Appendix 1: The first stage of deregulation of agricultural marketing

Scheme/product	First intervention	Main features	Reform process
Single channel fixed price schemes			
General characteristics		Monopoly buyer via appointed agents; monopoly seller to the trade; monopoly importer/exporter; prices fixed in Cabinet on the basis of average cost of production plus a margin for profit; pan-territorial and pan-seasonal prices.	1935:Malie Control Act, Maize Advisory Council appointed, regulation of export of maize. 1938:First Mealie Scheme established under the Marketing Act. 1944/45: Single channel marketing system for maize started. 1953:Establishment of Maize Board Stabilisation Fund
Maize (incorporating grain sorghum)	Mielie Control Act (No.39 of 1931)	Minister had powers to specify the percentage of the crop, which should be exported every year.	Prohibition on the building of grain silos repealed. A change in pricing policy (1987) and the scrapping of price control on maize meal.
Winter cereals (wheat, barley and oats)	Wheat Industry Control Act, 1935; Marketing Act, 1937	Price control exercised at miller and baker level; Government subsidy on bread.	Single channel fixed-price system since 1987 (pricing no longer cost-plus); abolition of registration requirement on millers and confectioners (1990); removal of bread subsidy (1991); price control on flour, meal and bread, and fixing of millers' margins scrapped (1991); government subsidies (high of R1.3bn in 1984) terminated (1992); quantitative import control replaced with tariffs (1995); finally, scheme terminated in 1998.
Single channel pool schemes			
General characteristics		Monopoly buyer and seller via appointed agents; advance payment made to producers and final proceeds paid on termination of the pool; extensive tariff and non-tariff protection against imports.	
Oilseeds (groundnuts, sunflower seeds, soybeans)	Groundnuts (1934); sunflower seeds (1952); and soybeans (1968)	Board selling prices fixed; Oil expressers registered with the Board; South Africa a net importer of oilseeds, thus rent seeking opportunities arose	Abolition of import control over oilcake and fishmeal; groundnuts under a surplus removal scheme (1994/5); finally, scheme terminated in 1998.
Leaf tobacco	Since 1932, in the form of statutory single-channel marketing under the Cooperative Societies Act (Act 38 of 1925)	All producers in a given area were compelled to deliver a specified commodity to their local co-operative (whether they were members or not)	Permits for imports abolished (1990); finally, scheme terminated in 1998.
Deciduous fruit	1939	South Africa a traditional exporter, mainly to Europe (UK and Germany); all functions and powers delegated to a private company (Unifruco); close co-operation with PPECB; only premium grades exported.	Domestic market controls abolished in 1970s; Unifruco and Outspan amalgamate to form Capespan (1995); scheme terminated in 1998
Citrus fruit	1939	South Africa a traditional exporter; all functions and powers delegated to a co-	Domestic market controls abolished (1990); Unifruco and Outspan amalgamate to form Capespan (1995);

		operative (Citrus Exchange, whose operational arm, Outspan, also handled the exports of Swaziland, Mozambique and much of Zimbabwe); close co-operation with PPECB; only premium grades exported.	scheme terminated in 1998
Bananas	1957		Scheme terminated in 1993
Lucerne seed	1952		Controls over imports and exports abolished (1992); scheme terminated in 1998
Wool	1972	South Africa a traditional exporter.	Monopoly right of Board to sell wool rescinded (1993); finally, scheme terminated in 1998
Dried fruit	1938	The Board exercised control over a dying industry without any attempts at revival.	Scheme terminated in 1998
Chicory	1939		Scheme terminated in 1993
Rooibos tea	Clanwilliam Tea Cooperative in 1948. Rooibos Tea Control Board, 1954	Regulating marketing, stabilising prices, improving and standardising quality	In 1993, the Rooibos Tea Control Board was privatised, which resulted to the establishment of the Rooibos Ltd.
Mohair	1965	South Africa a traditional exporter.	Scheme terminated in 1994
Dairy	1956 1961 Dairy Industry Act	Dairy Scheme run as a surplus removal scheme with wide powers of intervention.	Consumer price control on fresh milk abolished (1983); price control over butter and cheese abolished (1986 & 1988 respectively); power to determine transport tariffs, prohibit fresh milk sales, and to manage pools for fresh milk, butter and cheese not used after 1987; Price stabilisation ended after Court ruling ended levy income (1992); Milk Scheme implemented in 1994; Scheme terminated in 1998
Surplus removal (price support) schemes			
Red meat	Meat Trade Control Act, 1932; Marketing Act, 1945	Attempts to stabilise producer prices in controlled areas	Abolition of restrictions of movement from uncontrolled to controlled areas (1992); abolition of restrictive registration of producers, abattoir agents, butchers, dealers, processors and importers (1993); Scheme terminated in 1998
Eggs	1953	Industry moved out of surplus production in the 1980s	Abolition of production and pricing control under the Control of Egg Production Act (1993); Scheme terminated in 1994
Potatoes	1951	Intervention reactive, and had to be quick as a perishable product	Scheme terminated in 1993
Dry beans	1955	Limited intervention	Scheme terminated in 1993
Grain Sorghum	1957	Part of the Summer Grain Scheme up to 1987	Scheme terminated in 1998
Supervisory and price regulation schemes			
Canning fruit	1963	Applicable to canned deciduous fruit only; Enforced negotiations around minimum prices and seasonal contracts; after 1992 no consensus	Scheme terminated in 1998

		reached on minimum prices	
Cotton	1974	Powers of control initially limited to seed cotton; industry internationally uncompetitive	Control powers extended to cotton fibre (1974); Registration of ginners formal (1991); Scheme terminated in 1998
Control in terms of other legislation			
Sugar cane	Sugar Act, 1936	The Sugar Agreement was promulgated in terms of the Act in 1943. Control exercised outside of agriculture (via the Department of Trade and Industry).	The industry has undergone a process of deregulation during the 1990s, but is still heavily protected by tariffs and enjoys more support than any other branch of agriculture.
Wine	1918		KWV, which exercised statutory powers over the industry, began a process of deregulation in the late 1980s, leading to the eventual termination of production quotas and the fixing of a minimum price. KWV became a registered company in 1998, and lost its statutory powers in the process.
Ostriches	1958	Control extended to ostrich products in 1988. Single channel control exercised in terms of Co-operative legislation	Single channel marketing abolished in 1993
Lucerne hay	1958		Single channel marketing abolished in 1993

Appendix 2: Current Arrangements for Marketing Regulations

Commodity	Organisational structure	Source of income	Remaining assets	Imports and exports	*Information*	Research
Maize	Technical Advisory Forum (representing all directly affected groups) Board of Trustees of Maize Trust SAGIS (SA Grains Information Service) Grain SA	Income from Maize Trust	To date a total amount of R 2.64 million was transferred to the Maize Trust. R 20 million was recovered in legal matters that have been finalised. Approximately 275 individual court cases at an estimated amount of R38 million are in various stages of formal litigation. Funds amounting to R 9 million could be collected through an informal process subject to other matters and possibilities. An amount of R 58 million will be settled in instalments. Maize Board Building	Phytosanitary requirements and quality standards should be adhered to, and PPECB certificate for exports Tariff band applicable for imports, currently zero rate	SAGIS, a section 21 Company funded by, amongst others, the Maize Trust Processors and purchasers of grains register with SAGIS, exporters, importers, processors, purchasers and storers keep records and furnish returns to SAGIS. Maize implemented 28/11/97	Financed with income from the Maize Trust and performed by ARC, Universities and other research organisations
Winter cereals	Wheat Forum (representing all directly affected groups) Board of Trustees of Winter Cereal Trust Board of Trustees of	Income from Trusts and levy income R4,00/mt (excl VAT) on wheat processed (research) and R0,50/mt (excl VAT) on wheat, durum, barley or oats	Fixed assets of the Wheat Board transferred to the Winter Cereal Trust	Import (formula) tariff for wheat and wheaten flour Phytosanitary requirements and quality standards should be adhered to and PPECB	Performed by SAGIS and funded by the Trust and levies Processors and purchasers of grains register with SAGIS, exporters, importers,	Financed with income from the Trust and levies and will be performed by ARC, Universities and other research organisations

	Winter Cereal Research and Development Trust amalgamated in 2000 SAGIS SA Grain Laboratory	processed (information.) Published 16/3/98, expired 30/10/98. Payable by processors. B. R4,00/mt wheat processed (research) and R0,50 /mt wheat, durum, barley and oats (information), published on 18/9/98, expires in 2002. Recovered at first point of sale.		certificate needed for exports	processors, buyers and storers of grains keep records and furnish returns to SAGIS. Wheat implemented 30/01/98	
Oilseeds	Grain SA Oilseeds Advisory Committee	Oil and Protein Seed Development Trust	Still waiting for verification from Oilseeds Administrator.	Import tariff Phytosanitary requirements and quality standards should be adhered to and PPECB certificate needed for exports	Is performed by SAGIS and GSA funded by the Trust.	Performed by the ARC and other researchers and financed with income from the Trust
Deciduous fruit	Deciduous Fruit Industry Trust (DFIT) Deciduous Fruit Producers' Trust (DFPT) Fresh Produce Exporters Forum (FPEF)	Statutory levies	Approximately R7,9m used to finance the closing down of the Board and bridging finance for research; remaining funds to be transferred to the DFIT	Free, subject to compliance with quality requirements and obtaining a PPECB certificate Import tariff applicable	DFPT Statutory Levies	Performed by the ARC, Universities and private sector, and financed with income from the statutory levies funds
Citrus fruit	Citrus growers Association (CGA) Citrus Industry Trust	Statutory levy	The remaining funds of the Citrus Board, estimated at between R4 million and R8 million, were transferred to the Citrus Industry Trust	Free, subject to compliance with quality requirements and obtaining a PPECB certificate Import tariff applicable	CGA Statutory levies	Statutory levies: function will be performed by CGA
Lucerne seed	Lucerne Seed Industry Forum (representing all the directly affected	Income from Lucerne Seed Industry Research and Development Trust	Fixed assets of the Lucerne Seed Board (book value R250 161)	Phytosanitary requirements and quality standards should be	Will be performed by the Lucerne Seed Industry Organisation	Performed by ARC and financed with income from the Trust

	groups) Board of Trustees of Lucerne Seed Industry Research and Development Trust Lucerne Seed Industry Organisation (Section 21 Company)		were transferred to the Lucerne Seed Industry Research and Development Trust	adhered to and PPECB certificate needed for exports	and funded by the Trust	
Wool	Wool Forum (representing directly affected groups) Board of Trustees of Wool Trust Cape Wool SA (Section 21 Company)	Income from Wool Trust	Fixed assets of the Wool Board (market value R60 million) were transferred to the Wool Trust	Anybody may import or export freely No tariffs	Cape Wool SA funded by the Wool Trust. The Wool Forum requested for registration, records and returns to enable Cape Wool SA to perform this function	Financed with income from the Wool Trust and performed by ARC, CSIR and other research organisations
Dried fruit	Dried Fruit Technical Services (representing directly affected groups) Section 21 Company	Statutory levies	Remaining funds transferred to DFTS	Tariffs applicable Section 87 import and export control extended until 31/3/1998, thereafter free marketing.	Dried Fruit Technical Services funded by statutory levies	Financed by statutory levies and performed by Dried Fruit Technical services, ARC and other research organisations
Mohair	Board of Trustees of Mohair Trust Mohair SA (Section 21 Company)	Income from Mohair Trust	Assets of the Mohair Board (value R100 million) were transferred to Mohair Trust	Anybody may import or export freely No tariff	Mohair SA funded by the Mohair Trust	Financed by the Mohair Trust and performed by ARC, Universities and other research organisations
Milk	SAMFED (SA Milk Federation) consisting of: Milk Producers' Organisation (MPO) SA Milk Organisation (SAMO)	SAMFED Voluntary contributions	Approximately R199 000 to be transferred to the MPO for funding of research etc	Phytosanitary requirements and quality standards should be adhered to and PPECB certificate Import tariffs	By SAMFED from voluntary levies. SAMO for the secondary sector. MPO for primary sector	By SAMFED from voluntary levies. SAMO for the secondary sector. MPO for primary sector

	National Milk Distributors Association (NMDA)					
Red meat	Meat Forum (representing all the directly affected groups) Board of Trustees of Meat Trust SAMIC (Section 21 company)	Income from Meat Trust	Approximately R50m Meat Board's funds to be transferred to Meat Trust	Different tariff rates	Will be performed by the South African Meat Industry Company (SAMIC), a Section 21 Company funded by, amongst others, the Meat Trust	Financed with income from the Meat Trust and performed by ARC, Universities and other research organisations
Potatoes	Potatoes SA (representing directly affected groups) Board of Trustees	An application for statutory levies to finance research and information is currently being investigated by the NAMC, and a recommendation will be made to the Minister in due course.	Assets were transferred to Trust in 1993 (R22 million)	Phytosanitary requirements and quality standards. PPECB certificate needed for exports	Potatoes SA to be financed by levy	Potatoes SA to be financed by levy
Dry beans	Dry Bean Producers' Organisation Trustees of Dry Bean Trust	Voluntary levies	Not applicable	Phytosanitary requirements and quality standards should be adhered to and PPECB certificate needed for exports	Dry Bean Producers Organisation and financed by Trust	Dry Bean Producers Organisation and financed by Trust
Grain sorghum	Sorghum Forum (representing directly affected groups) Sorghum Trust	R3,10 per ton sorghum, excl VAT, payable by a producer who sells sorghum directly for use or processes sorghum, by a sorghum dealer, feed manufacturer, malt manufacturer, processor, by a sorghum agent or broker, by the importer of sorghum, by an exporter, and by a person who receives sorghum as	The remaining funds of the Sorghum Board, ± R7 million, transferred to the Sorghum Trust	Import tariff. Phytosanitary requirements and quality standards should be adhered to and PPECB certificate needed for exports	Will be performed by SAGIS funded by the Sorghum Trust Processors and purchasers of grains should register with SAGIS, exporters, importers, processors, purchasers and storers of grains keep records and furnish returns. Sorghum implemented 09/ 04/98	Two-thirds funded by the State (ARC), rest from statutory levies.

			remuneration for services rendered or for goods delivered. Published on 08/05/98, lapsed on 31/07/00, extended to 28/2/2002.			
Canning fruit	Canning Fruit Forum (representing directly affected groups) Canning Fruit Producers' Organisation (CFPO) SAFVCA (SA Fruit and Vegetable Canning Association)	Voluntary contributions	Equipment and computers (R46 000) transferred to SAFVCA The Board's share in SAPO and minor obligations transferred. Remaining funds of the Canning Fruit Board (± R600 000) transferred to Infruitec for research	Import tariff. Phytosanitary requirements and quality standards should be adhered to and PPECB certificate needed for exports	CFPO will perform the function, financed though voluntary contributions collected by the four major canners	Infruitec will perform this function, financed *via* voluntary contributions
Cotton	Section 21 Company: Cotton SA (representing directly affected groups) Cotton Trust	12c/kg cotton lint produced, excl VAT, payable by ginners to Cotton SA. Published 08/03/98, lapsed 01/03/00. 14c/kg cotton lint produced, excl VAT, payable by ginners, to Cotton SA. Published on 31 /3/ 2000, to lapse on 31/3/2004	The remaining assets of the Cotton Board, valued at R5 841 754, were transferred to the Cotton Trust The Cotton Board's remaining funds, ± R3 032 761 also transferred to the Cotton Trust	A tariff is applicable on imported cotton, which may, under certain conditions, be rebated	Cotton SA and financed by statutory levies. Registration implemented 08/03/ 98, and records and returns on 09/04/ 98.	Co-ordinated by Cotton SA, financed by statutory levies and performed by ARC (TCRI)

Appendix 3: The history of the CPI
(CPI Manual: Chapter 1: www.ilo.org/public/english/bureau/stat/guides/cpi/index.htm)

Price indices have a long history
- A very early example was the simple index compiled by William Fleetwood in 1707 - it was intended to estimate the average change in the prices paid by Oxford University students over the previous two and half centuries
- Another example = index compiled by the legislature of Massachusetts in 1780 in order to index the pay of soldiers fighting in the Revolutionary War against England
- During 19th century, interest in price indices gathered momentum
- In 1823 Joseph Lowe published a study on agriculture, trade & finance - he developed the concept of a price index as the change in the monetary value of a selected set, or basket, of goods and services, an approach still widely used today, - he also noted the various uses for a price index, such as the index linking wage and rents, and the calculation of real interest
- Lowe can be considered "the father of the consumer price index"
- Later in 19th century further important contributions were made, including those of Laspeyres (1871) and Paasche (1874) whose names are associated with particular types of price indices.
- The Laspeyres index measures the change in the value of the basket of goods and services actually purchased in the earlier of the two periods. In effect, it uses the expenditure of the earlier of the two periods compared to weight the price changes, while the Paasche index uses the expenditure of the later period.
- Marshall (1887) advocated the use of chain indices in which indices measuring price movements from one year to the next are linked together to measure price movements over longer periods of time.
- During the 1920s several important developments occurred
- In 1922, Irving Fisher published "The Making of Index Numbers" - this was prompted by Fisher's interest in inflation and his advocacy of the Quantity Theory of Money.
- A good measure of changes in the price level was needed - that is, a good price index - which lead him into a systematic investigation of the properties of hundreds of different kinds of possible price indices
- Fisher's preferred index, the geometric average of the indices advocated by Laspeyres and Paasche respectively, is now known as the fisher index. It treats the two periods being compared symmetrically.
- The Fisher index remains the preferred index from a theoretical point of view for most purposes
- It can be expected to provide an unbiased estimate of change in the cost of living in most circumstances
- In 1924, Konus published a seminal paper laying down the foundation for the economic theory of the COST OF LIVING INDEX (COL)
- The COL is designed to measure the changes in the cost of maintaining a given standard of living as distinct from maintaining sufficient purchasing power to buy a fixed set of goods and services
- In reality, consumers do not go on purchasing the same set of goods and services over time but adjust their expenditure to take account of changes in relative prices and other factors

In 1926, Divisia index
- It is useful conceptually when actual values, such as household consumption expenditures in the national accounts, have to be decomposed into their price and quality elements
- By 1930, the theoretical foundation for the compilation price indices, including CPIs, had been laid.

Appendix 4: International guidelines for the measurement of the CPI
(CPI Manual, Chapter 1: www.ilo.org/public/english/bureau/stat/guides/cpi/index.htm)

- The Second International Conference of Labour Statisticians convened by the International Labour Organisation (ILO) promulgated the first international standards for CPIs in 1925.
- The original international standards have been revised three times, in 1947, 1962 and 1987, each revision being approved by the International Conference of Labour Statisticians.
- The present Manual contains a much more extensive, detailed and up to date discussion of both the theory and practice of consumer price indices. It also contains the draft resolution for the fourth revision of the international standards submitted to the XVIIth International Conference of Labour Statisticians in 2003.

- <u>The current revision</u>
- The revised and updated standards presented in this manual have been developed in response to several factors
- Work on the methodology of price indices, covering both theoretical issues and optimal methods of calculation, was undertaken at an international level during the 1990s as a result of the formation of the *International Working Group on Price Indices* (established under the auspices of the United Nations Statistical Commission, met for the first time in Ottawa in 1994 "Ottawa Group")
- Another factor is the high priority accorded to the control of inflation as a policy objective in most countries, after the experience of high, or even hyper, inflation in the last three decades of the 20th century

- CPIs are subject to an upward bias - result of their failing to make proper allowance for improvements in the quality of many goods and services, especially newer goods such as computers subject to rapid technological progress
- The cumulative effects of even small potential biases can have considerable financial consequences for government budgets over the long term
- Within the EU the convergence of inflation was deemed to be an important prerequisite for the formation of a monetary union. This required precisely defined price indices that are comparable between countries. This work culminated in the elaboration of a new set of international standards for the 29 member and candidate countries of the EU and lead to the development of the EU's *Harmonised Indices of Consumer Prices (HICPs).*

- Responsibility of the International Agencies
  - All the international agencies concerned with general economic policy now attach importance to the CPI and its movements (as result of experience of inflation in the last three decades). In addition the International Labour Organisation, the International Monetary Fund, the World Bank, the regional Economic Commission of the United Nations, the Organisation for Economic Cooperation and Development and the Commission of the European Union all have a strong interest in CPIs. All of these agencies have provided technical assistance in the compilation of CPIs to countries in transition as well as to developing countries. The agencies have therefore agreed to pool their resources and collaborate in the present revision of the CPI Manual, establishing an Inter-Secretariat Group to manage the process.

- Specific Issues (www.ilo.org/public/english/bureau/stat/guides/cpi/revguid.htm)
  - The recent emergence of economies in transition & movements towards free market economies of many developing countries has raised new issues with respect to CPI measurement. Economies in transition are quite dynamic with a lot of peculiar problems. Many new products are introduced all the time, while others leave the market. Also there are big and frequent quality changes in the existing products, and changes in the relative prices of goods and services in response to changes in consumer demand. All this imposed the need for finding new methodological solutions for observing prices and calculating the price index.
  - Eurostat has developed procedures and standards for a Harmonised Index of Consumer Prices (HICP)
  - In the United States the Boskin Report has created an enormous amount of interest. It identifies possible sources of bias in the CPI like substitution bias, retail outlet substitution bias, quality bias, new goods bias. This report has called into question the accuracy and relevancy of the consumer price index even when international standards are followed.
  - CPI may overstate the rate of inflation. Among countries in which major research projects have recently been undertaken to investigate possible upward bias in the CPI are Canada, UK, France and Australia.
  - Other issues that have arisen include the need for constructing and publishing more then one index that will meet specific requirements, because no single index can serve all purposes without having conceptual short-comings for some or all of them, also the question of computing separate CPI for different population groups.
  - There is now a raised awareness of the need to review:
    - The formula utilised
    - The frequency, comprehensiveness and quality of household surveys
    - The procedures for quality adjustment, introduction of new goods and new outlets
    - The usage of probability sampling methods, etc.;
    - The use of a single index to serve various objectives;
    - The demand for sub-population indices; etc.;

Appendix 5: Weights and sources of weights
(CPI Manual, chapter 17: www.ilo.org/public/english/bureau/stat/guides/cpi/index.htm)

Role of the weights
- As some items are more important than others in the sense that more money is spent on them by the consumer, each item is given a "weight" to represent its relative importance in the average household's total expenditures during the reference period for the weights.
- To arrive at the aggregate index figure the price relatives of the individual products are multiplied by these "weights" to derive a weighted average aggregate index.
- The weights determine the impact that a particular price change will have on the overall index.

Consumption expenditure and weights
- In the ICLS (1987) CPI resolution it is observed that households' consumption expenditures should usually be used as the basis for the derivation of weights.
- This is also the practice followed in the construction of most national CPIs.
- Consumption expenditure can be measured in terms of "acquisition", "use", or "payment".
- For an index generally defined as a statistical measure of the average changes in prices of consumer goods and services purchased by the index population, consumption from own production, goods received as income in

kind and goods and services supplied free of charge, are outside the scope of the index as there are no prices directly linked to the item for the consumer.
- Prices that cannot be directly or satisfactorily measured are also excluded.
- If the national CPI is used as an indicator of price movements for the entire country, the population weights should be estimated from information which cover all households residing in any part of the economic territory, regardless of their income.
- If country uses national accounts estimates as basis for CPI weights, institutional households (mental hospitals, army) are included; if household budget surveys are used as basis for estimating CPI weights, institutional households are excluded.

Contents of the CPI basket
- The CPI basket is meant to contain the goods and services that fall within the scope of the index and which are important to the reference population.
- Due to practical difficulties, it is not possible to include all goods and all services in the CPI basket.
- Therefore, it is necessary to determine what goods and services should be selected so that the index reflects price changes for a much wider range of goods and services than is actually priced.

Treatment of unimportant expenditures
- In general the CPI is required to cover all expenditure groups in the classification used.
- Once the percentage shares for each group are calculated, it might be decided, for example, to exclude groups with weights lower than 0.1 percent (for food groups) and 0.2 percent (for non-food groups).
- The lower minimum threshold for the food items might be set because the prices for these items tend to display greater variability and that prices for food items are normally less expensive to collect.
- In case some expenditure groups are excluded their weights should be distributed across those that were selected, or they should be assigned to the related groups.
- A similar procedure would also be applied to products that have a tiny share of the expenditure in the market basket or are difficult to define in terms of specifications and price characteristics.
- However, certain items due to their significant nature should be included even though they have a very low share of expenditure.

Classification issues
- For the purpose of applying the weights, products are grouped with other products, either because they have a common end-use or because they are considered substitutes for each other.
- These families of products are joined together at different levels to form a hierarchy in a classification system.
- To the extent practical, for the purposes of international comparison, the classification scheme of goods and services should be in line with classification of individual consumption according to purpose (COIOP), the most recent version which was approved by the UN Statistical Commission at its 30th Session in March 1999.
- To facilitate estimation and application of weights it is also desirable that the classification used be consistent with the classifications used for household expenditure surveys and other statistics (foe example retail statistics).
- Each product selected for inclusion in the CPI basket is assigned a product code in accordance with the classification system.
- Sub-indices are computed by combining product indices, according to the classification system.
- These sub-indices are further aggregated following the hierarchy of the classification to arrive at major groups or divisions, and finally, the "All-items" index.
- It is necessary to determine what goods and services should constitute each class of the CPI. Each expenditure class has to be represented by selected goods and services that are considered representative for their class.
- The price changes of these particular goods and services are then monitored and their weight average is subsequently used as a measure of price changes for that class.

Aggregation
- Aggregation starts with the sample of specific product prices collected from particular outlets in particular areas
- The prices or price relatives are combined using the price index formula to arrive at the first level of index aggregation (the elementary aggregate or elementary aggregate index)
- The elementary aggregate index covers all prices collected for one product in one stratum.
- Stratification may be by region, by shop type, by both or neither.
- For most items, particularly food, a large number of prices are collected from great number of different shops in different areas of the country. These prices vary considerably. The experience of many countries suggests that the type of outlet is the most important factor associated with difference in prices for the same item. Very often there might be significant regional variations as well.
- Once price indices for the elementary aggregates are computed, the item indices are obtained as weighted combination of the indices for each elementary aggregate

- Then the item indices are combined following the hierarchy of the classification, with appropriate weights applied along the way.
- Depending on the formulae used, the bases of the weights differ
- The geometric mean assumes that the expenditure shares of each item within the elementary aggregate are the same in each period
- The ratio of arithmetic mean prices assume equal quantities in both periods, and
- The arithmetic mean of price relatives equal expenditure in the first period.

Elementary aggregate, item and section weights
- Once the content of the basket has been determined, the weights should be derived. The data used to derive weights comes from a variety of sources.

Explicit and implicit weights
- If, all prices relatives within the elementary aggregate are equally important, a formula giving equal importance to all price relatives should be used. The ratio of average price formula assumes that the importance of each observation is proportional to its base price. This latter approach makes the strong assumption that expenditure values are proportional to the base prices. In the ratio of average price formula, transactions with higher prices receive more importance than those with lower prices.
- Another alternative formula is the geometric average. The geometric average of price relatives and the ratio of geometric average prices yield the same result. The use of this formula assumes that the weight of each observation is equal to its share of base period value (not its share of base period quantities). Thus, as relative price change, the assumption is made that there is an inverse relationship between the change in price and the quantity produced consistent with a unitary quantity produced. This assumption about the inverse relationship between price and quantity may not be valid for all expenditure groups (for example medicaments).

Sources of weights
- Household Budget Survey
- National accounts
- Population censuses
- Other surveys
  o National Food Survey
  o Points of purchase surveys

Weight reference period
- The weight reference period is the time period, often a single calendar year, to which the estimates of the value of consumption relate.
- The weight reference period and the price reference period used in the index formula should refer to the same period.
- The weights may be chosen from multiple periods depending on the formula that is used to calculate the index. It was recommended that a symmetric index be used which requires weights for the base period and the current period.
- The weights that are used refer to a single calendar year. If a single year's data is not adequate, an average of several years' expenditure data may provide the best base as it reduces the sampling and seasonal variance of the consumer expenditure data for a given size of the annual sample.
- During the periods of high inflation, multiple year weights should be calculated by averaging value shares rather than averaging actual value levels.
- For seasonal products, it may be preferable to develop separate weights by month.

Plutocratic and democratic weights
- To construct an aggregate price index for a population some method of aggregation has to be used to "average" the effect of price changes on all households in the population.
- This aggregate index may be computed with the weights which reflect average expenditures of reference households or the expenditure of an average household.
- In most, if not all countries, the CPIs use weights that reflect the composition of the estimated aggregate values of the reference population. This means that each household contributes to these weights by an amount proportional to its expenditure. Such weighing has been named "plutocratic".
- The second type of weighing, which gives equal importance to all households by averaging consumption values, is named "democratic".

Appendix 6: Historical changes in CPI-food weights
(Gerald E. Schulte, Food Cost Review, 1950-97, Economic Research Service/USDA)

- The CPI for food is probably the most widely used measure of change in food prices.

- A reliable estimate of change in overall food prices allows both economists and policy analysts to split estimates of the changes in consumer food spending into two components
  1. changes in actual consumption of food and food-related services, and
  2. changes in prices paid for food and food related services.
- Analyst who construct the CPI index numbers do so by choosing representative consumer items to represent various classes of consumer spending
- The prices of these representative consumer items are weighted by their shares in consumer spending
- A review of changing weights = not a simple evenly evolving story
- CPI weights are based on changing consumer spending patterns and thus are subject to periodic revisions.
- <u>CPI-Food in CPI-U</u>
- As an economy's per capita income grows, its consumers normally spend a smaller share on essentials such as food
- This expected behaviour appears in the CPI-Food weights and is reflected in a downward trend for the CPI-Food weights as a percentage of the CPI-U index.
- <u>CPI-Food-at-Home vs. CPI-Food-away-from-Home</u>
- The effects of rising affluence are not the only factors responsible for decreasing the share of consumer spending on food
- The rise in two-income households, the share of women in the workforce, and time constrains associated with modern lifestyles also have changed the nature of consumer spending on food
- The picture that emerges from an examination of recent historical CPI-Food weights is of food accounting for a shrinking share of consumer spending, but more of this spending is for food away from home.

Appendix 7: Changes in the formula for calculating the basic components of the CPI
(Bureau of Labour Statistics: October 1998, Industrial Relations, Vol.37, No.4)

- Significant changes made within the past few years have been designed to eliminate a bias associated with the introduction of new items into the index, better capture price changes associated with the introduction of new prescription drugs, better reflected patterns of treatment received by hospital patients, and better capture the actual (quality-adjusted) prices of personal computer equipment.
- NEW FORMULA = a geometric mean estimator
- Based on BLS research, the new formula will reduce the annual rate of increases in the CPI by about 0.2 percent per year
- Research strongly suggests that the use of the geometric mean estimator at the basic level of index construction in the CPI will produce a measure that more accurately reflects the impact that changing prices have on the average US household
- One motivation was the problem of functional form bias then presented in the CPI. "Functional form bias" occurred when using observed expenditure information to estimate the quantity weights used in the index formula. Because the geometric mean formula does not require quantity data, it does not suffer from this problem
- In contrast to the fixed quantity weights of the current CPI formula, the geometric mean estimator employs a set of fixed expenditure proportions as weights for average prices of items within a CPI basic index. Fixing relative expenditure proportions rather than relative quantities implies that consumers can alter the quantities of goods and services they buy, albeit within the narrow range of a CPI category, when the relative prices of those goods and services change.
- The geometric mean formula will be used only to average prices within the item-area strata. Consequently, the geometric mean formula will address only the issues of substitution within strata.
- Substitution can take several forms:
  o Substitution among brands of products, e.g. between brands of ice cream
  o Substitution among product sizes, e.g. between pint and quart packages of ice cream
  o Substitution among outlets, e.g. between a brand of ice cream sold at different stores
  o Substitution across time, e.g. between buying ice cream during the first or second week of the month
  o Substitution among types of items within a category, e.g. between ice cream and frozen yoghurt
- Note, however, that substitution across categories, such as between ice cream products in general and apples in general is not addressed by the geometric mean formula

Appendix 8: Comparative CPI Methodologies

Country	Sampling &Weights	Re-base of Index	Price Collection	Index Formula
South Africa	Survey of Income and Expenditure of Households (conducted every five years) Geographical sample for price collection - includes 13 major metropolitan areas, covering all nine provinces, "other urban areas" are covered by nine provincial samples of four to five urban areas each, therefore, and a total of 39 "other urban areas" is sampled. Retail trade and service sampling frame for each of the 53 sampling areas. (The sample of outlets is revised every five years when the weights are revised.)	Every five years	An average of 110 000 price quotations are collected each month from approximately 2 200 outlets by means of 6 700 questionnaires. The indices are based on retail trade and service prices. Price information refers to the first seven days of the relevant month. The prices of all items include VAT.	Laspeyres formula in which fixed weights are used to aggregate basic product indices to higher group indices and the total.
United Kingdom	Annual UK Family Expenditure Survey	Once every Year	Domestic prices are colleted by the private sector company Research International. Prices are collected on the second or third Tuesday of each month, although for some items prices are collected a day on either side of that day. In addition, data are collected by ONS staff from some major suppliers. Prices include taxes such as council tax; VAT, duties, vehicle excise duty, insurance tax and airport tax.	Annually chain linked Laspeyres index
Canada	Information on the spending habits of Canadian households is obtained periodically from family expenditure surveys. Nearly all Canadian urban and rural households. In one survey, households selected from random sample are asked to keep a detailed diary of food expenditure over a two-week period. In the other survey, the randomly selected households are asked to provide detailed information on what goods and services were purchased in the previous calendar year together with the amount of money spent on these items.		The prices used in the CPI are those that any consumer would have to pay on the day of the survey. This means that if an item is on sale, the sale price is collected. Prices are collected for over 600 separate goods and services. Most commodities are priced once a month. Some items are priced each quarter. Property taxes and tuition fees are monitored once a year. Generally, the more often prices change, the more often they are collected. When prices change outside the scheduled time of collection, a special price collection may be carried out to ensure that such changes are reported in the CPI in a timely fashion. The pricing cycle starts in the first week of each reference month and extends to the third week of the month.	

Hong Kong	Household Expenditure Survey (updated every five years)	Every five years	Price data are collected mainly by field visits, supplemented by telephone and postal enquiries. On average, about 10 000 visits and 1 300 telephone calls are made to some 4 000 retail outlets and service providers each month to collect about 45 000 price quotations.	
Japan	2000 average of the Family Income and Expenditure Survey (updated every five years) For fresh food, monthly weights are calculated from not only the expenditure by item, but also the quantity purchased of each month for the entire year. (The total weights for three categories of fresh food - i.e. fresh fish and shellfish, fresh vegetables, fresh fruits - are fixed throughout the year.)	Every five years	The index covers 596 items. The prices of the items are collected in the monthly Retail Price Survey in principle. In this survey, prices are surveyed once a month in principle, but the prices of fresh food and cut flowers are collected three times a month as their prices sharply fluctuate day by day. Approximately 233 000 price quotes are obtained each month from 31 000 establishments and 22 000 rental units.	Laspeyres formula
Uganda			Price data collection for all goods and services is carried out on monthly basis for all centres. The collected price data is carefully examined for accuracy and validity before it is used for CPI calculations.	Modified Laspeyres formula
Chile	Household Budget Survey Point-of-Purchase Survey	Used to be every ten years, in 1998 it was suggested to re-base every five years.	The type of prices used corresponds to the sale price to the final consumer. This price corresponds to the cash price, including VAT and other taxes. The period is the month. The frequency of collecting prices will be monthly, with the exception of the group Food and Beverages, and some fuels of high variability, for which prices will be collected weekly.	Laspeyres formula
Malaysia	Household Expenditure Survey (conducted every five years)	Every five years	The index covers about 430 items. Each month approximately 100 000 price quotes are obtained from about 19 000 retail outlets throughout the country. Prices are collected monthly, except for prices on rental property which are collected on a quarterly basis.	Laspeyres formula
Mozambique	Household Budget Survey Point of purchase survey		The price collecting zones are grouped in 7 circuits where each circuit is visited approximately at the same time (same week)	

			every month. Markets are still visited every week. The outlets in some of the circuits are widely spread and can only be reached by car. According to Maputo Central, some types of non-food outlets are almost absent within a circuit and replacement will be hard to find if a particular outlet is permanently closing down. Maputo Central should reconsider the circuits and if lack of recourses should be taken into account, try to concentrate the outlets within a specific circuit.	
New Zealand	Household Economic Survey (updated every five years) Outlet weights are used, as it is not practical to survey every outlet and are based on the proportion of sales by outlet type and/or market share.	Every five years	Prices are surveyed for all the goods and services selected for the Food Price Index. This generally takes place in the main urban areas. Prices are collected in a wide range of outlets since most items are sold in more than one type of outlet. For example an apple, from a fruit and vegetable shop, a supermarket or a dairy. The rate of price change will usually vary between these outlets. Household Expenditure Survey and retail trade data are used as a guide to determine which outlets to price survey for a particular commodity.	Laspeyres Price Relative Index Formula, this formula produces the same results as the basic Laspeyres formula but means that expenditure data from the Household Economic Survey can be used directly in the index formula.
Ireland	Household Budget Survey & estimates of expenditure by tourist across a range of consumer goods and services		Personal visits are made to retail outlets by some 200 part-time pricers on a monthly basis. Approximately 51 000 price quotations are gathered in this way. In addition 112 special inquiries covering items such as utility charges and services are conducted by post and telephone. Most prices are collected monthly, some quarterly and others annually. The Central Statistics Office supplies general specifications to price collectors and collectors are free initially to select a brand of the same item to be priced throughout the country. Once selected, the same item/brand is priced on a monthly basis in order to ensure matched price quotations. If an item disappears, substitution can occur but that price is excluded until matched prices are	Laspeyres formula

			available for the same comparable item for two consecutive months.	
Korea	The weights of index items are calculated on the basis of average expenditures per household obtained from the FIES. The FIES covers all households excluding farmers' and fishermen's households and one-person households, and is conducted monthly in a sample of 5500 households in 36 cities.		The prices obtained by the price collectors are normal prices (actual transaction prices) excluding abnormal prices such as: - Temporarily irregular prices caused by disaster or similar condition - Discounted prices due to volume purchases - Prices of second-hand articles and goods that are sold on an instalment basis	Laspeyres formula
Philippines	Family Income and Expenditure Survey Commodity and Outlet Survey	No fixed interval for rebasing, so far: 1966, 1972, 1978, 1988, 1994, 2000	The survey covers about 9500 outlets nationwide with about 415 138 price quotations obtained monthly. Price collection for food is carried out weekly in 9 markets.	Variant of the Laspeyre's Formula with fixed base year period weights
Turkey	Household Income and Expenditure Survey	Every five years	The index covers 410 items. Approximately 100 000 price quotes are obtained each month, from 6390 outlets in the 7 regions. Prices are collected twice each month (four times each month for vegetables and fruits). The prices include any relevant taxes	Laspeyres formula
El Salvador	Urban Household and Expenditure Survey	No fixed schedule for re-basing, currently = 1992, previous = 1978	Every month 1 124 establishments and 3 424 prices are surveyed. Prices of most items are surveyed monthly, but some relatively stable prices are surveyed only once every second month or once a quarter. The price measured are inclusive of value added tax.	Modified Laspeyres formula
Finland	National Accounts	Every five years	The index covers 492 items and is based on actual prices paid by consumers. Therefore, it includes all taxes and duties.	Fixed base Laspeyres formula
India	Family Income and Expenditure Survey	Efforts are made to update the weights every ten years. However, due to various reasons, this	The index covers 260 items, and approximately 160 000 retail price quotes are obtained each month from 16 545 outlets and selected open markets. About 81 percent of the price quotes	Laspeyres formula

			are collected every week for price sensitive items. Prices for some commodities (about 18 percent) are collected on a monthly basis. Prices of items such as house rent, school or college fees and school/college books (I percent of price quotes) are collected every 6 months. The price quotes include all tax.	
		schedule could not be adhered to. The latest update of the CPI weights was done in 1981-82, after a gap of 22 years.		
France	Weights are derived from national accounts final consumption data of the antepenultimate year		Prices are collected through the month using stratified sample surveys. They are collected for 159 groupings (with 303 sub-groups, more than 1000 products are observed, and 150 000 quotations are collected each month).	Annually chained Laspeyres-type index
Peru	"Encuesta Nacional de Propósitos Múltiples"	The index base has been moved from 1994 to 2001	Approximately 40 000 price quotes are obtained each month from 41 markets, 5 Supermarkets, 500 rented homes, 505 educational centres, 210 urban and interstate transport lines, among others. The prices are collected in different frequency depending on the type of goods: prices of products sold in retail outlets are collected every Thursday and Saturday; prices of products sold in other outlets and prices for leasing costs are collected once a month; and prices for public services are obtained every time the tariffs are changed by the enterprises that provide such services.	Laspeyres formula
Ecuador	Survey of Incomes and Expenses of Urban Homes		Prices are collected weekly, semi-monthly, and refer to the last week of the previous month and the first three weeks of the reference month. The survey includes 2 450 outlets and a total of 11 500 prices are collected. The prices include VAT and other sales taxes.	Chained Laspeyres formula
Italy	The weights are represented by values of final household consumption as derived from the National Accounts. These values are then corrected on the basis of other information derived from the Households Budget survey and from other sources.		Prices are collected monthly with the exception of durables, semi durables and rents (quarterly) and seasonal goods (twice a month). The price quotations refer to a group of approximately 1000 products classified accordingly to the COIOP'95 Rev. 1 classification. The CPI is based on approximately 300 000 price	Laspeyres type index

			quotations each month taken at 26 000 sales outlets and 12 000 households.	
Brazil	Household Budget Survey	The index compilation process and its methodology is being constantly improved, therefore there is no index re-base on a regular basis. The weights were revised in 1989 and in 1999 and the next revision will be in 2003/2004.	The collection of prices and goods and services is continuous throughout the month and is carried out by special teams of approximately 300 field researchers. The systematic collection of prices follows a schedule established each year, in which each month is divided into four periods, approximately to one week each. The samples are also divided into four parts, and each part includes a fixed set of establishments that is always visited during the same period of each month. The general rule is that the prices of each product are collected each month. Information is collected annually for taxes, the amount of which are set once a year.	Laspeyres index

Appendix 9

Group/Item	Expenditure group															
	Total		Very low		Low		Middle		High		Very high		Pensioners		Core	
	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000	1995	2000
Food	18.02	25.44	40.73	57.58	34.39	54.91	31.12	46.5	25.42	34.28	14.84	16.68	21.06	35.43	12.55	27.96
GRAIN PRODUCTS	3.31	5.44	12.6	17.88	9.13	16.82	7.61	12.41	5.2	7.46	2.37	2.62	4.05	8.61	4.33	5.99
White bread	0.69	0.96	1.53	1.26	1.65	1.75	1.55	1.91	1.18	1.68	0.49	0.57	0.82	1.11	0.9	1.07
Brown and whole-wheat bread	0.43	1.12	2.42	3.52	1.94	3.73	1.44	3.07	0.67	1.72	0.25	0.41	0.6	1.85	0.56	1.26
Other bread and bread rolls	0.1	0.08	0.02	0.02	0.05	0.03	0.07	0.04	0.1	0.06	0.1	0.1	0.08	0.08	0.13	0.09
Cake flour	0.27	0.29	0.79	0.59	0.65	0.81	0.64	0.69	0.45	0.44	0.19	0.14	0.3	0.49	0.36	0.31
Bread flour	0.13	0.18	1.16	1.27	0.5	1.03	0.25	0.51	0.31	0.18	0.06	0.03	0.14	0.45	0.17	0.19
Breakfast oats	0.07	0.04	0.06	0.02	0.04	0.04	0.07	0.05	0.09	0.05	0.07	0.03	0.09	0.05	0.1	0.04
Corn flakes/breakfast cereals	0.23	0.23	0.18	0.03	0.13	0.08	0.23	0.14	0.28	0.26	0.23	0.25	0.3	0.21	0.31	0.25
Mealie meal	0.38	1.16	3.33	7.87	1.96	5.95	1.37	3.32	0.65	1.23	0.2	0.24	0.51	2.37	0.5	1.27
Mealie rice/samp	0.11	0.16	0.67	0.82	0.45	0.71	0.27	0.42	0.17	0.19	0.07	0.05	0.15	0.34	0.14	0.17
Rice	0.37	0.65	1.74	2.04	1.28	2.1	1.02	1.57	0.64	0.91	0.23	0.29	0.49	0.99	0.48	0.71
Spaghetti, macaroni and other pasta	0.18	0.18	0.37	0.07	0.17	0.11	0.18	0.16	0.2	0.22	0.18	0.18	0.21	0.17	0.24	0.2
Biscuits	0.13	0.12	0.04	0.05	0.09	0.05	0.13	0.1	0.14	0.14	0.12	0.12	0.13	0.12	0.16	0.13
Rusks	0.01	0.01	0	0	0	0	0.01	0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Cake, tarts, pies and other baked prod.	0.04	0.04	0.02	0.02	0.03	0.02	0.04	0.04	0.05	0.05	0.04	0.04	0.05	0.04	0.06	0.05
Other grain products	0.17	0.22	0.27	0.3	0.19	0.41	0.34	0.39	0.26	0.32	0.13	0.16	0.17	0.33	0.21	0.24
MEAT	5.33	6.44	9.77	9.51	9.16	9.93	8.32	10.09	7.53	9.02	4.47	4.86	6.07	8.08	0.06	7.07
Fresh - beef and veal	1.22	1.09	2.68	1.84	2.72	1.95	2.2	2.01	1.9	1.64	0.95	0.17	1.4	1.33	0	1.19
Fresh - mutton and beef	1.19	1.84	1.46	1.41	1.3	1.68	1.54	2.07	1.79	2.44	1.02	1.68	1.33	2.24	0	2.03
Fresh - pork	0.37	0.22	0.34	0.27	0.44	0.3	0.35	0.24	0.32	0.26	0.39	0.2	0.4	0.27	0	0.24
Fresh - poultry (including frozen)	0.96	1.67	2.83	4.59	2.27	4.24	1.9	3.66	1.35	2.48	0.76	0.88	1.16	2.47	0	1.83
Fresh - boerewors	0.41	0.54	1.05	0.55	0.82	0.8	0.89	0.91	0.66	0.83	0.31	0.39	0.53	0.62	0	0.6
Fresh - other sausage	0.08	0.22	0.15	0.08	0.09	0.13	0.08	0.21	0.1	0.3	0.07	0.21	0.1	0.22	0	0.24
Bacon	0.11	0.12	0.05	0.04	0.1	0.04	0.06	0.08	0.11	0.12	0.11	0.14	0.13	0.13	0	0.13
Ham	0.04	0.02	0.01	0	0.01	0.01	0.04	0.02	0.05	0.03	0.03	0.02	0.04	0.02	0	0.02
Other cold meat	0.21	0.18	0.06	0.04	0.09	0.08	0.23	0.15	0.31	0.25	0.19	0.18	0.22	0.18	0	0.2
Other meat and meat products	0.74	0.54	1.14	0.69	1.32	0.7	1.03	0.74	0.94	0.67	0.64	0.45	0.76	0.6	0.06	0.59
FISH AND OTHER SEAFOOD	0.08	0.72	0.87	0.93	1.12	0.98	1.03	0.99	1.05	0.87	0.7	0.61	0.9	0.83	0.19	0.79
Fresh or chilled	0.31	0.28	0.27	0.15	0.41	0.23	0.39	0.32	0.45	0.36	0.27	0.26	0.4	0.33	0	0.31
Frozen	0.07	0.18	0.05	0.06	0.07	0.08	0.07	0.13	0.08	0.19	0.06	0.21	0.07	0.19	0	0.21
Smoked, dried and salted	0	0.02	0	0.02	0	0.02	0	0.02	0	0.03	0	0.02	0	0.02	0	0.02

Tinned fish	0.13	0.2	0.32	0.66	0.34	0.6	0.29	0.48	0.17	0.25	0.1	0.08	0.14	0.25	0.17	0.21
Fish paste	0.01	0	0.03	0	0.04	0	0.03	0	0.02	0	0.01	0	0.02	0	0.02	0
Other fish	0.28	0.04	0.2	0.04	0.26	0.05	0.25	0.04	0.33	0.04	0.26	0.04	0.27	0.04	0	0.04
MILK, CHEESE AND EGGS	1.9	2.2	3.29	3.62	3	3.96	3.03	3.71	2.56	2.97	1.68	1.6	0.17	2.82	2.46	2.42
Fresh milk	0.76	0.75	1.62	1.03	1.12	1.11	1.12	1.13	0.97	1.05	0.67	0.58	0.88	0.92	0.98	0.83
Cheese	0.29	0.24	0.05	0.02	0.17	0.06	0.26	0.14	0.32	0.27	0.28	0.28	0.31	0.26	0.37	0.27
Condensed/evaporated/sterilized milk	0.13	0.15	0.15	0.33	0.26	0.31	0.2	0.22	0.17	0.18	0.11	0.11	0.16	0.26	0.17	0.16
Milk powder	0.11	0.09	0.32	0.26	0.28	0.28	0.26	0.24	0.19	0.13	0.08	0.04	0.14	0.14	0.15	0.1
Other milk products, including creamers, whiteners and mixtures	0.29	0.53	0.57	0.9	0.42	1.05	0.53	0.98	0.41	0.7	0.25	0.36	0.29	0.66	0.38	0.58
Eggs	0.32	0.44	0.58	1.08	0.75	1.15	0.66	1	0.5	0.64	0.29	0.23	0.39	0.58	0.41	0.48
FATS AND OILS	0.85	0.93	2.06	2.31	1.86	2.12	1.66	1.8	1.31	1.31	0.66	0.56	1.02	1.32	1.12	1.18
Butter	0.19	0.11	0.48	0.1	0.36	0.11	0.31	0.12	0.3	0.14	0.15	0.1	0.21	0.13	0.24	0.14
Fats	0.03	0.04	0.09	0.15	0.08	0.1	0.05	0.07	0.04	0.05	0.02	0.02	0.03	0.05	0.04	0.05
Cooking and salad oil	0.26	0.39	0.86	1.55	0.73	1.27	0.59	0.91	0.41	0.53	0.19	0.18	0.31	0.61	0.34	0.5
Margarine	0.27	0.28	0.48	0.4	0.5	0.49	0.5	0.51	0.39	0.41	0.22	0.19	0.35	0.4	0.36	0.35
Peanut butter	0.1	0.11	0.15	0.11	0.19	0.15	0.21	0.19	0.17	0.18	0.08	0.07	0.12	0.13	0.14	0.14
FRUIT AND NUTS	1.08	1.16	0.84	1.47	1.09	1.7	1.4	1.78	1.33	1.52	0.99	0.91	1.28	1.39	0.41	0.42
Deciduous fruit	0.28	0.32	0.35	0.51	0.38	0.53	0.44	0.55	0.35	0.45	0.25	0.21	0.33	0.39	0	0
Subtropical fruit	0.22	0.29	0.21	0.47	0.29	0.5	0.3	0.51	0.29	0.39	0.19	0.21	0.28	0.36	0	0
Citrus fruit	0.17	0.18	0.18	0.33	0.23	0.37	0.29	0.36	0.24	0.26	0.14	0.11	0.24	0.24	0	0
Other fresh fruit	0.05	0	0.01	0	0.03	0	0.03	0	0.05	0	0.05	0	0.06	0	0	0
Canned fruit	0.08	0.06	0.02	0.01	0.04	0.03	0.09	0.05	0.1	0.07	0.07	0.06	0.09	0.08	0.1	0.08
Dried, crystallized fruit	0.02	0.02	0	0	0.01	0.01	0.03	0.01	0.02	0.01	0.03	0.03	0.03	0.02	0.03	0.03
Fruit juices	0.2	0.23	0.06	0.11	0.09	0.21	0.16	0.24	0.2	0.28	0.21	0.23	0.19	0.23	0.26	0.29
Nuts	0.03	0.04	0	0.04	0.01	0.04	0.02	0.05	0.03	0.04	0.03	0.04	0.03	0.05	0.01	0.01
Other fruit and nut products	0.03	0.02	0.01	0	0.01	0.01	0.04	0.01	0.05	0.02	0.02	0.02	0.03	0.02	0.01	0.01
VEGETABLES	1.8	2.42	4.56	6.71	3.95	5.79	3.32	4.67	2.56	3.21	1.44	1.48	2.13	3.55	0.17	0.21
Potatoes	0.35	0.5	1.64	2.16	1.14	1.64	0.78	1.14	0.51	0.67	0.25	0.21	0.44	0.81	0	0
Onions	0.18	0.28	0.7	0.89	0.52	0.82	0.41	0.65	0.29	0.4	0.13	0.14	0.22	0.41	0	0
Tomatoes	0.23	0.33	0.82	1.05	0.61	0.96	0.49	0.77	0.35	0.44	0.17	0.16	0.27	0.48	0	0
Green beans	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.1	0.08	0.1	0.07	0.06	0.1	0.11	0	0
Cabbage	0.1	0.22	0.46	1.23	0.39	0.88	0.29	0.59	0.16	0.28	0.07	0.06	0.13	0.38	0	0
Carrots	0.1	0.12	0.19	0.12	0.17	0.17	0.18	0.21	0.14	0.19	0.09	0.09	0.13	0.17	0	0
Pumpkin and marrows	0.1	0.11	0.11	0.11	0.14	0.14	0.16	0.19	0.13	0.16	0.08	0.08	0.13	0.14	0	0
Squashes	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.01	0.01	0.02	0.02	0	0
Beetroot	0.06	0.07	0.06	0.08	0.09	0.12	0.12	0.16	0.1	0.12	0.05	0.04	0.07	0.1	0	0

Sweet potatoes	0.04	0.04	0.03	0.04	0.08	0.05	0.06	0.06	0.07	0.06	0.03	0.03	0.05	0.06	0	0
Lettuce	0.06	0.07	0.01	0.01	0.02	0.02	0.03	0.03	0.07	0.07	0.06	0.08	0.06	0.08	0	0
Other fresh vegetables	0.14	0.2	0.26	0.57	0.26	0.48	0.25	0.35	0.21	0.22	0.11	0.14	0.15	0.31	0	0
Dried, dehydrated vegetables	0.04	0.06	0.04	0.2	0.1	0.19	0.11	0.13	0.06	0.06	0.03	0.03	0.05	0.11	0.06	0.07
Canned vegetables	0.08	0.07	0.09	0.04	0.12	0.06	0.14	0.08	0.11	0.1	0.07	0.07	0.1	0.09	0.11	0.09
Frozen vegetables	0.2	0.2	0.05	0.08	0.18	0.1	0.18	0.13	0.21	0.23	0.2	0.22	0.19	0.23	0	0.01
Other vegetable products	0.03	0.06	0	0.03	0.02	0.05	0.01	0.05	0.05	0.08	0.02	0.06	0.02	0.05	0	0.04
SUGAR	0.59	0.85	3.07	3.82	2.01	3.17	1.49	2.02	0.91	1.06	0.4	0.34	0.78	1.55	0.77	1.07
White sugar	0.49	0.75	2.96	3.44	1.92	2.82	1.39	1.81	0.81	0.95	0.3	0.28	0.66	1.34	0.64	0.94
Other sugar	0.1	0.1	0.11	0.38	0.09	0.35	0.1	0.21	0.1	0.11	0.1	0.06	0.12	0.21	0.13	0.13
COFFEE, TEA AND COCOA	0.72	1.27	2.24	3.15	1.63	2.81	1.41	2.06	1	1.35	0.57	0.95	0.94	1.97	0.93	1.61
Coffee	0.37	0.88	1.01	1.78	0.8	1.71	0.69	1.28	0.51	0.85	0.3	0.73	0.47	1.34	0.48	1.12
Tea	0.3	0.36	1.19	1.35	0.8	1.08	0.68	0.76	0.45	0.47	0.21	0.18	0.42	0.59	0.38	0.45
Cocoa, chocolate drinks and other hot drinks	0.05	0.03	0.04	0.02	0.03	0.02	0.04	0.02	0.04	0.03	0.06	0.04	0.05	0.04	0.07	0.04
OTHER FOOD PRODUCTS	1.64	4.01	1.43	8.18	1.44	7.63	1.85	6.97	1.97	5.51	1.56	2.75	1.72	5.31	2.11	5.08
Salt	0.07	1.13	0.25	5.32	0.17	3.85	0.12	2.65	0.1	1.44	0.05	0.48	0.09	1.78	0.09	1.42
Spices and flavouring	0.36	0.08	0.26	0.07	0.3	0.09	0.41	0.11	0.47	0.11	0.34	0.06	0.41	0.09	0.47	0.1
Vinegar	0.06	0.06	0.08	0.11	0.09	0.13	0.12	0.13	0.1	0.1	0.05	0.03	0.07	0.09	0.08	0.08
Yeast, baking power and bicarbonate of soda	0.06	0.07	0.15	0.22	0.11	0.23	0.12	0.17	0.1	0.11	0.05	0.03	0.08	0.13	0.08	0.09
Custard power and puddings	0.07	0.05	0.02	0.01	0.04	0.04	0.07	0.05	0.1	0.07	0.06	0.05	0.08	0.06	0.09	0.07
Canned soup, soup powder and stock cubes	0.08	0.16	0.06	0.5	0.08	0.48	0.13	0.37	0.1	0.22	0.07	0.08	0.09	0.24	0.1	0.21
Chocolates	0.19	0.16	0.07	0.05	0.08	0.06	0.13	0.1	0.18	0.15	0.2	0.17	0.18	0.12	0.24	0.2
Other sweets	0.04	0.06	0.05	0.05	0.02	0.05	0.03	0.07	0.03	0.07	0.05	0.06	0.04	0.05	0.06	0.08
Ice cream	0.15	0.11	0.02	0.02	0.05	0.03	0.1	0.07	0.17	0.13	0.15	0.13	0.13	0.11	0.2	0.14
Jam, syrup and honey	0.23	1.51	0.38	1.4	0.41	2.09	0.44	2.53	0.31	2.28	0.19	1.1	0.26	1.97	0.3	1.9
Jelly powder	0.06	0.04	0.01	0.01	0.05	0.02	0.08	0.04	0.09	0.06	0.05	0.03	0.08	0.05	0.07	0.05
Other related sugar products	0.01	0	0	0	0	0	0	0	0.01	0	0.01	0	0	0	0.01	0
All other food products	0.26	0.58	0.08	0.42	0.04	0.56	0.1	0.68	0.21	0.77	0.29	0.53	0.21	0.62	0.32	0.74

Source: StatsSA Statistical release P0141.5 of 27 February 1997 & 28 February 2002

Appendix 10

The imperative for a new futures contract to allow market efficiency

Introduction

The Agricultural Market Division (AMD) is a successful and reliable market recognized domestically and internationally as the prime price formation forum for grain in Southern Africa. Without doubt the price signals from the market have encouraged grain production in an otherwise uncertain environment, an example being in December 2001 when attractive prices for July maize encouraged the producers to plant aggressively in very adverse conditions.

There remains a glaring weakness that was never anticipated years ago when the market was first established. It is the aim of this document to identify and explain this defect, and propose a solution.

The Impact of Globalisation on the Domestic Market

At the time that the market was established, South Africa and Southern Africa were producing surpluses of grain. The futures contracts were designed to allow hedging on the local market – producers could sell forward at a price that included a risk premium and consumers could buy some protection against the vagaries of the weather. When prices fell dramatically because of domestic surpluses, the international trade stepped in to buy grain. The world price of maize thus provided a floor. Our markets efficiently and successfully linked and correlated to international grain prices. In short, the contract specifications had worked and the market performed its function of price discovery and price formation very well.

We have moved into a period where regional shortages of grain, especially white maize, will persist. Unfortunately the current futures contracts only permit the delivery of "maize of African Origin". The result is that world supply is not properly integrated into our market and the price formation process is not efficient. Taking this argument to its full conclusion, it is possible for the regional demand to totally skew the appropriate economic value of the underlying commodity, even in the absence of market collusion among rampant speculators. This is especially true in the white maize market.

South Africa having established the sole credible futures market for white maize, the world simply looks at our prices when pricing their own stock. Further, because US white corn cannot be delivered on the futures market, it is dangerous to hedge US white maize on the market. A "technical squeeze" could cost the hedger dearly.

In conclusion, upward price momentum in South Africa spills into the world market without creating a forum that easily allows other grain producers (e.g. USA producers who can produce enough white maize to satisfy the appetite of even the most rampant of bulls) to switch to white corn and hedge in South Africa.

Conclusion

The AMD must create a new white maize contract that allows delivery of US (or other) white corn. This will mobilize the resources of the northern hemisphere whenever we have a regional shortage. The market will compete away "supernormal" premiums for white corn. The market will have become efficient. Food security will have been addressed for millions of people, without government intervention, by the invisible hand of supply and demand **assisted by the appropriate hedging instrument supplied by the Agricultural Market Division.**

Appendix 11

<center>**Proposal for a new SAFEX futures contract to achieve market efficiency**</center>

The SAFEX Market (AMD) has become the pricing mechanism for regionally produced coarse grains and oilseeds. It does however not allow for price discovery of premiums or discounts based on international imports due to the lack of physical settlement into the current listed futures contract. This is due to delivery of only "maize of African Origin" allowed in physical settlement of Futures contracts. The proposal calls for the introduction of a second futures contract, which will allow physical settlement through the use of maize of an international origin.

Internationally grain is priced on the basis that it could readily be imported/exported based on either a surplus or shortage arising in the local market. Allowing for other factors such as the exchange rate, transport differentials, freight, etc. The determination of import and export parity is thus largely a function of supply and demand. However, parities **assume** that imported grains can freely be substituted for local grains in an environment where local price levels move out of line with international prices. This in practise is not the case. Although only a small (less than 10 %) of futures contracts result in physical delivery the possibility that any contract can physically settle inhibits speculative activity. As indicated above that possibility does not extend to the current futures contract.

This results in:

- Grains being imported only if a South African buyer confirms the transaction. This causes the South African buyer to hedge his exposure before the confirmation of the trade by buying grain in the local market. Upon confirmation he will sell his hedge to the importer and take delivery of the imported product. This price action will often not be picked up by the market, as the exact tonnage imported is not in the public domain. The market will however pick up the initial buying pressure. This results in a skew favouring demand.

- Should an arbitrage opportunity occur between the international and the local price, an international trader would not be able to avail of that by selling international origin maize as he will not be able to deliver onto a hedge position on SAFEX if he is not able to find a local buyer. As these anomalies usually exist for a short period of time it is crucial that he will be able to settle a hedge contract in physical delivery if prices move away from the arbitrage position. Currently he will only liquidate his physical position by finding a willing buyer (miller) in South Africa. Clearly in a fast moving market this can be very risky as prices might move adversely before he can find a buyer. This inhibits arbitrage activity.

- South African maize trades at a premium in the international market due to mainly quality considerations during any given trading year. The premium over the international market differs from time to time based on a number of factors, which causes it to be larger or smaller than the long-term premium. This results in the entire crop being priced at the ruling premium even if only a relatively small proportion is exported on premium order. These transactions are also not always in public domain.

How to achieve Parity Pricing?

In the process of price discovery it is clear that provision must be made to determine what the actual premium on South African origin white maize is from time to time. The market also needs to be able to arbitrage international origin white maize with South African maize in order to create a truly market based import parity price. Currently the contention is that the international market delivers inferior quality white maize compared to local production. This opinion is vested in perceptions on quality and the genetically modified (GMO) nature of the international market. These quality issues are addressed through the phytosanitary requirements imposed by Trade and Industry and enforced by Customs on maize of international origin.

The argument for the introduction of a "non-African Origin" maize futures contract

Although not the perfect solution the introduction of a "non African Origin" maize futures contract may solve some of the aforementioned issues in a market friendly manner. This contract will be substantially the same as the current listed contract with the only difference that delivery of other (or US origin) maize will be allowed in order to achieve physical settlement of a futures contract. This will be achieved in the current fashion through grain storers issuing the certificate based on the agreed grade. Technically a grade two classification would allow the Co-operatives to store foreign origin with South African stocks of grade two quality, which the Co-op industry separates from grade one maize as a rule.

The exchange already has a grade two maize contract as a listed instrument. Consequently a technical adjustment will be the only requirement in order to achieve delivery.

Advantages

- The major advantage on the introduction of such a futures contract will be the access to northern hemisphere maize whenever there is a regional shortage, which causes our market to revert to import parity. This will obviously ensure regional food security in a transparent fashion.

- The market will determine the premium on local production in a transparent and market related fashion, which will not result in a "supernormal" premium for an extended period of time. This will result in dynamic pricing of a factor (premium or discount) that the majority of market participants cannot obtain information on at present.

- The choice of using imported or domestic maize in the milling industry then becomes a factor of price as the market chooses between essentially two different products. If imported maize is indeed of a lesser quality then milling losses will cause a discount to South African origin. The size of this discount will compensate the buyer for any losses, which in turn will result in substitutability.

- No single entity would be able to squeeze the market by exports or lower crop forecasts in the event of adverse weather conditions.

- Although imported maize might be quality deficient this in itself should not disallow physical settlement. Maize is frequently imported to South Africa, as is the case at present. Delivery onto a futures contract will not depart from current quality standards. It is intended that the imported product be of the same quality as is currently required by customs and market practise.

- The price premium on white maize will also in all probability distort the production of yellow maize as the difference in price amounts to more than R 400 – 00 per ton at present. As these products are physically essentially the same the country would in all likelihood import Yellow maize for the feed industry. It will make a little difference whether this maize reaches the market via over the counter contracts or through delivery onto a futures contract through SAFEX. The benefit through the exchange will be the transparency of the process and the quantity delivered, which ensures long-term price conversion between the local and the international market.

- Finally a price risk instrument will exist for the international trade to hedge price risk in the sub region. As maize is frequently imported to SADEC a local futures contract allowing international delivery would go a long way to manage price risk exposures for international commodity traders.

Conclusion

Although the introduction of an international origin maize futures contract will not alleviate absolute price pressure due to external factors, it will allow a transparent price discovery mechanism for determining true premiums and discounts based on the global grains market. This will allow the market to be immune against individual players and perceptions and to exercise free choice. As such, the rules of global supply and demand would rule in a very expedient fashion. Ultimately this would contribute to regional food security in a transparent fashion without a need to resort to interventionist policy. This would be to the benefit of all market participants in the long run.