



AN APPRAISAL OF  
AGRICULTURAL PRICE STATISTICS  
IN PAKISTAN

by

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## 1. INTRODUCTION

### 1.1 Price Data and Policymaking

Agriculture is a vital industry in Pakistan, comprising over 26 percent of the GDP. Although its contribution to the total economy has declined slightly in recent years as compared with industry, manufacturing and services, agriculture still comprises the largest single sector of the economy. The importance of agriculture is also underscored by the fact that the average Pakistani consumer spends about 50% of his income on food, significantly more than for any other item. Therefore, policymakers at all governmental levels need accurate, reliable indicators to keep them informed on all aspects of the agricultural economy. A primary indicator is price, whether it is at the farmgate, at the wholesale level, or in retail shops. In particular, accurate and timely agricultural price data are needed by government planners to: (a) evaluate Pakistan's terms of trade; (b) estimate agriculture's contribution to GDP; (c) evaluate agricultural price support policies; and (d) evaluate fundamental changes in agricultural supply and demand, and their effects on consumer and producer welfare.

In general, Pakistan is fortunate to have a wide variety of agricultural prices data collected by a large number of institutions in both the public and private sectors. However, there are remarkably few agricultural price suppliers or users in Pakistan who fully understand all of the price series that are available and how they are collected. Furthermore, there is broad consensus among agricultural policy analysts that the price collection system needs strengthening to complement the Food Security Management (FSM) Project's current program on production data under the Agricultural Data Collection (ADC) Component.

### 1.2 Cooperative Effort

To address these concerns about the agricultural price statistics system, the Ministry of Food and Agriculture (MINFA) and the Federal Bureau of Statistics (FBS) of the Government of Pakistan (GOP), along with the U.S. Agency for International Development (USAID), under the auspices of the Food Security Management (FSM) Project, initiated a

cooperative effort to evaluate Pakistan's agricultural price statistics system. A special study was designed to simultaneously focus on the prime actors in the price statistics system: suppliers and users. The suppliers' perspective was represented by the ADC Component of the FSM Project, with assistance from Carroll Rock, the Minnesota State Statistician for the U.S. Department of Agriculture's National Agricultural Statistics Service. The users' perspective was represented by the Economic Analysis Network (EAN) Component of the FSM Project, with assistance from Kerry Gee, an agricultural economist from Colorado State University and Chemonics International Consulting Division. The study was conducted during March-May 1987 and could not have been completed without considerable assistance and cooperation from personnel in MINFA, FBS, the FSM Project, USAID, and all the officials and staff of the various Government of Pakistan and provincial agencies visited in Islamabad, Karachi, Lahore, and other cities.

### 1.3 Basic Objectives

The basic objectives of this paper are :

- a. to track and evaluate the various agricultural price series collected in Pakistan
- b. to interpret how agricultural data users utilize price statistics, the problems they have with the data, and their additional price data needs
- c. to review price analysis techniques
- d. to offer recommendations on improving current agricultural price data series and price analysis. This includes suggestions on sample designs, collection of information, and ultimate utilization of the estimates as well other related recommendations.

### 1.4 Annexes

Two sets of annexes are provided at the end of the paper. Annexe A lists some of the questionnaires and summary tables employed in agricultural price collection in Pakistan. Because of the diversity in the shape and size of these forms, and also because of their considerable number, they have not been reproduced here and are merely listed. Annexe B is a comparison of wholesale price series compiled by the Federal Bureau of Statistics, and by the Sind Bureau of Statistics.

## 2. OVERVIEW OF AGRICULTURAL PRICE COLLECTION

### 2.1 Institutions Involved in Price Collection

Agricultural price data in Pakistan are collected at three major levels in the marketing chain; farmgate or harvest prices, wholesale prices, and retail or consumer prices. Each of these are important in decisionmaking in the agricultural sector and in government agencies that deal with agriculture. Retail and wholesale prices have been collected for many years, resulting in a number of published time series. There is a deficiency of commodity price data at the farm level. Harvest season prices at the farm gate are collected in the Punjab and Baluchistan provinces, but the information is not published. Until the early 1980s, farm level prices were collected in the Sind province but these numbers were also never published. No farm level prices are collected in the Northwest Frontier Province.

Several institutions are involved in collection, summarization and dissemination of commodity prices. These include:

- a. Ministry of Food, Agriculture and Cooperatives, Agriculture Division: Agricultural & Livestock Marketing Advisor (ALMA)
- b. Statistics Division, Federal Bureau of Statistics, (FBS)
- c. Provincial government agencies
- d. Ministry of Food, Agriculture & Cooperatives: Agricultural Marketing & Storage Ltd.
- e. Agricultural Prices Commission.
- f. Universities and research Institutes.
- g. Trade associations and producer groups
- h. Special interest groups

There appears to be considerable duplication of effort among these entities. For example, wholesale potato and onion prices are collected in the same markets by the Provincial Departments of Agriculture, the FBS, and Agricultural Marketing & Storage Ltd. Five different organizations are gathering price information in the Rawalpindi markets. Wholesale prices for 13 basic food items are collected by both FBS and ALMA. A variety of

retail/consumer food prices are also reported by these same agencies. A description of organizations collecting price data is given below and diagrams showing the flow of wholesale and retail prices appear in Figures 2.1 and Figure 2.2.

## 2.2 Agricultural and Livestock Marketing Advisor (ALMA)

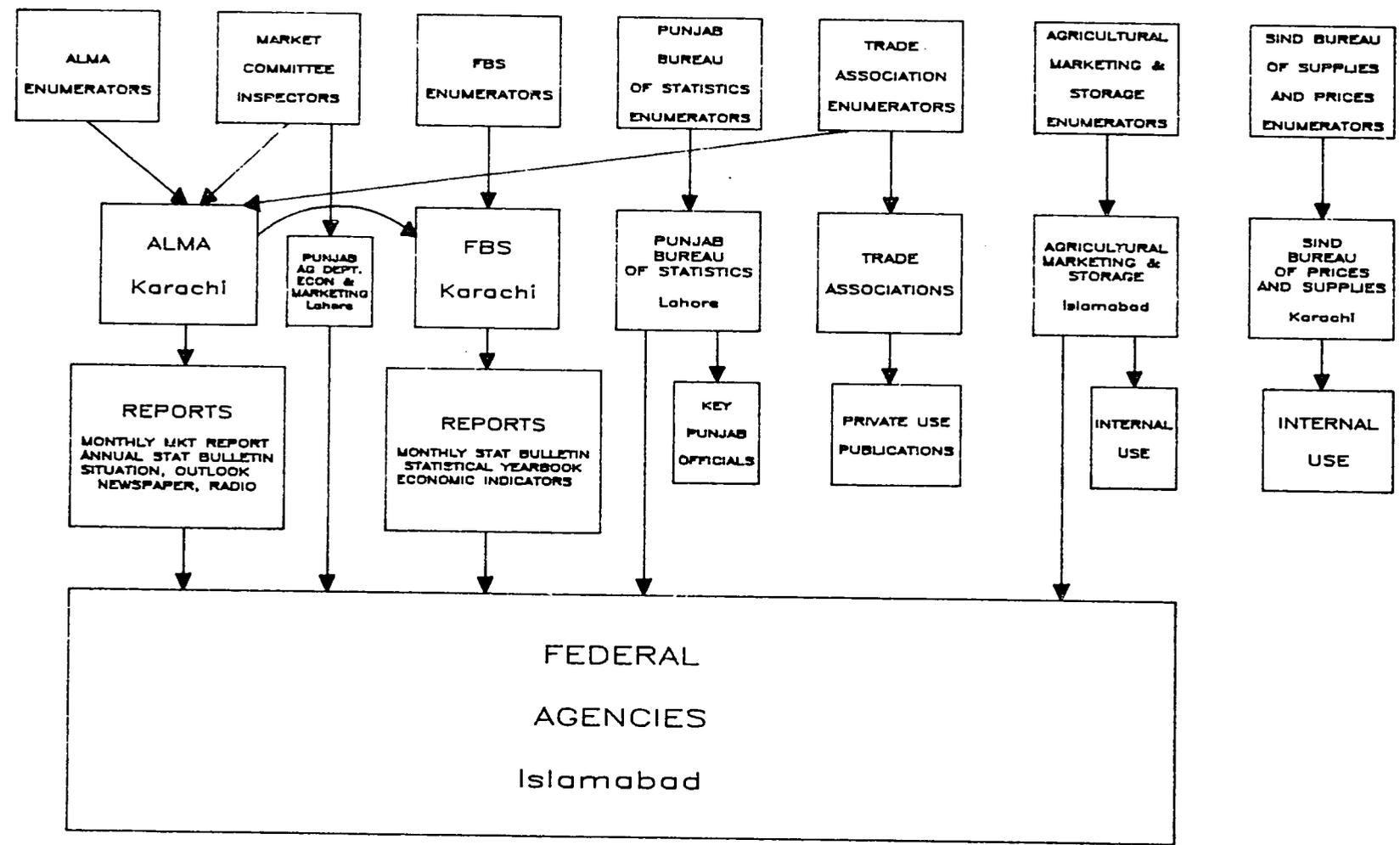
This agency of the Ministry of Food, Agriculture and Cooperatives, with head offices in Karachi, has a major responsibility for collection and dissemination of price data. It has been in existence for many years and until the FBS started collecting wholesale prices about 10 years ago, ALMA provided the only national data on agricultural prices. Much of the wholesale price information published by this agency is provided by local market committees through the Provincial Departments of Agriculture. ALMA employs 13 of its own enumerators who report prices in major markets and for markets where there are no marketing committees. It also collects retail prices in many markets but depends on the FBS for retail prices in the Karachi market. It produces monthly and annual publications which report wholesale and retail price series.

The Agricultural and Livestock Marketing Advisor provides the Ministry of Food, Agriculture & Cooperatives with analyses of factors causing fluctuations in commodity prices. This information is reported weekly along with a price summary. It also prepares detailed outlook and situation reports as needed and as resources are available. ALMA administrators consider market and price analysis as one of their major contributions to federal policy makers and an area of work which they would like to expand. They also have plans for the collection of farm level prices but lack resources to implement such a program.

## 2.3 Federal Bureau of Statistics

The FBS of the Statistics Division, located in Karachi, has been in existence for about 20 years. Part of its mandate, at the time it was organized, was to collect price information, and it is responsible for preparing national indices on many products in Pakistan as well as national income accounts. To provide information on the agricultural sector of the economy, the FBS collects prices on a large number of retail food items as part of a comprehensive list of 91 wholesale and 466 retail items traded in the market place. The FBS agricultural price collection system is summarized in Figure 2.3.

FIGURE 2.1  
FLOW OF WHOLESALE AGRICULTURAL PRICE DATA



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FIGURE 2.2  
FLOW OF RETAIL AGRICULTURAL PRICE DATA

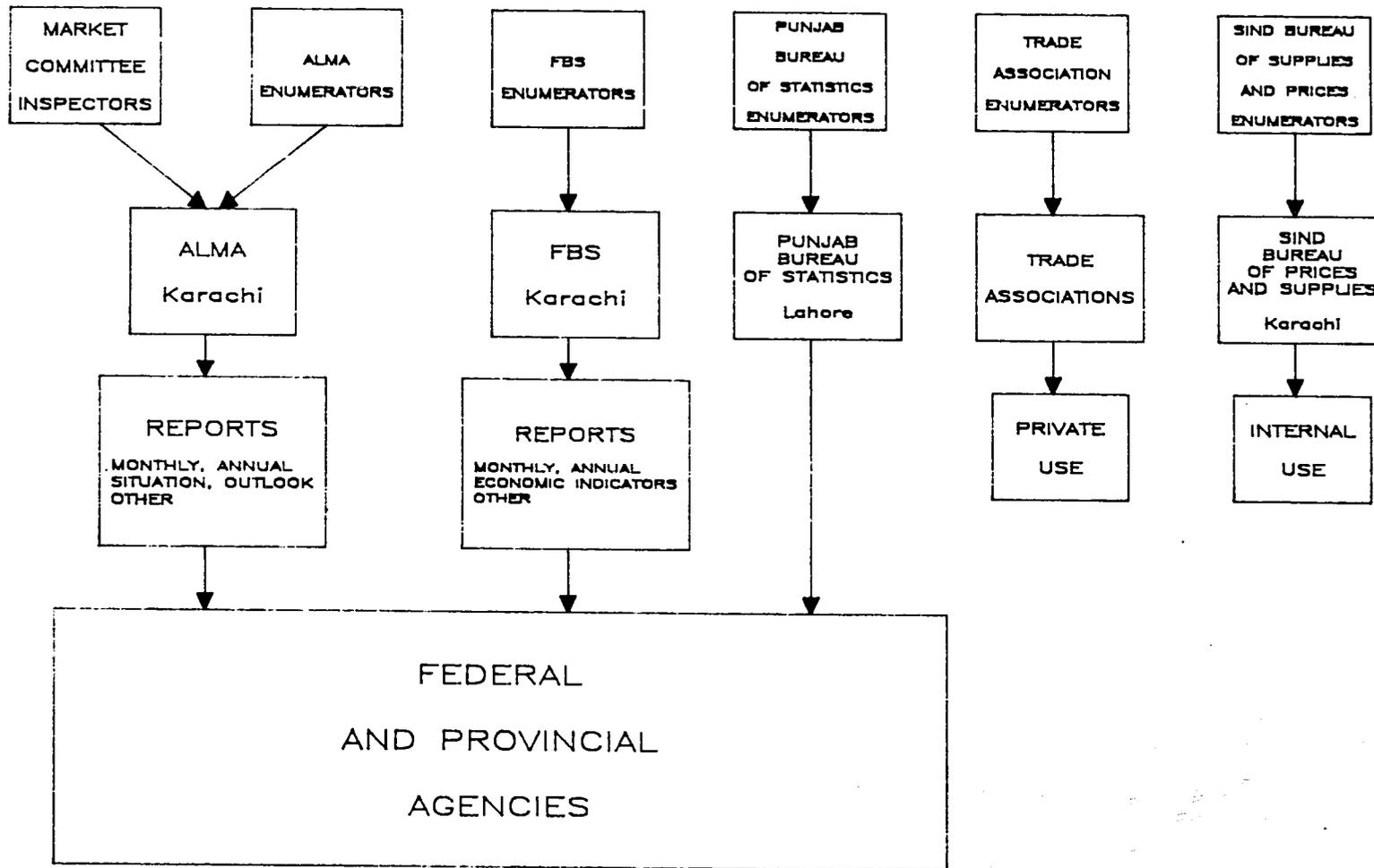
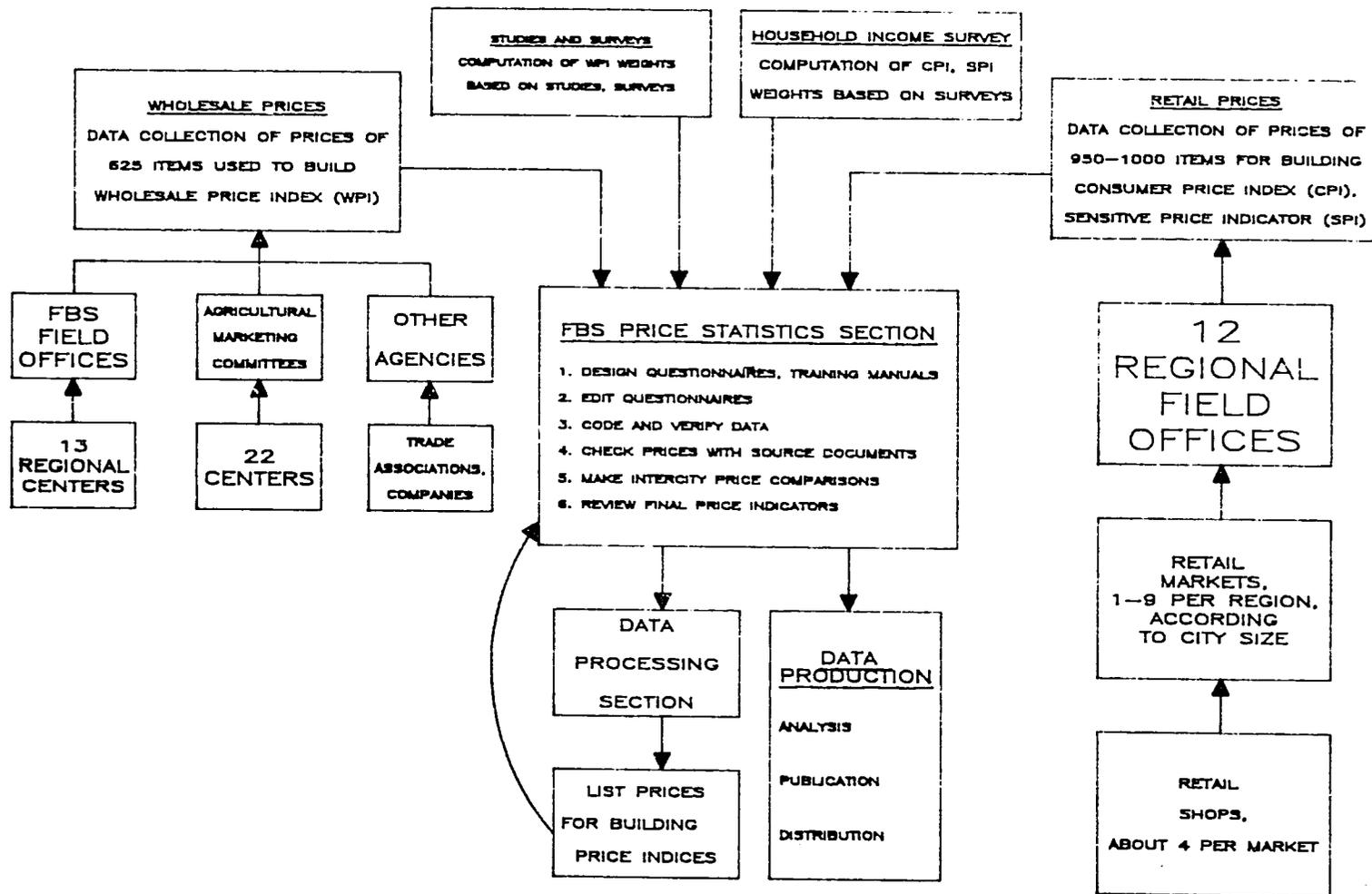


FIGURE 2.3  
 FLOW OF FEDERAL BUREAU OF STATISTICS PRICE DATA



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About 10 years ago, FBS began collecting wholesale prices for agricultural commodities because ALMA, which had been providing these data, could not meet FBS price reporting deadlines. FBS, which reports the prices in a monthly statistical bulletin, has offices in many major cities and maintains a large staff of enumerators who collect price data. It also obtains some agriculture wholesale prices from ALMA and, through ALMA, from selected trade associations. The FBS is strictly a data gathering and reporting agency and does no price analysis. It prepares and presents a weekly set of "sensitive price indicators" to the cabinet weekly based on 30 essential food items. The agency also prepares many other statistical price data for other high level government officials.

#### 2.4 Provincial Governments

Each province has one or more organizations collecting agricultural commodity prices. These units are not the same in all provinces. Sind has given this responsibility to the Bureau of Supplies and Prices which has a staff of trained enumerators. This agency also supervises local market committees which will be described later. The Sind Bureau of Statistics does not collect agricultural prices. The Punjab has three agencies that collect prices: the Crop Reporting Service gathers farm level prices for selected commodities; the Department of Agriculture, Economics & Marketing controls the marketing committees and compiles price data through its inspectors; and the Bureau of Statistics collects both wholesale and retail prices on a variety of commodities. The Northwest Frontier Province and Baluchistan both have limited activities related to collection of agricultural prices. Instead, FBS and ALMA have enumerators in these provinces who report the needed information.

Market committees are important collectors of agricultural prices in Sind and Punjab. These agencies are established by legislation in all major cities to manage and police wholesale markets, collect marketing fees and to build and maintain marketing facilities. Committees consist of either 10 or 17 members who are appointed by the provincial government and serve three year terms. Represented on the committees are farmers, wholesalers, retailers, consumers and a government representative. They hire necessary support staff, including inspectors, who report on prices and volume of sales. Commodities are sold by auction in these wholesale markets. There are 121 market committees in the Punjab and 65 in Sind. Since market committees are administered by the provincial governments, the federal agencies, who are important users of their data, have little control over data collection procedures or the

quality of the data.

## 2.5 Agricultural Marketing and Storage Ltd.

Agricultural Marketing and Storage Ltd. is an agency responsible for stabilizing both prices and supplies of potatoes and onions in the market. Whenever wholesale prices fall below the support level, open market purchases are made to reduce supplies entering the market to raise prices.

The agency maintains its own staff of enumerators who collect wholesale auction prices in major potato and onion markets. The price series prepared by this agency are not published.

## 2.6 Agricultural Prices Commission

The Agricultural Prices Commission (APCom) is responsible for recommending support prices for major agricultural commodities. In this capacity, APCom is a major price user for its analyses of domestic and international price comparisons. However, because of the nature of the APCom methodology, and the lack of farm-level input and product price data, APCom collects its own village and farm level price data in the process of estimating farm production costs.

## 2.7 Universities and Research Institutes

Periodic cost of production studies are conducted by agricultural economics departments at Pakistan universities. These studies usually include estimates of farmgate or harvest prices for the commodities under investigation. These kinds of analyses are intermittent and have not produced a price series.

The Punjab Economic Research Institute is also engaged in cost of production studies. This has been done for many years. Since farm level prices are gathered by the Institute in its annual surveys, these surveys do provide a source of historical prices for selected crops.

## 2.8 Trade Associations and Producer Groups

A number of trade associations and producer groups have their own system for collecting price data. Among these are the poultry producers, cotton ginner, and sugar manufac-

turers. Since they operate in the market place continuously, and accurate and timely price information is essential to their management decisions, they have found it advantageous to conduct their own data collection and analysis. Some of these organizations provide price data to ALMA and through ALMA to the FBS for inclusion in its published series.

## 2.9 Special Interest Groups

Some special interest groups have their own staff for collecting commodity prices. For example, the Rawalpindi Chamber of Commerce hires individuals to gather prices in the Rawalpindi market. There are also commission firms who collect price data regularly. They publish a regular news letter for subscribers based on data collected in the market. These organizations and their subscribers appear to have special needs which are not being met by the government agencies.

## 2.10 Coordination of Price Collection Activities

The multiplicity of institutions collecting agricultural price data indicates a variety of special needs that have not been met in the past. The need for timeliness and accuracy of data, and insufficient geographical and commodity coverage by individual sources, appear to be the major factors causing duplication of collection activities. There seems to be little formal effort to establish a dialogue among data collectors and data users to resolve common concerns and reduce duplication.

### 3. SAMPLING FRAME

#### 3.1 Levels Represented

The sampling frame for any price series should be constructed to represent geographical, seasonal, and market levels of the respective commodity.

#### 3.2 Geographic Coverage

Geographic sample distributions for most retail agricultural price data series appear to be skewed toward urban centers. This over-representation of urban areas, where prices are likely to be different than in rural areas, will lead to biased estimates. Wholesale price coverage is generally consistent with regional market hierarchies, but geographic price differences are generally not weighted according to respective market volumes. Within a given urban area, sample frames are stratified by local markets and by shops within each market, but there is no consistent attempt to weight each strata by market volume or population.

#### 3.3 Seasonal Coverage

Many data series are collected on daily, weekly and monthly bases. However, many agricultural commodities experience fundamental seasonal shifts in supply and demand that are not reflected in seasonal variations in reported prices. In the most general cases, flat price trends across a crop season strongly suggest that the true price levels are not reflected due to either nonrepresentative samples or misquoted prices.

#### 3.4 Market Coverage

The government is interested in the variation of prices by market level, particularly the margins required to move commodities from the farmgate to the retail level. However, price series on these market levels often suggest that the market levels were not specified properly. In the poultry industry, frequently reported cases where marketing margins increase as supplies increase and prices fall strongly suggest that the markets were not specified properly and the enumerators were unaware of the economic contradictions of their estimated prices.

## 4. PRICE SERIES

### 4.1 Collection Procedures

The following sections give a detailed description of agricultural price collection procedures in Pakistan as described by key respondents interviewed in the various agencies. The team of consultants was able to obtain fairly complete information on organizations collecting prices, their administrative setup, geographical and commodity coverage, reporting time schedules, distribution of data, and published documents. Because of time limitations and scheduling problems there were no contacts with enumerators in the field to observe their procedures.

### 4.2. Wholesale Prices

A large number of agencies, both public and private, gather wholesale agricultural prices in Pakistan. There appears to be no statistically sound sampling plan for any of the public agencies. Enumerators are instructed and know that in most major cities there is one, or more than one, wholesale market for field crops, and another for fruits and vegetables. In general, separate enumerators and questionnaires are used for each type of market. In Karachi prices are collected for several different wholesale markets. Most agencies require the enumerators to price items of "average quality" since there is almost no grading. Some agencies request their enumerators to provide three quotes (high, medium, low), and average the quotes. Others are satisfied with a range of prices. Almost no agricultural wholesale prices are collected in smaller towns or in rural areas. Enumerators are expected to have at least 10 years of formal schooling. Most public agencies have a system of quality control to check on the work of their enumerators. Turnover is almost nonexistent with vacancies being filled within the ranks and a good source of recruits available whenever there is an opening.

Since a large number of agencies are collecting wholesale agricultural prices, it not surprising that much information flows across agency boundaries. Figure 1 was developed to summarize the essential elements of wholesale price data flows, based on discussions with statisticians throughout the price collection system. The following sections describe the major wholesale price series.

#### 4.2.1 **Agricultural Livestock and Marketing Adviser**

The office of the Agricultural Livestock and Marketing Ad-

viser (ALMA), Karachi, gathers a large volume of agricultural wholesale prices in Pakistan, through its own enumerators, administered out of the Karachi office, and through inspectors hired by agricultural marketing committees in Sind and Punjab provinces. Wholesale agricultural prices are collected by ALMA enumerators and market committee inspectors on daily, weekly and longer schedules. This paper will concentrate on the daily and weekly prices.

ALMA enumerators gather daily wholesale prices on 25 essential food items in 10 major cities of Pakistan. Three of the cities are in Sind, five in the Punjab, and one each in Baluchistan and the NWFP. The enumerators gather wholesale prices by observing auctions, talking with traders, and through other methods. They are also advised to list reasons why prices are changing on any item that is of interest. These prices and comments are telephoned daily to Karachi where they are assembled and each week, ending on a Thursday, are made available to ministries in Islamabad, provincial agencies, customs officials, embassies, and the media.

In the various Karachi markets, daily prices are gathered on almost 100 food items. These prices are primarily used by newspapers and radio stations. Daily wholesale prices for many other fruit and vegetable items are also collected at other markets when the crops are in season.

Each week on Thursday, agricultural inspectors in 40 markets across Pakistan collect wholesale prices on almost 200 crop and livestock items. Inspectors may collect wholesale prices at the same time they are gathering information on the quantity of the commodity entering the specific market. Gathering these data concurrently could certainly compromise the responses received from the wholesalers. This information is sent by the market committees to ALMA. It is also sent to Federal Bureau of Statistics to help in their index computations. Most of these prices are quoted in rupees per 40 kilograms. In addition, market inspectors in the Punjab collect weekly wholesale prices for some 160 items (many similar to the 200 mentioned above) but most are quoted in rupees per quintal. These prices, along with comments on the market situation, are mailed monthly to the Directorate of Agriculture (Economics and Marketing) in Lahore, where the comments and prices are combined and mailed to 36 agencies, largely governmental. Wholesale prices collected by the enumerators and inspectors are supplemented by prices obtained from trade groups and associations for foodgrains, pulses and oilseeds.

Each month ALMA also mails a monthly review of wholesale

prices to government planners and others interested in the agricultural sector. Comments are provided to explain price changes or other relevant items. ALMA also publishes a monthly bulletin on markets and prices. There is some narrative in the bulletin but it is useful only in the historical sense, because the time lag between the end of the month and actual publication of the bulletin can be six months or more. In a comparison made in the July 1986 bulletin of wholesale prices for various markets for the same item, numerous discrepancies were found on several pages. In most cases market prices for rural markets are not combined. However, wholesale prices for essential items are combined for a monthly straight average for six markets. This means that the Karachi price is given the same weight as the Quetta price which is not statistically reasonable for most items. The average price for the six markets would be more representative if each price were weighted by the relative quantity of goods traded in the respective markets. The weighting procedures are standard statistical techniques that could be routinely implemented. Prices are often not weighted because of lack of volume data, but in this case, the daily volumes of most of these items are recorded by the market committees.

ALMA issues an annual bulletin on markets and prices. The most recent issue is for 1983-4. The publication is behind schedule because of a lack of funds and because of printing problems. The annual bulletin generally contains wholesale prices for most of the items on the questionnaires. A few are not published. The prices are shown by commodity and market for each month of the fiscal year (July-June) together with a straight average. Again, in most cases, volume data by month are available to compute a weighted average. Some recorded prices show little, if any, change over a year's time. This appears open to question since other markets for the same commodity show definite seasonal trends. A number of these prices are contributed by market committee inspectors over which ALMA has no direct control. More care should be taken in publishing some of these data unless these have been carefully checked and verified.

A performance chart is prepared by ALMA, which lists the publications available on commodity research and other topics that make use of wholesale price data. Again, a lack of resources has limited the work of the organization in this field of endeavor. The most recent published outlook and situation reports for a commodity are for the years 1977 and 1978. No outlook and situation studies have been undertaken since 1980.

A large volume of price statistics and other data arrive at ALMA headquarters in Karachi daily. Almost all data are

hand tabulated. This helps explain the errors found in the bulletins, the unsound statistical methods used, and the excessive time needed to get the information out to the general public.

#### **4.2.2 Federal Bureau of Statistics, Karachi**

FBS has not been collecting wholesale agricultural prices as long as ALMA. It was claimed by FBS that they were collecting some of this information because ALMA's data were not available on a timely basis for their index computations and national account statistics. FBS gathers wholesale prices on 236 items each Thursday at 22 markets. Their methodology is similar to ALMA's except that they ask for three different price quotations. Of the 236 items for which prices are collected, about 100 are agricultural and are almost identical to the items on which prices are gathered by ALMA.

FBS publishes monthly wholesale prices for these agricultural products in its monthly statistical bulletin which is available in the third week of the following month. This information is not released to any agencies before it is published. Wholesale prices in important markets are shown for the items on the monthly questionnaire and are compared with the previous month and the same month a year ago. Index numbers of wholesale prices by commodity are also published.

Wholesale agricultural prices by fiscal year (July to June) are listed in a statistical yearbook published by FBI. The 1986 year book contained data for 1984-5 and was not available until May of 1986. The tables show annual average wholesale prices of selected commodities in important markets for the last five fiscal years. No percentage changes or narrative is provided. All of the averages are straight even though quantity data are available for most markets and for most commodities. In general, the wholesale prices in both the monthly and annual publications appeared reasonable although there was not enough time available in this study to examine them in detail.

#### **4.2.3 Punjab Bureau of Statistics**

Punjab Bureau of Statistics (PBS) in Lahore collects wholesale prices of seven related essential agricultural commodities in eight major cities of the Punjab on a daily basis. Prices are generally quoted in a narrow range. These are the same markets visited by ALMA and FBS. The information is collected from 9 o'clock to 11 o'clock in the morn-

ing each day. Only price changes are telephoned or telexed to Lahore daily. If there are no changes, no message is sent. For 18 selected essential agricultural articles, PBS obtains a range of wholesale prices from the inspectors of the market committees and these prices are also telephoned or telexed daily to Lahore if a price change occurs. These 23 wholesale prices are sent daily to 13 price data users in Lahore, to other cities in the Punjab, and to Islamabad. Wholesale prices are shown for a specific day only, by market, and no comparisons are made. These prices are gathered for administrative and restricted use only in the province of the Punjab and are never published.

#### 4.2.4 Sind Bureau of Supplies and Prices

The Sind Bureau of Supplies & Prices (SBSP) in Karachi has the administrative control of the market committees in Sind. The bureau personnel feel that farmers need information more quickly on price changes in various markets. The SBSP staff also see a need for grading of commodities that are shipped between provinces in Pakistan. These and other initiatives are presently stymied by lack of funds. Enumerators for the SBSP collect wholesale agricultural prices at 15 markets in Sind -- three in Karachi, and one each in 12 other major cities.

On a daily basis, enumerators gather prices for 14 vegetables and 2 fruits throughout the year and 14 other vegetables and 27 fruits (including different varieties of the same fruit) on a seasonal basis. They collect a wholesale price and a "mashakher" price which is between the wholesale and retail price for an item. Also collected daily is the quantity of each item that arrives in the market. All of this information is mailed daily to Karachi.

Each week, on Thursdays, the enumerators collect wholesale prices in the same 15 markets on about 70 items of which about 38 would be considered agricultural. Of these 38, about 5 are for the same fruit and vegetable items that are collected daily. The enumerator collects a week ending wholesale price for each commodity, indicates the name of the market and the name of the shop and, if there is a variation from the previous week, there is a space on the form for remarks explaining the variation. The form is mailed to Karachi weekly.

On every other Saturday, or approximately twice a month, enumerators collect wholesale prices in the same 15 markets for about 125 largely agricultural items. A few of these items are duplicated on the daily and weekly forms but most are unique commodities, with a large proportion of live-

stock items. This form is sent to Karachi every fortnight. All the price information gathered by SBSP is used internally and none is published.

#### **4.2.5 Agricultural Marketing and Storage Ltd.**

The Agricultural Marketing & Storage Ltd.(AMSL), an agency in the Ministry of Agriculture, and has as one of its responsibilities the monitoring of potato and onion markets in the country. When the prices in wholesale markets go below support levels set by the government, AMS buys onions and potatoes in those markets to stabilize and raise prices. AMS gathers wholesale price information in a number of markets each day. All the questionnaires of the agency were not available for review, but it was learned that enumerators collect daily wholesale prices on onions in 12 important production and consumption markets in Pakistan. Prices are reported in a range. AMS also gathers a daily range of prices for potatoes in five major consumption markets. Prices are listed, when available, for red and white varieties, and fresh and stored potatoes. Only fresh potatoes are reported in Quetta. AMS also collects some wholesale prices for vegetables that compete with onions and potatoes. The price data gathered are used internally and are shared with the Agriculture Prices Commission and other federal agencies in Islamabad.

#### **4.2.6 Trade, Special Interest or Commodity Groups**

In most cases, enumerators for government agencies are not aware of other price collectors operating in the same market. However, private sector trade, special interest, and commodity groups maintain extensive wholesale price collection systems. For example, at least two such wholesale price sources are available for the Rawalpindi market. One is the Rawalpindi Chamber of Commerce. The Chamber has enumerators who collect wholesale prices of grains and pulses in the market on a daily basis. The second source is a large commission firm which publishes a daily market newsletter with wholesale prices for the major field crops. The annual subscription cost is Rs 10.

These private price collection operations suggest that there are other data users who need quick, reliable price data from this market and are willing to pay for the service. This would also suggest that there are other similar organizations in other markets throughout Pakistan, providing wholesale prices for agricultural commodities to others for a fee or using the information for internal purposes. An example of the latter is the Pakistan Poultry Producers

Association which collects wholesale poultry prices.

#### 4.3 Retail Prices

There are not as many public agencies collecting retail agricultural prices in Pakistan compared with wholesale. This does not mean that duplication of data does not exist. A chart similar to the wholesale price collection system shows the different government agencies that collect agricultural retail/consumer prices and their distribution (Figure 2). As with wholesale prices, the statistical methodology used to sample retail agricultural prices is generally not very systematic. All averages shown are simple averages, but there are instances when weighted averages would be much more statistically sound. Since the same people collect both retail and wholesale prices, nothing needs to be added about the experience and training of the enumerators. Following is a brief description of the agencies collecting retail agricultural prices.

##### 4.3.1 Agricultural Livestock and Marketing Advisor (ALMA)

ALMA enumerators gather daily retail prices on 25 essential food items in 10 cities of Pakistan. Shops are visited and notice is made of transactions. Prices are listed on the basis of package markings, or are obtained in conversation with retailers. The shops selected are all in the average price group for a city. The larger the city, the more shops are enumerated. Interviewers are advised to list reasons for price changes if they are known. Prices and comments are telephoned daily to Karachi where they are assembled weekly with wholesale prices and distributed around the country.

In the various Karachi markets, daily retail prices are gathered by ALMA enumerators on about 50 food items, primarily produce, that is, fruits and vegetables. These prices are generally compiled for the media, although they are also used internally. At other markets ALMA enumerators and market committee inspectors also gather daily retail prices for fruits and vegetables depending on the season. In at least one market the market committee inspectors set the retail price as a guide to retailers by adding a fixed percentage to the wholesale price. All these daily retail prices are combined to obtain weekly prices which are sent to ALMA in Karachi.

Each week ALMA mails a review of retail agricultural prices to government planners. Comments are enclosed explaining variations and changes. ALMA's monthly publication

does not include many retail prices. In fact, some of the published retail prices come from the FBS. Retail prices are shown for about 50 food items in Karachi with a comparison to the previous month. The only retail prices in the bulletin collected by ALMA are average monthly retail prices of 20 essential food items in 6 cities. A straight average for these six cities is computed. A straight average implies that people in Quetta and Peshawar buy the same quantities of a food item as people in Karachi or Lahore. A much more reasonable average would weight each city by population so a more realistic weighted average price could be computed. The publication of retail prices in the annual bulletin is similar to the monthly. Considering the huge volume of retail prices collected, very few are ever published by ALMA.

#### 4.3.2 Federal Bureau of Statistics (FBS)

FBS enumerators collect weekly consumer prices of 37 items -- a little over half of which are agricultural items. These items are collected in 12 major cities. In most of these cities only one market area is selected and four shops are enumerated in each market for the 37 items. The enumerator is also encouraged to add remarks about each item explaining price variability, etc. In larger cities like Lahore and Karachi four or more market areas are selected with correspondingly more shops. The prices for shops are averaged together for each city and this information is sent to Karachi and Islamabad weekly. One of its major uses is that it is combined with other price indicators by the Economic Coordination Committee. This committee has the responsibility for issuing the sensitive price indicator (SPI). The SPI is used by government planners to evaluate the country's economy.

FBS enumerators gather additional consumer or retail prices for agricultural items on the first and third Thursday of every month. At that time a sampling plan similar to that described above is completed in 12 major cities. A total of over 115 retail prices are gathered for agricultural items. This information is sent to Karachi for use in index computations work and some of the information is published in the monthly bulletin. The bulletin shows the weekly consumer prices of the 37 essential commodities for each market. In addition, a monthly price is published and averaged for the 12 markets. The average is a straight average which gives Karachi the same weight as Sukkur when it would be statistically more relevant to weight the consumer prices by population. Whereas over 115 retail agricultural prices are gathered, about 90 are published in the monthly bulletin. The annual bulletin publishes an

even smaller number of retail agricultural prices. About 17 items are published for 7 cities for the past 5 fiscal years.

#### **4.3.3 Punjab Bureau of Statistics**

The collecting of retail prices by PBS enumerators is very similar to their wholesale price work. Retail prices for a total of 23 essential agricultural articles in 8 major Punjab cities are collected daily. Prices are gathered from 3 shops per locality with five localities in Lahore. Price ranges are reported. Only price changes from the previous week are telephoned to Lahore each day. Distribution is similar to the wholesale prices and again, these prices are for administrative use only and are never published.

#### **4.3.4 Sind Bureau of Supplies and Prices**

SBSP enumerators daily gather retail prices for 14 vegetables and 2 fruits throughout the year and 14 vegetables and 27 other fruits (including different varieties of the same fruit) on a seasonal basis. Enumerators go into three markets in 12 of the major cities in Sind and considerably more markets in Karachi to gather retail data. This information is mailed to Karachi daily with the wholesale prices and quantities for all items. All this information is used internally by SBSP and nothing is published.

#### **4.3.5 Trade Associations**

The Pakistan Poultry Producers Association collects retail poultry prices for their own internal purposes. Other trade association sources of retail price data were not encountered during this study, but the large volume of trade in the agribusiness sector suggests that they exist.

#### **4.4 Farm Level Prices**

The greatest weakness in agricultural price data in Pakistan is in the area of farm level-prices. Currently, the Punjab Crop Reporting Service is the only governmental agency in the country collecting these prices using systematic data collection procedures. There is nothing comparable for the other provinces even though this is a primary need of data users. Baluchistan harvest prices are collected by enumerators working for the provincial Department of Agriculture. The prices are for 23 major crops and

are available by district and province. These prices are sent to the Ministry of Agriculture in Islamabad, FBS in Karachi, and provincial offices in Quetta. No information is recently available on sampling methodology, weighting procedures, or related information on these farm level prices. The FBS has indicated interest in responding to that need in the Sind and may extend it to other provinces in time, if resources permit. ALMA also has expressed a desire to collect farm-level prices in Sind but funding is a continuous problem.

The Punjab Crop Reporting Service in Lahore gathers farm level price data for 19 kharif crops and 13 rabi crops each year. The sample is probably adequate for estimating prices of wheat and other major crops, but may be somewhat deficient for minor crops or crops grown only in localized areas. The sampling techniques used for the collection of the data and the overall methodology appear to be statistically sound. However, no information was available on how individual respondents are selected within the sample village. The prices collected are weighted by the amount sold by the selected farmer so a true weighted price is available for all crops selected. Publication of the information is another matter. The information should be available on an annual basis in Agricultural Statistics of Pakistan but it is not. Farm prices for eight crops in the Punjab are available for the crop years 1980 to 1985. It may be that the farm level prices for the minor crops were not statistically defensible. Nevertheless, these prices were the only weighted agriculture prices published by a government agency that were found during this study.

Other farm level prices are gathered by various producer groups, universities, and research institutes. The Directorate of Land Record, Government of Punjab, has been collecting and publishing harvest prices since 1947. Prices are collected from Patwaris. No information about timing or methodology is available. Data are published in "Season & Crops," available from the Punjab Government Printing Press, Lahore. Farm level poultry prices were published in The Pakistan Poultry Industry: A Policy Analysis Framework. The source was the Poultry Research Institute in Rawalpindi. Other agricultural industry groups may also be collecting data on farm level prices for their particular commodity since almost no published data are available.

## 5. USERS OF AGRICULTURAL PRICE DATA AND THEIR CONCERNS

### 5.1 Users' Assessment

A cross section of data users were interviewed to obtain their assessment of agricultural prices in Pakistan. Below is a summary of their major concerns.

### 5.2 Data Accuracy

How closely reported prices represent actual prices in the market is a concern of many data users. This doubt is created by the data inconsistencies described above. There are instances where published series show little or no fluctuation for several months or even over a period of 12 months, although the user knows from personal observation that prices are, in fact, changing significantly over this time period. In some instances, the published price is the government floor price and does not correspond to the market price, which is fluctuating. There are discrepancies in prices reported by different agencies for the same commodity, in the same market, on the same day. This is illustrated by examples prepared by the Sind Bureau of Supplies and Prices, comparing prices collected by them and prices gathered by the FBS (Appendix B).

Some data users are not confident of the accuracy of published price data because they suspect that enumerators record prices without going to the markets or obtain them through telephone contacts. There is also concern that prescribed sampling procedures are not being followed even though there may be a written plan by the collection agency. In particular, there seem to be reservations about data collected by the market committees. It is felt that values are typically under-estimated. This is also a situation where the data are collected by one agency and are processed and published by another. This gives the processing agency no control over the collection activities. Most data users are also concerned about the absence of a grading system and about the lack of standards for reporting prices.

### 5.3 Market Coverage

Probably the greatest gap in agricultural price data is the lack of farm level prices. What little is collected is questionable in the minds of data users. Government support or procurement prices are often used as proxies for farm prices because there are no reliable data on the discounts

required by procurement agents who collect commodities at the farmgate. It appears that policymakers really do not know what farmers are being paid for their produce and therefore cannot accurately assess the economic wellbeing of farmers or the impact of government price policies on farm businesses. The need for a reliable price series at the farm level is a concern of many data users.

Most price data are collected in large cities. Some data users are concerned that this causes biased estimation. They contend that prices in rural areas are different from those in urban areas; also, that prices collected in urban areas represent a relatively small proportion of total sales. In 1981, only 28 percent of the population lived in urban areas. Therefore it is likely that this is a valid concern.

A few data users felt that published prices did not accurately reflect regional differences arising from distance to markets. Others expressed a concern that some commodities receive much better coverage than others and that better data are needed on minor commodities because they may become important political items in the future.

#### 5.4. Availability of Price Data

Some prices are not equally or easily accessible to all users. An example is farm level prices which are collected in the provinces but are unpublished. Although key government agencies receive wholesale and retail prices of essential food items on a timely basis, the time lag for most data users is much longer.

Farmers, as a user group, are largely neglected in the distribution of price information. In selling produce, they deal with individuals who are active in the market daily and know current prices. In contrast, farmers may have last week's prices or even older ones, which puts them at a disadvantage in bargaining. With no farm level prices available to the public, there is little help for this group.

#### 5.5 Duplication of Data Collection

Although financial resources in most government agencies are limited, there is much duplication of data collection. This also creates confusion for users since estimates from different sources are not comparable. Some duplication occurs because some users are unwilling or unable to wait for the data to be released by existing collection agencies and start their own data collection operations.

## 5.6 Communication of Data Needs

Although there is much dissatisfaction with published price statistics among data users, there seems to be little formal effort to communicate these concerns to the collection agencies. In some cases the data collectors indicated that they would welcome suggestions for improving their price series. An open dialogue between these groups could probably solve many of the price statistics problems. One collection agency suggested that they be consulted by data users before a research project is begun so they could offer suggestions on data sources and, in special situations, use their staff to collect needed information, thus greatly reducing the cost to the data user.

Further professional development of the agricultural price collection system will be limited so long as there is a lack of freedom to exchange ideas among individuals of different administrative rank. Two way communication of ideas, both vertically within statistics organizations, and horizontally across organizations, is often limited. There is also a tendency to protect established administrative responsibilities and to look upon criticism as an attack and not as an opportunity to make improvements. These kinds of attitudes are counterproductive, and they will remain a major obstacle to improving the agricultural price statistics system so long as professional development is weak or lacking.

## 6. DATA PROCESSING

### 6.1 Importance of Price Data

Agricultural prices are a key element in the decision-making process of many institutions in Pakistan. Government agencies assess the welfare of both producers and consumers, plan price support programs, measure international trade options, and plan farmer-oriented legislation based on reported prices. Agriculture-related industries monitor commodity prices in planning production and marketing strategies. Universities and research institutes use prices as input into econometric and enterprise analysis, and linear programming. Farmers need good price data to make optimum management decisions and plan crop marketing. Newspapers, radio, consulting firms and a number of other special interest groups also use agricultural commodity prices on a regular basis.

### 6.2 Inaccuracies

High level policy makers and their associated collection agencies feel that some of their key price series are fairly accurate. For example, the FBS provides weekly to the cabinet a set of sensitive price indicators which are index numbers for about 35 retail food prices. The FBS relies solely on their own enumerators to collect these data. The Ministry of Food, Agriculture and Cooperatives also receives weekly retail and wholesale prices and an explanation of price changes for 25 commodities. This summary is prepared by ALMA which also relies on its own enumerators for collecting the prices. However, other prices, not collected for ALMA's special series, may not be given as much attention by the collection agencies.

Problems with price statistics are illustrated by the experiences of price analysts. For example, an unpublished study for the National Commission on Agriculture involved a linear programming analysis of sugarcane production. When the published sugarcane price was used in the model, sugarcane production would not enter the solution. Yet sugarcane is produced profitably in the area. The researchers found that the actual price in the market was considerably higher than the published price.

Similarly, an activity to estimate retail and wholesale price spreads for some commodities was unsuccessful because the relationship between published wholesale and retail prices were logically inconsistent. Analysts have been unsuccessful in calculating seasonal prices indices for some

commodities because of illogical fluctuations in published price series.

In another instance, an econometric model of the supply and demand for farm commodities included a series of farm level prices for the country. No source was cited for these data. Since no series of farm level prices are collected for Pakistan, the reader is left questioning the reliability of the data and consequently the accuracy of the analysis. [See reference 4 of the Bibliography.]

Researchers often employ their own enumerators to collect commodity prices because they believe established series are inaccurate.

### 6.3 Price Analysis

There is no lack of technical expertise among Pakistani agricultural economists in econometrics and other price analysis techniques. Examples of sophisticated analyses using agricultural prices are reports published by the Applied Economics Research Centre at Karachi, the Pakistan Institute of Development Economics at Islamabad, and the Punjab Economic Research Institute at Lahore. These studies range from simple regression models to complex multiple equation supply and demand analyses.

Most of these studies are one-time events and soon become outdated. There does not appear to be a systematic program in Pakistan for agricultural price analysis to assist policymakers on a continuing basis. For example, there is no current information on farm-retail price spreads, price elasticities, seasonal price patterns and price forecasts. Organizations that would like to do more price studies are limited by the lack of needed price data, by a lack of confidence in reported prices or a lack of funds.

### 6.4 Price Summarization

Some concerns have been expressed regarding summarization and presentation of price data. First, simple arithmetic averages are used to estimate combined prices for several markets or over specified time periods. This gives equal weight to all observations regardless of the quantities of sales associated with each price, resulting in biased price estimation. It has been suggested that information on quantities and/or population is available and could be used to calculate weighted averages.

The second concern regards transcribing and typing errors

that occur in published data. It is felt that more effort should be made to reduce these errors through better data processing procedures.

## 7. CONCLUSIONS

### 7.1 Summing up

This report has presented a description of agricultural price statistics collection, summarization, and analysis in Pakistan. There are many price series currently available to users and a number that are collected but are not available to the public. Many financial resources are expended each year on these activities. The nation has a great need for good agricultural price information. Based on these observations and concerns, the study leads to various conclusions concerning agricultural prices, which are listed below.

### 7.2 Duplication

There is much duplication of effort in the collection of agricultural price data.

### 7.3 Inconsistencies

Many users of price data lack confidence in the statistics due to knowledge of unsatisfactory collection procedures or observed inconsistencies in published prices.

### 7.4 Market coverage

There is inadequate geographical coverage of markets. Most data are collected in large urban markets while coverage in rural markets is limited.

### 7.5 Analysis

Analyses of agricultural prices are fragmented, intermittent and without a consistent, comprehensive and organized plan based on needs of policy makers and other users.

### 7.6 Access to data

Farmers have little access to timely price data to assist them in management and marketing decisions.

### 7.7 Sampling

Sampling procedures for most agricultural price series are not statistically sound.

### 7.8 Administrative structure

Organizations collecting price data and those processing and publishing the data are often not under the same administrative structure, which hinders improvement in collection procedures.

### 7.9 Farm level prices

Current farm level prices are lacking in all provinces and none of these prices are collected in Sind and NWFP.

### 7.10 Price index

There is a need for a nationwide, farm level prices paid and prices received index in agriculture.

### 7.11 Combined activities

Combining fee collection activities with collection of price data by market inspectors is not a desirable situation.

### 7.12 Manual data processing

ALMA is processing large quantities of data by hand which takes a great deal of time and multiplies the possibility of human error in calculating and recording numbers.

### 7.13 Weightage

Average prices over markets and time periods are not weighted by volume of sales, population, or other market criteria, resulting in biased estimates.

### 7.14 Grading

Lack of an effective grading system for farm commodities makes definition of published prices difficult.

#### 7.15 Publication of data

A large amount of effort, resources, and time are expended to collect retail and consumer prices and only a small fraction are published.

#### 7.16 Exchange of views

There does not appear to be an effective forum for exchanging concerns and needs among data collectors and data users.

#### 7.17 Criticism

Price statistics suppliers are generally not receiving constructive criticism from price statistics users because the users, particularly economists, are not consistently performing even rudimentary analyses that could identify data collection problems.

## 8. RECOMMENDATIONS

The following recommendations for improving agricultural price statistics in Pakistan are offered, without any attempt to set priorities.

### 8.1 Users committee

A committee should be formed of representatives from all agencies collecting agricultural price data and key users of price data to coordinate data collection, discuss methodology, and make recommendations on solutions to data collection problems and deficiencies.

### 8.2 Elimination of duplication

Duplication in the collection of agricultural price data should be eliminated, where feasible, to improve the cost efficiency of price collection within the country.

### 8.3 Review

A review is needed of current price series to determine if unnecessary data are being collected or if important items, such as livestock and forestry products, are being overlooked.

### 8.4 Sales volume

A system is needed to compile volumes of sales associated with reported prices so proper weighting can be done. If quantities are not available for a commodity, proxy weights should be developed.

### 8.5 Sampling techniques

Sampling techniques used by all agencies collecting agricultural price data should be reviewed to assess deviations from scientific sampling procedures.

### 8.6 Training programs

Agencies involved in agricultural price data collection should hold regular training programs for experienced enumerators to improve their techniques and assure uniformity in collection practices.

### 8.7 Monitoring

A program should be established to insure regular monitoring of enumerators and inspectors reporting price data to maintain quality control.

### 8.8 Grading system

A comprehensive commodity grading system should be implemented to improve the accuracy of price quotations. In the absence of specific grades, closer attention should be given to defining the products being traded.

### 8.9 Computerization

Computerization of all price data summarization and tabulation activities, where not presently done, will improve the accuracy and timeliness of price data.

### 8.10 Information for farmers

A system is needed to make current price information available to farmers to assist them in marketing decisions.

### 8.11 Representative coverage

Sampling should be modified to provide representative coverage of all geographic areas.

### 8.12 Separation of activities

Collection of price information should be separated from collection of information for assessing fees by the market committees.

### 8.13 Agricultural Prices Statistician

A long term Agriculture Prices Statistician position should be established under the Agriculture Data Collection component of the Food Security Management Project. Major responsibilities would be to provide general guidance for strengthening the prices data system and specific assistance in initiating a national index of prices paid and prices received series.

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## APPENDIX A

### List of Agricultural Price Questionnaires and Summary Tables

1. Collection Sheet for Weekly Wholesale and Retail Prices of Essential Food Items (ALMA)
2. Summary of Weekly Average Wholesale/Retail Prices of Essential Food Items (ALMA)
3. Daily Wholesale Prices Bulletin for Newspapers, Radio (ALMA)
4. Weekly Wholesale Price Collection Sheet, Provincial Markets (ALMA)
5. Weekly and Monthly Statement of Wholesale Prices (ALMA)
6. Summary of ALMA Services
7. Weekly Wholesale Price Collection Sheet (FBS)
8. Daily Wholesale and Retail Price Summary (Punjab Bureau of Statistics)
9. Monthly Review of Economic Situation and Price Trends of Agricultural Commodities in the Punjab (Directorate of Agriculture, Punjab)
10. Functions of Sind Bureau of Supply and Prices
11. Fruits and Vegetable Questionnaire
12. Weekly Wholesale Price Collection Sheet (Sind Bureau of Supply and Prices)
13. Fortnightly Wholesale Price Collection Sheet (Sind Bureau of Supply and Prices)
14. Wholesale Price Collection Sheet (Rawalpindi Chamber of Commerce)

15. Biweekly Grain Market Report  
(Haji and Company, Rawalpindi)
16. Retail Price Chart
17. Fortnightly Retail Price Collection Sheet (FBS)
18. Annual Producer/Harvest Price Summary  
(Baluchistan Directorate of Agriculture)
19. Instructions for the Collection of Harvest Prices
20. Annual Summary of Farm Level Prices by District  
(Punjab Bureau of Statistics)

## APPENDIX B

### A Comparison of Karachi Retail Prices Estimated by Two Statistical Agencies

The Sind Bureau of Supply and Prices (BSP) and the Federal Bureau of Statistics (FBS) both estimate monthly retail prices in Karachi. Both agencies use random sampling procedures, but there are notable differences in their estimates, as summarized for November 1985 and January 1986, in the table on the following page.

For the Karachi retail market during November 1985, the FBS estimates are approximately 5.94 percent higher than the BSP estimates. Excluding 10 commodities with no reported price changes between the two survey periods, the FBS estimates for the other 23 commodities are about 8.53 percent higher than the BSP estimates.

During January 1986, the FBS estimates for all 33 commodities are about 4.70 percent higher than BSP estimates. For the 23 commodities with price changes reported between the two survey periods, the FBS estimates are about 6.74 percent higher than the BSP estimates.

COMPARISON OF KARACHI RETAIL PRICE ESTIMATES

COMMODITY	UNIT	-- NOVEMBER 1985 --			-- JANUARY 1986 --		
		BSP (a)	FBS (b)	% DIFF. (c)	BSP (d)	FBS (e)	% DIFF. (f)
Wheat (AQ)	Kg.	2.75	3.00	8.33	2.75	3.00	8.33
Wheat Flour (OM)	"	3.00	3.20	6.25	3.00	3.20	6.25
Rice, Basmati	"	5.00	5.75	13.04	5.00	5.75	13.04
Moong Pulse	"	8.00	9.00	11.11	8.13	9.00	9.67
Gram Pulse	"	7.00	7.50	6.67	7.00	7.25	3.45
Beef, Cow	"	15.00	17.00	11.76	15.00	17.50	14.29
Mutton	"	30.00	32.00	6.25	30.00	32.75	8.40
Eggs (Farm)	Doz.	8.37	8.88	5.74	10.63	10.75	1.12
Potato	Kg.	3.62	3.75	3.47	2.50	2.50	0.00
Onion (Dry)	"	2.12	2.25	5.78	1.88	2.00	6.00
Tomatoes (AQ)	"	4.12	5.75	28.35	2.50	3.00	16.67
Banana	Doz.	4.62	4.88	5.33	5.00	5.50	9.09
Mustard Oil	Kg.	13.50	14.50	6.90	14.00	14.50	3.45
Ghee, Vegetable	"	14.00	14.00	0.00	13.80	14.00	1.43
Salt, Rock	"	1.50	1.84	18.48	2.00	2.00	0.00
Red Chillies	"	14.00	14.00	0.00	12.00	14.00	14.29
Sugar (OM)	"	8.50	8.25	-3.03	8.75	9.00	2.78
Gur (SQ)	"	5.00	6.00	16.67	5.00	6.00	16.67
Milk (Fresh)	Ltr.	6.00	6.44	6.83	6.25	6.25	0.00
Tea (SQ)	250 gm.	15.65	15.65	0.00	14.50	14.50	0.00
Milk (Nido)	1.8 Kg.	96.00	96.00	0.00	96.50	96.50	0.00
Cigarette, K-2	Pkt.	2.00	2.00	0.00	2.00	2.00	0.00
Tea (Prepared)	Cup	1.00	1.00	0.00	1.00	1.00	0.00
Mulmul	"	6.00	8.00	25.00	8.00	8.00	0.00
Markin 54"	"	8.00	8.50	5.88	8.00	8.50	5.88
K.T.	"	22.00	23.00	4.35	23.00	23.00	0.00
Shoe (Bata)	Pair	199.95	199.95	0.00	199.95	199.95	0.00
Chappal	"	19.95	19.95	0.00	19.95	19.95	0.00
Kerosene Oil	Ltr.	2.00	2.00	0.00	2.00	2.00	0.00
Firewood	40 Kgs.	33.00	34.00	2.94	30.00	35.00	14.29
Match, Box	Each	0.25	0.25	0.00	0.25	0.25	0.00
Washing Soap	Cake	1.55	1.55	0.00	1.55	1.55	0.00
Lifebouy Soap	"	3.00	3.00	0.00	3.00	3.00	0.00

SOURCES:

- (a) (d) Sind Bureau of Supply and Prices (BSP)
- (b) (e) Federal Bureau of Statistics (FBS)

NOTES:

- (c) Percent difference between (a) and (b), with (b) as base.
- (f) Percent difference between (c) and (d), with (d) as base.

COMMODITY QUALITIES: AQ -- Average Quality  
 OM -- Open Market  
 SQ -- Superior Quality