

The Inflationary Implications of Crop Failure

RICHARD C. PORTER*

INTRODUCTION

In discussions of the economic problems of underdeveloped countries, the thinking of layman and of professional economists often diverges widely. Nowhere is this disagreement more patent than in the case of food production and its effects upon the price level. In government agencies, newspapers, and public discussions, the view that bad crops "cause" inflation is ubiquitous, while economists are usually quick to point out the difference between movements in relative prices and the general price level.

The economists' view is sophisticated and requires elaboration. For nearly a century, there has been a division of economic problems into two basic categories: those concerned with the value and production of particular commodities relative to other commodities; and those concerned with the total production of an economy and the general price level of the output. There is now an extensive theory of the effect of a decline in the output of a commodity (e.g., food) upon its price. Under most conditions, one can safely predict that an autonomous¹ reduction in the output of food will induce a rise in the price of food *relative to other prices*. But there is no reason to expect a rise in the general price level; for that is determined by another theory—a theory which does not concern itself with production of particular commodities, but rather with total production in the economy.

If food output were a small part of this total production, the economist would say that the overall price level is not affected by a decline in food output; the rise in food prices, even if large, would be offset by slight declines in other prices² so that the general price level would remain stable. Food production in Pakistan is, however, no small part of total output. Thus, a decline in food production almost always implies a decline (though by a

*Dr. Porter is Research Adviser to the Institute of Development Economics. He is grateful to Abdul Majid Khan of the Economic Affairs Division, Ministry of Finance, Government of Pakistan, and to S. U. Khan and M. U. Chapra, both of the Institute of Development Economics, for helpful suggestions. He alone is responsible for the errors that remain.

1. An "autonomous", or "exogenous", movement merely means that it is not capable of economic explanation (at least within the context of the theory being discussed).

2. Not all other prices would fall by the same amount; some might even rise. But the general tendency would be for other prices to fall.

smaller percentage) in total output of the economy, and, other factors remaining unchanged, a rise in the general price level. When the economist says this, however, he is not agreeing that a fall in food output "causes" inflation; once food production regains its former level, traditional economic theory asserts that, again if other factors remain unchanged, prices will decline to their previous levels.

The purpose of this paper is to suggest that economists have paid insufficient attention to these "other factors" which, if unchanged, keep poor crops from permanently affecting prices. The very fact of a bad food crop in a particular year³ may cause changes in "other factors" which are irreversible; if this is so, the bad crop may cause a permanent rise in the general price level (and perhaps even a permanent *series* of rises in prices). The layman's feeling that crop failures *cause* inflation may be essentially correct though, as is often the case in economics, it is not easy to know the dancer from the dance.

It is important to insert here a few words about the "prices" we shall be discussing. Something like two-thirds of the normal value of Pakistan's total national output is food, and about two-thirds of that is consumed by its producers. "The price of food" is, therefore, determined in markets through which passes only about one-third of the nation's food production; "the price level", a weighted average of the prices of food and other commodities, is, therefore, determined in markets through which passes only about one-half of the nation's total production. Thus, the prices we will discuss are marginal prices, though certainly not in so extreme a sense as are, for example, Karachi gold exchange or Bonus Voucher prices. Implicit throughout this paper is the assumption that these prices have effects upon the economic behaviour of many who buy or sell little through these markets; in other words, the "non-monetize" or "un-organized" sector is assumed to be neither insulated from nor impervious to the prices set in the markets of the organized sector. From this it follows that any effort to control Pakistan's economic destiny requires knowledge of the causes of change in food prices and the price level.⁴

SECTION I

Poor crops mean high food prices—a statement safe to make but hard to quantify. Even the question whether a decline in food production by a

3. Throughout this paper, a bad food crop will be taken to mean general food shortages (although efforts to alleviate the shortages through food imports will be discussed in Section III). In Pakistan, a crop failure in one season may be partly offset, within the year, by the bounty of a later season; we are here concerned with a *year* of, on the whole, inadequate food crops.

4. It is also important to study the effects of such price changes upon investment and growth, but this is beyond the scope of this paper.

given percentage will induce a greater or smaller percentage rise in food prices cannot be unequivocally answered⁵. This fact, surprising since food

5. Study of the 1950s does not help too much. Given in the table below are indices of food production of the preceding year (on the assumption of a lag in distribution) and wholesale prices (primarily food items).

Year	Food Production of Previous Year	Wholesale Prices	Percentage Change of Food Prod.	Percentage Change of Prices	Elasticity
	(1)	(2)	(3)	(4)	(5)
1951-52	100	100	*	*	*
1952-53	90	107	-10	+ 7	-.70
1953-54	90	89	0	-17	*
1954-55	107	70	+19	-21	-1.10
1955-56	97	88	- 9	+26	-2.89
1956-57	88	116	- 9	+32	-3.56
1957-58	106	113	+20	- 3	-.15
1958-59	100	118	- 6	+ 4	-.67
1959-60	95	123	- 5	+ 4	-.80
1960-61	110	125	+16	+ 2	+.13

* means incalculable.

Sources: Col. (1) Government of Pakistan, *Budget, 1961-62, Economic Survey and Statistics*. Table 2—"Index of Agricultural Production, Food Crops" (C.S.O.), converted to 1951-52=100.

Col. (2) See, Appendix C to *A Measure of Inflation in Pakistan 1951-60*. (Karachi: Institute of Development Economics, March 1961). Laspeyres Indices of the two wings averaged. Figure for 1960-61 from S. U. Khan and R. A. Khan, "A Note on Wholesale Prices, 1960-61," *The Pakistan Development Review*, Winter 1961, pp. 73-78.

Cols. (3) and (4) are the annual percentage changes of Cols. (1) and (2) respectively.

Col. (5) is not the usual elasticity calculation. It is the percentage change in prices divided by the percentage change in output, (Col. (4) ÷ Col. (3)), the exact inverse of the usual elasticity.

The figures in the last column offer no conclusive proof as to whether the "elasticity" of price response is greater or less than one. It is worth noting, however, that food output declines were always accompanied by raised prices; output increases were not consistently accompanied by lower prices. One must be wary about over-working such statistics as these—in Pakistan in the 1950s, there are distracting circumstances in every year.

certainly has a price-inelastic demand, results from the stabilizing adjustments of food stocks and imports which may more than offset the destabilizing decline in the marketed fraction of the food crop. Thus, we cannot say whether a fall in food output will cause a rise or fall in the incomes of farmers, even if the implicit money value of their self-consumed output is included.⁶

This inability poses a great problem, for it is important to know which groups gain and which lose in a year of poor crops. Of course, the nation must lose;⁷ and urban groups, both wage- and profit-earning, will surely suffer in at least the early stages of a rise in food prices (before any changes occur in industrial wages, production, sales, or prices). But it is not impossible that some or all food-producers will gain from poor crops. In fact, the distinction between a farmer who gains and one who loses with a decline in food production depends upon two factors: one, the rise in food price relative to the decline in his output; and two, the fraction of his crop

6. Let Y = the cash income of food-producers = $p(X-C)$, where p is food price, X is output, and C is self-consumption. Let Y' = the value of their food output = pX . Then,

$$(1-1) \frac{\Delta Y'}{\Delta X} = p \left[1 + \frac{\Delta p/p}{\Delta X/X} \right]$$

where Δ means the change from the preceding year and the product of two Δ 's is neglected. Y' will move in the opposite direction to X if, and only if,

$$(1-2) \frac{\Delta p/p}{\Delta X/X} < -1$$

Moreover,

$$(1-3) \frac{\Delta Y}{\Delta X} = p \left[1 + \frac{\Delta p/p}{\Delta X/X} \right] - p \frac{\Delta C}{\Delta X} \left[1 + \frac{\Delta p/p}{\Delta X/X} \cdot \frac{\Delta X/X}{\Delta C/C} \right]$$

Y will move inversely with X only if

$$(1-4) \frac{\Delta p/p}{\Delta X/X} < -\frac{1 - \Delta C/\Delta X}{1 - C/X}$$

Since $\frac{\Delta C}{\Delta X} < \frac{C}{X}$ (i.e., food growers generally increase the self-consumed fraction

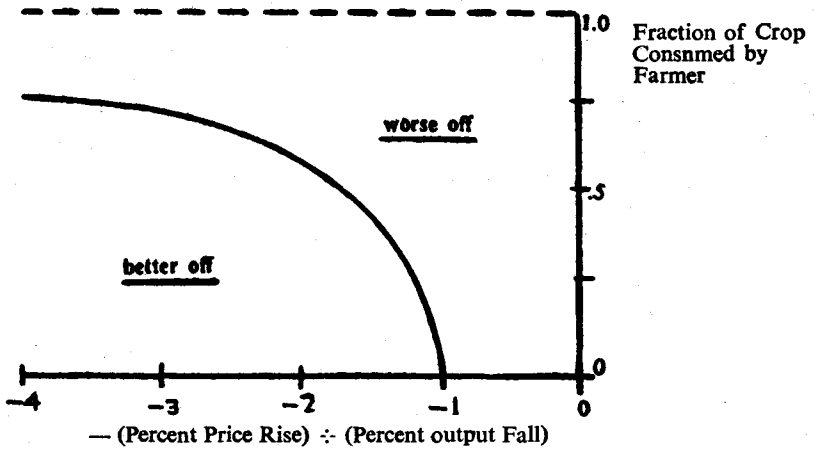
of their output in bad years).

$$(1-5) \frac{1 - \Delta C/\Delta X}{1 - C/X} < -1$$

and (1-4) is a more restrictive condition on $\frac{\Delta p/p}{\Delta X/X}$ than (1-2)

7. Barring the unlikely possibility that non-food production expands sufficiently to compensate people for the reduction of food.

which he consumes.⁸ The values of these two factors, which would just permit the farmer to consume the same amount of both food and non-food items as he could in the previous year of better crops, are shown in Figure I-1.



If all farmers' per cent output declines exceed the per cent price rise, then no food producer is better off, (*i.e.*, none can increase his consumption of at least some items without decreasing his consumption of others). If, however, the per cent price rise exceeds the per cent output fall, then some farmers may gain; they are more likely to gain (and gain more) the smaller the normal consumption of their own food crop. If price responds little to output declines, there will be few, if any, gainers; on the other hand, it is unlikely that price would ever respond sufficiently (three-fold), to make gainers of the vast majority of Pakistan's farmers, small-holders who consume more than two-thirds of their own crop. And, to those farmers whose crops have failed so calamitously that they become food purchasers, any rise in food prices merely augments their hardship. Thus, if any food producer gains from a bad food crop, it is the large-scale farmer who consumes an insignificant part of his own crop.

There are two other groups in the economy who may gain initially from

8. In the terminology of footnote 6, Y is the income available for expenditure on non-food items. If the farmer is to maintain both his food consumption (C) and his non-food consumption (Y), on the assumption that non-food prices do not change, then equation (I-3) must equal zero:

$$(1-6) 0 = \left[1 + \frac{\Delta p/p}{\Delta X/X} \right] - \frac{C}{X} \left[\frac{\Delta p/p}{\Delta X/X} \right]$$

$$\frac{\Delta p/p}{\Delta X/X} = - \frac{1}{1 - \frac{C}{X}}$$

a poor food crop. One, growers of crops other than food whose prices move sympathetically with food growers' either for supply or demand reasons. And two, non-producers whose incomes react favourably to rises in food prices. Each of these will be considered briefly.

The incomes of cash-crop (*i.e.*, non-food) producers may improve with poor food crops either because outputs of cash crops generally move inversely with food production or because the prices of cash crops move directly with food prices. Let us consider the output side first. The simple correlation coefficient between the percentage change in yield per acre of food crops and the percentage change in yield per acre of cash crops (annual, 1948-49 through 1959-60) is 0.43 in West Pakistan and 0.53 in East Pakistan.⁹ This suggests a fairly close relationship between the success of food and of non-food crops. But such a yield relationship is fraught with complexity. A shift in marginal acreage between food and non-food will by itself lower the yield per acre of the crop whose production is expanded and raise that of the other crop; if this influence could be removed, the yield per acre correlations might be larger. Experience over the past decade with government procurement has convinced administrators that farmers are not slow to rearrange production plans when prices and controls change.¹⁰ If the yields per acre of food and cash crops move readily and in inverse fashion as a result of economic and administrative factors, then they must move very similarly as a result of innovation and weather factors. Since we are concerned with an autonomous decline in food output, we will assume that a similar (but probably lesser) decline occurs in cash-crop production.

Then, whether the cash-crop producer gains or loses with poor food crops depends chiefly upon the movement of cash-crop prices in the face of poor cash crops. If neither food nor manufactured goods prices rose, the cash-crop farmer would be as well off as before if cash-crop prices were to rise by the same percentage as cash-crop production had declined. Since food prices will have risen, however, cash-crop prices must rise by a *larger* percentage than output falls if the cash-crop farmer is to be able to purchase the same amount of food and manufactured goods as before. How much larger

9. The data are taken from Ministry of Agriculture figures for production and acreage of principal crops in East and West Pakistan. Gram is included in food crops. See Government of Pakistan, *Budget, 1961-62, Economic Survey and Statistics*, Tables 5-8, pp. 5-8, Statistics Section.

10. Displays of "economic" behaviour by farmers are probably increasing but are certainly not new. In the 1920s, for example: "... owing to the boom in cotton produced by the [First World] war, the area under it in the [Punjab canal] colonies trebled in five years, and in a single year, when prices dropped, it fell by 600,000 acres. Similarly, the low price of raw sugar in 1923-24 led, the following year, to a reduction of 80,000 acres in the area under sugarcane." M. Darling, *The Punjab Peasant in Prosperity and Debt* (Oxford, 1925), p. 153. See also R. Clark, "The Economic Determinants of Jute Production", F.A.O. *Monthly Bulletin of Agricultural Economics and Statistics*, Sept. 1957, pp. 1-10.

depends upon several factors.¹¹ But the same conclusion may be reached concerning the cash-crop farmers as the food producers, namely, if any farmers are better off in a year of poor crops, it will probably be those with large holdings whose food consumption is a small fraction of their total income.

There is another, diversely composed, group that may gain by poor food crops and the concomitant rise of food prices—rural money-lenders, land-rent receivers, food wholesalers (rural and urban), and food speculators. Despite the great interest the Pakistan governments have shown in these people, very little is known of the conditions under which they specially thrive. Some surely benefit from rising food prices; for others there is a question whether the higher prices are a sufficient offset to the effects of declining output (and marketed share). Here it is only noted that this group should not be overlooked during the enumeration of gainers and losers from crop failures.

SECTION II

In this section, we will try to find the effect upon consumption patterns of an autonomous decline in food production. We will continue to assume, for a while longer, that prices, wages and production in urban manufacturing are unchanged; and we will use the conclusions of the previous section that certain rural groups, primarily large-scale farmers, may be better off as a result of the output decline and price rise of foods. Nevertheless, a vast majority of the population, and especially those who are initially poor and/or urban, will suffer a decline in real income (however measured).

That this vast majority will struggle to keep its already-low food con-

11. Let p_c , p_f , and p_m be prices of cash crops, food, and manufactured items respectively; X_c is the farmer's output of cash crops; and C_f and C_m are his consumption of food and manufactured items. If saving and self-consumption of cash crops are neglected, the cash-crop producer's budget equation is:

$$(1-7) \quad p_c X_c = p_f C_f + p_m C_m$$

If p_m is again assumed initially unchanged, then being as well off as or better off than before (*i.e.*, neither C_f nor C_m needs to be reduced) implies:

$$(1-8) \quad \frac{\Delta p_c / p_c}{\Delta X_c / X_c} < -1 + \frac{p_f C_f}{p_c X_c} \cdot \frac{\Delta p_f / p_f}{\Delta X_f / X_f} \cdot \frac{\Delta X_f / X_f}{\Delta X_c / X_c}$$

Thus, unreduced welfare for the cash-crop farmer in a year of generally poor crops requires a larger rise in cash-crop prices (1) the larger the fraction of his income he spends on food, (2) the greater the rise in food prices relative to his output decline, and (3) the smaller the decline in cash crop production relative to food production. Of course, the effect of this last term is reversed if cash-crop output *rises* in a year of poor food crops; then unreduced welfare does not require the per cent rise in cash-crop prices to exceed the per cent fall in output.

sumption from declining too much is certain. Whether this phenomenon is labelled as a low marginal propensity to consume food (out of real income) or as low price and income elasticities of the food demand schedule¹² is not critical. It will in any case mean that, for most families, the percentage quantity decline in food consumption will be much less than the percentage food price rise which causes the quantity curtailment. A larger fraction of money income will be devoted to food purchases.¹³ A part of [this increased expenditure will be at the expense of saving (or through dis-saving); but past savings are not large in those low-income groups which are most affected. The total expenditure of the urban workers and poorer farmers upon goods other than food must decline.

Will this reduction in expenditure on manufactured goods be offset by an increase in such expenditure by wealthier groups in the economy, some of whom are better off as a result of the crop failure? Probably not, for several reasons. One, people with already high incomes are slow to revise upward their consumption plans, especially as a result of a temporary expansion of income. Two, whatever expansion does occur will very likely occur at least as much in services as in manufactured goods, and no small

12. Though using a demand curve for a commodity so important in consumers' budgets is dangerous.

13. Except in unusual circumstances. Assume that, for a particular family, real food consumption (C_f) may be written as a function of real income (Y/p , where Y is money income and p the consumer price level).

$$(II-1) C_f = F \left[\frac{Y}{p} \right]$$

Then, the fraction of money income spent on food is E_f :

$$(II-2) E_f = \frac{p C_f}{Y} = \frac{p}{Y} F \left[\frac{Y}{p} \right]$$

The derivative of E_f with respect to p yields:

$$(II-3) \frac{dE_f}{dp} = \left[(1 - e_3) (1 - e_2) + e_2 (1 - e_1) \right] \frac{E_f}{p}$$

Where e_1 is the percentage change in the consumer price level (p) divided by the percentage change in food prices (pf); e_2 is the percentage change in real food consumption (C_f) occasioned by a one percent rise in real income (Y/p); and e_3 is the percentage change in money income (Y) divided by the percentage rise in food prices (pr).

A sufficient condition for dE_f/dp positive is that each of e_1 , e_2 and e_3 be less than unity. e_1 will be close to one but, as will be argued in this and later sections, certainly less than one—non-food prices will not rise as much as food prices initially. e_2 is also surely less than one. And few people are in a position where their money incomes rise by more than food prices; these are the unusual circumstances that may negate the statement of the text. The fraction of money income spent on food would decline with food price rises only if:

$$(II-4) e_3 > \frac{1 - e_1 e_2}{1 - e_2} > 1 \text{ (provided } e_1, e_2 < 1)$$

part in gold and land purchases. And three, the greatest part of the domestically manufactured items in Pakistan are not those that appeal to high-income groups; it is the demand for imported goods (and export Bonus Vouchers) that will rise most. As between domestically manufactured goods for consumption and for investment, the latter have a better chance of receiving the demand of high-income gainers, but these items compose a smaller part, at present, of Pakistan's manufacturing sector.¹⁴

Following a bad harvest and concomitant food price rises, the total domestic expenditure, at prevailing prices, on manufactured goods will, therefore, decline. If no excess demand already exists, this means either prices fall, production declines, stocks accumulate, or exports rise. In an economy where manufacturers spend so much time trying to get permission to raise prices, it is unlikely they will undo this hard work by lowering them—for almost any reason.¹⁵ Thus, at first, stocks may accumulate; later production may be cut if exports cannot be increased. Profits in manufacturing (except possibly of luxury goods) will decline significantly with urban employment perhaps also falling off. Few people in the cities gain in a year of bad crops (and those few that do must be surreptitious about it).

There is another possibility. Where prices of manufactured goods are maintained below the level required to clear markets, the loss of demand during bad crop years may mean merely a loss of *excess* demand. The amount actually sold may still be the total amount that producers wish to sell—but with shorter queues. If this is so, the manufacturer may be only very slightly worse off (because the price of his food has risen) as a result of the crop failure.

SECTION III

It is important to consider the possible effects of a food-crop failure on the foreign exchange balance since with low foreign exchange reserves, any increase in the balance-of-payments deficit would certainly induce very quickly changes in the Government's import policies.

14. There are few investments that do not have a sizeable, and fairly inflexible, foreign exchange component. In the absence of any expansion of imports, domestic investment cannot increase very much. And licences for capital imports are not likely to be increased at such times (see Section III).

15. Witness Minister Shoaib's admonishment: "As their [the manufacturers'] production expands, with the same selling prices, they are faced with a pile-up of finished goods. They complain of a glut in the market; the way to clear it up is not to cut back production, but to reduce prices." Government of Pakistan, *Budget, 1961-62: Speech of the Finance Minister*, Paragraph 7, p. 2.

Pakistan's exports are almost entirely agriculturally derived, consisting largely of jute and cotton (in both their raw and manufactured states). To a great extent, world prices of jute and jute products respond to changes in Pakistan's jute crops; the same is true only slightly, if at all, of the cotton crops. Thus a year of generally bad crops in Pakistan will cause a rise in international jute (and jute products) prices but will not affect cotton (and cotton products) prices. Export earnings will rise only if the rise in world jute prices is quite large relative to the decline in Pakistan's jute output; more precisely, Pakistan's jute earnings will rise in the face of a bad jute crop if jute prices rise greatly when world output falls and/or if the world output also decline significantly when the Pakistan crop fails.¹⁶

The general conclusion of this may be easily stated. A bad crop year, in which Pakistan's output of jute or cotton declines relatively more than that of other countries, will always lead to a fall in export earnings unless world prices rise proportionately more than world output falls. Export earnings may decline even if world prices are very responsive. They are more likely to decline for goods in whose market Pakistan plays a small part (cotton) than for those in which Pakistan is an important producer (jute).

In short, it is less likely that bad crop years will be accompanied by a fall in jute earnings abroad than a fall in other export proceeds. There might, however, be a tendency for the exports of cotton (and its manufactures) and tea to rise, despite any fall in their output, as a result of a smaller domestic demand for these items. It is impossible to determine, either on a *priori* grounds or by examination of Pakistan's trade statistics over the turbulent 1950s, whether export earnings will, on balance, tend to rise or fall during bad crop years.

Imports into Pakistan cannot, in a given year, change much unless import licences expire unutilized (very unlikely) or the Government draws

16. Let p be the price of jute (considered a homogeneous product for simplicity), X_p be Pakistan output of jute and X_o the output of the rest of the world. The foreign exchange earnings from jute (R), if all jute is sold abroad, are:

$$(III-1) \quad R = p X_p$$

If no decline in R is to occur when X_p declines, then

$$(III-2) \quad \frac{\Delta X_o / X_o}{\Delta X_p / X_p} > - \frac{1}{a} - \frac{X_p}{X_o} \left[\frac{1+a}{a} \right]$$

where (a) is written for $\frac{\Delta p/p}{\Delta x/x}$ and $X = X_o + X_p$. Condition (III-2) is more likely to be fulfilled the larger is (a) (in absolute value) and/or the larger

$$\text{is } \left(\frac{\Delta X_o / X_o}{\Delta X_p / X_p} \right).$$

down foreign exchange balances in order to import foodstuffs.¹⁷ This would, of course, keep down the extent of the food price rise, but only to the expense of an unfavourable turn in the foreign balance on current account. Abstracting from the extraneous shocks to which Pakistan's foreign trade seems particularly prone, we may conclude that the only clear effect of crop failure upon the balance of payments will be to raise imports to the extent that the Government chooses to alleviate the high food prices. But this is more a dilemma than a choice: higher imports this year may reduce the rise in food prices, but the resulting lower imports next year (to restore foreign exchange holdings) increase the likelihood that the price rise will be permanent.¹⁸

SECTION IV

The Governments' (Central and Provincial) budgetary position is certainly not unaffected by the country's food position. Unfortunately, the effects cannot be seen from historical analysis because the years of bad crops in Pakistan have always been years of other unusual circumstances. But *a priori* thinking suffices to indicate that, at such times, tax revenues will not increase and the Government's expenditures will not decline—from inadequate food supplies may follow both physical pain and fiscal grief.

The only source of government revenue that might increase when crops fail is the personal income tax,¹⁹ for the relatively rich (the only ones who pay such taxes) are most probably the sole gainers from the rise in food prices (Section I). Corporate profits and net revenues from government enterprise will not rise and may decline (Section II). For the same reasons, those goods which carry sales and excise taxes will not sell either in greater quantity or at higher price. Land revenues can only decline through suspensions and remissions in particularly distressed farm regions. Finally, taxes on exports will also fall, even if export *earnings* should rise, inasmuch as such taxes are generally applied per quantity to agricultural exports; the volume of jute and cotton produced will be reduced by the very factors which damaged food crops (Section I). The tendency is surely toward a decline in government revenues.

Presumably, the Government's expenditures are much less variable than its revenues, once the budget has been established. While this has, in fact, proven to be true over the 1950s in Pakistan,²⁰ nevertheless expenditures

17. While the majority of Pakistan's food imports over 1955-56 to 1959-60 involved no foreign exchange, 812 million rupees (of the total, 2,330) million rupees, of food imports) represented a direct charge on Pakistan's foreign exchange balances. See, *Report of the Food and Agriculture Commission*. (Karachi: Manager of Publications, Government of Pakistan, November 1960), p. 29.

18. As will be seen in Section VII.

19. And, for the same reasons, the agricultural income tax; but this latter is a very minor source of revenue.

20. See, N. Sarfraz, *Problems of Budgetary Reform in Pakistan*. (Karachi: Institute of Development Economics, October 1961).

have often deviated substantially from budgeted estimates. To the extent that the Government is a food buyer domestically, it has not purchased at market prices and hence its expenditures here are insulated from the food price increases during poor crop years. But price rises (or increased shortages) of manufactured goods do generally force delays under-procurement and re-budgeting. Since, in years of bad crops, these prices (or shortages) will be less likely to be increasing, the most important factor which tends to keep actual government expenditures below budgeted levels is absent. To the extent that the Government institutes food procurement schemes (either domestic or foreign) which operate at a loss (as opposed to the only other feasible alternative, break-even²¹), expenditures rise above budgeted amounts. Any relief to rural areas particularly hard hit by the failure of crops will mean further unexpected expenditures by the Government.

The Pakistan money supply is approximately equal to the sum of foreign exchange balances, government securities, and bank advances less time deposits. When crops fail there may be a tendency for foreign balances to decline and government securities (because of an increased deficit) to rise. Time deposits will probably decline, at least relative to demand deposits, as consumers mobilize their wealth in defence of their food consumption.²²

21. Cf. E.C.A.F.E., *Food and Agricultural Price Policies in Asia and the Far East* (Bangkok, 1958): "In the implementation of price policies, stress has been laid ... on measures likely to entail the least cost to the treasury ... Nevertheless, government price policies for foodgrains and certain other crops have often given rise to heavy financial burdens in the form of food subsidies or government trading losses" (p. 9). A footnote notes that the "disguised subsidy" on food was 92 million rupees in Pakistan in 1956.

22. There is some evidence of this in Pakistan over the 1950s. Because the ratio of time deposits to demand deposits has risen so greatly over the decade, the relation between the annual rate of change of this ratio and crop size is examined. The percentage rates of change of the ratio of time-to-demand deposits (end of December figures) over the twelve years, 1950 through 1961, are: +6, -6, +11, +12, +40, -5, -2, +4, +3, +26, +10, +9. The indices of food crop size are given in footnote 5 with the addition of 1949-50=99 and 1960-61=113. Assuming that food crops affect the deposit ratio with about a six-month lag (the food "year" is July-June), neglecting 1959 when time deposits rose rapidly for extraordinary reasons, and dividing the two sets of figures arbitrarily into highs and lows, we form the following table:

		Crop Size	
		Low	High
Change of Time-Demand Deposit Ratio.	Low	5	1
	High	2	3

Other divisions between high and low lead to less spectacular tables, but this at least suggests a positive relationship between crop success and time deposit growth. It is notable that the exceptions to this generalization are usually the years when prices rose little in the face of bad crops (or fell little in the face of good ones). This strengthens the conclusion that bad crops *plus* food price rises will reduce the public's desire for time deposits.

Bank advances to the private sector may also fall. Thus, the change in the money supply may temporarily be positive or negative; but any tendency for the money supply to contract (or grow less rapidly than usual) is strictly a short-run influence (see Section IX). The ultimate effects of crop failure on the money supply will there be seen to be much clearer than the immediate effects.

SECTION V

So far, the analysis has been of the initial reactions of the economy to a decline in food production. In the remainder of this paper, we shall be concerned with the *secondary* reactions, namely those which begin to occur some time after the bad food crop. And the basic question is: what are the irreversible changes caused by the bad crop (such that a subsequent normal or above-normal crop cannot return the economy to its original state)?

The wage structure is the most critical place where such irreversible changes may occur. In most underdeveloped and underemployed economies, the wage of basic, unskilled jobs is determined to only a slight degree by the strictly economic forces of supply and demand. The "floor" wage (possibly a truly subsistence wage) is a political and sociological affair. To the extent that workers have political influence and that public philosophy is concerned with the welfare of the working class, rises in the cost of living will be translated, belatedly and perhaps; incompletely, into rises in wages. How belated and how incomplete is this relationship is an empirical question.

The level of money wages is an outstanding example of irreversibility in Pakistan although the reasons for this attribute are clearly not the same as in more successfully unionized economies. A rise in wages, once achieved through this socio-political process, is almost impossible to reverse—this is undoubtedly the reason why "pay commissions" generally delay, not decide, especially in the face of price movements which the Government still hopes to reverse. If the rise in food prices in one year leads to any rise in wages in the succeeding years (even if all other influences return to their previous "normal" states), the economy can avoid, only with great difficulty, a permanently higher price level.

In Pakistan, the ability of workers to maintain real wages in the face of extensive price rises is not fully recognized. It is often said that *money* wages have remained nearly constant during the 1950s,²³ while, in fact, *real* wages have remained far more stable. In Karachi, the index of money wages rose by 48 per cent over 1952-1960 and 21 per cent over 1955-1960, while the

²³ For example, the *Second Five Year Plan* (June 1960) commits this error. See p. 60: "In fact, the average money wage rate seems to have stood constant around Rs. 1,000 per annum in recent years."

index of real wages increased by 18 per cent over 1952-1960 and remained the same over 1955-1960.²⁴ It is impossible to deny, for Karachi at least, the closeness of the movements of cost of living and money wages over the past ten years.

The retaliatory influence of wages upon prices is two-fold. The first (to be discussed in Section VI) is that the money wage level determines money incomes in a large part of the economy, and this in turn affects not only the extent of consumption demand but also its composition. The second influence (to be discussed in Section VIII) is upon costs in manufacturing industries. Usually, it is in the context of the secular effects upon development effort that these two influences of money wage levels are discussed. Part of the purpose of the next sections is to indicate that the short-run effects may also be significant.

SECTION VI

When a more-nearly-normal or above-normal crop year follows a bad one, prices of foods will fall again. The extent of the decline, and whether food prices will return to their previous level, are difficult questions which will for the moment be avoided. It is sufficient to assume a decline from the heights attained in the year of poor crops. Then those very groups which suffered loss (in the sense of being incapable of consuming as much of each good as before) will gain somewhat once normal crops reappear. The urban worker finds the crack in his tea-cup closed by higher money wages and lower food prices; and the low-income farmer who was hurt by the poor crop will gain by the good one (for the same reasons, *mutatis mutandis*, as discussed in Section I). Most of those who lost in the bad crop year will at least begin to return to their earlier economic welfare position.

Let us consider only the person who is now capable once again of consuming exactly that bundle of goods which he consumed in the year preceding the crop failure (*i.e.*, his consumption bundle of two years ago). Will he in fact return to that consumption pattern immediately? There are good reasons for thinking he will *not*.

When expenditures must be reduced in low-income groups, it is probable that food consumption will be cut to a much lesser extent than manufactured items (Section II). But whatever reduction in food that does occur is irretrievably lost. It is obvious, but not trivial, to note that one cannot overcome last year's hunger by overeating this year. To a great extent, this is also true of manufactured items. There is not perfect symmetry, however, simply

²⁴ See Appendix A to A. R. Khan, *Wages and Prices in Karachi*. (Karachi: Institute of Development Economics, October 1961).

because many important manufactured articles are, unlike food, somewhat durable—such things as footwear, clothing, cooking utensils, bicycles, and blankets are consumed over a longer period than a year. Since these are the very items whose purchase is most drastically reduced in the year of food shortage, household stocks are, in the following year, abnormally low. While one cannot overcome last year's cold winter with a new blanket this year, a greater-than-usual expenditure on blankets is required if *this year's* winter is to be effectively weathered.

This is more than just a high income elasticity for semi-durable manufactured goods. There is a back-logged demand which will probably be satisfied even though it means an expenditure elasticity for such items *greater* than that of two years ago (*i.e.*, before the bad crop). Even if real income rises this year to its level of two years ago, food consumption will probably not rise immediately to its previous level but will remain somewhat depressed (relative to two years ago but not, of course, to last year) in order to permit satisfaction of accumulated demands for semi-durable manufactures.

Were other factors conveniently to remain equal (to two years ago), we should therefore expect food prices to be now below those prevailing with the same size crop two years ago. Other factors, however, will not have remained equal. Some groups gained during the bad crop year and have probably expanded their demand at least temporarily, for food as well as other items. Workers' wages will be higher now. And there are other forces, still to be discussed, which either expand aggregate (and hence food) demand or increase the scarcity (or price) of goods substitutable to food. A *ceteris paribus* prediction of a lower (than two-years-ago) food price in the year following bad crops would be a dangerous one.

Far less dangerous is the conclusion that demand for manufactured items on the part of low-income groups will be abnormally high in the year following a food crop failure. But low-income groups contribute only a portion of the demand for manufactured goods; before making assertions about the *total* demand for such items, we should look at the demand of those with higher incomes. These can conveniently be divided into two groups for present purposes: (1) high-income farmers and certain landlords, middlemen, *etc.*, whose real incomes rose in the year of bad crops; and (2) high-income urban groups whose incomes suffered either slightly (because their food consumption was low relative to their unchanged incomes) or significantly (because their incomes were derived from the lower profits of manufacturing) in the bad crop year.

For both of these high-income groups, the consumption analysis of developed economies is probably applicable. A generally accepted proposition

resulting from both theoretical and econometric work is that a consumer will alter his total consumption only gradually in the face of changes in his income. Furthermore, the pattern of his consumption will be altered only gradually as relative prices change. For these reasons, it is unlikely that serious change in consumption, either the total or the composition, will take place among high-income groups either in the year of bad crops or the following year. There will be slight increases in consumption by the high-income gainers and slight decreases by the losers.

It is unlikely that the behaviour of high-income groups will alter the earlier conclusion that demand for domestic manufactured articles will rise above the level of the year preceding the crop failure in the year following it. Larger stocks of such items than the manufacturers desire *may* have been accumulated during the year of high food prices (see Section II), and a reduction of these excess inventories may alleviate, at first, the inflationary demand pressures on prices of manufactured goods. Whether such additional stocks (if they exist) will be adequate to satisfy all the back-logged demand is an empirical question; if large stocks did accumulate, it is *possible* that the demand pressures might be avoided.

The effect of this increased demand upon prices is a question of importance in an economy where price rises usually occur for demand reasons. There are strong indications that this will hereafter be the case in Pakistan. There would, however, be little use in seeking evidence from the 1950s when extensive price controls enforced legally the wide-spread philosophy that the reaping of profit in conditions of shortage is an immoral activity. Though this belief, which has survived the loss of its legal basis, may continue to deter manufacturers from raising prices in the face of increased demand, it will probably cease soon (if not already) to keep retail prices down.

It appears now, however, to be only a matter of time before the manufacturers of Pakistan assimilate the ways of their Western counterparts concerning the code of the administered price: raise prices whenever demand warrants and public opinion is not too hostile, and never lower prices. If and when this should occur, another irreversibility of bad crops will appear. Manufactured goods' prices may rise permanently in the year following bad crops simply because of a temporary spurt in demand. Should wages (and perhaps food prices) rise because of this, the spurt in demand may sustain itself.

SECTION VII

Before turning to the cost side of manufacturing, it is important to look briefly at the foreign sector. During a year of bad crops, the current account

balance may deteriorate (see Section III). This possibility warrants consideration. Where, as in Pakistan, the foreign exchange balance is already low, not only can this not be allowed to continue but it must be reversed if an adequate reserve is to be prepared for the next crisis. Thus, the Government must take measures either to expand exports or to restrict imports; the practical (and usual) choice is the latter.

Even though a "normal" crop year follows a bad one, there may have occurred an irreversible decline in foreign exchange reserves; of course, an exceptionally good year will occur eventually and reverse this loss, but few governments in underdeveloped economies can afford the risk involved in waiting for nature to repay her debt. There are ways to avoid an import contraction—the links are not inseparable. But where it is not avoided, it is another irreversible legacy of crop failure.

The reduction in imports may take place in luxury consumption items. This will at least partially lead to a re-allocation of export Bonus Vouchers in this direction; the extent of such re-allocation will depend upon the behaviour of high-income groups in the face of gains and losses during the bad crop year (Section VI). Probably the reduction of availability of imported manufactured items for consumption would add somewhat to the demand for domestic manufactures. But such a conclusion is tenuous, for the two are far from perfect substitutes and may not be considered substitutes at all by many people.

The reduction of industrial imports, whether equipment or material, poses a frightening dilemma for governments. Most Pakistani businessmen have shown great willingness to re-invest profits in capital equipment, but to ask them to wait longer for the requisite import licences is to invite them to consume their profits. To reduce raw material imports means under-utilization of already-imported scarce capital. Thus, if industrial imports are reduced, it is likely to cause: (1) a rise in demand for luxury consumption, domestic and foreign; and (2) a rise in the prices of industrial raw materials. The implications of the first have been discussed in the preceding section; new import constraints will probably further an already existing rise in demand for domestic manufactures. The second effect will be treated in the next section.

SECTION VIII

In Pakistan, domestic industrial prices have been determined much less by economic forces than by law and custom. During the 1950s, it has been considered anti-social, if not illegal, to raise price merely because of increased demand or inadequate supply. Thus, manufacturers are reluctant to alter

prices in order overtly to augment profits.²⁵ Only when costs have risen is there justification for a price rise; moreover, price increases are often requested, granted, and executed following a rise in costs quite irrespective of the demand for the product. Of course, in an economy where excess demand exists for a great many products, demand need not be too carefully considered.

The conclusion is that manufactured goods prices will increase most readily in response to an increase in costs. And this is precisely the surest legacy to industry of the year of bad crops. Wages will rise (Section V) and raw material prices—especially of those which are imported or are substitutes for imports²⁶—may also rise (Section VII). Either is sufficient to set in motion the mechanism of industrial price rises; the fact that demand is higher (in the year following crop failures) is an attractive, though unnecessary, fillip.²⁷

There are two further points to be noted. First, while the relationship between costs and prices is more mechanical in a regime of controlled prices, it exists quite as fully in economies where prices are uncontrolled. Second, this price increase is almost completely irreversible. It could be reversed, were costs or demand to decline sufficiently later; but (as we shall see) this is quite unlikely to occur. Thus, the economy is saddled, within a year or two of bad crops, with a new higher level of manufactured goods prices.

SECTION IX

So far, the discussion has been conducted primarily in terms of relative price changes. The analysis may now be summarized and furthered by consideration of the general price level of the economy, the money supply, and the income velocity of money. But one preliminary problem must be

25. Witness the events following decontrol of cloth prices. Even the mill-owners seemed to share the popular belief that decontrol would (or should) encourage greater output with *no* rise in prices. Indeed, the rise in prices following decontrol has been universally hailed as unfortunate, if not immoral.

26. Prices of raw material (other than imported or import substitutes) may increase if: 1) the previous year's high food prices induce farm substitution of food crops for industrial raw material crops; or 2) the Government raises its control price on such raw materials on grounds of equity to producers. An example of this latter influence is the controlled price of factory-delivered sugar-cane which was raised, between 1955-56 and 1957-58, by 5 annas per maund (18 per cent) in East Pakistan and 4 annas per maund (17 per cent) in West Pakistan (and, of course, the price per maund of sugar, payable to the processing factory, rose by Rs. 2.78 (8 per cent) in East Pakistan and Rs. 10.38 (33 per cent) in West Pakistan over that period).

27. Evidence of the lagged adjustment of prices of manufactured goods to those of foodgrains is found in *A Measure of Inflation in Pakistan, 1951-60, op. cit.*, Section II. The correlation of manufactured goods prices is higher with the previous year's price index (or cereals prices) than with the current year's; this fact suggests that change in food prices somehow causes change, in the same direction, of manufactured goods' prices in the following year.

treated even before the crop failure and its concomitant chain of effects is introduced. This question is whether or not the economy, in the "normal" year preceding that of bad crops, is in a monetary "equilibrium". Certainly, in Pakistan, no equilibrium has existed in the 1950s in the sense of a stable outcome of completely free, market forces. Markets have generally not been free by any definition of that word; the question of equilibrium can only be considered within the context of the myriad of controls, ever changing but ever present. Monetary equilibrium here must mean that the individuals of the economy are *satisfied* with the cash balances that they are holding, given the prices and availabilities of the various commodities which might be purchased with these balances.

It is sometimes stated that the existence of consumer price and quantity (*i.e.*, rationing) controls is basically inconsistent with monetary equilibrium. This is certainly true if there are not sufficient gray, or black, markets to absorb any excess liquidity. If there are not, the amount of money (at least some) individuals hold will be larger than they desire relative to the level of their incomes. In other words, the income velocity of money will be lower (or the Cambridge real-money-balance k higher) than it would be in equilibrium. Many feel that this disequilibrium has generally existed in Pakistan in recent years, despite the presence of (legal and illegal) free market outlets for excess funds.

Let us consider first the situation when (and if) such an artificially low income velocity exists. Such excessive liquidity is, by definition, a force that would cause a general rise of prices if it were permitted to manifest itself in this way. Thus, a crop failure and the subsequent rise in food prices provide an outlet for the release of the excess liquidity.²⁸ The ensuing rise in the prices of manufactured and imported goods merely provides a further vent for the liquidity. If the money supply is unchanged, some of the excess liquidity is finally removed by the very process that eliminates it in free-price economies—namely, higher prices. Income velocity is, in the end, higher and hence nearer its equilibrium value.

The more difficult, more interesting and more probable case is, however, that which assumes monetary equilibrium in the economy, at least initially. There is usually a sufficiently broad free market in foodstuffs to ensure that people need not, and hence will not, keep greater money balances than they desire—although their desired money balances may be larger in the presence

28. This begs the question of why the excess liquidity did not drive up food prices in the "normal" crop year. If one argues that there is excess liquidity, then (I think) one must also maintain that almost all prices are regulated—a great deal of money can flow through a very small opening if the pressure is great. Then, it must be argued (somehow) that the shortage of food induces a rise in the permitted food price.

of controls.²⁹ If equilibrium exists initially, the crop failure and subsequent events must disturb that equilibrium and force adjustments if it is to be reattained.

In the year of crop failure, the primary change in the economy is the rise in food prices. This usually means a change in the income velocity of money, although there may be no fundamental change in the equilibrium income velocity (or, in other words, in the *ultimately* desired real money balances). It is, of course, possible that the velocity is affected by shifts in relative prices or expectations of general price rises; but the most probable change is a rise in velocity³⁰ in the bad crop year because individuals prefer a lapse from long-run monetary equilibrium to an immediate (and hopefully short-lived) readjustment of their consumption habits. If this is so, then the rise in velocity is a temporary movement out of long-run equilibrium and not a shift in the equilibrium velocity. If relative price changes or expectations decrease the desired real cash balances, then the situation is similar to the disequilibrium model previously discussed. A permanent rise in prices is always maintainable if the necessary rise in velocity is desired by the public. In India, it is frequently argued that food shortages raise velocities.³¹

29. Especially if the controls are not expected to be permanent. For some speculations on this tricky subject, see pp. 43-46 of my "Income Velocity and Pakistan's Second Plan", *Pakistan Development Review*, Summer 1961.

30. The statement requires some support, for the evidence of the 1950s in Pakistan shows that income velocity has not always risen in years of food shortages. The historical uncertainty follows from the facts that the money supply and non-agricultural output have not always remained constant and that there have been secular movements in the income velocity. Nevertheless, the evidence is clearer than it at first appears. If we divide the ten crop-years, 1949-50 through 1958-59, into five good (G) and five bad (B) years (on the basis of the food crop production index of the C.S.O; see footnote 5), they run G, G, B, B, G, B, G, G, B. If we divide the income velocity movements over ten years, 1950-51 through 1959-60, into up (U) years and down (D) years (see App. 1 of my "Income Velocity and Pakistan's Second Plan", *op. cit.*), they run D, D, U, D, D, D, U, D, D, U. Allowing a one-year lag between crop size and its effects upon income velocity, we form the following table:

		Income Velocity	
		Up	Down
Crop Size	Good	0	5
	Bad	3	2

With so few observations, Chi-Square testing is inapplicable; but more casual analysis indicates that bad crops are more likely to be accompanied by velocity rises and good crops by velocity falls than the reverse.

31. See for example, S. Sachi, "A Basic Fallacy in Planning Commission's Appraisal", and D. Shenoy, "Inflation and Import Surplus", both in *Economic Weekly* (Bombay), May 17, 1958 and June 21, 1958 respectively.

This is probably so in the short-run, but not at all comprehensible as a permanent effect. If the rise is not permanent, however, the problem of how the higher price level is to be maintained is still unsolved.

If the ultimately desired, or long-run equilibrium, velocity changes little, or not at all, as a result of the series of events following the crop failure, then one of three things must eventually occur: (1) the general price level must not rise; (2) national income (in constant prices) must fall; or (3) the money supply must increase. Each of these possibilities will be discussed in turn.

Can the general price level return to that prevailing before the crop failure? We have already argued that there will have occurred an irrevocable rise in prices of manufactured goods, accompanied by an equally irreversible rise in urban wages. Thus, an ultimately unchanged price level would require that food prices eventually fall *below* those preceding the crop failure. Little analysis is needed to see that this is implausible; only a curious combination of reduced urban demand and increased farm marketings could cause such a result, and there is no reason for suspecting their occurrence. When normal crops once again reappear, the relative prices of foods and manufactures will certainly resemble those prevailing before the crop failure.

Can there be a decline in the aggregate output (*i.e.*, constant price national income) of the economy—or, more accurately, in the supply of goods which enters the monetized sector? This would imply that either the farmers market a smaller fraction of their output or the production of manufactured items declines. Without change in relative prices, the first is unlikely. The second is certainly a possibility, and some economists have observed the phenomenon of generally rising prices and over-production of manufactured items in underdeveloped countries.³² While such a situation is a distinct theoretical possibility, it does not seem to have occurred in Pakistan, at least as yet.³³ Rather than speculate on its possible future occurrence, it is perhaps

32. Cf. D. R. Khatkhate, "The Impact of Inflation on India's Economic Development", *Economic Development and Cultural Change*, April 1959, pp. 363-76: "the paths of inflation [followed by developed and underdeveloped economies] actually diverge when one comes to disaggregation of the demand for consumer goods . . . We find a paradoxical situation wherein sagging markets in industrial consumption goods coexist with buoyant markets for food . . . Demand for food . . . was almost rising faster than the annual rise in money incomes. This meant that a portion of income which was previously spent on other goods was now diverted to food. This was why the demand for cloth slackened of late leading to the accumulation of stocks, while at the same time, inflationary pressure on food was accentuated" (pp. 364, 365, 369).

33. This absence might be interpreted as evidence that the Pakistan economy has generally operated under conditions of suppressed inflation, with the excess demand for manufactures thwarted by price controls. What would appear as over-production in a free-price economy would, under these conditions, merely reduce the extent of unsatisfied excess demand. The recent removal of price controls would provide, in such a situation, an ultimate restraint against price increases by introducing the potential sanction of declining sales. On the imminence of this possibility in Pakistan today, see the speech of S. A. Hasnie, Governor of the State Bank of Pakistan, at its Annual General Meeting, Sept. 8, 1961.

wiser to consider the third possibility, that of a rise in the money supply—for this is the manner in which higher price levels have proved maintainable in the past.

Can the money supply expand to accommodate higher prices? Here we at last arrive at the crux of the difference of opinion between laymen and economists on the subject of food prices and inflation. Traditionally, almost reverently, economic theory likes to consider money an exogenous variable, determined by the policies of the central bank; overall price levels are in turn determined (at least in part) by this money supply. To suggest a reversal of this causation may seem heresy, and yet this is what is usually done—implicitly to be sure—when food shortages are said to “cause” inflation.³⁴ The answer lies in the fact that control of the size of the money supply is a power always held by governments but not always exercised by them. In Pakistan, the Central Government, with the cooperation of the State Bank, has diligently pursued a policy of not controlling the money supply. The money supply is indeed dependent upon foreign exchange reserves and the government indebtedness but it also depends upon the amount of private advances the banks wish to make.³⁵

In a period of higher prices, bank customers can easily expand their borrowings. This they will do as long as the money supply is inadequate to meet the public's demand for real cash balances. Of course, not everyone qualifies for bank credit, but those who do can, and will, increase their borrowing until sufficient new money is created to bring the actual income velocity down (or the propensity to hold real cash balances up) to its equilibrium value. The process by which the bank borrowings of the few become the cash balances of the many is well known, and it operates with little less vigour in underdeveloped economies. For both individuals and business firms, inadequate real money balances can be supplemented either by increased saving (which would make the higher price level ultimately untenable) or by increasing the time between receipt of goods and payment for them (which eventually requires increased bank credit). In Pakistan, the commercial banks have been quite prepared to meet any demands for credit.³⁶ The State Bank has never seriously opposed such an expansion.

Alternatively, this tendency for the money supply to grow through private credit might be offset by a reduction in government indebtedness.³⁷

34. Unless it is simultaneously maintained that economy was previously being forced to hold undesired liquidity or that the food shortage somehow causes a rise in the equilibrium income velocity.

35. See my Appendix E (pp. 57-67) to M. Haq, *Deficit Financing in Pakistan, 1951-60*. (Karachi: Institute of Development Economics, February 1961).

36. See pp. 19-23 of M. Haq, *Deficit Financing in Pakistan, 1951-60, op. cit.*

37. Or in foreign exchange reserves. This latter offset to monetary expansion occurred in the early 1950s, but reserves are now not large enough to permit consideration of significant further reductions.

Precisely the opposite occurred in the face of a growing money supply and rising prices in the years 1955-1958. The inelasticity of tax revenues and the Government's desire to avoid declining real expenditure meant that deficits rose, not fell, in these years; the government deficit only furthered the potential expansion of the money supply. The total government borrowing from banks did decline in 1959-60, and hence did provide a contractionary tendency to money supply growth—nevertheless, the money supply increased, apparently without much strain on bankers' prudence or ingenuity, by 5.3 per cent in that year (June 1959-June 1960; the increase between Decembers was slightly larger).

Lest this policy of passivity by the State Bank seem foolishly short-sighted, we might consider the alternatives to money supply expansion. The obvious alternative is a forcing down of prices to their earlier levels; this may be achievable, but only at the expense of at least temporarily idle industrial capacity. Conservatives may cry that price rises tend to reduce growth rates, but it will always be more obvious that idled capacity is a reduced growth rate. There is, however, a more frightening alternative than recession. For rural groups, there is an obvious and readily available substitute for money, namely, foodgrains. Cereal balances are as good a reserve as cash balances and may be increasingly used if the money supply does not expand.³⁸ In a developing economy, it is certainly monetization and not its opposite that the central bank must encourage. It is probably true that inflation discourages monetization; it is certainly true that lack of money discourages it.

Keynes discovered that in developed economies there were substitute liquid assets to money and that their prices (and yields) could seriously affect the velocity of money (or desired real money balances). While the substitute assets are different in an underdeveloped economy, faith in a constant income velocity of money is liable to equally great disillusionment.

SECTION X

Inasmuch as the money supply can easily grow to meet the higher (after price rises) cash balance demands of the public, there is no need to argue that velocity (equilibrium or not) rises with the higher prices. The new, irreversibly higher price level can just as easily, and more plausibly, be maintained by means of an expanded money supply. The crops fail and then return to normal—but their legacy remains, a chain of reactions which lead to a permanently higher price level in the economy. If crop failure is a periodically recurring phenomenon, one price push may still be working its

³⁸. For a full discussion of this possibility, see my "The Dangers of Monetary Policy in Agrarian Economies", *Pakistan Development Review*, Winter 1961, pp. 59-72.

effects when the next is begun. The demand-inflation possibilities of over-ambitious investment plans not only may exist simultaneously with crop-push inflation, but may even be induced by it as the Government seeks desperately to avoid a decline in the real size of its expenditure (while being unable to increase tax revenues).

Some of the relationships discussed in this paper are no more than hypotheses and speculations. Empirical work is required to verify their existence and estimate their quantitative importance. Such investigation will be made difficult and tenuous by the entangled economic past of Pakistan—the separation of the effects of bad crops from those of the collapse of the Korean boom, the Plans, and the devaluation may prove impossible. It is hoped that these suggestions are of value in themselves, but they depend ultimately upon factual knowledge.

The lesson of this paper is, however, clear even if some of the hypothesized relationships are unsure as to existence or importance. Stabilization of food prices is a prerequisite to price stabilization. It is certainly a necessary condition, and very probably a sufficient condition as well. Adequate stocks and stable, expanding sources of supply of food-stuffs are essential if Pakistan's development is not to be periodically marred by serious rises in prices. Such rises are awkward and inequitable in the short-run; they may be devastating to economic growth in the long-run, for they have not even the rationale of demand inflation that investment may be thereby encouraged.³⁹

Once this crop-push inflation is controlled, traditional excess-demand inflation can more easily be isolated and handled. The fact that the money supply expands after a crop failure may now create confusion between the two causes of price rises. While it has been argued (Section IX) that price increases can encourage increases in the money supply, it is still as always true that money supply increases through deficit-financing can lead to price rises. The purpose of this paper is not to suggest neglect of demand inflation but to encourage recognition of the serious, irreversible influences of crop shortages and food price rises upon the general price level.

39. Consideration of food price stabilization by means of price controls is beyond the scope of this paper, but two questions may be asked of Pakistan's experience with such controls in the 1950s: (1) was not the attempted cure worse than the disease? and (2) was a cure provided? The data on food prices, production and marketings at times of controls are sufficiently unreliable that no clear answer can be given even to the latter (simpler) question. We must be especially skeptical of government-collected "price" data whenever there are extensive government procurement, rationing, and price-control schemes. And yet we must know much about the behaviour of free and/or black market prices (and their effect upon procurements) if we are to discover if the "average" food price is lower with or without controls.