AN ANALYSIS OF DEMAND AND SUPPLY FACTORS IN AGRICULTURAL EXPORTS FROM DEVELOPING ASIAN COUNTRIES*

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ABSTRACT

In the formulation of export policy, many developing countries place overwhelming emphasis on the promotion of manufactured exports while neglecting or paying inadequate attention to opportunities for continued development and diversification of agricultural (and other primary) exports. This policy choice is born mostly out of the long-standing primary-export pessimism - the view that export prospects for agricultural products are determined predominantly by the long-term pattern of world demand leaving little room for supply-side policies to achieve export success. The purpose of this paper is to examine this pessimistic view in the light of the export experience of seven traditional agricultural-exporting countries in Asia. The results suggest that while external demand does enter the picture as a significant influence, export success emanates mostly from active supply-side polices as against the passive acceptance of external demand conditions.

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1. Introduction

In the design of export policy in agricultural-exporting developing countries, a key issue is the relative emphasis given to the continued development of agricultural exports and the promotion of "new" labour-intensive manufactured exports. In many countries it has become fashionable to place overwhelming emphasis on the latter while neglecting or paying inadequate attention to opportunities for continued development and diversification of agricultural (and other primary) exports. This policy choice is born mostly out of the long-standing primary-export pessimism- the view that export prospects for agricultural products are determined predominantly by the long-term pattern of world demand leaving little room for supply-side policies to achieve export success.

The purpose of this paper is to examine this pessimistic view in the light of the export experience of seven traditional agricultural-exporting countries in Asia- Malaysia, Thailand, the Philippines, Indonesia, India, Pakistan, and Sri lanka- over the period 1960-86. The hypothesis which figures prominently in the analysis is that, while external demand constraints do impede export performance in certain product areas, superior export performance comes mostly from active supply-side policies. Our country sample provides an ideal subject for testing this hypothesis. These countries are broadly similar as regard the relatively favourable endowment of natural resources and the important role that has been played by agricultural exports in their historical economic transformation. Yet, over the years, there have been marked differences among them in terms of export performance as well as overall economic growth, presumably reflecting the impact of divergent economic policies.

In a recent paper on trade and development experience in Asian countries, Findlay (1984: 40) has taken a critical look at the manufacturing bias in the export-

oriented strategy of resource rich countries and argued in favour of "balanced export-oriented growth" with exports as the leading sector, paying attention to labour-intensive manufactures but not neglecting agricultural and other primary exports. Findlay's argument is based entirely on considerations of the nature of resource endowment in these countries as compared with that of the four Asian newly industrialising countries (NICs). He has stopped short of addressing the primary-export pessimism that underlies the present policy bias towards manufactured exports. It is expected that the analysis of the present paper would provide an empirical basis for examining the appropriateness of Findlay's balanced export growth strategy.

The paper is arranged as follows. Section 2 profiles the evolution of export policy and other related economy-wide policies of the sample countries. This is done with a view to identifying the key policy shifts over time in individual countries and similarities and differences in policy across countries. In Section 3, the growth and pattern of agricultural exports are examined within the context of the choice of trade regime and developments in external market conditions. The analysis at this stage provides a subjective assessment of the relative importance of external market conditions and internal factors in determining export performance. This is supplemented in Section 4 by a formal econometric analysis of the relative importance of these factors. A concluding section summarises the results and draws out policy implications. The commodity classification system employed in the study, the data sources and the method of data compilation are described in the Appendix.

2   Policy Context

The economies of the seven Asian countries under study, as they evolved during the colonial era, were highly specialised in the production of primary commodities, which they exported in exchange for manufactured goods from developed countries[1]. During the early post-war years, the new political leadership of these countries shared

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[1] Thailand did not experience colonial rule, but her economy was greatly influenced by the pattern of colonial trade in the region.

a common interest in restructuring their economies with the aim of breaking away from this colonial economic pattern. The strategy commonly chosen was industrialisation based on deliberate import substitution. This policy choice essentially created an incentive bias against export production. This anti-export bias has, on balance, continued to be an important characteristic of the incentive structures of these countries (Findlay, 1984:37). However, over the years, the countries have tended to differ in the comprehensiveness and intensity of import substitution policies adopted, the emphasis placed on the promotion of traditional exports industries, and, therefore, the degree of policy bias against export production.

Policy regimes of Thailand and Malaysia have clearly been much more favourable to export producers throughout, compared to that of the other sample countries (Akrasanee 1981; Lim 1981; Myint 1967 and 1984). Even in the early years of heavy emphasis on import substitution, the governments of these countries opted for only a mild form of import substitution, and there were no attempts to move beyond the promotion of light manufacturing industries. Domestic industries were usually protected through moderate tariffs rather than quantitative restrictions (QRs) and exchange controls. These features of the trade regime, coupled with prudent macroeconomic management was instrumental in avoiding significant exchange rate misalignment with deleterious effects on tradeable production. Moreover, the choice of tariff rather than QRs as the means of protection meant that the domestic incentive structure was not significantly insulated from changes in world market prices.

After an initial policy choice in favour of industrialisation, both countries seemed to have sensed early that, given the basic conditions of their economies, the key to economic growth and development was to be found in expanding their exports, both old and new. Thus, Malaysia took initiative in the modernisation of its rubber industry through a massive government-funded scheme for replanting with high-yielding varieties, and also encouraged export producers through economic incentives and infrastructure development to switch into new lines of agricultural exports such as palm oil. Given the crucial role played by foreign-owned companies in the production and marketing of plantation crops, the Malaysian government took care

to pursue a favourable and unambiguous policy stance toward direct foreign investment[2].

Economic policies in Thailand since the late 1950s paved the way for the development of a dynamic peasant export economy. These policies were aimed at not only the expansion of rice (the main export crop) production, but also diversification, in line with changing world market conditions, into new export crops, such as maize, sugar and tapiyoka. The Thai government, after a few years of experimentation with rice monopoly, liberalised rice trade and permitted and encouraged a network of private middlemen to handle the marketing and processing of rice and the other peasant products. Through this policy, Thailand has been able to avoid the deleterious effects on export growth of the state marketing board system found in other peasant export economies in Africa and Asia (MacBean, 1989).

Both Thai and Malaysian governments have continued to rely on taxation of major agricultural exports to finance public expenditure outside these sectors. However, the degree of disincentive effects of taxation and other government intervention seems to be relatively lower as compared with that in the other sample countries (Table 1). Moreover, in both countries, the authorities have pursued an active policy of lowering export rates in times of adverse price movements in the world market with a view to preserving exporters' profit margin. Since about the early 1970s, both countries have begun to place a greater policy emphasis on the promotion of manufactured exports. This has reflected in a clear manufacturing bias in export incentives (Ariff and Semudram, 1990; Chunanuntathum et.al., 1990). However, given the overall economic environment which is in general conducive for export activities and the nature of resource endowment, there is no conceivable adverse effects of this policy shift on agricultural export producers.

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2 Transfering a progressively large share of these companies to the nationals was a declared policy. But the government always made it clear that the transfer of ownership would be through formal share trading rather than through arbitrary expropriation.

TABLE 1

DIRECT, INDIRECT, AND TOTAL NOMINAL PROTECTION
RATES FOR EXPORTED PRODUCTS

Country	Product	1975 - 79			1980 - 84		
		Direct	Indirect	Total	Direct	Indirect	Total
Malyasia	Rubber	-25	-4	-29	-18	-10	-28
Pakistan	Cotton	-12	-48	-60	-7	-35	-42
Philippines	Copra	-11	-27	-38	-26	-28	-54
Sri Lanka	Rubber	-29	-35	-64	-31	-31	-62
Thailand	Rice	-29	-15	-43	-15	-19	-34

Note: The direct nominal protection rate is defined as the difference between the total and the indirect nominal protection rates, or equivalently, as the ratio of (1) the difference between the relative producer price and the relative border price, and (2) the relative adjusted border price measured at the equilibrium exchange rate and in the absence of all trade policies.

Source: Krueger, Schiff, and Valdés (1988).

India provides an example of a country whose policy regime during the postwar period has consistently been characterised by a significant anti-export bias (World Bank, 1987:82-83). Since the early 1950s, the overriding aim of development policy has been across-the-board import substitution in the context of a foreign trade regime which relies extensively on QRs (Bhagwati and Srinivasan, 1975; Wolf, 1982; Riedel et.al. 1984). As a reaction to the foreign exchange constraint on economic growth, export promotion was recognised as a policy goal in the late 1960s, but exports in general and agricultural exports in particular continued to be constrained fundamentally by "the inward-looking framework in which exports are treated essentially as an after thought" (Wolf, 1982: 12). Also, the export incentives granted are concentrated on a few manufacturing sectors, and most agricultural exports are not eligible for these incentives. By contrast, most of the latter exports are subjected to export duties at varying rates. On the basis of an extensive analysis of India's export taxation in the 1970s, Wolf (1982:p.108) observes that, "in conjunction with the effect of the trade regime on the exchange rate, the taxation of exports was excessive from the point of view of the optimal monopoly tax". There have been some trade policy reforms since 1973, including progressive loosening of import controls and increase in incentives to manufactured exports, but in the absence of significant policy initiatives to redress exchange rate overvaluation and to reform export taxation, the policy bias against agricultural and other primary exports has remained virtually unchanged (Joshi and Little, 1988).

The remaining four countries have undergone significant policy shifts, both towards more outward orientation as well as in the opposite direction, during the period under study. For instance, the policy regime of Pakistan was strikingly similar to that of India until about the late 1960s (Islam, 1981; Adams and Iqbal, 1983). Stringent QRs on imports produced a highly overvalued rupee that discouraged exports. Moreover, the commitment to a fixed exchange rate (until 1972) coupled with relatively higher domestic inflation as against world inflation distorted resource allocation against tradeable production (Islam, 1981. Ch. 6). Beginning in the late 1960s, there has been slow but steady progress in trade liberalisation which may have reduced the incentive bias against export producers as against import-competing

producers (Guisinger and Scully, 1990). Since the early 1970s, exchange rate adjustment has become an active policy tool, and this has reflected in a significant improvement in the real exchange rate for exports . Given the continued presence of significant export taxes (Table 1), the policy regime has, however, continued to favour exports of manufactured goods over primary exports (Guisinger and Scully, 1990:p. 257). Despite various initiatives to liberalise foreign trade, monopolistic state control of export trade, a practice which has isolated local producers of these crops from world price changes, has continued to be an important element of the trade regime (Bautista, 1990, p. 119).

In Sri Lanka, most of the post independence decade (1948-58) turned out to be a liberal trade regime with just a few low taxes on imports and exports (Cuthbertson and Athukorala, 1990). In the early 1960s, the economy swiftly moved into a highly restrictive trade regime in response to an aggravating balance of payments situation. At the same time taxes on the three major export crops were continuously increased and a number of minor agricultural exports were brought under taxation in order to finance large social expenditures of the government (Table 1). From the late 1950s, foreign-owned enterprises which controlled about 60 percent of the tea, 30 percent of rubber and about 10 percent of coconut plantations operated under a state of uncertainty as the nationalisation of plantations became an accepted policy of one of the two major political parties. The plantations were finally nationalised and placed under the management of state corporations in the first half of the 1970s. Even though replanting subsidy schemes for the three export crops were initiated in the 1950s, their achievements have continued to be lacklustre given the uncertainty created by the nationalisation policy and unattractive producer prices for the export crops resulted from overvalued exchange rate and heavy export taxation (Athukorala 1984: 45-47). Export promotion through selective incentives became an element of the policy agenda in the late 1960s. Yet, reflecting the cumulative impact of import controls, overvalued exchange rate and high export taxes, the trade policy mix was, on balance, anti-export throughout. in 1977, the Sri Lankan government introduced a sweeping set of liberalisation measures, including the replacement of most QRs with tariffs, removal of domestic price controls, adoption of a floating

exchange rate regime against an initial substantially devalued rate. However, the promising start to removing the biases in the incentive structure soon lost momentum because of poor macroeconomic management and deteriorating external conditions. Instead of further rounds of across-the-board tariff reductions and the maintenance of a realistic exchange rate, the government resorted to ad hoc changes to import duties and selective export incentives. Estimates of trade bias (Cuthbertson and Athukorala, 1990, Table 5.5) suggest that the trade regime continued to favour import substitution over export production after 1977, with a significant bias against both major and minor agricultural exports compared to manufactured exports and import-competing production. Despite initial promises to reduce the role of the government in the economy and to promote private sector activity, the plantation sector has continued to suffer under highly inefficient public-sector management.

Unlike the other six countries, Indonesia inherited from the colonial era a highly restrictive trade regime. Post-colonial years up to the mid 1960s saw the country moving towards further state control of trade, prices, and production (Pitt, 1990). Private foreign investment which had played a key role in the expansion of export production and export trade was severely discouraged both by a series of nationalisation measures against existing enterprises and by restrictions on new investment (Myint, 1984: 43). After nationalisation, the plantations and other export industries suffered under highly inefficient state management. In the presence of stringent import controls and detailed bureaucratic controls on the domestic economy, there was little room for private sector initiative. . Under Soeharto's "new order" policy reforms initiated in 1967, policies towards foreign investment were greatly liberalised. However, the old restrictionist stance persisted in the policies towards international trade and domestic economy. The structure of effective protection continued to favour import-competing industries against export producers. This incentive bias was intensified with the onset of the oil export boom in the mid-1970s which inflicted "Dutch disease" upon the Indonesian economy (Warr, 1986). The massive appreciation in the real exchange rate resulting from increased oil revenues continued to the 1980s despite the 1978 currency devaluation. However, during the first half of the 1980s, Indonesian authorities succeeded in countering real exchange

rate appreciation through contractionary fiscal and monetary policies and a significant exchange rate devaluation in 1983 (Siamwalla and Setboonsarn, 1988).

Writing in the mid-1960s, Myint (1967) classified the Philippines together with Malaysia and Thailand as outward-oriented countries in South-East Asia. However, in the latter part of the 1960s, the country began to move towards a restrictive trade regime because of the widening balance of payments deficit Shepherd and Alburo, 1990). The anti-export bias generated by this move was further aggregated by the introduction of duties on traditional exports. Selective incentives to nontraditional exports (both agricultural products and manufactured goods) were introduced between 1967 to 1973, but the subsidy element involved in these incentives was rather insignificant as compared with the degree of anti-export bias in the overall trade policy regime (Shepherd and Alburo, 1990: 161). Pervasive government controls over marketing of exportable products, heavy quota protection given to import competing industries, and overvalued peso continued to discriminate against export production (Bautista, 1990; Clarate and Roumasset, 1987). A major programme of tariff reform and trade liberalisation was designed in 1980, but this was completely derailed in 1983 when full control of foreign exchange was reintroduced. Liberalisation attempts were resumed in 1985 and a significant amount of QRs were removed between 1986 and 1988. The impact of these reforms on the incentive structure of the economy has not yet been assessed.

3 Export Performance

In this section we briefly survey the export experience of sample countries during 1960-86 in order to identify whether differences in policy regimes are reflected in intercountry differences in export performance. Data on growth of agricultural exports and their share in total commodity exports are summarised in Table 2. Growth rates are reported for the total sample period (1960-86) as well as for the sub periods 1960-72 and 1973-86, in order to shed light on possible effects of the slowing down of world economic growth since 1973 on export performance. For Indonesia, Malaysia, and The Philippines data are reported for total agricultural exports as well

as agricultural exports excluding forestry products (timer). We focus only on the latter figures, as the importance of timber exports in the export structure of a country depends mostly on the availability and gradual depletion of forestry resources rather than on domestic economic policy.

The picture of comparative export performance that emerges from the Table generally supports the view that the nature of domestic policy orientation is important in explaining intercountry differences of export performance. Thailand and Malaysia, the two sample countries which have, on balance, maintained a relatively favourable policy regimes for export production throughout the sample period, have recorded both higher and steadier real export growth. In terms of constant (1980) prices, Thai agricultural exports increased almost by five folds (from $1176 mn. to $5750 mn.) between 1960-62 and 1984-86. Exports from Malaysia showed a three fold increase between these two periods starting from a relatively higher base figure (from $ 1643 to 4853). At the other extreme, Sri Lanka provides a clear example of export stagnation propelled by a persistent anti-export bias in the incentive structure, and direct state intervention in export production and marketing. It is the only country in the sample whose real exports remained virtually stagnant during the period under study. The export experience of the other countries has been mixed, with significant changes in annual average growth between the two sub periods It is interesting to note that, despite slower world income growth, export growth rates of all countries except Sri Lanka are higher for the 1973-86 period as compared with those for 1970-72. This pattern is consistent with the greater outward orientation in trade policies of these countries since the early seventies.

In all countries, agricultural share in total non-oil commodity exports has declined over the years. The usual explanation of this pattern is the growing importance of labour-intensive manufactured exports[3]. However, a close look at data

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3 For a recent comprehensive analysis of Asian export performance see James et.al. 1989, Chapters 4 and 5.

TABLE 2
AGRICULTURE EXPORT PERFORMANCE OF SAMPLE COUNTRIES[a], 1960-86

	Export Value US$ mns (at 1980 price)			Annual Compound growth (%)[b] (at 1980 price)			Agricultural share in total merchandise exports (%)[c]		
	1960-62	1970-72	1984-86	1960-72	73-86	1960-86	1960-62	1970-92	1984-6
India	1465	1731	3285	1.13*	3.80	3.04	47.7	35.5	32.5
Indonesia	1227 (1227)	1600 (2188)	3481 (3903)	2.09 (5.02)	5.14 (2.93)	4.78 (6.16)	83.7 (83.7)	63.3 (84.9)	46.3 (50.8)
Malaysia	1643 (1975)	2609 (3625)	4853 (7202)	4.90 (6.50)	5.55 (5.92)	5.70 (6.02)	53.3 (59.0)	49.1 (67.3)	38.7 (57.0)
Pakistan	354	605	1319	3.06	4.47	4.24	60.6	50.3	36.0
Philippines	1057 (1531)	1313 (2110)	1756 (1962)	0.91 (2.65)	1.74* (0.15)	2.80 (1.00)	72.7 (84.3)	50.4 (71.0)	29.7 (32.8)
Sri Lanka	737	805	714	0.77*	-0.26*	-0.58*	98.4	94.8	55.6
Thailand	1176	1926	5750	4.38	8.35	7.14	86.8	71.6	55.54

Notes:

(a) For Indonesia, Malaysia and the Philippines, non-bracketed and bracketed figures relate to agricultural exports excluding timber (SITC 247 + 248) and including timber respectively.

(b) Estimated by fitting a least-squares trend line to logarithmic export series. All coefficients except those denoted by * are statistically significant at least at 5 percent level.

(c) For Indonesia and Malaysia the share has been estimated using non-oil exports.

Source: See Appendix

suggests that relatively poor performance in agricultural exports may also has been a contributory factor. For instance, it is mostly the countries with relatively poor agricultural export growth such as India, The Philippines and Sri Lanka that have indicated the sharpest erosion in the agricultural share. In Malaysia and Thailand the share has declined at a slower rate[4]. The experience of these two countries in fact suggest that the emphasis on manufactured export expansion is not inconsistent with further exploitation of agricultural export potential.

Under given world market conditions for its traditional exports, an individual country can achieve higher export growth as compared with the other countries by improving upon its market share in these exports ("competitiveness factor" in Kravis's (1970) terminology) and/or by diversifying its commodity mix into new product lines ("diversification factor"). A simple way of identifying the relative importance of domestic supply-related factors as against external demand factors in export expansion is therefore to examine the association between relative export growth on the one hand and, changes in market shares of traditional exports and the changes in commodity composition on the other. If supply conditions rather than external demand are the major determinant of export success, then we should find that successful exporters increased shares in world market traditional exports and/or diversified the commodity composition of their exports.

Table 3 sets out data on export market shares of principal (traditional)[5] agricultural commodities exported by the sample countries. For each country, all commodities which accounted for at least one percent of total agricultural exports

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4 It should be mentioned that export shares estimated using gross export data tend to show an exaggerated picture as to the diminishing role of agricultural exports. This is because much of the manufactured exports from these countries consist of assembly-type products with the value added by domestic factors being much smaller per unit of export than in agricultural (and other primary) products. Athukorala and Bandara (1989) have illustrated this point drawing upon the Sri Lankan experience.

5 Henceforth the two terms "principal exports" and "traditional exports" are used interchangeably.

TABLE 3

EXPORT MARKET SHARE OF MAJOR AGRICULTURAL EXPORTS OF SAMPLE COUNTRIES, 1960-86 .

	1960-62	1970-72	1984-6
India			
Tea (074)	39.7	32.0	29.8
Cotton (263)	1.5	0.7	0.2
Coffee (071)	0.8	1.0	2.0
Sugar (061)	0.1	0.1	0.5
Tobacco (121)	3.4	4.7	5.2
Indonesia			
Rubber (232)	15.9	16.0	19.5
Tea (074)	3.7	4.1	8.6
Coffee (071)	0.7	2.0	5.6
Fixed Vegetable Oil (424)	5.7	6.3	3.4
Palm Oil (4222)	18.4	18.1	7.6
Malaysia			
Rubber (232)	34.7	36.3	35.3
Fixed Vegetable Oil (424)	8.0	18.3	47.5
Palm Oil (4222)	17.9	65.1	72.0
Pakistan			
Rice (042)	2.3	5.2	11.4
Cotton (263)	1.9	2.6	6.7
Philippines			
Sugar (061)	7.8	6.6	2.0
Tobacco (121)	0.9	0.8	0.5
Fixed Vegetable Oil (424)	8.8	14.3	12.3
Coconut Oil (4243)	62.1	55.8	54.1
Sri Lanka			
Tea (074)	35.6	30.6	25.2
Rubber (232)	4.2	4.2	2.6
Fixed Vegetable Oil (424)	5.8	3.1	0.7
Coconut Oil (4243)	3.2	2.3	2.7
Spices (075)	1.6	2.8	2.1
Thailand			
Rice (042)	20.4	16.9	33.2
Rubber (232)	5.6	7.2	13.4
Maize (044)	3.5	5.3	4.4
Sugar (061)	0.3	1.0	2.8
Tobacco (121)	0.1	1.0	1.7

Note: SITC classification numbers are given in brackets

Source: See Appendix

during 1960-62 are defined as principal commodities. A comparison of data in tables 2 and 3 generally supports the view that superior export performance is associated with market share gains in principal exports. For instance Thailand has significantly improved upon her world export shares in all five commodities listed in the table. Malaysia shows rather impressive performance in palm oil exports with an increase in her world market share from 18 percent in 1960-62 to 72 percent in 1984-86. As MacBean (1989: 123-5) has noted, Malaysia's success of promoting palm oil exports during this period was further aided by inappropriate agricultural and economy- wide policies of traditional palm oil exporting countries in Africa. Despite "resource pull" effects emanating from rapid structural changes in the economy (Barlow and Jayasuriya, 1987), Malaysia has managed to maintain her share in world natural rubber exports. Pakistan's above-average export growth is also associated with increase in market shares of the two principal exports, rice and cotton. Market share gains in tea, rubber and coffee exports laid behind Indonesia's relatively favourable export performance during latter part of the sample period. By contrast, India, Sri lanka and the Philippines have recorded significant market share losses in their principal exports throughout the period.

As regards achievements in the area of product diversification too, Thailand stands out to be the super performer (Table 4). The shares of rice, maize, sugar, rubber, and tobacco in thai agricultural exports have declined throughout, reflecting the growing importance of mew export items. The most noteworthy development in the recent export experience of this country is the growing importance of processes food items such as fish products, canned and fresh fruit and vegetables (shown as "other food " in Table 4). Their share in total agricultural exports increased from form 9 percent in the early 1960s to about 53 percent in 1984-86. These are usually high value commodities with higher income elasticity of demand (Islam, 1988). The emerging export pattern therefore suggests that, through successful diversification, Thailand would have achieved terms of trade gains while reducing the severity of external demand constraint on export growth. Unlike Thailand, Malaysia has continued to depend on a small number of export items. Nonetheless, the export structure of this country has undergone a remarkable transformation from the heavy

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TABLE 4

COMMODITY COMPOSITION OF AGRICULTURAL EXPORTS - 1960-86[*]
(Percentage shares)

	1960-62	1970-72	1984-6
India	100	100	100
Food (0)	70.10	73.6	75.6
Tea (074)	41.80	26.3	16.1
Coffee (071)	2.6	4.1	8.4
Sugar (061)	3.9	4.2	2.4
Other	21.8	39.0	48.7
Beverages and Tobacco (1)	5.4	7.7	8.9
Agricultural Raw Material(2-27-28)	24.5	18.7	15.5
Cotton (263)	5.2	3.4	4.2
Other	19.3	15.3	11.3
Indonesia	100	100	100
Food (0)	15.8	26.2	48.9
Tea (074)	2.9	10.1	21.0
Coffee (071)	4.2	3.4	4.8
Spices	5.3	3.9	5.1
Other	3.4	8.8	18.0
Beverages and Tobacco	4.2	2.4	1.7
Agricultural Raw Material(2-27-28)	74.0	63.8	41.0
Rubber (232)	55.0	34.6	25.8
Wood (247 + 248)	8.2	4.8	10.6
Other	10.8	4.4	4.6
Oil and Fat (4)	6.0	7.6	8.4
Palm Oil (4243)	4.6	6.5	3.6
Other	1.4	1.1	4.8
Malaysia	100	100	100
Food (0)	7.6	11.7	9.8
Cocoa (072)	-	0.3	2.4
Other	7.6	11.4	7.4
Beverages and Tobacco (1)	1.1	1.2	0.3
Agricultural Raw Material(2-27-28)	87.4	75.8	58.4
Rubber (232)	75.2	47.3	24.8
Wood (247 + 248)	9.6	27.1	31.6
Other	2.6	0.6	2.0
Oil and Fat (4)	3.9	12.1	31.5
Palm Oil (4243)	3.8	11.8	29.9
Pakistan	100	100	100
Food (0)	22.8	36.3	57.6
Rice (042)	18.4	23.5	32.0
Other	4.4	12.8	25.6
Beverages and Tobacco (1)	1.2	1.9	1.4
Agricultural Raw Material(2-27-28)	75.9	61.8	41.0
Cotton (263)	49.1	47.8	35.1
Wool (268)	3.2	2.7	1.9
Other	23.6	11.3	4.0

TABLE 4 continued

	1960-62	1970-72	1984-6
Philippines	100	100	100
Food (0)	35.1	39.8	55.3
Fruit, Fresh and Dried (057)	2.7	4.2	13.9
Fruit, Preserved (058)	2.1	3.3	8.2
Sugar (061)	28.2	25.1	12.1
Other	2.1	7.2	21.1
Beverages and Tobacco (1)	2.0	2.3	1.9
Agricultural Raw Material(2-27-28)	56.5	45.3	16.1
Copra (223)	16.2	13.4	0.7
Coconut Fiber (245)	3.7	1.9	2.1
Wood (247 + 248)	19.6	28.4	9.2
Other	17.0	1.6	4.1
Oil and Fat (4)	6.4	12.6	26.7
Coconut Oil (4243)	6.1	12.5	26.6
Sri Lanka	100	100	100
Food	70.2	70.5	77.3
Tea (074)	65.3	61.9	61.6
Fruit (057) (mainly desiccated coconut)	3.4	5.0	6.4
Spices (075)	1.1	2.5	3.4
Other	0.4	1.1	5.9
Agricultural Raw Material (2-27-28)	24.0	22.8	19.1
Rubber (232)	17.6	18.2	14.4
Coconut Fiber (265)	1.9	2.9	2.3
Oil and Fat (4)	5.8	6.7	3.6
Thailand	100	100	100
Food (0)	51.8	67.5	82.1
Rice (042)	35.2	25.0	20.9
Maize (044)	6.2	15.8	8.1
Sugar (061)	1.4	4.6	6.4
Other	9.0	22.6	52.7
Beverages and Tobacco (1)	0.3	1.9	1.5
Agricultural Raw Material (2-27-28)	47.7	30.6	16.4
Rubber (232)	20.5	15.8	12.5
Other	27.2	14.8	3.9

Note: SITC classification numbers are given in brackets

Source: See Appendix

dependence on a single commodity with less favourable market prospects (rubber) through the successful expansion of palm oil exports. The dependence of Pakistan on rice and cotton as the two key commodities has increased during this period. For the remaining countries the diversification pattern is less clear. In India, Sri Lanka and the Philippines, shares of traditional export commodities have mostly declined over time, but this is to a significant extent a reflection of poor performance of these exports than of success in the development of new products.

5   Determinants of Exports: An Econometric Analysis

The survey of export performance in the previous section suggested that export success of individual countries depends more on domestic supply conditions than on external demand conditions, and that domestic supply conditions influence export performance through the country's ability to maintain its competitiveness in traditional products and to diversify into new product lines. In this section we proceed to test the relative importance of external demand conditions on the one hand and competitiveness and commodity diversification on the other in determining export success. The latter two variables are expected to capture the net effect of supply-side factors on export performance.

The conventional approach to the decomposition of these influences in trade performance is to apply the constant market share analysis (CMSA). CMSA, despite its greater attraction to researchers given its less-demanding data requirements, has at least two major limitations (Yotopouios and Nugent, 1976: 315-16). Firstly, the results are sensitive to the choice of the final or the initial year as the base year. Secondly, only the demand influence is directly calculated, and the other influences are estimated as residuals on the basis of the restrictive assumption that export performance is entirely accounted for by the three factors. Given these limitations of CMSA an alternative approach is adopted here. We measure the three factors separately using specific indices and then use them as explanatory variables in a time

series regression model to explain changes in real exports[6]. The model is:

$$XV_t = f(WD_t, CM_t, DV_t) \tag{1}$$

$$f_1' \geq 1, \quad f_2' \geq 1, \quad f_3' \leq 1$$

where,   XV = volume of exports,
            WD = world demand,
            CM = competitiveness in traditional exports,
            DV = export diversification, and
            t = time subscript.

World demand (export market potential) for the set of commodities exported by a country (XV) is measured in terms of a weighted-average index of constant price world exports of relevant commodities:

$$WD_t = \sum_{i=1}^{n} \alpha_{it} WX_{it} \tag{2}$$

where, α_{it} is the share of commodity i in country's total agricultural exports, WX_{it} is an index of constant price world export of commodity i, and n is the number of commodities.

Export diversification (DV) is measured using the Gini-Hirschman coefficient:

$$DV_t = 100 \sqrt{\sum_{i=1}^{n} \left(X_{it} / \sum_{i=1}^{n} X_{it} \right)^2}$$

where X_{IT} is value of exports of commodity i. DV is an indirect (direct) measure of diversification (concentration). Its highest possible value is 100 which occurs when total export is composed of only one commodity. The increase in the number of goods

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6 The methodology is adapted from Kravis (1970b). See also Love (1984), for a similar approach.

exported and/or more even distribution of export among these goods is reflected in a lower value of DV.

The index of competitiveness in traditional exports is constructed as the ratio of actual (observed) exports to hypothetical exports which is estimated by assuming that the country had maintained its "initial" market shares in the exports of these commodities:

$$CM_t = 100[\sum_{i=1}^{N} XP_{it} / \sum \beta_i XW_{it}]$$

where, for each ith principal commodity, XP is export earnings of the given country, XW represents world export earnings, and β is the initial-period world market share (1960-62 annual average). N is the number of principal commodities.

The coefficients of WD and CM are hypothesised to be positive. Since DV is an inverse measure of diversification, the sign expected for its coefficient is negative. If external market conditions are the dominant factor in determining export performance, WD should bear the brunt of explaining XV. On the contrary, if domestics supply factors are relatively more important, XV should be largely explained by CM and DV.

It is important to note that the two supply-side variables used in the model capture the cumulative influence of both domestic policy and various other spontaneous factors operating on the supply side. Of course a more appropriate approach would have been to use variables representing domestic policy influences in place of CM and DV in the model. There are, however, formidable conceptual and data problems which prevent us from adopting this approach. Many components that determine overall incentives to export are not directly measurable (Riedel et. al. 1984; Bhagwati and Srinivasan, 1975). In addition to direct financial incentives, various other supply-side initiatives by the government such as infrastructure development, and agricultural research and extension services are important in determining export

success. When these influences are not adequately captured in the model the world demand variable tends to "picks up" the influence of these missing effects, leading to an exaggeration of the demand effect in the final results[7]. Given these problems, we consider our approach of representing the net impact of supply side factors in terms of CM and DV as more appropriate in delineating the impact of external demand conditions on export performance.

The model was estimated for each country using annual time series data covering the period 1960-86. Export data used in the analysis are in term of constant (1980) prices. WD and CN series were constructed using data disaggregated at the 3-digit level of SITC. For the purpose of constructing CM series, the commodities which accounted for 1 percent or more of total agricultural exports during 1960-62 were selected as traditional exports. All variables were measured as indexes with the 1960-62 annual average as the base value.

Prior to estimation, we tested for non-stationary of (or the presence of a unit root in) each of the data series (in log form) employing the Dickey-Fuller test and Sargan-Bhargava DW test (Table 5). The tests suggested that, for all sample countries except Sri Lanka, the violation of the assumption of stationary in data series was sufficiently important to impart bias to the regression estimates. Guided by this finding, we used data in level (original) form for Sri lanka, and in first-difference form for the other countries[8]. After finding that the regressors were not asymptotically correlated with the contemporaneous disturbance term (in terms of the Wu-Hauesman test in all cases), the model was estimated by OLS. We employed the

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7 This point can be illustrated by using the empirical results reported in Balassa (1989). This study attempts to explain agricultural exports of developing countries using a regression model which has real incentives (to represent the supply-side influences) and world income as the two explanatory variables. The regression coefficient of the real incentive variable is positive and statistically significant leading to the interpretation that "domestic policy matters". However, the coefficient of the income variable is significant and much larger in magnitude suggesting that external demand is the binding constraint. We suspect that this result is a statistical artefact representing the missing influences of supply-side developments.

8 In all cases we were able to achieve stationary through first differencing.

Chow test of parameter stability to test for possible impact on the hypothesised relationship of the slowing down of world demand growth since 1973.

The regression results, together with relevant test statistics, are reported in Table 6. Note that since all variables have been used in logarithmic form, the estimated coefficients can be directly interpreted as elasticities. For all countries except Malaysia, results are reported only for the total sample period, as the Chow test failed to detect a significant break in the observed relationship between 1960-72 and 1973-86. For Malaysia, given the presence of evidence of such break, estimates are reported for the two subperiods as well. All the regressions pass the F-test for overall statistical significance, and Ramsey's RESET test for the appropriateness of the functional form chosen at the one-percent level. The basic assumptions relating to the OLS error process are overwhelmingly supported by various tests.

The coefficient of world demand variable (WD) is statistically significant (at least at the 10 percent level) with the expected sign for all countries except Thailand. Thus, the results suggest that, overall, world demand is an important determinant of export performance. The elasticity of individual-country real exports with respect to change in world demand varies from .28 in India to .89 in the Philippines, suggesting a sample average of over .5. However, the results for the competitiveness and diversification variables (CM and DV) suggest that supply-side factors are relatively more important than world demand in explaining changes in real exports. The coefficients of these two variables are statistically significant (with the expected sign) at the 5 percent level or better in all cases. The coefficient of CM is much larger in magnitude than that of WD for India, Indonesia, Malaysia, and Thailand, and approximately equal to the latter for Pakistan, the Philippines and Sri Lanka. The magnitude of the DV coefficient is equal to or greater than that of WD for all countries except Sri Lanka. All in all, the results provide ample support for the hypothesis that while world market conditions do influence export levels in general, countries can still achieve superior export performance through active supply side policies.

TABLE 5
UNIT ROOTE TESTS FOR VARIABLES USED IN THE ANALYSIS

		DF	ADF	DW
INDIA	XV	-2.02	-1.77	0.46
	WD	-4.37*	-2.48	0.34
	CM	-3.05	-2.51	0.42
	DV	-3.20*	-3.06*	-0.92*
INDONESIA	XV	-3.85*	-2.83	0.24
	WD	-1.86	-1.82	0.24
	CM	-3.32*	-2.55	0.68
	DV	-4.58*	-8.74*	0.44
MALAYSIA	XV	-4.02*	-3.19*	0.46
	WD	-2.99*	-3.34*	0.30
	CM	-2.85	-1.54	0.28
	DV	-3.43*	-2.45	0.30
PAKISTAN	XV	-4.12*	-5.58*	0.44
	WD	-2.20	-2.22	0.58
	CM	-3.03*	-3.05*	0.52
	DV	-4.12*	-4.56*	1.52*
PHILIPPINES	XV	-2.54	-3.78*	0.48
	WD	-2.35	-3.02*	0.40
	CM	-2.03	-3.58*	0.67
	DV	-3.21*	-2.96*	1.11*
SRI LANKA	XV	-3.98*	-2.35	1.08*
	WD	-2.71	-3.02*	0.40
	CM	-4.08*	3.58*	0.79*
	DV	-4.28*	-2.95*	0.98*
THAILAND	XV	-2.94*	-2.35	0.46
	WD	-2.53	-2.83	0.45
	CM	-4.64*	-2.50	0.74
	DV	-4.31*	-2.95*	1.06*

Note: DF = Dickey-Fuller statistic
ADF = Augmented Dickey-Fuller statistic (in all cases one period lag on the dependent variable was adequate to ensure residual whiteness)
DW = Durbin-Watson statistic from the first-order autoregressive regression
Approximate critical values (sample size = 50): DF/ADF - 5% = -2.93, 1% = -3.58;
Sargan-Bhargava DW test - 5% = 0.78, 1% = 1.00
An asterisk (*) indicates the rejection of the null hypothesis that the variable is an integrated process of order 1.

TABLE 6
DETERMINANTS OF AGRICULTRUAL EXPORTS (XV): REGRESSION RESULTS

	INDIA	INDONESIA		MALAYSIA		PAKISTAN	PHILIPPINES	SRI LANKA	THAILAND
			1960-86	1960-72	1973-86				
C	0.02 (1.97)***	0.00 (0.19)	0.01 (1.07)	0.00 (0.30)	0.03 (2.22)**	0.00 (0.22)	0.00 (0.27)	8.07 (1.01)	0.00 (1.27)
WO	0.28 (1.79)***	0.58 (1.76)***	0.43 (2.87)*	0.76 (3.64)*	0.48 (4.22)*	0.84 (10.36)*	0.89 (8.34)*	0.75 (10.30)*	0.23 (1.55)
CM	0.72 (7.76)*	0.79 (6.35)*	0.69 (2.67)**	1.09 (4.54)*	0.52 (2.31)**	0.90 (15.61)*	0.89 (9.00)*	0.70 (13.72)*	0.89 (7.13)*
DV	-0.40 (2.41)**	-0.53 (2.62)**	-0.43 (1.76)***	-0.94 (5.10)*	0.83 (3.05)*	-1.11 (6.33)*	-0.91 (3.42)*	-0.32 (2.24)**	-0.40 (2.35)**
Test Statistics[b]									
$\bar{R}^2$	0.85	0.63	0.42	0.83	0.66	0.92	0.78	0.90	0.70
F(3.1, 4.8)	22.25	15.48	6.56	19.95	8.37	98.66	30.15	86.34	20.50
SE	0.03	0.07	0.05	0.03	0.03	0.03	0.08	0.03	0.08
DW(du-1.7, 1.5)	2.05	1.53	2.47	1.81	2.32	1.47	2.63	2.05	1.79
LMSC(4.3, 8.0)	0.23	0.04	2.30	0.05	0.22	0.23	4.18	0.02	0.03
JBN(6.0, 9.2)	1.51	3.62	0.06	3.25	0.76	3.50	0.73	0.51	2.03
RESET(4.3, 8.0)	0.05	1.08	0.83	2.31	2.78	0.45	3.25	3.79	0.04
ARCH(4.3, 7.3)	0.06	0.52	9.40	0.02	2.68	1.34	0.12	2.50	0.45
CHOW(2.9, 4.3)	2.73	0.83	9.68			1.48	0.79	1.53	0.49

Notes:
a   t ratios are given in brackets with significance levels (one-tailed test) denoted as: * = 1%; ** = 5%; and *** = 10%

b   Figures in brackets are critical values (5%, 1%) of the test statistics
LMSC, Lagrange multiplier test of residual autocorrelation
JBN, Jarque-Bera test for the normality of residuals
RESET, Ramsey's test for functional form misspecification
ARCH, Engle's autoregressive conditional heteroscedasticity test
CHOW, Chow test of stability of the regression coefficients (between 1960-72 and 1973-86)

Finally, the results for Malaysia deserve further attention, given the statistically significant differences in regression estimates for the two sub period. The equation for 1960-72 is more supportive of our hypothesis than the one for 1973-86. In the latter equation the coefficient of DV has the perverse sign and is statistically significant at the 1 percent level. The magnitude of the coefficient of CM for the latter period is much smaller and less significant than the one for the former period. The explanation for this difference in the observed relationship perhaps lies in the nature of commodity diversification pattern of the country. As noted above, Malaysia's attempts to reduce her dependence on natural rubber was overwhelmingly focused on a single commodity (palm oil). Through this policy, by the mid 1970s, Malaysia gained prominence in the world palm oil market in addition to her historical prominence in world rubber trade. Given this pattern of commodity dependence, external demand conditions would have become relatively more binding on the country's export performance.

5   Conclusion

In this paper we have examined the relative importance of external demand conditions and internal supply factors in agricultural export performance in developing countries, drawing upon the experience of seven Asian countries. The analysis was conducted by comparison of the experience of countries in relation to differences in economic policy regimes as well as by time-series econometric analysis of export performance of individual countries over the period 1960-86.

The results reject the hypothesis that export growth of developing countries depend crucially on the world market factors over which they have little control and suggest that while external demand does enter the picture as a significant influence, export success emanates mostly from active supply-side policies as against the passive acceptance of external demand conditions. Thus external demand constraint does not seem to be a valid criterion in determining the relative emphasis placed on agricultural exports as against manufactured exports in the export policy of developing countries.

APPENDIX

For the purpose of this study, agricultural exports are defined to include commodities in Section 0 (food and live animals), Section 1 (beverages and tobacco) less 122 (manufactured tobacco), Section 2 (inedible crude material) less Divisions 27 and 28 (minerals and crude fertiliser), and Section 4 in the Standard International Trade Classification (SITC), Rev. 2 of the United Nations.

Export data for individual countries and world exports of relevant commodities were compiled from various issues of UN, Yearbook of Trade Statistics (for the period 1966-86) and FAO, Trade Yearbook (for the period 1960-65), supplemented with individual country sources as required to fill gaps. Export data for Pakistan for the period 1960-73 comes from the data appendix (unpublished) to Guisinger and Scully (1990). Fiscal-year data reported in this source were converted on to a calendar-year base on prorata basis to link with the UN data. For Sri lanka, data for 1970-73 period are from Sri Lanka Customs Returns. For India data for the period 1982-86 were compiled from Statistical Yearbook of India.

Export growth rates, export earning indices, and commodity concentration coefficients used in the empirical analysis are based on constant (1980) price export data. In the absence of export price (or unit value) indexes for individual countries at the required level of disaggregation, world market price indexes obtained from, UN, Monthly Bulletin of Statistics and FAO, Production Yearbook (for the period 1960 -73) were used throughout. The export prices of major primary commodities were used directly to individual commodities of each country when such direct matching was possible. For the remaining commodities of each country, world price indices for relevant 2-digit items (or SITC 2-digit items after the subtraction of major export goods included therein) were used. For each country, the index of total agricultural export earnings was constructed by summing up constant price export earning series of SITC 3-digit items. Our procedure of using world prices as deflators for individual countries is essentially based on the law of one price assumption. There is evidence that this assumption is not too restrictive as far as internationally traded primary commodities are concerned (Dornbusch, 1988).

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