Changing Food Consumption Patterns and its Implications on Agribusiness in Sri Lanka

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Changes in food consumption patterns in any given country are an important indicator of developmental changes. Such changes are mostly an outcome of increased income, which in turn have implications for the agribusiness sector, especially in terms of production, processing and trade. The objective of this paper is to primarily analyze changes in the food consumption patterns of Sri Lanka and indicate how they could influence the progress of the country's agribusiness sector. Data show a declining ratio in cereal-protein and an increase in meat-protein, and animal-protein ratios. Consequently, there is potential for a higher demand for processed, ready-to-eat meals, or food types that can be easily prepared. Sri Lankan agribusiness needs flexibility to accommodate such changing consumption patterns.

Introduction

Food consumption patterns in any country are generally considered to be an important indicator of developmental changes. The behavioral pattern in food consumption related to a given stage of development, notwithstanding other changes unique to a particular country, has found to be very similar. Sri Lanka (SL) is no exception to this general trend. This study proposes to analyze food consumption patterns in SL during the period 1970-1999 and assess their implications for the agribusiness sector in the country. The required data for the study have been obtained from *Food Balance Sheets* for the period under review, published by the Department of Census and Statistics of SL.

Though SL is basically an agricultural economy, it is a truism that during the post-independence developmental era, the local production of food had been insufficient to meet domestic demand. Large quantities of food have annually been imported making SL a net food importing country. Apart from the legacies of a general neglect of the food-producing sector during colonial times, another reason behind such large-scale imports had been the concern the ruling governments had over escalating food prices and the ensuing rise in the cost of living with political overtones. Items like rice, potatoes, and onions have been imported during off-peak periods mainly to arrest higher prices in the market. In addition to these basic commodities, other items imported included wheat flour, sugar, red lentils, dried milk powder, fish types etc. The entire wheat flour and red lentil requirements are imported. Although some sugar is manufactured locally, it is only a minor fraction of the total needs and nearly 80% of the sugar requirements is obtained through imports. Tinned milk powder (whole dried) is the other heavy importing item. The domestic milk production is very limited and it is capable of meeting only around 20% to 25% of the country's requirement of milk and milk products. Further around 70% of dried and salted fish and the entire quantity of tinned fish are imported into the country. In addition, smaller quantities of meat types, margarine, and fruits are also imported. The nature of demand for food is an important stimulant in making production decisions. A proper identification of food consumption patterns can therefore be a useful guide in improving the local agribusiness sector.

Theoretical Aspects of Food Consumption

A general tendency observed in development has been that while per capita income and urbanization increase, population growth rate exhibits a decreasing trend. Food consumption patterns are highly influenced by all these indicators. Rising per capita incomes as well as increasing urbanization change the nature of food demanded. Whereas population growth, in terms of people's numbers and age-sex structure, affects both quantity and quality. Other demographic characteristics like aging of the population and the proportion of immigrants can also be correlated to changes in food consumption.

Engel and Bennett have individually put forward significant theories regarding the relationship between patterns of income and changes in per capita food consumption. The Engel's law states that the proportion of the family budget devoted to food declines as income increases implying that the income elasticity of demand for food is less than one. Whereas Bennett's law posits that the staple ratio (the proportion of calories an individual derives from staples) declines with rising incomes (Mitchel et al., 1997).

Moreover, as income rises consumers desire variety in diet and quality in food intake making non-staples more important. At higher income levels, taste and health characteristics too play an important role in consumption decisions. Another feature is that there is a general rise in demand for food that requires less preparation time.

In addition to the above, mention can also be made of the analysis undertaken by the McKinsey School where an attempt was made to relate changes in food consumption to development (Taylor & Findlay, 1996). Its emphasis has been on two distinct relationships in terms of growth in GDP per capita. While the first deals with growth in per capita food consumption, the other considers possible dietary changes.

On the growth in per capita food consumption, two interactions could be mentioned. First and foremost, the priority is for nutritional needs. Then, convenience, health and image become important. Although there is within these changes an inclination for the rich to spend more money on food, the additional expenditure is usually absorbed by packaging and presentation than by the actual content. Dietary changes can also be divided into two kinds. On the one hand, the nutritional balance in food consumption is subject to change. The emphasis is now more on animal protein with a high content of fat, oils and sugar. There is also a high demand for more processed foods. The other change relates to food habits. A Western orientation especially in Asian eating habits is increasingly noticeable creating a demand for such food products. With growth and rising standards of living there is more acceptance of Western eating ways.

Urbanization influences the pattern of food consumption in several ways. Changes in earnings, life style, and shopping facilities are but a few of those which could be mentioned (Rae, 1995). Advertising is a key component of the urban way of life. The processed food market owes very much to advertising in terms of reaching the consumers. An obvious outcome tends to be a consumption pattern with less of staples and more of processed items. In the Asian context this has reflected in higher income urban consumers showing a preference for substituting rice with other food items. The rural consumers however tend to retain a diet with a higher proportion of staples. The trend is also observable among the poorer sections of the urban dwellers - the blue-collar workers and the large number occupying the informal sector. Here, a relationship between the occupational pattern and the level of staple food consumption can be established (Bouis, 1991, 522). When the occupational structure requires a greater amount of energy it results in higher consumption of staples than any other form.

Mitchell et al., (1997) have identified three broad stages in the transformation process of diets:

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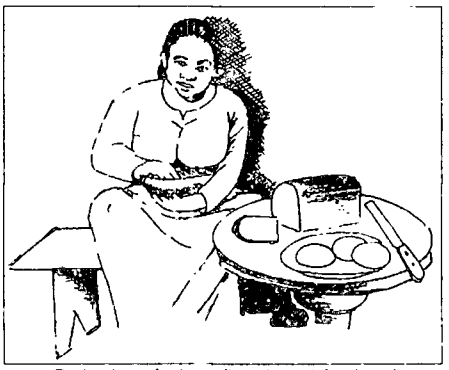
during the first stage, wherever cereals and starchy roots combine to form the staples, the consumption of cereals increases at the expense of root crops. In stage two, when increases in incomes are registered, the cereal consumption moves toward its peak, while root crops continue to decline. But, on the other hand, non-traditional food consumption expands. The intake of cereals during this stage is either stable or subject to only a marginal increase, whereas, the consumption of livestock items and other products rapidly increases. Moving on to stage three, while a decline in the per capita intake of cereals is observed, livestock products continue to register an increase. To these three, Rae (1995) has added a fourth stage where health concerns influence a shift away from at least some livestock products towards substituting them with cereal-based items.

Gender studies reveal a further factor determining food consumption patterns. It relates to the opportunity cost of time for women (Senauer et al., 1986). When more women come forward to join the workforce, the nature of demand for household food commodities undergoes a change. The compulsion is more for convenience foods with varying degrees of processing at the expense of raw unprocessed items.

Consumption Pattern of Cereals

SL is multiethnic in character consisting of not only different races but also many religions. Each socio-religious group has certain unique food habits. Yet, there is an outstanding element that is common to all. It is the consumption of rice as the staple diet. Rice is always taken as the base food with other food items such as vegetables, fish or meat, which are cooked into a curry. A combination of these items determines the food consumption pattern of SL.

Rice is the primary source of carbohydrate providing the necessary calories. In 1970, per capita consumption of rice was estimated to be 109.84 kg per year, yielding 1,030.34 calories per day. This accounted for 45.57% of the calorie intake. After nearly three decades, in 1999, despite the increase in population from about 12-19 million, per capita consumption of rice has declined to 100.2 kg per year, clearly reflecting a change in the pattern of consumption of the commodity. The amount of calories coming out of rice too has declined to 948.10 per day, which accounts for 40.65% of the daily calorie intake. The change has mainly been caused by a shift from rice to wheat. Wheat flour has gradually become



Reduction of wheat flour based food and increase of rice based foods is one necessary condition for the country's self sufficiency.

the most predominant among cereal food items. A major contributory factor has been the ease with which wheat preparations, compared to rice, could be made. Another reason has been the cheapness of the commodity. But it is an item that is entirely imported. Import figures are a clear indication of its popularity. In 1970, wheat flour imports amounted to 374,550 Mt but by 1999, imports have increased to 682,520 Mt. **Figure 1** shows the changes in per capita consumption of rice and wheat flour.

The other main cereals consumed in the country are maize, sorghum, and kurakkan and meneri. Production of maize, during the period 1970 to1999, has dropped from 14,410 Mt to 31,470 Mt. Yet, maize that was not imported in 1970 has shown an annual import level of 125,630 Mt in 1999. The increased usage is mainly due to its popularity as an animal feed, which during the 1970-99 period grew from zero to 89,920 Mt. The rest of the cereals, on the other hand, are entirely used for human consumption. During the period under review, production of other cereals has declined significantly. During the pre-1977 period consumption of kurakkan and meneri has gone up significantly and it could be due mainly to the lack of availability of complementary food types during that period. However, along with the liberalization level of consumption has gone down. By overall, kurakkan and meneri along with other grains showed a combined drop in per capita consumption during the period 1970-99 where the per capita consumption levels have dropped from 0.94-0.22 and 0.24-0.01 respectively. **Figure 2** shows the per capita consumption of maize, sorghum, and kurakkan and meneri over the period 1970 to 1999.

A definite conclusion emerging from the pattern of changes in the consumption of these cereals is that they have, during the period under consideration, become substandard commodities. They have over the years been replaced mainly by wheat and also, to a certain extent, by rice. Longer preparation time involved may be one reason for the constant lower demand for the product leading to a decline in production levels. Yet, it is difficult to conclude whether their inferior status is a direct outcome of development in the country. The major reason seems to be the induction of wheat and its consumer attraction in terms of usage and economy. The curtailed use could perhaps be due to a combination of both development and substitution.

Consumption Pattern of Roots and Tubers

Potato, manioc, yams, and sweet potato are the most common varieties of roots and tubers used for consumption in SL. Except for potato, the demand for others are generally met from supplies within the country. Even with potato there is now a conscious effort to fulfill the entire need through domestic production. Nevertheless, lower production levels during certain periods have led to imports. In 1970, local potato production was around 31,740 Mt, which has, by 1999, decreased to 27,170 Mt. During the same period, potato imports have increased from zero to 128,860 Mt. Significantly raised imports clearly indicate that there has been a positive increase in per capita potato consumption where the consumption levels have shot up from 1.88 Kg per year in 1970 to 7.15 Kg per year in 1999. Yet, in some years the increase has been moderate. This may be due to a lower consumption of the commodity during certain periods, caused mainly by policy decisions, which severely curtailed imports. If free market conditions are allowed to prevail, it is possible to use potato consumption as an indicator of developmental changes. A higher use of potatoes can always be linked to an increased standard of living. Nevertheless, one has to be cautious in making hasty conclusions because, like wheat flour, potatoes too

Figure 1: Consumption of Rice and Wheat Flour Per Capita 1970-1999

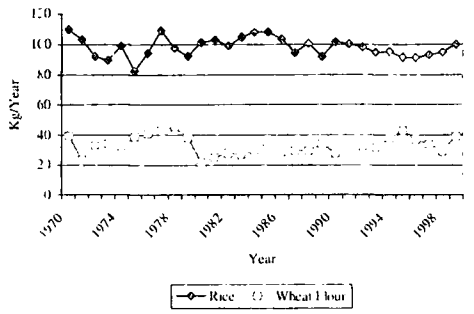
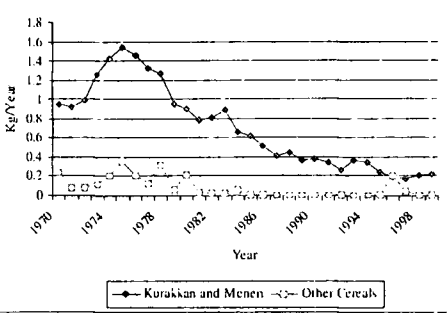
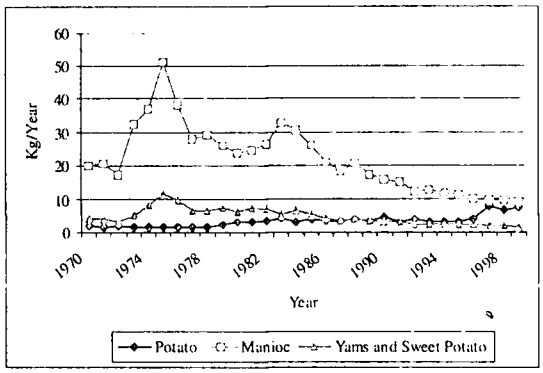


Figure 2: Consumption of Kurakkan, Meneri and other Cereals Per Capita 1970-1999



have the added attraction in terms of food preparation. This would have had the effect of neutralising other factors and increased its usage. Notwithstanding such considerations, its introduction has however displaced other roots and tubers of an indigenous variety. Manioc, yams, sweet potato etc. have all been casualties and condemned to an inferior status. Moreover, potato has greatly contributed, along with wheat, towards Westernization of food habits. Consequently, it is in constant demand in the growing fast food outlets located mainly in Colombo and its vicinity.

Figure 3: Consumption of Potato, Manioc and Yams and Sweet Potato Per Capita 1970-1999



On the other hand, the production of manioc though still significant, shows a declining trend. In 1970, the production level was 353,750 Mt, which has however, by 1999, almost been decreased to 251,510 Mt. Manioc usually served human consumption but it is not uncommon that in certain years a smaller proportion went towards animal feed. In 1970, the per capita consumption level was19.79 Kg and, in 1999, this had declined to 9.25 Kg. Like manioc, yams and sweet potato production has also been reduced. During the period under review, their output levels plummeted from 72,160 Mt to 41,590 Mt. This has resulted in a decreased per capita consumption of 4.04 Kg in 1970 to 1.53 Kg in 1999. **Figure 3** shows the changes in per capita consumption of roots and tubers during the period 1970 to1999.

The figure shows a sharp declining trend for manioc consumption, and a slightly lesser one for yams and sweet potato. Such reductions in the intake of inferior roots and tubers could perhaps be considered as another indication that the country had climbed a further step in the development ladder. The results are easily comparable with the experience of more advanced countries. Yet, it could well be due to, as discussed earlier, the substitution of potatoes for entirely different reasons. It is nevertheless safe to attribute the switch to both enhanced levels of living as well as to superior qualities of the potato in terms of palatability and preparation.

Consumption Pattern of Fruits and Vegetables

Even though, SL is the home of a large variety of fruits a perusal of the total production of fruits during the period under review shows that it has subject to very high fluctuations. For example, the recorded production level of 147,360 Mt in 1970 had dramatically dropped to 43,490 Mt in 1990. Again, in 1999, it rose to 143,390 Mt. During the interim when production was so low fruits had to be imported. Especially, the introduction of fresh imported fruits like apples, oranges in the local market enhanced the consumer demand for fruits. This is clearly evident from the escalated fresh fruit imports from 1,370 Mt in 1991 to 19,030 Mt in 1999. Thus, fruit consumption itself increased from 2.67 Kg to 8.23 Kg between 1991 and 1999. Figure 4 shows the changes in fruit consumption over the period 1970-99.

The internal production of vegetables is entirely sufficient to meet local needs. But, on the other hand, a small proportion, both in fresh and processed forms, could also find an export market. A clear example of the evolving export market had been the Middle East where there was a growing concentration of the SL migrant labour. In 1970, the vegetable production (except onions) was estimated to be 799,860 Mt but in 1982 it has nearly halved to 487,800 Mt. However, it has shot up again to 860,390 Mt in 1983 raising the level of consumption. But, since 1988 it recorded a sustained decline through to 1999 and reached a level of 685,340 Mt. Within this period of continuous slide, the year 1989 stands out, when production levels during the year dropped sharply from 969,120mt in the previous year to 558,820 Mt. The reasons for this could, as discussed below, perhaps be political. But this have had an overall impact on the per capita consumption of vegetables during the period under review.

Figure 4 reveals that per capita consumption of vegetables has risen in 1983 and remained almost alike until 1992. A sharp drop has observed in 1989. Similarly, in fruits a sharp decline could be observed in 1989 and then increased in 1992 and remained constant around the same levels. The reasons for this are not entirely clear. Yet, it could be conjectured that they are more political in nature than economic. The causes beyond doubt could be linked to the prevailed ethnic conflict and how the Northern and Eastern Provinces that contribute substantially to the total supplies of fruits and vegetables were affected. Acute shortage of supplies led to higher prices which, ultimately translated into a drop in consumption levels. In fruits, though the declining consumption was met by imports, the experience could not be reciprocated with regard to vegetables. This difference too is somewhat reflected in the graph. In the post-1989 period, while the consumption of fruits records some increase, the trend is conspicuous by its absence in the case of vegetables.

Consumption Pattern of Meat

Meat consumption in SL, like many other countries of the developing world, is generally affected by religious beliefs. Even within one single religion, there are sometimes differences in the pattern of consumption. The most commonly consumed meat varieties in SL are poultry, mutton, beef, and pork. During the period under consideration, both beef and mutton show little variation in their production patterns, whereas, the production of pork shows a marginal increase. The most marked increase had however been in the production of poultry. It has risen from 2,940 Mt in 1970 to 56,880 Mt in 1999, nearly a twenty-fold increase. This remarkable rise had in fact been a response to a higher market demand for poultry products, especially chicken. The higher demand is clearly reflected in the consumption figures for the period. The per capita consumption increased from 0.23 Kg in 1970 to 3.09 Kg in 1999. The phenomenal change in the consumption pattern of poultry products is consistent with the experience of developed countries where there is now an increasing trend towards consuming white meat for health reasons. Although the SL increase cannot fully be attributed to such concerns, there is no denial that it could perhaps be one among a few other reasons. A major cause had undoubtedly been more awareness of the nutritional needs of the human body and the contribution animal proteins could make in this respect. The popularity of poultry products, compared to other meat types, is also mainly due to the fact that its consumption is not subject to any religious constraints within the meat-eating population in the country.

The per capita consumption of beef, mutton and pork show a marginal change during the period under review. Mutton and pork consumption have increased from 0.08 Kg to 0.12 Kg and 0.05 Kg to 0.09 Kg respectively. The Beef consumption on the other hand exhibited a mini-

Figure 4: Consumption of Vegetables and Fruits, Per Capita 1970-1999

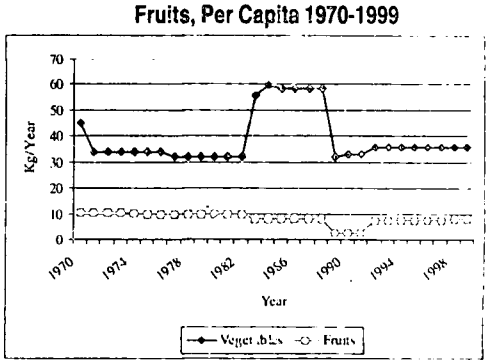
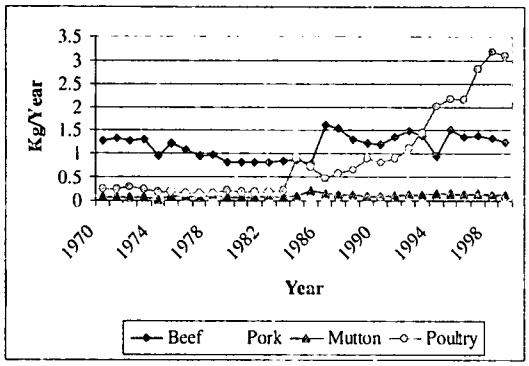


Figure 5: Consumption of Beef, Pork, Mutton and Poultry, Per Capita 1970-1999



mal decrease from 1.28 Kg in 1970 to 1.24 Kg in 1999. The pattern of variation in the per capita consumption of the different meat types is shown in Figure 5.

Common Patterns in Food Consumption

In SL, cereal consumption, compared to other foods, is at a higher level. Yet, within this category, while rice consumption displays a declining trend, wheat consumption is subject to a sustained increase. The pattern is almost consistent with other high performing Asian countries. Some of the major rice-eating countries like Singapore, Thailand, Malaysia, and Indonesia reveal a declining trend in rice consumption substituted by wheat. In China, though there is no comparable drop in rice intake, consumption of wheat has increased. The substitution of the staple cereal rice with non-staple cereals such as wheat flour in SL is no doubt compatible with the consumption patterns relating to increased incomes. But unfortunately, other indicators of development, including political, have pushed SL to a more backward position. The cereal consumption of a country, according to Mitchell et al. (1997), remains almost constant until that country advances to a stage where it is categorized as belonging to the highest income group. SL, still with its low-income status, cannot therefore expect much swift change in its cereal consumption. It is reasonable to surmise that the existing pattern would be sustained for a long time without yielding to high levels of fluctuation.

The consumption pattern of roots and tubers is consistent with the development experience of a majority of other countries. As cereals increase as items of importance, there has always been a commensurate decline in the consumption of roots and tubers. This implies, as indicated earlier, a transition from one growth stage to another, which SL has undoubtedly attained.

With the acceleration of the development process, the fruit and vegetable consumption too should show an increasing trend. But of the two, vegetable consumption exhibits an opposite pattern to what is anticipated. This could be, as already mentioned, due to restricted production levels and the absence of any attempts to replenish the deficiency through imports. On the contrary, a newly emerging trend of exporting vegetables was underlined. This would have no doubt further exacerbated the declining consumption outcomes. The fruit consumption, on the other hand, is consistent with the development experience. Although output levels were not very different from vegetables, consumption was maintained at a healthy level through additional imports. Meat consumption is another area governed by the pace of development. It tends to increase with rising income levels. SL meat consumption levels have traditionally been very low. Economies that go through a rapid development process have always shown significant increases in their meat consumption. In SL, while poultry consumption shows a steady rise, increase in mutton and pork has been very moderate. Beef consumption, at the same time, shows a declining trend. Apart from other factors emanating from the development path, increased health concerns could be an additional factor influencing these trends. But it needs to be emphasized that more awareness about health is also a function of ongoing development. Almost similar patterns of meat consumption, especially with respect to poultry, have been experienced by countries like Thailand, Malaysia, Indonesia and Brazil.

There are three major indicators that determine the changes in food consumption patterns: cereal-calorie ratio, cereal-protein ratio, and livestock-protein ratio. In a normal development path with escalating incomes, cereal-calorie ratio and cereal-protein ratio will decline whereas the livestock-protein ratio will increase. The food consumption data on SL show that cereal-protein ratio, and meat- and animal-protein ratios (within the livestock-protein ratio) have behaved according to expectations (Table 1). During the period under review, the cereal-protein ratio has declined from 60.78% to 53.60%, meat-protein ratio has increased from 1.43% to 5.13% and animal-protein ratio (includes fish, eggs and milk) has increased from 19.41% to 28.02%. Even though, there is an overall marginal decline in the cereal-calorie ratio, intermediary years show a significant decline. This could be attributable to policy changes that have enhanced the consumption of cereals.

It could be mentioned that SL's food consumption patterns demonstrate some similarities with other highly developing countries. The rate of urbanization in SL is relatively stagnant and was estimated to be at around 22%. Consequently, its impact on the food consumption patterns, unlike in other countries, may be very low. The per capita income level, a good indicator of living standards, shows that SL has, during the period under review, achieved a higher standard of living. There had been a steady progress in income levels. A higher cost of living however brought about a decline in the real GDP. Any increase in per capita income levels usually leads to enhanced consumption, which translates itself into raised living standards. It could therefore be concluded that higher per capita incomes have been a major contributory factor towards shifting consumption patterns in SL. Its experience has been no different from other countries in a similar position.

Another observable phenomenon along the development path has been the Westernization of the Asian diet. The SL experience is again not very far from what is witnessed in a number of other developing economies. A clear indication of this is the rapidly opening internationally reputed Western fast food outlets mainly in the urban centers. But, notwithstanding the preference for Western orientation, there could be other reasons too. One of those could perhaps be the need for quickly prepared food to conserve both time and energy. There is also a growing habit of eating out. In addition to the more reputed fast food outlets like the Kentucky Fried Chicken, McDonalds and Pizza Hut, there has been a mushrooming of take-away food shops (both Oriental and Western) in and around Colombo and also in the other major towns. This could indeed be interpreted as another symptom of socioeconomic progress. It signals, apart from the acceleration in economic activity, increased participation of women in employment and thus an improvement in their gender status. The demonstration effect created by global exposures through the advancement of modern communications (mass communication media not excepted) too would have played a role. Tourism and travel certainly exacerbated the tendency. Clearly, this is an area that needs further analysis and research.

Table 1 Major Indictors of Sri Lanka's Food Consumption Pattern 1986-1996

	1970	1980	1990	1999
Cereal-calorie ratio (%)	58.84	54.95	55.46	57.95
Cereal-protein ratio (%)	60.78	54.51	50.77	53.60
Meat-protein ratio (%)	1.43	1.60	2.61	5.13
Animal-protein ratio (%)	19.41	22.67	24.61	28.02

Conclusion

Changes in the pattern of consumption are an important source that could influence agribusiness planning. At a primary level, before production and import decisions for agricultural commodities are made, the nature of demand for food needs to be carefully analyzed. At the subsequent stage, they have

implications for processing of food extending into the agribusiness sector. When incomes increase consumption patterns and consumer attitudes will generally reflect the experience of economies already developed, subject to both religious and socio-cultural norms. A high demand for more processed as well as convenient foods is a usual expectation. Yet, it cannot be fulfilled without the assistance of a viable agribusiness sector. Our study has identified some of the emerging patterns of food consumption in SL. Despite the acute nature of the political problems, the study clearly reveals a range of healthy developments underlining the potential for progress in the agribusiness sector. Cereal consumption could for example occupy a position of priority for some time. Consequently, there will be sufficient opportunity for more initiative and innovation in agribusinesses relating to this pattern. An expanding market for instant preparations like noodles, string-hoppers, hoppers etc. is always a possibility. Increasing level of poultry consumption too provides the potential for variety of businesses that could compete with the more popular fast food outlets through cheaper and quality items. They could also concentrate on preparations more suitable for the local palette.

It is the contention of the authors that the food processing, in contrast to food production, has not received the attention it deserves. Even the little that had occurred is concentrated primarily in Colombo and to a lesser extent in the other major towns. There is a unique absence of uniform national distribution. With increased development, a comprehensive plan of food distribution that includes not only production and import of food commodities, but also food processing is indispensable. Such a processing agenda first and foremost needs to be based on food consumption patterns of people. It could then be tied to the major sectors of the economy: agriculture, industry, and services. Even with regard to exports, there is an urgent necessity for countries to move away from unprocessed, bulk food to more processed and ready-to-use items that could satisfy immediate consumer needs. SL, both as a major exporter of primary (food) commodities and a producer of agricultural commodities for local food consumption, this should be an area of serious concern.

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