in the hands of powerful groups which have their interests in the industrial sector or in the oil sector.

In the following part of this lecture, the executive summary of a report on agricultural credit developed by N.S. Parthasaraty for phase I of the project GCP/SYR/006/ITA is reported. It summarizes the main findings of an inquiry on the status of the credit system for agriculture in Syria.

PROJECT GCP/SYR/006/ITA

Implications for the Agricultural Sector of the Current Credit System

(By N.S. Parthasaraty)

Executive Summary

Background

The rural financial system has played an important role in Syrian agriculture through state owned agricultural credit institutions, fixed subsidized interest rates, integration of input, credit and output procurement. Global changes and the new opportunities in their wake have made it necessary for the rural financial system to be reorganized to facilitate establishment of a globally competitive production system as a means to continuously improving living standards and to spreading the fruits of prosperity among the disadvantaged social sections.

Agriculture

The population of 16 million is growing at over 3% per annum expected to reach 24 million by 2010. Although the current calorie per capita of 3200 is considered satisfactory, food production is required to keep pace with growing population, increasing per capita incomes and changing food habits. Meeting the growing needs would not be a simple issue of motivating 25% of the holdings with 76% of the area for higher production as any growth strategy has to consider the majority of relatively smaller households farming under uncertain climatic conditions.

Policy Environment

In the Agricultural sector, as in other sectors of the economy, Syria has in recent years been gradually introducing several reforms shifting the economy from a centrally planned system that prevailed over several decades to a market system. Further pace to the reform process is currently at the stage of resolving issues concerning redefinition of the role of public institutions, selection of appropriate policy instruments for a competitive environment and engineering a smooth transition at minimum hardship and social cost. Since the mid-eighties there have been many important policy changes - such as: unification of exchange rates, private sector entry into defined areas of agricultural procurement, private sector export of vegetables and fruits, reduced rigidities in crop planning, removal of explicit subsidies and fixation of prices according to production costs.

Macroeconomic And Monetary Policies And The Financial Sector

Social considerations, the fact that public sector has been the main user of credit and apprehension that prices might increase seem to have kept critical monetary determinants unchanged. Borrowing by banks are 1.44 times and 2.66 times the deposits (Demand and Time Liabilities) in the case of Industrial Bank and Commercial Bank respectively suggesting that banks rely more on borrowings to lend and invest than on deposit mobilization and that observance of prudence norms are not institutionalized. As time deposits carry a uniform interest rate of 7-8 % and lending for crops is at an average of 5% the difference is bridged by low cost refinancing and loans from the CBS at 2.5 to 2.75%. In this sense, agricultural short, medium and long-term loans are subsidized. The future interest policy assumes significance in the context of government's decision to allow private sector participation in banking.

The responsibilities of CBS include managing money supply, supervising and directing banking activities according to norms and performing the role of financial and monetary counselor to the government. Much of the responsibility of supervising the banks seems to have devolved, over a period of time, partly

upon the MEFT and its officials in regard to policy matters and the other part upon the Central Organization for Financial Monitoring.

The Financial System The financial sector in its entirety is government owned and directed. With the Central Bank of Syria as the banker's bank at the apex the system consists of five "specialized" banks, namely, the Commercial Bank of Syria, Agricultural Cooperative Bank, Industrial Bank, People's Credit Bank and Real Estate Bank with apportioned segments of the market categorized by nature of end-use of the money. The specialized approach to banking has resulted in the following: (a) each bank has virtually one category of customer and each customer one bank to go to and this, in turn, has led to low motivation to enlarge the financial market; (b) each potential borrower has at times to go to different banks for different financial need; (c) fragmentation of financial functions, wastage of the potential combined strength of the infrastructure of all the banks, isolation of each bank in its demarcated sphere and lack of competition are the inevitable outcome of this structure.

ACB has a network of 108 branches distributed over all governorates. Branches operate as independent units, each regarded as a separate profit center. Each branch reports directly to the Director General. The branch manager acts as notary public and as assistant head of the Real Estate Office for purposes of registration of mortgages and debtor declarations.

Loans outstanding and to be collected are 2.54 times the annual disbursement. Although borrowing is 0.88 times the deposit, appearing to be low, it seems to be due to severe liquidity restricting ACB's ability to avail of discounting. The balance sheet shows that loan assets are supported by other liabilities unconnected with banking activity. Return on capital is poor because of prohibitively high transaction costs at 11.59 % of loan disbursement.

Cooperatives. Although cooperatives, in the manner in which they operate in Syria, cannot be considered an intermediary financial institution at the grass root level, they play a vital part in the whole system of input supply, procurement, credit disbursement, proceed disbursement, collection and creation of a collective will and mutual assurance for action. But for the cooperatives the workload and cost per transaction for ACB would be much higher.

Credit to Rural Households

Agriculture directly received only 11.28 % of available credit in 1990 and this declined to 9.88 % in 1999. However, this does not capture the full picture, as there are no separate figures for credit extended to input and output related agencies, both in distribution and in manufacture, and to those engaged in agro-processing and exports. ACB extends assistance to private farmers, cooperative member farmers, cooperatives, farmers' unions and federations and public sector organizations engaged in agriculture. Private sector has access even if in the same area a society is functioning. The ownership of the private body intending to borrow should be farmer/farmers with license from the MAAR.

Each farm household must have a crop license as a prerequisite for obtaining credit and even for cash purchase of inputs if credit is not needed. In the case of medium or long-term loans the access procedure is prolonged. Farmer groups in Homs and Sweida voiced dissatisfaction over long procedural delays in processing applications for medium and long-term loans. Many even had the impression that the bank does not give long-term loans. Farmers find it difficult to obtain loans for machinery like harvesters and tractors and have to depend on supplier credit at high interest rates of 20-30 %. According to them, lesser priority is given by the bank to medium and long term lending affected important activities like land reclamation and fruit tree replanting. Loans for land reclamation is subject to a standard ceiling whereas the actual fund needed may be higher depending on the nature of the terrain and the soil structure.

Output dealers, exporters' agents and cold storage units are active in fruit and vegetable growing areas. Financing by them takes several forms. Direct advances ahead of the season are given with, and sometimes without, an agreement on the unit price at which the harvest would be sold. The farmer is thus

under obligation to sell the crop to the dealer at a price to be negotiated and having to repay the loan the farmer finds himself at the weaker end of the bargain.

The enforcement mechanism is effective and as such repayments are generally satisfactory except in times of poor rainfall and drought. In times of natural calamities like drought, a committee, appointed by the Governor, consisting of representatives of ACB, administrative authority of the affected area, MAAR and farmers' union assesses the extent of damage based upon which ACB Board is authorized to grant full or partial deferment.

The special powers of endorsing collateral charges on ownership titles, which are legally enforceable, conferred upon the lending agency is a unique feature of the Syrian system encouraging timely repayments, acting as deterrent on willful defaulters. Officials associated with loan recoveries feel that the enforcement mechanism is the best answer to curb the tendency to avoid repayment spreading among farmers who are generally dependable.

It is significant that, of the loans extended by ACB, private farmers accounted for over 50% and cooperative members about 45%, the remaining going to the public sector (state farms, Euphrates Basin Establishment, and other activities related to MAAR, etc). Another notable feature is the low proportion of medium and long-term loans and the declining percentage from year to year – from 17 % in 1997, to 15 % in 1998 and further down to 14 % in 1999. This trend is to be noted in the context of farmers' impression that ACB producers to extend medium and long-term loans are quite cumbersome.

The differential interest against the private sector is 0.5 % in the case of ACB, 1 % by PCB and 2 % by IB. IB's interest rates are higher across the board by 0.5 to 2 % for the same borrower category compared to other banks. It is seen that cooperatives get the benefit of lowest interest and next the public sector with private sector subject to the highest rate perhaps because of the lower risk that banks attach to lending to public sector agencies guaranteed by the respective Ministries. Even in refinancing agricultural production loans CBS has a discriminatory margin of 25 % for discounting loans taken by private farmers who are not members of farmer associations.

Observations on Loan and Interest Structure

There is little flexibility in loan structures to suit different crop and cash flow situations.

- i) Standard loan terms and a one-size-fits-all approach has produced a sterile lending environment in which there is no distinction between a good borrower and a bad one, between a borrower who keeps his value addition in the bank and one who either does not produce the value addition or squanders it.
- ii) Narrow interest spread and high transaction cost crowd out the possibility of any allowance for service improvement.
- iii) The mission hardly heard from any of the farmer group reports of high interest rates. On the other hand, their readiness to resort to more convenient and costlier alternative sources is indicative of the higher value they place upon better service and easy access than on cost.
- iv) The low percentage of medium and long-term loans are not conducive to promote long -term productivity of agriculture.
- v) The preferential rates of refinancing signify government's desire to match monetary policy with its commitment to promote industrial development through an enlarged role for private sector.

In regard to short-term loans, from the figures of demand potential and planned coverage, it seems that a substantial part of agricultural production is financed by farmers' own resources and from borrowings in the informal market. It is quite possible that large farmers who account for over 70 % of production may be self-financing their farm expenses and the more affluent among them lending money to friends and relations on profit-sharing basis permitted by religion.

Credit to Service Providers

According to senior officials of IB, demand for funds is larger than resources indicating the need for strong fiscal, monetary and marketing measures to promote savings. Figures show that food industry's share of borrowing is steadily on the increase from 20 % in 1990 to 39 % in 1999. In absolute terms it has grown from SP 298 million to SP 976 million, by well over 3 times. Significantly, while sum borrowed has increased the number of borrowers has declined from 1129 to 976 suggesting that average size of loan has increased. This might imply a use of better technology or higher degree of automation or scale increase or a combination of any of these. It is a pity that CB does not have similar figures classified according to industry and nature of activity.

Against a theoretical potential of SP 73 252 million, calculated on the basis of approved projects under Law 10, that can be financed by the banking system, IB can be said to have met cumulatively SP 5844 million from 1990 to 1999 – less than 10 % of the potential. To the extent of working capital funding from CB, the gap would narrow. Figures for CB's credit to agro-processing industry is unavailable. The low percentage is also due to a poor rate of maturation of approved investments as well as to low participation by private sector in bank credit.

Low Participation by Private Sector

It seems that the reluctance of the private sector to avail of bank credit, assuming that it is available without much procedure and red tape, arises out of the following:

- i) Religious considerations preclude lending and borrowing against interest.
- ii) Private sector is still unfamiliar with legitimate procedural and security requirements of the banking industry, which after all is dealing with public funds and has necessarily to make contingent provisions to recover money in the eventuality of default.
- iii) Many promoters do not appreciate the criticality of working capital and do not tie up working capital along with financial arrangements for capital for plant and machinery. They look for working capital after commencement of production and quite often find themselves having to grapple with an acute cash crunch.
- iv) The foregoing is not to imply that there is no scope for banks to make their products and procedures more borrower-friendly. Slow progress in this direction is due to the fact that they still look upon public sector as their chief customer. Public sector lending is the softer part of the market, needing less effort in evaluation, securitizing, monitoring and recovery.
- v) The preferential treatment to public sector borrowers (example: lower interest) not only places private sector at a competitive handicap but sends out a wrong signal from the government to banks that private sector is of inferior priority.
- vi) Although agro-processing and other post harvest supports are rated as critical elements of agricultural policy, banks like CB have not designed the management information system to monitor progress to corrective measures.

Alternative Sources

Private funding is apparently taking place on a fairly large scale outside the banking system going by the impression gathered from many entrepreneurs met by the mission. Return expectations in the informal market are naturally high. High cost private financing has ramifications.

- i) Only projects with very high returns would pass the test and as a result many projects with attractive returns, by normal standards, would get neglected arresting economic growth.
- ii) This would also affect expansion and modernization necessary to acquire global competitiveness.
- iii) Lack of competitiveness would force manufacturers to confine themselves to the domestic market and exert pressure on the government to protect local industry for its low efficiency and poor product design and quality
- iv) Often the entrepreneur has to compromise on technology for want of adequate capital and projects could become sick even before they have commenced commercial production being uncompetitive in terms of pricing, technology and quality.

Savings

Savings has been appropriately called the “forgotten half of rural finance” as provision of financial services often focuses more on extending credit neglecting other services like savings, family budgeting and insurance.

Earning rate on savings having remained constant for over ten years now, the attractiveness of the rate has varied depending on the inflation rate and opportunity cost of capital. The following picture emerges deflating the retail price index change from the interest rate of 8 %. Savings increased when “real” interest rate improved and more so when it turned positive. Savings in 1990 were a bare SP 66,291 million and since then it has increased more than four-fold. This also goes to show that opportunity cost of capital in the informal market is not such a heavy counter-force as to dampen the effect of improvement in positive rates of return in the formal system. Although informal lending rates are cited as varying from 24 to 36 %, such markets not being so fluid and well organized, access to opportunities may not be easy, apart from the higher risk involved in such investments compared to keeping money in an institution having the backing of the government.

Savings Mobilization

The following factors inhibit savings mobilization.

- i) Banks do not have the freedom to design different savings products carrying different rates of return and cash flow features to meet varying saving characteristics.
- ii) Rates and other terms being standard, there is a sterile uniformity among the banks and this lack of variation dampens any semblance of competition to attract savers.
- iii) As lending rates cannot be varied by the management there is no way of the bank being able to distinguish a good customer with large deposits and maintaining a good account from, say, a one-time borrower.
- iv) Any disciplinary minimum ratio of banks' own funds and mobilization as a condition of concessional refinancing or discounting, if in existence, is weakly enforced; so, there is no pressure to mobilize savings and deposits.
- v) Where agricultural credit is concerned, the low rate of interest based on 2.5 % discounting by central bank to meet all lending needs, has taken away the purpose of mobilizing deposits costing 8 %. More the deposits the higher would be the loss to ACB.

Subsidy Dependence Index

The subsidy dependence of the rural financial institution is the percentage by which its average on-lending rate would have to increase to make it self-sustainable (Jacob Yaron and Others, Rural Finance, The World Bank, 1997). In the present case, the present average lending rate of 7.44 % needs to be increased by 3.26 % toward interest plus 9.59 % toward additional transaction cost incurred by ACB over the norm— that is, by a total of 12.85 %. This gives a subsidy dependence index of 1.73 (12.85/7.44), which is extremely high and untenable. Of this 1.73, interest insufficiency accounts for 0.44 and the balance 1.29 is the very high transaction cost. This stresses the urgency of restructuring ACB and lowering its transaction cost per loan.

Implications of Agricultural Policies for Rural Financial System

Total demand for funds has grown 3.2 times and loans to sectors other than the public sector has grown faster than that for the public sector apparently stimulated by the policy reforms. The public sector, however, continues to dominate the capital market with its share having nudged downwards from 74.72 to 70.46 %. In absolute terms also, public sector absorption of available resources is still very substantial indeed.

Priority areas enumerated in the Agricultural Policy have not fared well. Loans for irrigation declined in 1999 to a little over a third of 1990. Greenhouses, which form the thrust for improved quality and competitive costs for export, has limped from SP 301 million to SP 475 million in 1999. The share of these special purpose loans declined from 20 % of total loans to 12 % in 1999 besides registering a fall in absolute terms from SP 1695 million to SP 1271 million. Encouragement of mechanization, micro-irrigation and similar activities is another activity that is part of ACB's objectives that has not made satisfactory progress as indicated by the low ratio of medium/long term loans to short term loans.

ACB's Objectives: ACB has succeeded in fulfilling its prime objective of providing cash and in-kind loans to the agricultural sector. The loan volumes, however, have been declining year after year. An important objective was to encourage establishment of cooperative societies. The cooperatives could have been encouraged for a role in mobilization of savings and lending. The development of such second tier financing activities would have considerably strengthened the rural financial system and shifted the focus for ACB from retail lending to wholesale lending leaving to grass-root financial functions responsibilities of credit rating of borrowers and ensuring timely collections.

The number of beneficiaries in 1999 was only 54 % of the number in 1994. Even allowing for the poor rainfall in 1999, it is seen that the market contraction process had already set in from 1995. It is significant to note that the number of borrowers peaked to 749,703 in 1989, nearly three times the client base in 1999. This trend is indeed cause for concern. Loans are not reaching farmers or farmers are unwilling to utilize the facility from the Bank or farmers are becoming self-sufficient for financing production activity. The last mentioned possibility seems unlikely going by the impression one gains from meeting farmer groups in different parts of the country. Loans advanced have also been going down reaching to 71 % of the 1994 volume in 1999 despite increase of area during the same period. Not surprisingly, therefore, the average size of loans has been increasing and is presently 1.32 times the size six years ago. The higher average size is suggestive of a movement toward larger farmers and/or toward better-endowed zones.

Coordination of National Agricultural Objectives with the operational and marketing strategies of the rural financial system has much scope for refinement. Matching measures and monitoring systems are needed to ensure fund flow to identified priority sub-segments; sufficiently sensitive alert signals in the form of data reporting, monitoring and management information systems to track achievements with reference to quantified priority objectives are required.

The combination of input distribution and banking, two unlike businesses, in the hands of ACB is hardly conducive to sound internal management controls, performance parameters and accountability.

Crop and land holding records maintained for the purpose of issue of crop licenses are of a high order and constitute a good basis for examining feasibility of alternate and easier system of access to credit. The recovery mechanism supported by special powers of confiscation of lands of defaulters is sound

Aggregate Performance of the Sector

Growth in agricultural sector has been an average 3 % between 1995 and 1999 in a period when other sectors like manufacturing, transport & communication and services have done much better. Consequently, the share of the sector in the gross output has also declined from 25 % to 21 %. While other sectors have been able to take advantage of the reform, agricultural sector has been languishing. The slow entry of private sector in to the less glamorous and more complex agro-related economic activities, the risks associated with it and the traditional preference of banks to stick to “safe” public sector lending could be reasons for the slower growth. The liquidity pressure in ACB and the disinclination to assist farm investments on an increasing scale through medium and long-term loans are responsible for the poor net capital formation in this sector.

[...]

Recommendations

The suggestions of this report have been arranged in the following summary tabulation in order recommended sequencing. The sub-paragraph references in Section 13 are given to indicate the portions in the main text containing more details.

Table E-1

- | | |
|-----------|---|
| A. | <u>Operational decisions not involving policy or institutional changes which could be implemented immediately</u> |
| 1. | Revision of loan features – tenure, ceilings, documentation requirements and procedure simplification |
| 2. | Rebates for early and prompt payments and discount to those holding deposits |
| 3. | Loans against gold/jewelry |
| 4. | Guarantee to supplier of machinery against fee to reduce fund exposure |
| 5. | For marginal farmers in zones 3 and 4 increase loan size to cover subsistence during crop |
| 6. | Abolish discriminatory interest rate between public and private sector, leaving this to banks to charge same rate if security and risk are satisfactory |
| 7. | Remove discriminatory margin by CBS for cooperative members’ loans and private farmers’ loans |
| 8. | Infusion of additional funds into ACB for a provisional sum till balance sheets are re-evaluated, to provide necessary liquidity for margins to support increase in MT and LT loans |
| 9. | PCB to make available working capital facility limits to be used according to seasonal needs instead of lump sum loans |
| 10. | Review loan norms for agro-processing industry to moderate harsh collateral norms, reduce documentation and simplify procedures |
| 11. | Credit delivery at villages through weekly branches and pilot scheme to encourage micro-finance savings and lending groups in backward areas |
| 12. | Form Customer Consultative Committees in CB and IB to promote regular exchange on needs, procedure, difficulties |
| B. | <u>Policy decisions not necessarily requiring institutional changes which could also be taken up immediately</u> |

1. Banks to be authorized to design wider variety of deposit instruments to meet different saving habits and cash flow needs
2. ACB to be allowed to become a universal rural bank lending to rural trading and processing activities to widen its market base and reduce incidence of transaction costs
3. Appoint a reputed management consultancy firm to streamline systems and MIS in ACB as preparation for restructuring – including training to staff on computer and new system
4. Orientation programs for senior and supervisory staff, study tours in preparation for restructuring
5. Strengthen institutional and financing linkages between Policy priorities and RFS
6. Relief to Rural Finance System in times of drought – Agricultural Sinking Fund
7. Banks to be allowed to retain surpluses after tax, short term inter-bank lending to rationalize overall liquidity
8. Ceiling on interest spread in place of control of interest rates for deposits and lending as preparation for eventual free interest regime
9. Gold Deposit Scheme to mobilize idle gold with households for economic activity and tax incentives to promote household and corporate savings and investment

C. Decisions involving institutional changes

1. Restructuring ACB, separating commercial and banking functions; Re-evaluation of assets and liabilities and isolating them or writing off
2. Autonomy and Independent Board of stakeholders and experts 11-12
3. Infusion of capital, farmer participation through debentures, cumulative preference shares
4. Gradually increase reliance on own mobilized resources based on a realistic timetable duly formalized and made binding on the new management. Meantime CBS would continue support on progressively improving ratio of ACB's own mobilized resources
5. ACB would work on an Annual Business Plan and Loan Policy Document 18,19
6. Review proposed Passbook system and refine features for introduction on pilot scale as prelude to implementation on national scale
7. Select farmer associations/unions to be tried out as savings and credit associations, necessary legislation governing their conduct
8. Rehearsal of competition, open up agricultural lending to CB and PCB 20
9. Similarly working capital from more than one source, CB and IB, and PCB for small sector

Broader Issues

Clear policy statements and necessary legislative changes are needed to prevent public sector banks continuing unchanged despite political intentions to the contrary. Physical restructuring cannot by itself achieve desired results without attitudinal reorientation and acceptance of new realities by bank managements. Clear new mandates in writing, freezing and transferring past losses out of the books for creating a new beginning, absorption of existing debts, essential re-capitalization, constitution of new Boards of Management with independent outside experts including representatives of outstanding private sector industrialists are steps necessary to revitalize the financial sector. Fruits of economic reform would remain unrealized without a vibrant pro-active competitive financial sector.

Banking Norms: Restatement and enforcement, in stages, of internationally practiced Basle norms governing aspects like income recognition, asset classification, provisioning and capital adequacy are needed. The roles of CBS and MEFT need redefinition more appropriate to the emerging environment. Currently, the Ministry of Finance is the owner of public sector banks, MEFT playing the combined roles of manager and regulator and CBS confined to the role of the lender. The Banking Specialist suggests imparting fresh clarity to the role of CBS and reconstituting its duties as those of a Regulator. The CBS is better placed than administrative Ministries to evolve, stipulate and enforce prudential norms in accordance with international banking standards.

Legal Environment: The government is contemplating a new banking law in the context of the recent decision to permit private sector entry into banking. The Banking Specialist recommends enactment of a law on negotiable instruments governing transactions relating to checks, bills of exchange, promissory notes and transactions with banks.

ACB - Future Strategy: Substantial improvement in the farmers' capacity to hold the produce is to be promoted through micro-level institutions with stores and refinance facilities to advance monies against the grain deposited. Cold stores for fruits and vegetables and packing houses for export are rightfully in the domain of the ACB and when it has consolidated its position in the core area of production loans it could look into these and other areas for profitable lending. ACB should get out of re

tail lending and move more into wholesaling of credit, operating through cooperatives, private mini-banks and micro-finance groups in backward segments which, by the nature of their location and size, could more easily develop and maintain closer relationships with local communities and be able to operate at lower costs, provide better service and enforce high recovery rate. ACB should, in due course, become the rural bankers' bank.

Creating Debt Capacity: Investments in technological innovation, extension, creating market certainty and post harvest infrastructure are important for creating greater debt capacity among the farming community as well as for a sustainable growing rural financial system. Close guidance to technologically weak farmers through effective extension, crop insurance or credit guarantee and strict enforcement mechanism combined with incentives to farmers with consistently good repayment record are needed.

Impact Of Proposals In Terms Of Benefits, Risks And Adjustment Costs

Risks: The sources of risks to the implementation of credit reforms could arise from any of the following factors.

- i) Stability of macroeconomic indicators such as inflation and currency valuation
- ii) More development oriented banking norms and emergence of private banks may not take place in the short run. The proposals in this report support continuance and re-invigoration of the existing system to facilitate higher effectiveness and as such while there may be delays in private participation, basic services to farmers would not suffer.
- iii) The speed with which rural credit is reorganized might be subject to delays in decision-making.
- iv) The shift toward autonomy may meet with initial difficulties and problems. This should be overcome by ensuring that training and orientation precede the implementation of institutional changes and greater autonomy.
- v) Entry of private sector banks –especially in the working capital and industrial lending segments – may cause initial shocks to public sector banks but this would soon attain equilibrium as the sectors would find their own market niches and as the potential demand for capital is large enough to need both sectors
- vi) Interest rates may increase marginally if deposit rates have to be increased to attract savings but this would be more than compensated by higher liquidity with ACB, easier access to loans and lower transaction costs.

Social Adjustment Costs: The proposals do not visualize the closure of downsizing of any of the existing public sector institutions but recommends revamping them, re-capitalizing them, enriching their roles and arming them with greater autonomy to compete, expand and grow. Surplus staff would be absorbed by the additional needs for monitoring and regulating bank operations either at the CBS or at the proposed Bank Audit and Supervision Agency or at CB for their agricultural lending division and would more than pay for itself through greater effectiveness in supervision, better service and lower overall transaction costs. The cost of re-training bank staff on credit evaluation, credit design, credit delivery and marketing techniques to prepare them for responsibilities in a new environment would result in substantial enhancement of technical and operational skills.

The gradual adjustment toward a healthier balance of own funds and borrowings would ensure that no serious hardship arises out of a sudden liquidity shock to the system. As a matter of fact, at no time in the near future can agricultural credit be left without refinancing support from the central bank. What is, however, needed is a more balanced portfolio of resources and sustainability.

Benefits: The following benefits are expected to flow from the proposals.

- i) Smooth change over to a competitive and efficient rural credit system without abandoning existing institutions and, on the contrary, building it around the many excellent features of the existing structure.
- ii) The public, cooperative and private sectors would have their respective roles to play

- iii) No retrenchment of personnel from public institutions or any other form of hardship is envisaged
- iv) The competitive environment emerging from these reforms is likely to result in better service and at lower cost.
- v) The proposals would result in increased volumes of medium and long term lending leading to asset formation at the farm level, technology enhancement and higher debt capacity.
- vi) Improved self-reliance ratio and higher profitability in ACB, in due course, would release public resources to be invested in larger measure on critical infrastructure such as research and extension.
- vii) Public resources supporting untenable transaction costs in the system as implicit subsidies constituting revenue expenditure would get shifted to investment securing benefit flows over years producing a more lasting effect on farmer welfare.
- viii) Increased savings mobilization measures suggested in the report would help to meet the increased demand for capital as a result of economic reforms and to bring idle assets into the formal system to support economic activity.

8.3. Water use and irrigation policy¹⁷

From an economic point of view, irrigation represents a classic example of *market failure*, and thus state involvement of one kind or another has been always present in most examples of irrigation development plans.

The market failure derives from (i) the inability to define private ownership rights over the resource and (ii) the presence of externalities caused by the impact of individual user behavior on the collective access to water of users as a group.

As a result, a market will not form, and thus there will be no *market price*, and also, there will be a divergence between the private marginal costs and social marginal costs of water provision for agriculture.

On the other hand, irrigation is crucial for agriculture because it allows for an enormous potential increase in agricultural production. The importance of water is also increased because of links between irrigation and other kinds of policy. First, irrigation water is often a *complement* to other inputs, such as fertilizers or improved seed. As a result, the overall effectiveness of input subsidies is related to the availability of irrigation. Thus irrigation policy is strictly linked to *input policy*.

Also, the most effective use of irrigation water usually requires the adoption of new technologies of the acquisition of machinery and other fixed investments for which credit may be needed. As a result, irrigation policy is strictly linked to *credit policy*.

Moreover, the availability of irrigation water may make the cropping patterns available to farmers more varied. Farmers will have the option of growing many different crops if they can use irrigation. This flexibility will increase the elasticity of supply of all crops, because farmers could more easily switch from one crop to another. As a result, farmers' responsiveness to price policy is increased by availability of irrigation, which provides a link between irrigation and *price policies*.

Finally, the use of irrigation is strictly linked to the use of land: if people have difficult access to land, they will not be able to benefit from irrigation water. Thus, irrigation policy is strictly linked to *land tenure policy*.

All over the world and across the history of public policy in agriculture, three issues can be identified as the most relevant when speaking of irrigation water:

1. the choice of irrigation technology, with a contrast between *traditional* irrigation technologies, which usually are labor intensive but do not require large investments, and *modern* irriga-

¹⁷ This section relies heavily on Ellis, 1992, chapter 11

tion technologies, such as *drip* and *sprinkler* irrigation, which allow for water saving, require much less labor, but also require some investments to be done.

2. the institutional setting to regulate access to water use and management of large irrigation facilities. Irrigation facilities are often characterized by economies of scale that makes them natural candidates for state monopolies, and their functioning requires a constant management (such as to keep canals clean, to avoid damage in the tubes, etc.) for which there may be not enough private incentives.

3. the level of farmers' contribution to the cost of providing water. Often water use is granted to farmers virtually free of charge. This has negative consequences on the level of use, which tends to be excessive, and on the availability and quality of water for other uses (agricultural use of water can generate externalities). The question thus is how much to charge farmers for use in order to send them the right signals on the effective value of water and to save enough water for other use (especially for drinking and other personal uses).

Let us discuss each of these topics separately.

8.3.1. *Irrigation types and choice of technology.*

Irrigation can be defined as the use of human technology to increase and control the supply of water for crop production. In most cases, irrigation is supplementary to the naturally occurring supply of water to crops due to rainfall. However, there are important examples where there would be no agricultural production without irrigation (such as in the desert or in arid regions, where rain is condensed in limited times of the year)

Since very ancient times, human creativity has developed technologies for irrigation: irrigation works have existed for thousands of years in Asia, the Middle East and North Africa. The first civilizations of human race of the Euphrates and Tigris valleys were possible thanks to irrigation. The power of Egypt was in ancient times fueled by the possibility of using the Nile water for irrigation.

We need to distinguish between:

technology for water collection.

technology for water distribution.

Water can be collected from *surface water* (rivers, lakes, glaciers, or even the sea) or from *ground water* (by digging wells which extract water from *aquifers*).

The cost of collecting water varies very much, depending on the relative abundance of the water source, on the depth at which the aquifer is located underground, on the quality of the water (for example, it is possible in principle to use sea water for irrigation, but only after desalinization, which may be very expensive).

Once the water has been collected, in order to be used for irrigation it needs to be distributed on the cropped land.

Some form of simple technologies for water distribution, such as diverting the flow of a river to flood land, have lasted for millennia and are still used today, more or less in the same form.

The main characteristic of **traditional water distribution systems** is that *they require large amounts of human labor* to monitor and control the flow of water. Also, the *effectiveness* of water of traditional technologies is very low. Large quantities of water are required, because only a small part of it will be retained by the land and will be useful for the plants. Most of the water will be lost because of *running-off* or *deep percolation*.

The fundamental reason why traditional technologies are still used, especially by small farms in developing countries, is because *they do not require large investments*. In other words, the initial cost of irrigation to the farmer with traditional technologies is very low.

To summarize, the limits of traditional technologies are that:

- it is naturally possible only where abundant sources of surface water are available (rivers, lakes, etc). In order to make it available in other areas, large water distribution systems (such as dams, reservoirs, and long series of canals) need to be constructed.
- the operating cost of traditional irrigation technology is low only if labor is relatively inexpensive to capital.
- relatively large amounts of water are required.

For these reasons, when both water and labor started become scarce, and thus more valuable, modern alternative technologies for water distribution have been invented, which basically substituted capital and technology for labor.

The more common **modern water distribution systems** are *sprinkler irrigation and drip irrigation*. These innovations respond to two main desires: to save labor and to save water.

Sprinkler irrigation systems substitutes labor with power pumps and tubes to distribute water on the land, whereas drip irrigation is designed to reduce as much as possible the loss of water due to running-off and to deep percolation.

Both types of irrigation systems have also the advantage that they can be managed by automated systems, thus further reducing the need for labor.

... ..

Without government intervention, the type of irrigation that will be used depend on the private incentives. When labor is relatively inexpensive (as is for example for small farms with abundant family labor), whereas investment capital availability is limited, traditional irrigation systems will be common.

Unfortunately, this will mean that the effectiveness of water use will also be limited, and thus irrigation will only be truly feasible where water is abundant.

If water is scarce, the diffusion of irrigation among small farms will be impossible.

Where instead labor is relatively scarce relative to capital, there will be a strong incentive for adoption of modern irrigation technology. The initial cost of the required investments will be paid for by the savings in labor costs.

Modern distribution technology (especially drip irrigation) will allow for diffusion of irrigation also in areas where water is a scarce resource, thanks to the higher efficacy of water use.

Government intervention can have strong effects on the private incentives to switch from traditional to modern irrigation. For example, by providing better access to credit, the government can permit adoption of the modern technology also to small farmers, and in turn, this might help saving water and allowing for diffusion of irrigation to larger area.

Also, providing alternative employment opportunities to rural population, the incentive towards modern irrigation will increase, because of the higher opportunity cost of family labor.

8.3.2. *Public investments and institutions to manage water distribution.*

Farmers will use the water whenever it is available. The relative price of labor and capital will determine whether traditional or modern systems will be used.

However, to provide and increase the availability of irrigation water is usually a public responsibility, because of *economies of scale* and because of the *common property* aspect of irrigation facilities.

Water availability for irrigation can be increased by building dams, by digging wells, and, most importantly, by building a network of distribution canals that will transfer water from the collection point to the use points.

These facilities are characterized by large economies of scale: it will, in general be cheaper to build one large dam than many small ones. Also, once a network of channels is in place to add more channels requires low additional costs main reason is that usually

In addition, once water is made available in canals, it is very difficult to limit access to it. It will usually cost too much to put mechanisms in place that could measure the amount of water effectively used, or to prevent farmers at the periphery of the irrigation scheme to use it. This aspect is what makes irrigation systems to have characteristics of common property resources.

For the combination of these two reasons, a private provision of water is very unlikely to develop. A private firm, in fact will find very difficult to charge a price that reflects the value of water.

If water was not a scarce resource, or if there were no externalities related to water use, the common property aspect may not be a problem. Unfortunately, when water availability is limited and users are not charged a price, there usually be a problem of over exploitation. Over exploitation means that each individual user will tend too use too much water, thus reducing the availability to everyone else. If, in addition, use of water cause externalities, the efficiency loss is exacerbated.

Too illustrate the market failure related to problem such as this one, economists use the *prisoner's dilemma*, which is intended to illustrate why *egoistic behavior on the part of all the individual will not lead to welfare maximization*, thus contradicting the fundamental theorems of welfare economics.

The prisoner's dilemma is usually described as follows. Suppose there are two prisoners, A and B, which have been accused of a robbery that the judge suspects they did together. However, there are no evidences that they did it, so, if none of the two prisoners confess, they will be only charged with a small fine. If one of the prisoners accuses the other one, he could be freed while the other be convicted with a sever sentence. However, if both try to accuse the other, they will both be convicted.

Suppose the two prisoners cannot communicate with each other, but they have to decide what to do only based on what they think the other prisoner will do.

The maximum *social welfare* would correspond to none of the two confessing. The best interest of each prisoner, however is to try to accuse the other. So that, if they both follow their individual incentive, the social outcome will be the worse possible.

In terms of water use, each individual user will have an incentive to use more water. If all of the user do so, every farmer will be affected (because of rationing of the water, increased salinity, etc.). Nevertheless, if one farmer only decide to use less water, he will bear the entire cost of this decision, while everybody else will benefit.

Economists then predict that the outcome will be that all farmers will try to get the maximum amount of water, thus overexploiting the resource.

However, this would necessarily mean that agents do not care of what happens to others, and that they cannot communicate and commit with each other to cooperation, which could improve the social welfare.

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One of the main tasks of irrigation policy, then, is how to avoid the problem of over exploitation by giving farmers the right incentives for water use.

One other relevant aspect of irrigation scheme is how their cost is paid.

Traditionally, farmers have been given the right to use water virtually free of charge, or after payments of fees that do not reflect the actual cost of providing water.

On the other hand, providing water implies large scale investments which cause large costs for the government. Such costs are made of two components: the initial investment cost for *the construction* of the dam, or the other facility that collects water, and of the canals, tubes, weirs and all other infrastructures, and the subsequent *operating and maintenance* cost.

The continued availability of water depends especially on the efficient operation and maintenance of the plant. If canals are not kept clean from vegetation and dirt, the carrying capacity of the system may be compromised. Also, if regular maintenance is not provided, there may be heavy losses of water along the system due to holes in the tubes, breakings in the canals and so on (in Italy, for example, in some region of the South it is estimated that more than 30 % of the water is lost because of the bad state of the pipes).

Usually these costs are paid for by the government, with only small contributions of the farmers. For example, farmers only pay a small fee for accessing the system, usually in the form of a land tax on irrigated land, which is sufficient to cover only part of the initial costs.

Building and operation of the irrigation system is usually under the responsibility of a parastatal under the control of the Ministry of Agriculture and the Ministry of public works.

Farmers thus incur a cost only relative on the distribution of water on their plots of land, which usually does not depend on the actual amount of water being used. Instead, when traditional systems are used, and if labor is inexpensive, the quantity of water needed is larger and the cost of distribution is lower.

This lack of farmers participation to the cost of operating and maintenance of the water facilities has several negative consequences.

First, the government might incur in budgetary problems that prevents the efficient maintenance of the system.

Second, farmers have no economic incentive to save water, which leads to over-use.

Third, the parastatal administration may be characterized by corruption and income-seeking activity on the part of the irrigation officials, which are usually poorly paid. This in turn may cause problems with equity of distribution of the water, especially when the water is rationed in case of draughts.

Fourth, when both capital construction and operation and maintenance responsibility are given to the same agency, there may be a tendency for higher preference towards new capital constructions over recurrent operation and maintenance. As a result, maintenance is typically under-funded in many irrigation project, with the effect of large inefficiency in water distribution.

For all these reasons, it has become necessary in many countries to reform irrigation policy to give farmers higher participation both in the cost and in the management of the irrigation plant.

Privatization of the irrigation facilities is not a viable solution: as mentioned before, it would be very difficult, if not impossible, for any private operator to control use of water in order to be able to charge the correct user fee. The supply of water in the canal system cannot be fully controlled, because of fluctuating levels of rivers, leakage and other losses from the canals (such as evaporation), variable rainfall, etc.

Also demand will be difficult to control: many farmers receive their water only through other farmers' fields, or through field channels that are diverted from one field to another according to local water needs.

Thus, solutions other than privatization must be devised.

These might include:

(a) Farmer involvement.

If farmers are directly involved in the management and operation of the facilities that provide irrigation water may reduce the risk of inefficient management or unequal distribution. One proposal could be that of giving farmers the responsibility of electing, amongst themselves, a representative to patrol and to regulate water flows according to the needs.

(b) Separation of functions.

Many writers have suggested that the capital and construction responsibility should be separated from the operation and maintenance. The benefits of such a separation would include reduction of the conflicts in time and resource allocation between new projects recurrent operation and maintenance and more resources being devoted to the maintenance of existing plants, something that is usually under-funded.

(c) Water charges.

Farmers should be charged realistically in terms of their participation in the irrigation scheme. Both capital cost recovery and recurrent maintenance cost should be passed on to farmers through fees.

The mechanisms through which to collect the fees needs to be designed in a way that actual payment is related to water use. For example, an annual fee dependent on the amount of land and the type of crops.

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To conclude, efficient use of a country water resource is strongly dependent on the ability of governments to device a correct set of policies that gives farmers the right incentive.

Irrigation policy is strictly related to other agricultural policy, such as input policy, credit policy, and price policy.

One very important point to be recognized is that, even though water is considered a domestic resource that cannot be traded, in reality water can be exported indirectly through export of agricultural commodities.

For example ,when a country support exports of the products of irrigated crops, it implicitly diverts water use from other domestic uses.

If both farmers and the governments fail to recognize the opportunity cost of water when deciding which crops to support, the real comparative advantages can be underestimated.

One of the most negative effects of excessive support to export crops, in fact, is the reduction of water availability for domestic crops.

The *value of water* in agriculture should be assessed as the higher of the two costs:

- (i) the cost needed to provide water, or
- (ii) the opportunity cost of diverting water from other uses.

Depending on the relative scarcity of water and the competition with urban water needs, one or the other of the two costs may be higher.

Failing to internalize the cost of water for agriculture will always lead to problems of overexploitation.

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