National Centre for Development Studies
The Australian National University

ECONOMICS DIVISION — RESEARCH SCHOOL OF PACIFIC STUDIES

China Paper 91/3

The shadow price of capital in China

Lin Shujuan

Research School of Pacific Studies

ISSN 1037-4299
ISBN 0 7315 0952 8

ECONOMICS DIVISION — RESEARCH SCHOOL OF PACIFIC STUDIES

China Paper 91/3

The shadow price of capital in China

Lin Shujuan

Lin Shujuan has a Masters degree in Agricultural Development Economics and she recently completed her PhD dissertation, 'Application of cost-benefit analysis to China: a case study of the Xiamen Special Economic Zone' at the National Centre for Development Studies, Research School of Pacific Studies, Australian National University. Lin Shujuan completed her undergraduate studies at Xiamen University.

This series is intended to provide prompt preliminary distribution of new work on China's reforms and economic growth. All papers issued in this series have been formally refereed. The views expressed in this Working Paper are those of the author and should not be attributed to the Economics Division.

Key to symbols used in tables

- n.a Not applicable
- .. Not available
- - Zero
- . Insignificant

Printed in Australia by Socpac Printery

Economics Division
Research School of Pacific Studies
The Australian National University
GPO Box 4 Canberra ACT 2601
Australia

Enquiries to:
The Editor
Telephone (06) 2494700
Fax (06) 2572886

Abstract

The shadow price of capital is the present value of the stream of future consumption generated by current marginal investment. This paper derives an estimate of the shadow price of capital for China based on estimations of the marginal productivity of capital, the marginal propensity to save and the consumption rate of interest. Macro-economic data from independent accounting units of state industrial enterprises is compared to micro-economic data from World Bank project reports to produce a more realistic estimate. Using a simple model with no reinstatement, where the shadow price of capital depends only on the marginal productivity of capital and the consumption rate of interest, a lower limit for the shadow price of capital of 2.1 is estimated. Using a more complex aggregate function approach, an upper limit of 4.2 is estimated. The mean value of 3.2 is chosen as the shadow price of capital or the value of public investment in China. This estimate indicates that opportunity cost of capital is two times of its market price. In other words, the use of capital in China is subsidized. To exploit its labour-intensive comparative advantage and to correct capital market distortions, capital should be made more expensive to the user in China.

The shadow price of capital in China*

The capital required for public project investment may come out of current consumption, alternative investment, or both. In any case, one dollar of marginal investment will generate a stream of future consumption. The present value of this stream of consumption is called the shadow price of capital.

Like many developing countries, China has adopted a capital-intensive development strategy for industrialization. Given limited savings, a desire for advanced technology and ambitious investment planning, policy is biased toward investment. That is, a dollar of investment is considered to be more valuable than a dollar of current consumption.

In project evaluation, the shadow price of capital has to reflect the premium that the government places on investment over consumption, in project evaluation. If consumption is the numeraire, then a shadow price of capital of 1.2 means that income from a project that is re-invested is valued 20 per cent more than income that results in consumption. In other words, a premium of 20 per cent is placed both on the value of output of the project available for re-investment, and on the value of resources taken from investment elsewhere.

The primary objective of this paper is to estimate the shadow price of capital for China. The data used are based on statistics from independent accounting units within state industrial enterprises. The estimates derived show that at present capital is underpriced in China and that government policy should make capital more expensive to the users.

A theoretical framework for the shadow price of capital

Consider the case where total capital is fixed. The amount of capital required for a public project necessarily comes from alternative investment. Suppose that at the margin a unit of investment generates a projected

*This research was carried out as part of my doctoral dissertation presented at the National Centre for Development Studies at the Research School of Pacific Studies at the Australian National University. I am grateful for the assistance of my supervisor Professor Peter Warr, and advisers Dr Francis Perkins and Professor Helen Hughes.

stream of return of q per year, then q represents the marginal productivity of capital. Also suppose that this return of q is immediately consumed as it becomes available. The present value of the consumption stream generated by a unit of investment can be denoted as:

$$\frac{qK_o}{(1+i)} + \frac{qK_o}{(1+i)^2} + \ldots + \frac{qK_o}{(1+i)^T} = \sum_{t=1}^{T} \frac{qK_o}{(1+i)^t} \quad (1)$$

where

q = marginal productivity of capital;

K_o = capital cost of the project;

i = consumption rate of interest which is the social rate of discount for a stream of income expressed in terms of consumption equivalents;

If the average level of consumption increases over time and if diminishing marginal utility is accepted, future consumption generated by public investment must be discounted at a rate that reflects the expected future growth rate of consumption, g, and the rate of diminishing marginal utility, n. To derive n, a utility function must be specified:

$$U_c = C^{-n} \quad (2)$$

where

U_c = marginal utility at consumption level c;

C = consumption level c;

n = parameter of the utility function.

The basic assumption underlying this utility function is that the marginal utility of consumption decreases when the level of consumption increases. The higher the value of n, the higher the rate of diminishing marginal utility and the more egalitarian the government's objectives (Squire and Van der Tak 1975:63).

Furthermore, if the government considers future consumption less valuable than present consumption simply because it occurs in the future,

the discount rate must include an element, r, reflecting pure time preference. The resulting discount rate is referred to in Squire and Van der Tak (1975:68) as the consumption rate of interest.

$$i = ng + r \tag{3}$$

where

i = consumption rate of interest;

n = value of the social elasticity of the marginal utility of consumption;

g = the expected growth rate of real per capita consumption;

r = pure time preference rate.

Equation 1 is approximately equivalent to

$$qK_o \sum_{t=1}^{T} \frac{1}{(1+i)^t} = \frac{q}{i} K_o \tag{4}$$

since

$$\sum_{t=1}^{\emptyset} \frac{1}{(1+i)^t} = \frac{1}{i} \tag{5}$$

The present value of the aggregate consumption stream is then q/i times the capital investment. In a simple model with no reinvestment, the shadow price of capital depends only on the marginal productivity of capital and the consumption rate of interest.

$$S_k = \frac{q}{i} \tag{6}$$

where

S_k = shadow price of capital

However, it is unrealistic to assume that all returns from investment are immediately consumed. The shadow price of capital must also reflect the consumption generated indirectly by the reinvestment. Suppose that a fraction of the returns, s, is re-invested and only (1-s) is immediately consumed. If re-investment of the returns leads to an accumulated investment of A_t in year t, the overall direct and indirect return from this investment will be

$$qA_t$$

Assuming the fraction (1 - s) of this return is consumed, the contribution to aggregate consumption in year t is

$$(1 - s)\, qA_t$$

Therefore the shadow price of capital, that is, the present value of the entire stream of consumption, is

$$S_k = \sum_{t=1}^{T} \frac{(1 - s)\, qA_t}{(1 + i)^t} \tag{7}$$

The capital accumulated in year one is still the original investment

$$A_1 = 1 \tag{8}$$

In year two, the total capital investment is augmented by a fraction of the first year's return (sqA_1). Thus the accumulated capital in year two is

$$A_2 = A_1 + sqA_1 = (1 + sq)\, A_1 = 1 + sq \tag{9}$$

In year three, the accumulated capital includes the re-investment of a fraction of year two's return as well as the earlier reinvestment. The capital accumulated by year three is

$$A_3 = A_2 + sqA_2 = (1 + sq)\, A_2 = (1 + sq)^2 \tag{10}$$

Hence, the capital accumulation in year t is the sum of the available capital in the previous year A_{t-1}, and the reinvestment from the returns of the previous year, sqA_{t-1}. The general formula for capital accumulated in year t is

$$A_t = (1 + sq)^{t-1} \tag{11}$$

Substituting equation 11 into equation 7, we have

$$S_k = \sum_{t=1}^{T} \frac{(1 - s) q (1 + sq)^{t-1}}{(1 + i)^t} \tag{12}$$

or equivalently

$$S_k = \frac{(1 - s) q}{i - sq} = \frac{q - sq}{i - sq} \tag{13}$$

since

$$\sum_{t=1}^{\infty} \left(\frac{1 + sq}{1 + i}\right)^t = \frac{1 + sq}{i - sq} \tag{14}$$

Equation 13 expresses the shadow price of capital as the product of the share of consumption in the marginal return from investment, (1-s), and the marginal productivity of capital (q), divided by the difference between the consumption rate of interest (i) and the rate at which capital accumulates (sq).

Three parameters are involved in the estimation of the shadow price of capital equation 13: the marginal productivity of capital (q), the marginal propensity to reinvest (s) and the consumption rate of interest (i). The limitations of the estimation of shadow price of capital must be recognized. We have assumed that all the parameters that determine the shadow price of capital remain constant over time. If any of these parameters change, equation 13 will not accurately reflect the true shadow price of capital.

The assumption that all parameters remain constant over time generally implies that equation 13 overestimates S_k. It is reasonable to

expect that the divergence between q and i will decrease over time and reduce the value of current investment. For this reason, Squire and Van der Tak (1975) treat the value of S_k derived from equation 13 as a maximum estimate of its true value.

Since China has a centrally planned economy, state-owned enterprises dominate its economic activities. Data for estimation of the propensity to save and the productivity of capital for the private sector are difficult to collect. It is also difficult to distinguish between public and private s and q. Thus, in this study, a general shadow price of capital is derived from information and data collected from independent accounting units within state industry.

Estimation of the marginal productivity of capital in China: alternative approaches

In a perfect capital market with no government intervention, the market interest rate would reflect the social time preference rate as well as the social marginal productivity of capital, provided there is perfect competition in all other markets and there are no externalities. In China, however, not only are capital markets rudimentary, but capital prices are seriously distorted. Commodity and other factor markets are also highly distorted. The conditions required to equate the market interest rate to the social marginal productivity of capital are not likely to be satisfied. The market rate of interest is only of limited value in judging the level of the marginal productivity of capital.

Estimation of the marginal productivity of capital can be based on both macro- and micro-economic data. For China, both sources are explored. Direct estimation of the marginal productivity of capital for China is not an easy task because of numerous conceptual and empirical problems. An estimation of the social marginal productivity of capital in this paper is obtained by comparing estimations from four approaches:

- the marginal capital-output ratio approach;
- the marginal capital-output ratio modified to reflect labour's contribution;
- an aggregate production function approach; and
- micro-level estimates.

The three different macro-economic estimation procedures are undertaken first, followed by a study of micro-data to establish reliable estimates of the marginal productivity of capital in China.

The marginal capital-output ratio approach

In economies characterized by surplus labour with the marginal product of labour close to zero, the marginal productivity of capital (q) may be approximated by calculating the incremental output-capital ratio (k) which is simply the inverse of the familiar incremental net capital output ratio (ICOR). Formally,

$$q = \frac{\Delta Q}{\Delta K} \qquad (15)$$

where

ΔQ = incremental total output;

ΔK = incremental total capital investment.

Hence, the marginal productivity of capital expressed in equation 15 is the total output generated by a unit of domestic capital investment. In the literature, it is suggested that equation 15 be used as an upper limit for the marginal productivity of capital because it over-estimates the marginal productivity of capital for at least three reasons (Squire and Van der Tak 1975:110). First, it is obtained as an incremental average estimate rather than a truly marginal estimate; second, the implicit assumption of zero marginal productivity of labour is not really valid; and third, no allowance is made for technical progress and productivity growth in explaining increments in output.

The adjusted marginal capital-output ratio approach

One way to exclude labour's contribution to net incremental output is to subtract the increase in the value of labour's input per unit of net investment from the incremental net output capital ratio (Squire and Van der Tak 1975:111).

Formally,

$$q = \left(\frac{\Delta Q - \Delta L}{\Delta K}\right) \qquad (16)$$

where

ΔK = incremental total capital investment;

ΔQ = incremental total output;

ΔL = incremental contribution of labour to output.

In practice, it is assumed that labour's marginal contribution to output (MP_L) is equal to the increase in its factor payments, that is, the increase in the wage bill over the year. Although the adjusted marginal output-capital ratio approach provides a better estimate of the marginal productivity of capital than the previous estimate, it is still crude and could be expected to over-value the marginal productivity of capital due to the first and third reasons noted in the previous section.

The aggregate production function approach

When reliable national accounts data are available, a direct estimate of the marginal productivity of capital can be obtained by estimating the parameters of a Cobb-Douglas (or other more flexible) production functions. A Cobb-Douglas formulation is used here.

Formally,

$$Q = A_t K^{\alpha} L^{\beta} \qquad (17)$$

where

Q = total output;

A = a constant;

t = a time trend which reflects technical progress;

K = total capital input;

L = total labour input;

α = elasticity of total output with respect to capital;

β = elasticity of total output with respect to labour.

Constant returns to scale for the Cobb-Douglas production funtion implies the restriction $\alpha + \beta = 1$. Therefore, the marginal productivity of capital gives the following,

$$\frac{\Delta Q}{\Delta K} = \alpha A_t K^{\alpha} L^{(1-\alpha)} \qquad (18)$$

$$= \alpha (Q / K)$$

Given the assumptions of perfect competition and constant returns to scale, α is the share of profits in national income; Q / K is the output-capital ratio.

In empirical studies, the translog production function form has also been used to estimate the output elasticities of capital and labour. Under certain restrictive conditions the translog production function form simplifies to the well-known Cobb-Douglas specification (equation 17 above).

The advantage of the translog function is that it allows the output elasticities of capital and labour to vary over time. If the output elasticity of capital grows relative to that of labour, then the increasing weight given to capital and the faster growing input would cause the index of factor inputs to rise more rapidly than with constant output elasticities. Alternatively, a growing labour output elasticity would cause the productivity index to rise more rapidly than with constant Cobb-Douglas elasticities. For the two-factor case, the translog function can be written as

$$\text{Ln } Q_t = a_o + g_t + a_k \ln K_t + a_L \ln L_t + (1/2) a_{kk} (\ln K_t)^2 + (1/2) a_{LL} (\ln L_t)^2 + a_{kL} \ln K_t \ln L_t + e_t \qquad (19)$$

where

Q = net industrial output;

t = a time trend;

K = net capital input;

L = labour input.

a_k = elasticity of total output with respect to capital;

a_L = elasticity of total output with respect to labour;

a_{kL} = elasticity of substitution between capital and labour.

Hence, the marginal productivity of capital is,

$$\frac{\Delta Q}{\Delta K} = a_k \frac{Q}{K} + a_{kk} \frac{Q}{K} + a_{kl} \frac{Q}{K} \qquad (20)$$

The assumption of constant returns to scale requires the following restrictions on the parameters of the production function:

$$a_k + a_l = 1 \qquad (21)$$

$$a_{kk} + a_{kl} = 0 \qquad (22)$$

$$a_{ll} + a_{kl} = 0 \qquad (23)$$

In the Cobb-Douglas production function where $a_{kk} = a_{ll} = a_{kl} = 0$, the output elasticities are simply a_k and a_l. They remain constant over the entire sample period.

Macro-economic data for estimation of the marginal productivity of capital for China

Measures of total industrial output, capital investment, fixed assets and labour required for independent accounting units within state industry are necessary to estimate equations 15, 16, 17 and 19. However, the relevant data published by the Chinese government contain many weakness. At least four sources of data weaknesses can be identified.

(i) Total fixed assets are compiled from cumulative new investment in successive years with each investment valued at current prices. Unless the prices of capital goods remain stable, data generated in this way may not accurately reflect the actual growth of real fixed assets of independent accounting units within state industry.

(ii) Investment data for the independent accounting units within state industry include a variety of service facilities such as housing, schools, health clinics, stores, etc. Data which include investment connected with these service facilities in industrial input data overstate the amount of capital used directly in the production process.

(iii) Changes in the relative prices of the main components of total investment can also greatly affect the composition of industrial fixed

investment. In China, especially during the past decade, neither the level of investment goods prices nor the relative prices of major investment goods have remained constant over time. Therefore, the size and composition of the capital stock of state-owned industry as shown in the *China Statistical Yearbook* 1950-91 may deviate widely from the reality.

(iv) The data for total labour input in state-owned industry includes non-production labour input such as those engaged in providing public services, trading enterprises owned by the firm and so forth, while the national income generated from those non-production sectors is excluded from total industrial output. Hence, using official data is likely to overestimate true labour input and undervalue the total industrial output.

For the above reasons, available statistics cannot provide an accurate evaluation of the capital-output relationship for independent accounting units within state industry. Revised data of total industrial output, capital investment and labour required for independent accounting units within state industry are derived to rectify the principal shortcomings of official available data. Revised data are based on 1952 prices. The procedure for correcting the shortcomings in published data has been described by Chen, Jefferson *et al.* (1988). Basically these authors made the following adjustments:

(i) A new time series of net industrial output data was created based on constant 1952 prices, by using a national income deflator;

(ii) Annual figures for fixed capital stock were decomposed into three categories: non-residential construction, equipment, and others. Appropriate price indices, derived by Chen, Jefferson *et al.* (1988), were used to deflate each component of industrial investment and the deflated components were combined to form new time series data of industrial investment valued at constant 1985 prices;

(iii) Annual figures for capital inputs were formed by including fixed capital stock and working capital, but excluding residential construction, which represents the largest, though not the only category of non-industrial projects in industrial investment data;

(iv) Total labour input data was compiled by excluding non-production labour input from the original total labour input data. Because of a lack of accurate data, the amount of non-production labour employed was roughly calculated from the ratio of production to non-production

investment. In fact this may over-estimate the level of non-production labour because production activities are likely to be more capital-intensive than non-production ones.

The adjustments described above attempt to overcome the major problems of Chinese industrial input data while preserving consistency between inputs and outputs. Appendix Table A1 contains the original and revised data for independent accounting units within state industry from 1952-88. More detailed discussions of revised data can be found in Chen, Wang *et al.* (1988) and Chen, Jefferson *et al.* (1988).

Data for the derivation of the incremental capital-output ratio in state-owned industrial enterprises, is presented in Appendix Table A2. The average incremental capital-output ratio estimated by using equation 15 over the period 1952-88 was found to be 0.57.

Data for the derivation of incremental real net labour-investment ratios are presented in Appendix Table A3. The adjusted marginal output-capital ratio for independent accounting units of state industry estimated by using equation 19 was 0.57 - 0.20 = 0.37.

Estimation results for production functions

Before comparing the two estimation results of marginal productivity of capital by using equations 17 and 19, one modification made to the original two equations should be noted. The ordinary least square (OLS) results show a low value of Durbin-Watson statistics for the Cobb-Douglas production function and the translog production function (DW_1=0.95, DW_2=0.97 respectively). This indicates that there is autocorrelation among residuals. By using the error correction method (ECM), the first-order autoregression (AR(1)) correction improved statistical results (DW_1=1.56, DW_2=1.55 respectively) but autocorrelation among residuals still remained. Therefore, second-order autoregression (AR(2)) is employed in both equations 17 and 19.

Table 1 shows the estimation results using time series data for the independent accounting units within state industry from 1952-88.

Table 1
Estimation results

	Cobb-Douglas $\alpha+\beta\leq 1$ (1)	Translog $\alpha+\beta=1$ (2)	Cobb-Douglas $\alpha+\beta\leq 1$ (3)	Translog $\alpha+\beta=1$ (4)
Constant	-71.2	-51.1	-20.7	34.8
	(2.7)*	(0.9)	(1.7)***	(0.5)
t	0.4	0.2	0.1	-0.2
	(2.7)*	(0.7)	(1.7)***	(0.6)
a_k	0.39	2.16	0.68	0.78
	(2.5)**	(1.7)**	(6.3)*	(5.4)*
a_l	0.32	4.4	0.32	0.22
	(3.1)*	(1.4)****	(3.0)*	(1.5)****
$1/2\ a_{kk}$	n.a	-0.77	n.a	0.26
		(1.5)****		(0.9)
$1/2\ a_{ll}$	n.a	-1.05	n.a	-0.26
		(1.4)****		(0.86)
a_{kl}	n.a	0.28	n.a	0.26
		(1.9)***		(0.86)
R^2	0.99	0.99	0.99	0.99
DW	1.94	2.03	1.89	1.94
Heteroskedasticity test				
Chi-square	0.76	1.789	0.40	0.03
	(DF=1)	(DF=1)	(DF=1)	(DF=1)
Chi-square critical value	3.84**	3.84**	3.84**	3.84**
Ramsey test				
Reset (2)	0.49[a]	0.34[b]	3.88[a]	17.96[b]
F critical value	4.15**	4.18**	4.15**	4.18**

[a] F with DF1=1 and DF2=32.
[b] F with DF1=1 and DF2=29.
* significant at 0.5 per cent.
** significant at 1 per cent.
*** significant at 5 per cent.
**** Significant at 10 per cent.

Columns (3) and (4) in Table 1 show the estimation of equations 17 and 19 under the assumption of constant returns to scale. Thus, the sum of the output elasticities was constrained to equal unity. Initial estimation without this restriction is shown in columns (1) and (2) in Table 1.

Numbers in brackets are t values. The results show that Cobb-Douglas functional forms are a better estimation than the translog functional forms. All t statistics of the parameters are significant at 5 per cent in the Cobb-Douglas functional forms (columns 1 and 3), but not in the translog functional forms (columns 2 and 4). Moreover, the low F ratio of the Ramsey test leads to the acceptance of the Cobb-Douglas production functional form. The significant F value of the Ramsey test in the translog production function (column 4) indicates that the functional form specified for the Chinese economy is inadequate.

Statistically, both Cobb-Douglas specifications are acceptable with or without restrictions of constant returns to scale. However, economically, the assumption of constant returns to scale is not sensible for China. Therefore, in the discussion below, estimation of the marginal productivity of capital is based on the initial Cobb-Douglas production function form.

The elasticity of capital derived from the Cobb-Douglas production function is 0.39. The capital-output ratio has already been estimated to be 68 per cent (Table A2). Hence, the marginal productivity of capital estimated by using equation 17 is

$$q = 0.39\ (0.68) = 0.27$$

The micro level estimation approach

For micro-economic estimation, two sources of information are available: the interest rate structure of the economy and the project-specific economic rates of return. Imperfections in capital markets imply that interest rates are not very meaningful measures of the marginal productivity of capital. The pre-tax profit net of depreciation in the industrial sector would be a better guide of q (Squire and Van der Tak 1975:111). The profit rate in the private sector would also be a useful indicator but is difficult to obtain. In the case of China, the capital profit rates for independent accounting units within state industry may provide a suitable indicator. Appendix Table A4 shows that the average post-tax net capital profit rate is 17.6 per cent and the average pre-tax net capital profit rate is 26.7 per cent for 1952-87.

In using this data, the following points should be noted. First, with regard to the return on all invested capital, if project investment is financed by various sources, a weighted average of the return on each type of investment is necessary. The relevant interest rates may be interpreted as

the return on loan finance. Second, with regard to the real return, both the pre-tax profit rate and the interest rates should be deflated by the rate of inflation. Third, to obtain the return at border prices rather than at domestic prices, the application of the appropriate conversion factors is required (Squire and Van der Tak 1975:111).

Table 2
Micro estimation of the marginal productivity of capital in China

Sector	No. of projects	Total loans $US (million)	Weighted Average ERR[a]
Agriculture	11	973.1	25.0
Highways and railways	7	1062.6	27.0
Industry	9	1018.3	39.0
Ports	5	426.4	21.0
Power	8	1519.4	12.0
Weighted average ERR[a]			24.0

[a] Economic rate of return (ERR).
Sources: Data for calculation of the weighted average of ERR is given in Appendix Tables A5-A11.

Micro-level estimates of marginal productivity of capital in this study are based on the estimated rate of return on projects financed by the World Bank. The marginal productivity of capital for World Bank projects shown in Table 2 is derived from the weighted average of the economic rate of return (ERR) on 40 projects in China. Estimates are provided by World Bank Staff Appraisal Reports.

The average economic rate of return is 24 per cent for the 40 World Bank projects. This number is likely to overestimate the marginal productivity of capital in China for two reasons.

First, the figure represents the expected average ERR of the 40 projects rather than the actual *ex post* ERR of the marginal project.

Second, to receive financial assistance from the World Bank, the government is likely to have chosen those projects with the most profit potential. Thus, the projects financed by the World Bank may have higher returns than other projects. Most of the World Bank project appraisal papers used 12 per cent as the target rate of returns.

The value of marginal productivity of capital for independent accounting units within state industry is shown in Table 3. It ranges from 24 per cent to 37 per cent based on various estimations.

Table 3
The range of the value of marginal productivities of capital in China

	q values (%)
World Bank target rate of return	12
Economic rate of return[a]	24
Cobb-Douglas function[b]	27
Profit, tax/capital ratio[c]	27
Incremental O/K ratio[d]	37

[a] Table 2.
[b] Equation 17.
[c] Appendix Table A4.
[d] Appendix Tables A2 and A3.

As noted above, the economic rate of return for World Bank projects, as well as the adjusted incremental output-capital ratio, overestimate the marginal productivity of capital to a certain extent. Hence, the 12 per cent World Bank target rate included in Table 3 is used as a low bound of the estimation of q. A more reliable range is expected to be allocated between the value derived from micro-estimation and the World Bank target rate, that is between 24 per cent and 12 per cent. The mean value of 18 per cent has been chosen to calculate the shadow price of capital for China.

Estimation of the consumption rate of interest

The consumption rate of interest, i, as defined in the equation 3 has three components: the expected growth rate of real per capita consumption, g; the value of the social elasticity of the marginal utility of consumption, n; and the rate of pure time preference, r (Squire and Van der Tak 1975:109).

The expected growth rate of real per capital consumption

During the period 1980-87, total private consumption at constant prices grew at an annual rate of 6.1 per cent in China. Given a 1.2 per cent population growth rate (World Bank 1989) an average growth rate of real per capita consumption (g) of 4.9 per cent is implied in this period. Assuming that projected real per capita consumption will not change in the

near future (during a project life of 20 to 30 years), a value of 4.9 per cent for g is applied in this study.

The value of the social elasticity of the marginal utility of consumption

A number of attempts have been made to derive the value of the social elasticity of the marginal utility of consumption (n) objectively. Fellner (1967) found that a reasonable range of values for n is given by n=1.0 to n=2.5. Squire and Van der Tak (1975:67) suggested values of n=1.0 to n=2.0 for countries with mild and strong interest in income distribution objectives respectively.

Although economic growth has been the major objective of the Chinese government since 1978, social equity and improving distribution of income have not been completely ignored. To eliminate the 'Three Differences' that is the differences between rural and urban areas; between skilled and unskilled labour; between blue and white collar workers has been an important objective.

In practice it has long been recognized that there is a trade-off between growth and income distribution objectives which must be balanced by the government.

Since 1978, the increased use of market mechanisms and diversified ownership has caused the share of the household sector and other non state-owned sectors to increase rapidly. High incomes in these sectors have affected previous patterns of income distribution and caused social problems. The Chinese government is faced with the need to balance economic growth with income growth for low income groups. Hence, in choosing subjective parameters relating to equity and growth objectives, the Chinese government's attitude towards income redistribution may be considered as being 'moderate' compared to 'radical' and 'indifferent'. Values of n lying between 0.5 and 2.5 are chosen for sensitivity analysis. For the main part of the analysis, a value of n=1.5 will be used.

Estimation of the rate of pure time preference

The high priority that the Chinese government has placed on growth also implies a very low value for the rate of pure time preference (r). In other words, the Chinese government places very little, if any, premium on current consumption compared with future consumption. Because the consumption rate of interest depends on the social value judgements

reflected by both n and r, the value of these two parameters should not be determined interdependently. China has a growth-conscious economy, which requires a low consumption rate of interest. On the other hand, China is also concerned about current income distribution, which demands a high elasticity of marginal utility of consumption (n).

A low value for the rate of pure time preference (r) would ensure that the consumption rate of interest (i) is low and hence correctly reflects the Chinese government's growth objective despite the high value for n. Squire and Van der Tak (1975:109) recommend that relatively low values of zero to 5 per cent be used. A value of r=1 is applied in this study. Table 4 shows the possible range of consumption rates of interest in China. A central value of 8.4 per cent for the consumption rate of interest is chosen at this stage.

Table 4
The possible range of the consumption rate of interest for China

n	r=0	r=1	r=2	r=3	r=4	r=5
0.5	2.5	3.5	4.5	5.5	6.5	7.5
1.0	4.9	5.9	6.9	7.9	8.9	9.9
1.5	7.4	8.4	9.4	10.4	11.4	12.4
2.0	9.8	10.8	11.8	12.8	13.8	14.8
2.5	12.3	13.3	14.3	15.3	16.3	17.3

Note: The value of consumption rate of interest is derived from equation 3; g = 4.9 per cent.

Estimation of the marginal propensity to reinvest

If the national income is fixed and there is no external borrowing, the amount of capital available for investment can only be increased by decreasing the amount available for consumption. To accelerate the process of industrialization, China needed to accumulate large amounts of capital. To raise living standards, on the other hand much of its income needed for consumption. Correctly handling the relationship between reinvestment and consumption has long been recognized as one of the important factors in economic development.

Looking back over China's experience, it is clear that the imbalance between reinvestment and consumption since 1958 has been one of the

major causes of the repeated set-backs China has suffered in the process of industrialization (Dong Fureng 1982). Table 5 shows the proportion of China's national income devoted to reinvestment or consumption for various time periods since 1953.

Table 5
The proportion of national income devoted to reinvestment or consumption

Year	National income (billion yuan)	Consumption (per cent)	Reinvestment (per cent)
1953-57	412.2	75.8	24.2
1958-62	561.6	69.2	30.8
1963-65	357.8	77.3	22.7
1966-70	778.5	73.7	26.3
1971-75	1105.4	67.0	33.0
1976-80	1502.4	66.8	33.2
1981-85	2618.2	68.7	31.3
1986-88	3022.9	65.7	34.3

Source: State Statistical Bureau, *China Statistical Yearbook*, Beijing, 1989.

The average capital reinvestment rate in China ranged from 24.2 per cent in the *First Five Year Plan* to a peak of 34.3 per cent in the first three years of the *Seventh Five Year Plan*. However, most Chinese economists (Dong Fureng 1982) consider that the *First Five Year Plan* was the most healthy and that a capital reinvestment rate of 25 per cent would be most appropriate. Since 1978, the Chinese government has been taking steps to improve the balance between reinvestment and consumption. Reinvestment is gradually being reduced to a more appropriate level, that is, from 36.5 per cent in 1978 to 34.1 per cent in 1988. The efficiency with which capital is used is being improved and the distribution of reinvestment funds is becoming more rational.

Accordingly, a range from 25 per cent to 35 per cent reinvestment rate was chosen for sensitivity analysis. Table 6 summarizes the possible range of the shadow price of capital (S_k) based on different estimates of the marginal productivity of capital in independent accounting units within state industry.

The central group of values of S_k were chosen, that is, 2.1 for the lower boundary (equation 6) and 4.2 for the higher boundary (equation 13), based on q=18; i=8.4 and s=0.3. This means that the marginal social value

of public income is worth 2.1 to 4.2 times the marginal social value of private consumption at the average level of consumption in China. The mean value of 3.2 is chosen as the central value for the shadow price of capital in China.

Table 6
Shadow price of capital in China

Marginal productivity of capital (per cent)	Shadow price of capital - lower boundary	Shadow price of capital - upper boundary
12	1.4	1.8
18	2.1	4.2
24	3.0	14.0

Note: The value of the lower limit is derived from equation 6 and the value of the upper limit is derived from equation 13; s = 0.30; i = 8.4.

Summary and conclusions

The shadow price of capital was derived for China using equations 6 and 13 to establish lower and higher limits respectively. The derived values of the shadow price of capital using equation 6 range from 1.4 to 3.0 for different estimations of marginal productivity of capital. On the basis of the discussion in the third section, where the mean value of the marginal productivity of capital was estimated to be 18 per cent, the shadow price of capital estimates based on our chosen numeriare ranges from 2.1 to 4.2 depending on assumptions regarding the rate of reinvestment of capital. Hence, 2.1 and 4.2 represent the lower and upper limits of the shadow price of capital. The mean value of 3.2 is chosen as the shadow price of capital or the value of public investment in China.

The estimation results indicate that there is a premium attached to capital goods over consumption goods. The implications for policy planning are equally clear. A shadow price of capital of 3 suggests that, opportunity cost of capital is three times its market price. To exploit its labour-intensive comparative advantage China should tax the use of capital at a rate of 300 per cent, that is, at three times its original cost rather than subsidize its use. In other words, capital should be made more expensive to the user in China.

Appendix Table A1
The original and revised data for independent accounting units within state industry 1952-88 (1952=100)

Year	Net output (1)[a]	Original data: Total capital (2)[a]	Original data: Labour (3)[b]	Revised data: Total capital (4)[a]	Revised data: Labour (5)[b]
1952	11.44	14.68	51.0	14.68	50.5
1953	15.30	17.80	59.4	17.68	58.6
1954	17.68	21.17	61.0	21.17	59.2
1955	18.76	23.61	58.0	23.83	55.9
1956	24.53	27.02	71.7	27.28	68.6
1957	29.97	33.03	74.8	33.32	71.1
1958	50.24	46.96	231.6	47.55	218.0
1959	65.30	66.45	199.3	67.99	186.4
1960	73.34	87.45	214.4	90.40	199.7
1961	40.95	91.65	159.7	92.28	148.5
1962	34.90	89.26	117.8	87.39	109.5
1963	39.51	90.21	111.9	88.35	104.0
1964	50.19	94.83	115.9	90.55	107.8
1965	63.87	103.73	123.8	98.32	115.3
1966	79.58	111.94	132.4	106.23	123.4
1967	65.27	121.38	138.2	115.50	128.9
1968	60.58	129.16	149.2	122.58	139.2
1969	81.95	136.26	163.0	130.23	152.2
1970	110.12	154.51	195.9	152.29	183.1
1971	127.59	173.94	223.3	170.17	209.0
1972	134.09	197.46	235.0	194.65	220.3
1973	140.36	220.01	239.7	218.41	225.1
1974	138.52	236.31	249.7	234.91	234.4
1975	159.83	256.90	269.1	255.49	253.2
1976	144.19	277.44	286.6	274.44	269.8
1977	157.88	298.52	301.3	294.80	283.8
1978	190.82	327.30	301.4	321.12	284.1
1979	206.25	348.76	310.9	337.13	292.9
1980	224.20	366.37	324.6	346.42	305.0
1981	222.12	387.30	340.7	355.44	318.3
1982	231.95	414.59	350.3	372.48	324.6
1983	253.81	445.25	355.2	389.17	326.4
1984	283.46	475.51	359.2	402.31	328.6
1985	346.92	560.41	368.5	453.89	335.2
1986	375.54	649.60	382.3	527.97	344.0
1987	436.21	745.70	395.8	606.58	356.2
1988	528.10	860.30	409.3	697.90	368.4

[a] Columns 1,2 and 4 are in billion yuan.
[b] Columns 3 and 5 are in ten thousand workers.
Sources: The original data are from State Statistical Bureau, *China Statistical Year Book*, Beijing, 1990. The revised data for 1952-85 are from Jefferson Chen *et al.* 1988. The revised data for 1986-88 are calculated by author.

Table A2
Data for the estimation of the incremental output/capital ratio 1952-88
(1952=100)

	Net Industrial output (1)[a]	Incre-mental output(ΔQ) (2)[a]	Total capital inputs (3)[a]	Incremental capital inputs(ΔK) (4)[a]	ΔQ/ΔK (2)/(4) (5)[b]	Q/K (6)[b]
1952	11.44	n.a	14.68	n.a	n.a	0.78
1953	15.30	3.86	17.68	3.00	1.29	0.87
1954	17.68	2.38	21.17	3.49	0.68	0.84
1955	18.76	1.08	23.83	2.66	0.41	0.79
1956	24.53	5.77	27.28	3.45	1.67	0.90
1957	29.97	5.44	33.32	6.04	0.90	0.90
1958	50.24	20.26	47.55	14.23	1.42	1.06
1959	65.30	15.06	67.99	20.44	0.74	0.96
1960	73.34	8.05	90.40	22.41	0.36	0.81
1961	40.95	-32.39	92.28	1.88	-17.23	0.44
1962	34.90	-6.05	87.39	-4.89	1.24	0.40
1963	39.51	4.61	88.35	0.96	4.80	0.45
1964	50.19	10.68	90.55	2.20	4.86	0.55
1965	63.87	13.67	98.32	7.77	1.76	0.65
1966	79.58	15.71	106.23	7.91	1.99	0.75
1967	65.27	-14.30	115.50	9.27	-1.54	0.57
1968	60.58	-4.70	122.58	7.08	-0.66	0.49
1969	81.95	21.37	130.23	7.65	2.79	0.63
1970	110.12	28.17	152.29	22.06	1.28	0.72
1971	127.59	17.47	170.17	17.88	0.98	0.75
1972	134.09	6.50	194.65	24.48	0.27	0.69
1973	140.36	6.28	218.41	23.76	0.26	0.64
1974	138.52	-1.84	234.91	16.50	-0.11	0.59
1975	159.83	21.31	255.49	20.58	1.04	0.63
1976	144.19	-15.65	274.44	18.95	-0.83	0.53
1977	157.88	13.69	294.80	20.36	0.67	0.54
1978	190.82	32.94	321.12	26.32	1.25	0.59
1979	206.25	15.43	337.13	16.01	0.96	0.61
1980	224.20	17.96	346.42	9.29	1.93	0.65
1981	222.12	-2.09	355.44	9.02	-0.23	0.62
1982	231.95	9.83	372.48	17.04	0.58	0.62
1983	253.81	21.86	389.17	16.69	1.31	0.65
1984	283.46	29.65	402.31	13.14	2.26	0.70
1985	346.92	63.46	453.89	51.58	1.23	0.76
1986	375.54	28.62	527.97	74.08	0.39	0.71
1987	436.21	60.67	606.58	78.61	0.77	0.72
1988	528.10	91.89	697.90	91.32	1.01	0.76
Average					0.57	0.68

[a] Columns 1, 2, 3 and 4 are in billion yuan.
[b] Columns 5 and 6 are in percentage.
Sources: The original data are from State Statistical Bureau, *China Statistical Year Book*, Beijing, 1990. The revised data for 1952-85 are from Jefferson Chen *et al.* 1988. The revised data for 1986-88 are calculated by author.

Table A3
Data for estimation of the incremental labour input capital ratio 1952-88
(1952=100)

Year	Total labour (1)[a]	Total Wage bill (2)[b]	Incremental Wage bill (3)[b]	ΔL/ΔK (4)[c]
1952	50.50	21.6	n.a	n.a
1953	58.60	27.6	6.0	2.0
1954	59.20	28.3	0.7	0.2
1955	55.90	29.8	1.5	0.6
1956	68.60	36.2	6.4	1.9
1957	71.10	41.8	5.6	0.9
1958	218.00	79.6	37.8	2.7
1959	186.40	86.9	7.3	0.4
1960	199.70	92.1	5.2	0.2
1961	148.50	66.1	-26.0	-13.8
1962	109.50	51.8	-14.3	-2.9
1963	104.00	51.9	0.1	0.1
1964	107.80	56.3	4.4	2.0
1965	115.30	60.3	4.0	0.5
1966	123.40	63.7	3.4	0.4
1967	128.90	67.5	3.8	0.4
1968	139.20	71.1	3.6	0.5
1969	152.20	78.3	7.2	0.9
1970	183.10	90.2	11.9	0.5
1971	209.00	101.7	11.5	0.6
1972	220.30	114.6	12.9	0.5
1973	225.10	117.8	3.2	0.1
1974	234.40	122.8	5.0	0.3
1975	253.20	128.9	6.1	0.3
1976	269.80	135.0	6.1	0.3
1977	283.80	139.0	4.0	0.2
1978	284.10	147.0	8.0	0.3
1979	292.90	162.6	15.6	1.0
1980	305.00	181.7	19.1	2.1
1981	318.30	186.7	5.0	0.6
1982	324.60	194.5	7.8	0.5
1983	326.40	200.9	6.4	0.4
1984	328.60	232.8	31.9	2.4
1985	335.20	255.0	22.2	0.4
1986	344.03	287.8	32.8	0.4
1987	356.23	304.0	16.2	0.2
1988	368.41	360.4	56.4	0.6
Average				0.2

[a] Column 1 is in millions of workers.
[b] Columns 2 and 3 are in billion yuan.
[c] Column 4 is in percentage. The value of incremental capital inputs (ΔK) is taken from column 4 of Table A2.
Source: The original data are from State Statistical Bureau, *China Statistical Year Book*, Beijing, 1990. The revised data for 1952-85 are from Jefferson Chen *et al.* 1988. The revised data for 1986-88 are calculated by author.

Table A4
The average profit/capital ratio of state-owned industrial enterprises in China 1952-87

Year	Post-tax profit/capital ratio (per cent)	Pre-tax profit/capital ratio (per cent)
1952	19.2	25.4
1953	23.1	30.4
1954	22.5	30.4
1955	22.1	30.0
1956	22.0	32.1
1957	23.9	34.6
1958	34.2	46.5
1959	35.2	48.7
1960	32.6	43.6
1961	9.0	15.9
1962	8.5	15.1
1963	13.4	20.5
1964	17.5	25.7
1965	20.9	29.8
1966	24.2	34.5
1967	13.6	21.7
1968	10.0	17.3
1969	16.1	25.3
1970	20.1	30.6
1971	19.3	30.0
1972	18.0	27.7
1973	16.8	25.8
1974	13.4	21.7
1975	14.1	22.7
1976	11.4	19.3
1977	12.9	21.2
1978	15.5	24.2
1979	16.1	24.8
1980	16.0	24.8
1981	15.0	23.8
1982	14.4	23.4
1983	14.4	23.2
1984	14.9	24.2
1985	13.2	23.8
1986	10.6	20.7
1987	10.6	20.3
Average	17.6	26.7

Source: State Statistical Bureau, *China Statistical Yearbook*, Beijing, 1989.

Table A5
Sectoral Distribution of World Bank Loans to China 1982-88

Sector	No. of projects	Total loans $US (million)	Per cent
Port projects	6	426.4	6
Power projects	8	1519.4	23
Industrial projects	15	1682.2	25
Agricultural projects	13	1113.1	17
Highway & railway projects	8	1062.6	16
Education projects	9	854.2	13
Total	59	6657.9	100

Source: World Bank Staff Appraisal Reports.

Table A6
Distribution of World Bank loans among port projects in China 1982-88

Project	Total loans $US (million)	Bank	SDR[a]	ERR[b] (per cent)
Dalian port	96.0	71.0	25.0	20
Ningbo and Shanghai ports	76.4	..	..	18
Tianjin port	130.0	..	..	21
Huangpu port	88.0	63.0	25.0	21
Xiamen port	36.0	..	..	31
Total	426.4			

[a] Special drawing rights.
[b] Economic rate of return.
Source: World Bank Staff Appraisal Reports.

Table A7
Distribution of World Bank loans among power projects in China 1982-88

Project	Total loans $US million	ERR[a] (%)
1 Lubuge power project	145.4	12
2 Second power project	117.0	14
3 Shuikou power project	140.0	15
4 Wujing power project	190.0	12
5 National capital power supply project phase I	485.0	11
6 Beilungang thermal project	225.0	9
7 Beilingang extention project	165.0	15
8 Yantan power project	52.0	12
Total	1519.4	

[a] Economic rate of return.
Source: World Bank Staff Appraisal Reports.

Table A8
Distribution of World Bank loans in industrial projects in China 1982-88

Project	Total loans $US million	Bank	SDR[a]	ERR[b] (%)
1 Shanghai aluminum milling	..	..	..	..
2 Changcun coal mining	126.0	..	..	21
3 Shanghai machine tool	100.0	..	..	31
4 Shanghai sewerage	145.0	45.0	100.0	13
5 Phosphate development	62.7	..	..	26
6 Pharmaceuticals project	127.0	..	..	25
7 Industrial credit project	68.6	40.6	28.0	..
8 Second industrial credit	175.0	105.0	70.0	..
9 Fourth industrial credit	300.0	250.0	50.0	..
10 Gansu industrial development	20.0	..	..	..
11 Karamay petroleum	100.3	..	..	..
12 Zhongyuan-wenliu petroleum	100.8	..	..	74
13 Daqing oilfield reservoir	162.4	..	..	91
14 Fertilizer rehabilitation and energy saving project	97.0	..	..	31
15 Fertilizer rationalization	97.4	..	..	24
Total	1682.2			

[a] Special drawing rights.
[b] Economic rate of return.
Source: World Bank Staff Appraisal Reports.

Table A9
Distribution of World Bank loans in agricultural projects in China 1982-88

Project	Total loans $US million	Bank	SDR[a]	ERR[b] (%)
1 Coastal land development	100.0	40.0	60.0	32
2 Xinjiang agricultural development	70.0	..	..	18
3 Rural water supply	80.0	..	..	..
4 Seeds project	40.0	..	..	38
5 Third rural credit project	170.0	..	..	24
6 Forestry development project	47.8	..	..	>50
7 Pishihang-chaohu area development project	92.0	17.0	75.0	36
8 Red soils area development	40.0	..	..	29
9 Ggansu provincial development the agricultural component	130.0	..	..	13
10 Rubber development	100.0	..	..	17
11 North irrigation project	103.0	..	..	20
12 North China plain agriculture	60.0	..	..	..
13 Heilongjiang land reclamation	80.3	45.0	35.3	23
Total	1113.1			

[a] Special drawing rights.
[b] Economic rate of return.
Source: World Bank Staff Appraisal Reports.

Table A10
Distribution of World Bank loans in highway and railway projects in China 1982-88

Project	Total loans $US million	Bank	SDR[a]	ERR[b] (%)
1 Highway project	72.6	42.6	30.0	20
2 Shaanxi provincial highway	50.0	..	..	28[a]
3 Sichuan provincial highway	125.0	75.0	50.0	27[b]
4 Railway project	..	..	..	..
5 Second railway project	235.0	..	..	25
6 Third railway project	230.0	160.0	70.0	30
7 Fourth railway project	200.0	..	..	36
8 Beijing-Tianjin-Tanggu expressway project	150.0	25.0	125.0	15
Total	1062.6			

[a] Special drawing rights.
[b] Economic rate of return.
Source: World Bank Staff Appraisal Reports.

Table A11
Distribution of World Bank loans in education projects in China 1982-88

Project		Total loans $US million
1	University development project	200.0
2	Second university development project	145.0
3	Rural health and medical education	85.0
4	Second agricultural education	68.8
5	Agricultural education and research	75.4
6	Second agricultural research	25.0
7	Polytechnic/television university project	85.0
8	Teacher training project	50.0
9	Provincial university project	120.0
Total		854.2

Source: World Bank Staff Appraisal Reports.

References

Chen Kuan, Wang Hongchang, and Zheng Yuxin, 1988, 'Productivity change in Chinese industry: 1953-1981', *Journal of Comparative Economics* 12: 570-91.

Dong Fureng, 1982. 'Relationship between accumulation and consumption', in Xu Dixin *et al* 1982, *China's Search for Economic Growth: the Chinese Economy Since 1949*, China Studies Series, New World Press, Beijing:79-101.

Kuan Chen, Jefferson G.H., Rawski T.G., Hongchang Wang and Yuxim Zheng, 1988, 'New estimates of fixed investment and capital stock for Chinese state indstry', *China Quarterly*, 114: 243-66.

Lin Shujuan 1991, Application of cost-benefit analysis in China: a case study of the Xiamen Special Economic Zone, Ph.D thesis, NCDS, ANU, Canberra.

Squire, L. and Van der Tak, H., 1975, *'Economic analysis of projects'*, Johns Hopkins University Press, Baltimore and London.

State Statistical Bureau, *China Statistical Yearbook*, Beijing 1952-88.

United Nations Industrial Development Organization (UNIDO) 1972, *Guide-lines for Project Evaluation*, United Nations, New York.

World Bank, 1988, *Economic prices for project evaluation in China*, World Bank Country Operations Division, China Department, Report No.7365-CHA, Washington, D.C.

World Bank, 1989, *World Development Report*, the World Bank, Washington D.C.

World Bank Staff Appraisal Reports

No. 3366a-CHA, June 1, 1981, *University Development Project.*

No. 3653-CHA, October 14, 1982, *The Three Ports Project.*

No. 3815-CHA, May 26, 1982, *North China Plain Agriculture Project.*

No. 3819c-CHA, October 14, 1982, *Agricultural Education and Research Project.*

No. 3949-CHA, Dec. 29, 1982, *Daqing Oil-field Gaotaizi Reservoir Development Project.*

No. 4009-CHA, November 23, 1982, *Industrial Credit Project (China Investment Bank).*

No. 4159-CHA, March 31, 1983, *Heilongjiang Land Reclamation Project.*

No. 4183-CHA, March 10, 1983, *Zhongyuan-Wenliu Petroleum Project.*

No. 4334-CHA, January 23, 1984, *Lubuge Hydroelectric Project.*

No. 4406-CHA, August 24, 1983, *Polytechnic/Television University Project.*

No. 4521-CHA, November 7, 1983, *Rubber Development Project.*

No. 4560-CHA, March 7, 1984, *Railway Project.*

No. 4864-CHA, April 13, 1984, *Rural Health and Medical Education Project.*

No. 4871-CHA, May 21, 1984, *Second Agricultural Education Project.*

No. 4897-CHA, May 15, 1984, *Second Industrial Credit II Project (China Investment Bank II).*

No. 4902-CHA, May 7, 1984, *Karamay Petroleum Project.*

No. 5039-CHA, July 23, 1984, *Second Agricultural Research Project.*

No. 5127-CHA, Feb. 12, 1985, *Changcun (Luan) Coal Mining Project.*

No. 5147-CHA, January 22, 1985, *Second Power Project.*

No. 5271b-CHA, Feb. 5, 1985, *Second University Development Project.*

No. 5348-CHA, Mar. 18, 1985, *Seeds Project.*

No. 5358-CHA, Mar. 14, 1985, *Rural Water Supply Project.*

No. 5367-CHA, April 22, 1985, *Fertilizer Rehabilitation and Energy Saving Project.*

No. 5394-CHA, May 8, 1985, *Forestry Development Project.*

No. 5408-CHA, April 19, 1985, *Highway Project.*

No. 5512-CHA, April 22, 1985, *Second Railway Project.*

No. 5538-CHA, May 15, 1985, *Pishihang-Chaohu Area Development Project.*

No. 5673-CHA, Feb. 25, 1986, *Provincial Universities Project.*

No. 5856-CHA, March 17, 1986, *Tianjin Port Project.*

No. 5889-CHA, May 5, 1986, *Beilungang Thermal Power Project.*

No. 5994-CHA, Jan. 28, 1987, *Shanghai Machine Tool Project.*

No. 6002-CHA, March 7, 1986, *Third Railway Project.*

No. 6050-CHA, May 5, 1986, *Yantan Hydroelectric Project*

No. 6072-CHA, August 1, 1986, *Red Soils Area Development Project.*

No. 6189-CHA, November 24, 1986, *Shuikou Hydroelectric Project.*

No. 6230-CHA, August 28, 1987, *Huangpu Port Project.*

No. 6344-CHA, April 17, 1987, *Beijing-Tianjin-Tanggu Expressway Project.*

No. 6412-CHA, Jan. 29, 1987, *Fourth Industrial Credit Project (China Investment Bank IV).*

No. 6425-CHA, February 3, 1987, *Xinjiang Agricultural Development Project.*

No. 6485-CHA, Mar. 20, 1987, *Shanghai Sewerage Project.*

No. 6556-CHA, Apri. 15, 1987, *Gansu Provincial Development Project: the Agriculture Component.*

No. 6556-CHA, Apri. 15, 1987, *Gansu Provincial Development Project: the Industrial Diversification Component.*

No. 6588-CHA, Jan. 5, 1988, *Dalian Port Project.*

No. 6610-CHA, May 18, 1987, *Wujing Thermal Power Project.*

No. 6662-CHA, May 11, 1987, *Fertilizer Rationalization Project.*

No. 6720-CHA, May 28, 1987, *National Capital Power Supply Project - Phase I.*

No. 6903-CHA, Dec. 28, 1987, *Third Rural Credit Project.*

No. 6986-CHA, March 4, 1988, *Coastal Lands Development Project.*

No. 7059-CHA, Feb. 12, 1988, *Northern Irrigation Project.*

No. 7096-CHA, April 27, 1988, *Pharmaceuticals Project.*

No. 7164-CHA, May 12, 1988, *Beilungang Thermal Power Extension Project.*

No. 7167-CHA, May 12, 1988, *Shaanxi Provincial Highway Project.*

No. 7168-CHA, May 12, 1988, *Sichuan Provincial Highway Project.*

No. 7142-CHA, May 23, 1988, *Phosphate Development Project.*

No. 7148-CHA, June 2, 1988, *Fourth Railway Project.*

No. 7187-CHA, May 3, 1988, *Teacher Training Project.*

No. 7257-CHA, November 16, 1988, *Ningbo and Shanghai Ports Project: Shanghai Port.*

No. 7296-CHA, November 16, 1988, *Xiamen Port Project.*

Economics Division
Research School of Pacific Studies

PUBLICATIONS ON ASIA

China Papers

91/8 China's clothing and textile exports: demand or supply constrained?, Yang Yongzheng. 38 pp.
91/7 Special economic zones in China: the administrative and regulatory framework, David Wall. 28 pp.
91/6 The impact of economic reform on productivity growth in Chinese industry, Frances Perkins. 54 pp.
91/5 Poverty in China, Tong Ya-ming.
91/4 Estimation of the shadow price of labour in China, Lin Shujuan.
91/3 Shadow price of capital in China, Lin Shujuan.
91/2 Improving infrastructure: a cost benefit analysis of the economic performance of special economic zones in China, Lin Shujuan. 36 pp.
91/1 Reforming the agricultural sector in China, Justin Yifu Lin. 28pp.
90/4 Two-tier pricing in China's foreign exchange market, Will Martin. 14 pp.
90/3 The Hecksher-Ohlin theorem and intermediate goods: the Chinese economy 1970–86, Bing Zhao. 45pp.
90/2 Construction of a consistent market price data base for a general equilibrium model of China, David R. Thompson. 13pp.
90/1 Modelling the post-reform Chinese economy, Will Martin. 30pp.
89/1 Chinese economic reform: approach, vision and constraints, Y.Y. Kueh. 20pp.
88/2 The Xiamen special economic zone, Brian Brogan (ed.). Includes papers by Dong Fureng, Zhou Xiaochuan, Liang Wensen, Chen Yongshan, and Zheng Jin Mu and Huang Sheng Zhi.
88/1 Background to the forestry situation in southern China, Bruce Bennett. 36pp.
87/1 The role of microeconomic reforms in the decentralization of China's foreign trade, Yun-Wing Sung. 24 pp.

Papers are available for A$7.00 each, including postage.

Asian-Pacific Economic Literature

APEL is designed to give ready access to the large volume of literature on economic development in the Asian-Pacific region (ASEAN, the northeast Asian NIES, China and the Pacific Islands). Patterned on the *Journal of Economic Literature*, it contains three to four survey articles in each issue, as well as book reviews, an annotated list of new books, abstracts of selected journal articles, contents lists of journals and lists of working papers. It is published twice a year.
Vol. 1, No. 1 Presentation issue, May 1987.
Vol. 2, Nos 1 and 2, March and September 1988.
Vol. 3, Nos 1 and 2, March and September 1989.
Vol. 4, Nos 1 and 2, March and September 1990.
Vol. 5, No. 1 and 2, March and September, 1991.
Subscription rates:

Institutional:	A$:	DC 50; LDC 42
	US$:	DC 41; LDC 35
	£:	DC 23; LDC 20

Personal DC/LDC/Student:
A$26; US$22; £12.

Subscriptions for APEL are available from:
Beech Tree Publishing,
10 Watford Close,
Guildford, Surrey, GU1 2EP,
United Kingdom.

Bulletin of Indonesian Economic Studies
with 'Survey of Recent Developments'

Each issue of BIES contains a Survey of Recent Developments in the Indonesian Economy, three or four articles by specialist writers, notes on special topics and a book review section. BIES is issued in April, August and December.
An advance copy of the Survey is available to government advisers and businesses.

Subscriptions from :
Subscription Manager
Bulletin of Indonesian Economic Studies
Economics Department
Research School of Pacific Studies
Australian National University
GPO Box 4, Canberra, Australia. 2601.
(Credit cards are not accepted for BIES publications.)

Annual subscription rates:

Bulletin of Indonesian Economic Studies
(3 issues per year)

Air zone 1 (e.g. New Zealand, Papua New Guinea)	
Air zone 2 (e.g. Fiji, Indonesia, Malaysia)	
Air zone 3 (e.g. India, Japan)	
Cost of one subscription AIR 1–3	A$30.00 pa
Air zone 4 (e.g. USA, Canada, Israel)	
Air zone 5 (e.g. UK, Europe)	
Cost of one subscription AIR 4–5	A$33.00 pa
Surface (all destinations)	A$27.00 pa

5 per cent discount for a two-year subscription.

Survey of Recent Developments (advance copy)
(3 issues per year)

All destinations (air mail only)	A$60.00

Trade and Development Working Papers

91/3 *Small industry and firm-level efficiency: a developing country case study*, Hal Hill and K.P. Kalirajan, 30pp.

91/2 *Macroeconomic disequilibrium, structural changes, and the household savings and money demand in China*, Guonan Ma. 34pp.

91/1 *The structural transforation of Taiwan's tea industry*, Dan Etherington. 28 pp.

90/5 *Growth variations and the patterns of causalities among major macreeconomic indicators of selected Asian countries*, K.P. Kalirajan and Cezary A. Kapuscinski. 36 pp.

90/4 *Government intervention in Malaysian manufacturing industries: a suggested methodolgy of measurement*, K.P. Kalirajan. 24 pp.

90/3 *Singapore's managerial earnings and government intervention*, K.P. Kalirajan, 20pp.

90/2 *Agricultural wage growth and rural labour market adjustment: the case of Java 1970-1988*, Sisira Jayasuriya and Chris Manning, 41pp.

90/1 *Should agro-industrial research be funded from the public purse? The case of integrated coconut processing for the South Pacific*, Dan M. Etherington, 27pp.

89/12 *Macroeconomic adjustment to external shocks: Thailand*, Peter G. Warr and Bhanupongse Nidhiprabha, 34pp.

89/11 *In pursuit of identifying technical efficiency and X-efficiency*, K.P. Kalirajan and T.V. Varagunasingh, 20pp.

89/10 *Efficient water allocation and technological change: village dams in Sri Lanka*, S. Mahendrarajah and Peter G. Warr, 26pp.

89/9 *On measuring economic efficiency*, K.P. Kalirajan, 25pp.

89/8 *Indonesia: export promotion in the post-OPEC era*, Hal Hill, 42pp.

89/7 *Technical change in agriculture and the distribution of income: a general equilibrium model for the Philippines*, Ian A. Coxhead and Peter Warr, 38pp.

89/6 *Technology exports from a small, very open NIC: the case of Singapore*, Hal Hill and Pang Eng Fong, 52pp.

89/5 *Technical change, irrigation and factor demand elasticities in Philippine agriculture*, Ian A. Coxhead, 38pp.

89/4 *A simultaneous determination of market concentration and industry performance in West Malaysian manufacturing*, K.P. Kalirajan, 23pp.

89/3 *The shadow wage in economies with migrant labour: the case of labour as a traded good*, Norman Gemmell and Ivy Papps, 33pp.

89/2 *Explaining service price differences in international comparisons*, Rodney E. Falvey and Norman Gemmell, 34pp.

89/1 *Compensatory financial and fiscal incentives to exports*, Rodney E. Falvey and Norman Gemmell, 24pp.

88/6 *Testing causality between technical and allocative efficiencies*, K.P. Kalirajan and R.T. Shand, 24pp.

88/5 *Export processing zones: the economics of enclave manufacturing*, Peter G. Warr, 48pp.

88/4 *Rural welfare effects of food price changes with induced labour market responses*, Martin Ravallion, 25pp.

88/3 *Inpres and inequality: a distributional perspective on the Centre's regional disbursements*, Martin Ravallion, 25pp.

88/2 *Predictive performance of the World Bank's commodity price projections*, Peter G. Warr, 36pp.

88/1 *Some neglected issues in factor proportions and ownership: an Indonesian case study*, Hal Hill, 28pp.

87/16 *Intra-industry specialisation in producton and trade in newly industrialising countries: a framework and some empirical evidence from East Asia*, H. Don B.H. Gunasekera, 23pp.

87/15 *The North Sumatran regional economy: growth with unbalanced development*, Colin Barlow and Thee Kian Wi 79pp.

87/14 *Tariffs, quotas and piecemeal policy reform*, Rodney E. Falvey, 13pp.

87/13 *The economics of famine: an overview of recent research*, Martin Ravallion, 55pp.

87/12 *Macroeconomic policy and its impact on the Philippine economy*, Teofilo C. Daquila, 59pp.

87/11 *Border price changes and domestic welfare in the presen of subsidised exports*, Rod Tyers and Rod Falvey, 24pp.

87/10 *Liberalising OECD agricultural policies in the Uraguay Round: effects on trade and welfare*, Rod Tyers and Kym Anderson, 53pp. Out of print

87/9 *Social articulation as a condition for equitable growth in th context of a dual economy*, Dilip Dutta, 52pp. Out of print

87/8 *The poverty cost of welfare variability* , Martin Ravallion, 20p

87/7 *The economic costs of food self-sufficiency in China*, Yongzheng Yang and Rodney Tyers, 42pp.

87/6 *Growth, efficiency and fixed capital in linkage analysis*, Clive Hamilton, 19pp.

87/5 *Neutral taxation under uncertainty*, G. Fane, 15pp.

87/4 *Agricultural labor markets: a bargain-theoretical analysis*, Gaurav Datt, 26pp. Out of print

87/3 *Analysis of money and bank credit in the Philippines: an application of the Brunner-Meltzer framework*, Teofilo C. Daquila, 43pp.

87/2 *Economic growth and market liberalisation in China: implications for agricultural trade*, Kym Anderson and Rod Tyers, 44pp. Out of print

87/1 *Trade shocks in controlled economies: theory with an application to East Africa*, David Bevan, Paul Collier and Jan Gunning, 57pp.

86/13 *Implicit welfare weights in trade policy analysis: assessing negotiable alternatives to the EC CAP*, Rodney Tyers, 46p

86/12 *Growth and equity in Sri Lanka: a comment*, M. Ravallion, 11pp. Out of print

86/11 *Distributional outcomes of a 'moral economy'*, Martin Ravallion and Lorraine Dearden, 32pp. Out of print

86/10 *Change, adjustment and the role of specific experience: evidence from Sri Lankan rice farming*, S.A.B. Ekanayake and S.K. Jayasuriya, 34pp. Out of print

86/9 *Export promotion via industrial enclaves: the Philippines Bataan export processing zone*, Peter G. Warr, 35pp.

86/8 *Stages of development in smallholder tree crop agriculture* Colin Barlow and S.K. Jayasuriya, 42pp.

86/7 *Changes in the economic position of workers on rubber estates and smallholdings in Peninsular Malaysia, 1910-8* Colin Barlow, 42pp.

86/6 *Distributional effects of agricultural price distortions: a general equilibrium analysis for Korea*, Kym Anderson and Peter G. Warr, 27pp.

86/5 *Projecting matrices of international trade flows: the case o Australian and Pacific Basin trade*, Rodney Tyers, Prue Phillips and Peter Drysdale, 38pp.

86/4 *Inside a Bangladesh rice market: prices and expectations*, Martin Ravallion, 27pp.

86/3 *Structural change and its impact on traditional agricultural sectors of rapidly developing countries: the case of natura rubber*, C. Barlow and S.K. Jayasuriya, 40pp. Out of print

86/2 *Indonesia's other Dutch Disease: economic effects of the petroleum boom*, Peter G. Warr, 52pp.

86/1 *The relevance for developing countries of recent developments in macroeconomic theory*, W. M. Corden, 39pp.

These papers are available free on request from the National Centre for Development Studies. Photocopies of out-of-print papers are available for A$10.00 each.

National Centre for Development Studies

Authority and academic scribblers: the role of research in East Asian policy reform, Sylvia Ostry (ed.), Spring 1991, International Centre for Economic Growth, ICS Press, San Francisco.
200pp, ISBN 1 55815 133 8 (cloth)
ISBN 1 55815 133 X (paper)
Executive Summary $2.00
Cloth $24.95
Paper $12.95

Doing good: the Australian NGO community, Laurie Zivetz and others, Allen and Unwin, Sydney.
292pp, ISBN 1 86373 140 7
A$24.95

Achieving industrialization in East Asia, Helen Hughes (ed.), 1988, Cambridge University Press.
377pp, ISBN 0 521 35129 4
A$59.50

Unity and diversity: regional economic development in Indonesia since 1970, Hal Hill (ed.), 1989, Oxford University Press, Singapore.
610pp, ISBN 0 19 588921 5
A$35.00

The China–Hong Kong connection: the key to China's open door policy, Yun-Wing Sung, 1991, Cambridge University Press, Sydney.

New silk roads, Kym Anderson (ed.), 1991, Cambridge University Press, Sydney.

The dangers of export pessimism: developing country exports to industrial markets, Helen Hughes (ed.), 1992, International Center for Economic Growth, ICS Press, San Francisco.

Disarray in world food markets: a quantitative assessment, Rodney Tyers and Kym Anderson, Cambridge University Press, Sydney.

Commercially published titles are available from the publisher or from bookshops. The National Centre for Development Studies is able to direct your order if you are experiencing difficulties in obtaining copies.

NCDS Working Papers

91/12 *Poverty and government policy in Thailand*, Suphat Suphachalasai and Direk Patmasiriwat, 33pp.

91/11 *Protection and exports: a comparison of Taiwan and Thailand*, Han Herderschee, 34pp.

91/10 *Incentives for exports: the case of Thailand*, Han Herderschee, 28pp.

91/9 *Incentives for exports: the case of Taiwan*, Han Herderschee, 38 pp.

91/8 *Modelling steady state forestry in a CGE context*, Philippa S. Dee, 48pp.

91/7 *The economic consequences of saving Indonesia's forests*, Philippa S. Dee, 26pp.

91/6 *A dynamic approach to estimating inter-fuel substitution in Japanese energy demand*, Frances Perkins, 35pp.

91/5 *The impact of Japanese government energy policies on fuel switching and conservation: a dynamic approach*, Frances Perkins, 31pp.

91/4 *Wage determination in low income surplus labour economies*, Rushidan Islam Rahman, 25pp.

91/3 *Developing countries and the trading system in the 1990s*, David Robertson, 15pp.

91/2 *Poor women's access to economic gain from Grameen Bank loans*, Rushidan Islam Rahman, 19pp.

91/1 *Labour supply functions and the determinants of employment in a labour surplus situation: insights from an analysis of female wage workers in rural Bangladesh*, Rushidan Islam Rahman, 13pp.

90/10 *Transmigration policy and national development plans in Indonesia*, Riwanto Tirtosudarma, 33pp.

90/9 *EC 1992 and the small island states*, David Robertson, 30pp.

90/8 *Integration of women into development in the Asian region*, Frances Perkins, 50pp.

90/7 *The environment—let's get serious*, David Robertson, 18pp.

90/6 *Poverty alleviation and human resources development*, Lorraine Corner. 21pp.

90/5 *Poverty alleviation, economic growth and development policy in East Asia*, Romeo M. Bautista, with Appendix, *The identification and measurement of poverty*, Ian A. Coxhead. 76pp.

90/4 *GATT safeguards: restoring order to the trading system*, David Robertson. 61pp.

90/3 *Global change: too important to be left to the environmentalists*, David Robertson. 19pp.

90/2 *Public choice theory and Australian agricultural policy reform*, Will Martin. 26pp.

90/1 *Trading blocs in the Asia-Pacific area*, Gary Banks. 66pp.

89/8 *Impact of government energy policies on inter-fuel substitution in Japan: a dynamic approach*, Frances Perkins. 22 pp.

89/7 *Lessons from Australian rural policy reform*, Will Martin. 44 pp.

89/6 *The terms of trade and real exchange rates*, W.J. Martin and D.T. Nguyen. 24 pp.

89/5 *Analysing the effects of the MFA on developing country exporters*, Will Martin and Suphat Suphachalasai. 24 pp.

89/4 *Export growth of Thai clothing and textiles*, Suphat Suphachalasai. 26 pp.

89/3 *Trade in international aviation services: some empirical evidence*, Ethan Weisman. 46 pp.

89/2 *Threat of eviction and cropshare tenancy*, M.A. Taslim, 21 pp.

89/1 *Primary commodity prices and terms of trade of developing countries: a preliminary review*, Graeme Dorrance assisted by Berhanu Woldekidan, 1989. 26 pp.

88/4 *Supply-determined aggregate demand: an alternative approach to macroeconomic modelling*, M.A. Taslim. 14pp.

88/3 *Explaining the difference between the growth of developing countries in Asia and Latin America in the 1980s*, Helen Hughes. 22 pp.

88/2 *Recent trends in the Indian economy*, D.P. Chaudhri. 34 pp.

88/1 *Singapore's manufactured exports: a comparison with the Asian NICs*, Lee (Tsao) Yuan. 32 pp.

87/5 *International financial trends in East and South-East Asia*, J.R.H. Pringle, 37 pp.

87/4 *Industrialization and economic growth*, Helen Hughes, 30 pp.

87/3 *Tax reform in developing countries*, Richard M. Bird, 20 pp.

87/2 *A conservation framework for development assistance*, Bill Brown, 60 pp.

87/1 *Australia's food aid policy to Africa*, Jennifer Sharpley. 58 pp.

86/2 *Sectoral specialization in aid and procurement for aid: effects on efficiency of foreign assistance*, Rodney Tyers, Tony Voutas and Prue Phillips. 84 pp. Out-of-print.

86/1 *Economic development in East Asia: doing what comes naturally?*, James Reidel. 46 pp.

85/12 *Management not motivation: China's Open Door Policy*, Christopher Findlay and Xin Loulin. 28 pp.

85/11 *The role of Hong Kong and Macau in China's export drive*, Yun-Wing Sung. 74 pp.

85/6 *The returns to social forestry: a cost-benefit analysis of the Nepal-Australia forestry project, phase 3*, Clive Hamilton. 28 pp.

85/3 *The Philippines: growth, debt and crisis. Economic performance during the Marcos era*, Hal Hill and Sisira Jayasuriya. 65 pp. Out-of-print.

85/2 *A critical assessment of the transfer of Australian dry land agricultural technology to the Middle East*, Robert Springborg. 22 pp.

85/1 *Development studies relevant to foreign aid policy: ADAB and the universities*, Richard C. Manning. 80 pp.

These papers are available for A$7.00. Out of print papers are available for A$10.00 each.

Proceedings

China: trade and reforms, Papers from a workshop held in Sydney November 1990, organized by the Chinese Students' Society for Economic Studies (Australia), 250pp. A$15.00. ISBN 0 7315 0933 1

Economic issues in China. Papers from a workshop held in Canberra on 20-21 September 1989, organised by the Chinese Students' Society for Economic Studies (Australia), 267pp. A$10.00. ISBN 0 7315 0686 3

The ASEAN-Australian Transport Interchange, Peter J. Rimmer (ed.), 1987. 338 + xxii pp. A$15.00. ISBN 0 86784 913 4

Off-farm Employment in the Development of Rural Asia. Papers presented at a conference held in Chiang Mai, Thailand, R.T. Shand (ed.), 1986. Vol. 1, 366 + xii pp. A$12.00. ISBN 0 86784 721 2. Vol. 2, 247 + vi pp. A$12.00. ISBN 0 86784 729 8 Set: ISBN 86784 665 8

Managing the Tropical Forest. Papers from a Workshop held at Gympie, *Australia*. K.R. Shepherd and H.V. Richter (eds), 1985. 342 + x pp. A$12.00. ISBN 0 86784 537 6

Colombo Plan Book

Removing Constraints to Economic and Social Development, The Colombo Plan 31st Consultative Committee Meeting, Special Topic Paper 1986. 142 + xii pp. A$15.00. ISBN 0 86784 873 1

History of Development Studies

3 *On the margins of history: from Burma to Fiji*, Oskar. Spate, 1990, A$25.00. ISBN 0 7315 0914 5

2 *The Road Less Travelled: a development economist's quest*, Ben Higgins, 1989. 238 pp. A$20.00. ISBN 0 7315 0704 5

1 *A Course Through Life: memoirs of an Australian economist*, H.W. Arndt, 1985. 125 pp. A$10.00 ISBN 0 86784 657 7

Australian Development Studies Network Monographs

The Political Economy of Primary Health Care in South East Asia, Paul T. Cohen and John T. Purcal (eds), 1989. 198 + xx pp. A$28.00. ISBN 0 7315 0720 7

The Philippines under Aquino, Peter Krinks (ed.), 1987. 180 pp. A$12.00. ISBN 0 7315 0544 1

Register of Development Research and Expertise, Australia
Names, research specialization, expertise and research experience of people in Australia working in development-related research.
Pamela Thomas and Joseph Remenyi (eds). (Published by ADSN and ACIAR in association with the Centre).

2 1988. 450 pp. A$25.00. ISBN 0 7315 0608 1

1 1986. 200 + viii pp. A$10.00 ISBN 0 86784 888 X

A postage and packing charge is added to the cost of NCDS books as follows:

Australia: 1st book $4.80, each additional book $2.60, each additional book thereafter $1.00.
Overseas surface mail: 1st book A$9.30, each additional book A$2.80.

Overseas airmail: 1st book A$14.75, each additional boo A$8.00.
Working papers are A$7.00 a copy.
Photocopies of out-of-print titles are available at $10.

Australia–Japan Research Centre

Monographs

The Pacific Economy: growth and external stability, Mohamed Ariff (ed.), 1991.
312 + xvi pp. A$29.95 paperback / $44.95 hardcover.

The Soviets and the Pacific Challenge, Peter Drysdale (ed.), 1991.
160 + xxii pp. A$17.95 paperback / $34.95 hardcover.

Japan's Foreign Exchange Policy 1971-82, Ryutarō Komiya and Miyako Suda, Colin McKenzie (translation ed.), 1991.
379 pp. A$29.95 paperback / $49.95 hardcover.

Technological Challenge in the Asia-Pacific Economy, Hadi Soesastro and Mari Pangestu (eds), 1990.
371 + xiii pp. A$34.95 paperback.

The Culture of Market Penetration, William Coaldrake, 1990.
20 + v pp. A$9.95 q

The Australia-Japan Relationship: towards the year 2000, Peter Drysdale, Nancy Viviani, Akio Watanabe and Ippei Yamazawa, 1989.
91 pp. A$20.00 paperback / $10.00 students.

Australia and the Northeast Asian Ascendancy, Ross Garnaut, 1989.
339 + xvii pp. A$29.95 paperback.

International Economic Pluralism: Economic Policy in Asia and the Pacific, Peter Drysdale, 1988.
294 pp. A$27.50 paperback / $39.95 hardcover.

Pacific Trade in Services, Leslie V. Castle and Christopher Findlay (eds), 1988.
294 + xiv pp. A$24.95 paperback / $39.95 hardcover.

Industrial Policies for Pacific Economic Growth, Hiromichi Mutoh et al. (eds), 1986.
370 + xiii pp. A$19.95 paperback / $34.95 hardcover.

Political Economy of Agricultural Protection: East Asia in International Perspective, Kym Anderson and Yujiro Hayami (eds), 1986.
185 pp. A$19.95 paperback / $29.95 hardcover.

Proceedings of the Seventh Biennial Conference of the Japanese Studies Association of Australia, 1991

Volume 1: *Japan and the World*, 229 pp.

Volume 2: *Social, Political and Economic Change in Japan*, 211 pp.

Volume 3: *Japanese Language and Studies in Australia*, 283 pp.

Available by volume for A$39.00
or by the three volume set for A$110.00.

Pacific Economic Papers

199 *Asia-Pacific economic cooperation: an evolving case study of leadership and cooperation building*, Richard Higgot, September 1991

198 *Agricultural development and trade of Pacific Rim countries: towards the 21st century*, Kym Anderson, August 1991

197 *Open regionalism: a key to East Asia's economic future*, Peter Drysdale, July 1991

196 *Japanese corporate tax policy and direct investment abroad*, Yasushi Iwamoto, June 1991

195 *A market share analysis of Japanese beef imports*, Julian B. Morison, May 1991

194 *Dango: Japan's price-fixing conspiracies*, John McMillan, April 1991

193 *Financial reform in China and Hong Kong 1978-89: a comparative overview*, Y. C. Jao, March 1991

192 *Implications of China's foreign exchange system for the wool market*, Will Martin, February 1991

191 *Can Japan and the Soviet Union sort out their differences?* J.A.A. Stockwin, January 1991

190 *Japan as a creditor: macroeconomic issues*, H.W. Arndt, December 1990

189 *Macroeconomic management in the Pacific: growth and external stability*, Ross Garnaut, November 1990

188 *The politics of liberalisation in Japan: the case of rice*, Aurelia George, October 1990

187 *Steel industry development strategies*, Christopher Findlay, September 1990

186 *Japan's foreign aid policy: a capacity for leadership?* Alan Rix, August 1990

185 *Textiles, clothing and fibres in Australia and New Zealand*, Peter J. Lloyd, July 1990

184 *Savings behaviour of Japanese households*, Atsushi Maki, June 1990

183 *Japanese travel to Australia: prospects and issues*, Ian Curnow, Larry Dwyer, Christopher Findlay, Peter Forsyth and Susan Grace, May 1990

182 *Managing suppliers: incentive systems in Japanese and United States industry*, John McMillan, April 1990

181 *The use of Japanese balance of payments surpluses for Asian/Pacific development*, Derek T. Healey, March 1990

180 *China and Australian wool*, Christopher Findlay and Andrew Watson, February 1990

179 *Australian students and the Japanese tertiary education system*, Susan Grace, January 1990

178 *Japan's trade diplomacy: yesterday, today, tomorrow*, Peter Drysdale, December 1989

177 *International competition and domestic adjustments: the case of the Japanese textile industry*, Hideki Yamawaki, November 1989

176 *Long-run adjustment of the Japanese iron and steel industry and its implications for Australia*, Peter Drysdale and Chikao Tsukuda, October 1989

175 *China's penetration of the Australian textile and clothing market*, James Crowley, Christopher Findlay and Melissa Gibbs, September 1989

174 *The political economy of adjustment: the case of Japan's minimills, 1970-88*, Robert Uriu, August 1989

173 *Trade in services: with special reference to ASEAN*, H. W. Arndt, July 1989

172 *The Australia-Japan Treaty of Friendship and Cooperation: an Australian perspective*, Gary Woodward, June 1989

171 *A Pacific free trade area?* Peter Drysdale and Ross Garnaut, May 1989

170 *Ushiba Nobuhiko: a Japanese economic diplomat* Alan Rix, April 1989

169 *The investment-savings imbalance in Japan and global financial integration: causes and policy issues*, Yusuke Onitsuka, March 1989

168 *International financial deregulation - some macroeconomic implications*, Victor Argy, Februar 1989

167 *China's growth in Northeast Asian perspective*, Ross Garnaut, January 1989

A complete list of *Pacific Economic Papers* is available from:
Australia-Japan Research Centre
Research School of Pacific Studies
The Australian National University
GPO Box 4, Canberra ACT 2601, Australia.
Facsimile: 06-249-0767.
Telephone: 06-249-3780

Annual subscription rates for Pacific *Economic Papers*:

Institutions: A$100.00
Individuals: A$40.00
Single issues: A$15.00 / $10.00 students
Postage is included in the price of *Pacific Economic Papers*. Australian domestic postage is included in the price of books. Charges for overseas airmail postage is added to the cost of books as follows:
1st book: A$12.00
Each additional book: A$7.00

Economics Division
Research School of Pacific Studies

Publications on Asia

FAX ORDER

Fax number: (61-6 257 5088)
To: Bibliotech, ANUTECH Pty Ltd
Attention: Jessica Radnell, Manager

From: .....
Organization .....
Address: .....
.....
Phone: .....
Fax .....

Please supply
Ohiha Working Papers Nos. .....
.....
NCDS Working Papers .....
.....
Please supply a photocopy of any Working Papers out of print ☐
Proceedings .....
.....
Colombo Plan Book .....
History of Development Studies .....
Australian Studies Network Monographs .....
Australia-Japan Research Centre Monographs .....
.....
Japanese Studies Association Proceedings volumes: .....
All three volumes ☐
Pacific Economic Papers Nos. .....
.....

To order *Asian-Pacific Economic Literature*, *Bulletin of Indonesian Economic Studies* and *Survey of Recent Developments* please see the relevant section above.

Charge my (tick one)
Master card ☐ Visa ☐ American Express ☐ Bankcard ☐
Number: ..... Expiry Date: .....
Name: ..... Signature: .....
Telephone: ..... Fax: .....

Should you choose to pay by cheque or bankdraft please forward to:
Reply Paid 440 Bibliotech GPO Box 4
Canberra ACT 2601 Australia