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Shadow Exchange Rates for Project Economic Analysis: Toward Improving Practice at the Asian Development Bank

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Asian Development Bank

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Foreword

The ERD Technical Note Series deals with conceptual, analytical or methodological issues relating to project/program economic analysis or statistical analysis. Papers in the Series are meant to enhance analytical rigor and quality in project/program preparation and economic evaluation, and improve statistical data and development indicators. ERD Technical Notes are prepared mainly, but not exclusively, by staff of the Economics and Research Department, their consultants, or resource persons primarily for internal use, but may be made available to interested external parties.

Acronyms and Abbreviations

ADB	Asian Development Bank
CSP	country strategy and program
DFID	Department for International Development (United Kingdom)
DMC	developing member country
EER	equilibrium exchange rate
EREA	Economic Analysis and Operations Support Division
GFS	Government Finance Statistics
IFS	International Finance Statistics
IMF	International Monetary Fund
OER	official exchange rate
PPTA	project preparatory technical assistance
PRC	People's Republic of China
RRP	Report and Recommendation of the President
SCF	standard conversion factor
SER	shadow exchange rate
SERF	shadow exchange rate factor

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Abstract

This note examines the Asian Development Bank's (ADB) practice in estimating and using shadow exchange rate in the economic analysis of projects. Recognizing the limited application of the method suggested in ADB's *Guidelines for the Economic Analysis of Projects*, this note suggests a simple trade-weighted approach that corrects for at least the minimum level of distortions in the economic price of foreign exchange. This paper also echoes the recommendation of ADB's *Economic Analysis in 2002: A Retrospective* for the periodic reassessment of the shadow exchange rate as part of country strategy and program formulation.

I. INTRODUCTION

Economic analysis of a project differs from financial analysis in that economic analysis is based on opportunity cost, rather than actual, financial outlays. For example, an irrigation system may have to pay for power to pump water, but typically would not pay for the water itself. The system would then face a financial outlay for power, but none for water. Both power and water have an economic cost though: the value of power and water in the next best use, or the opportunity cost. Since the economic value represents the true, and perhaps otherwise hidden, value of a good or service, economists call it the "shadow" price. (See Curry and Weiss 2000, or ADB 1997, for a full description of project analysis.)

An exchange rate, which is the price of foreign currency, also has a shadow price: the shadow exchange rate. The shadow exchange rate is important in project analysis, because a simple way to measure the economic value of goods and services is to classify them into "tradables" and "nontradables."

For any project, a tradable good or service has a price established in international markets, regardless of whether the good or service is actually traded. If it is at least potentially traded, then it is relatively easy to estimate transport and other transaction costs involved in actually trading the good or service. And from the perspective of a specific country, the international market price can be taken as the true economic value of the tradable good or service, since taxes, subsidies, and other market distortions are resource costs for other countries.

For example, suppose the United States (US) government subsidizes American wheat farmers, who sell their output in international markets. The economic value of wheat to the US is the international price plus the cost of subsidies, but the economic value of wheat to any other country is only the international price. The wheat subsidies are an economic cost only to the US economy.

From this perspective, then, measuring the economic value of any tradable good or service is relatively easy: use the international price, plus transport and transaction costs, to calculate a value in terms of a foreign currency; and then convert the foreign currency into the domestic currency using the economic or "shadow" exchange rate. All tradable goods and services therefore require only one shadow price, the shadow exchange rate (SER).

There are several ways to estimate shadow exchange rates, differing in both their accuracy and conceptual and computational complexity. Section II below provides a brief review. These methods are generally based on converting the nominal or official exchange rate (OER) to the shadow exchange rate, through a conversion factor (the "shadow exchange rate factor", or SERF): $SER = OER * SERF$.

Although more complex methods of estimating the SERF are generally more accurate, the additional accuracy may not justify the extra effort when foreign exchange markets are not highly distorted. A simple method may be sufficient, although simpler methods should be compared at least occasionally with the results of more complex methods.

Despite the opportunity or potential for using simpler methods, there appears to be a perception that estimating the SERF is difficult and beyond the means of ordinary project analysis. Section III below reviews the practice in recent project analyses at the Asian Development Bank (ADB). The review found that the calculation or documentation of the SERF was inadequate in up to 90 percent of recent projects. Although calculating the SERF is relatively easy, as described in Section II, very few project analyses at ADB make the effort, even in documenting the source of their estimates.

The economic analysis of projects at ADB would be strengthened significantly through consistent and correct application of the standard methods of project analysis, including the SERF (ADB 2003). Section IV below uses one of the simplest methods to estimate the SERF for several countries in the Asian and Pacific region. The analysis shows that the method is easy to apply, and the required data are generally easy to obtain. Since the SERF is a country parameter, though, and not specific to any project, economists responsible for countrywide economic analysis should take the lead in estimating SERFs, leaving projects analysts responsible only for getting the latest estimates, and applying them correctly and consistently. The SERF is also important in country economic assessment, as a means of evaluating distortions in foreign exchange markets.

II. SUGGESTED METHODOLOGIES BASED ON ADB GUIDELINES

The SERF is the ratio of the SER to the OER. The SER is the weighted average of the demand price for foreign exchange paid by importers and the supply price of foreign exchange received by exporters. Taxes and subsidies cause the SER to diverge from the OER.

ADB's *Guidelines for the Economic Analysis of Projects* (1997) or *Guidelines* suggests three alternative approaches for estimating the SCF or the SERF. One approach is applicable when the country concerned enjoys balanced trade. The formula involves calculation of the SER based on the tariff-adjusted OER, weighted according to import-export shares. Another approach takes into account the sustainability of the country's trade imbalance through an assessment of the equilibrium exchange rate (EER). The use of the EER, rather than the market or official exchange rate, puts emphasis on the long-term stability of the exchange rate because of its significant effect on project performance. Appendix 16 of the *Guidelines* illustrates the application of these approaches to the Philippine case. This methodology is based on the model developed by Jenkins and El-Hifnawi (1993).

The *Guidelines* also suggest that, when tariffs represent the only distortion to trade and there are no distortions in factor or commodity prices, the SERF can be approximated by one plus the weighted average tariff rate. This is consistent with the accepted definition of the SER as the weighted average of the demand price for foreign exchange paid by importers and the supply price of foreign exchange received by exporters.¹

This third approach is equivalent to the methodology suggested by the United Kingdom's Department for International Development (DFID), formerly known as Overseas Development Administration (ODA 1988). This simple trade-weighted formula can be represented as:

III. ADB PRACTICE IN ESTIMATING AND USING SERFS OF SCFS

$$\begin{aligned} \text{SCF} &= \frac{\text{Imports (cif) + Exports (fob)}}{(\text{Imports + Import taxes}) + (\text{Exports - Export taxes})} \\ &= \frac{\text{Total trade}}{\text{Total trade + Net trade taxes}} \end{aligned}$$

where cif = cost, insurance & freight
fob = free on board

Alternatively:

$$\text{SERF} = 1 + \frac{\text{Net trade taxes}}{\text{Total trade}}$$

¹This is considered one application of Arnold Harberger's weighted average method in partial equilibrium framework.

In its retrospective review of operations with respect to project economic analysis in 2002 (ADB 2003), the Economic Analysis and Operations Support Division (EREA) identified various areas for improvement at different stages of the project cycle—identification, formulation, design, and appraisal. On the estimation and use of standard conversion factors, it was common practice to use the value of the SCF, or the SERF, that was used in the most recent project in the sector or in the country. The review further noted that while this promotes consistency across projects, the SCF or SERF used may not reflect prevailing economic conditions. It would not be surprising to discover that the original value of the SCF or SERF may have been estimated several years back, given the practice of referring to recent projects and accepting the value as that commonly used.

To verify this general observation and to glean useful insights from past practice, EREA conducted a survey of 232 loan proposals (using the Report and Recommendation of the President or RRP) approved from 1996 up to August 2003 (See Appendix 1).² A summary of practice is presented in Table 1 below. Almost 16 percent of the RRP's specifically cited the use of SCFs or SERFs from previous projects. This figure is not considered very significant, but note that 69 percent of the RRP's did not cite the source of the SCF/SERF at all. It is likely that most of these reports followed the same practice of using values from recent projects.

Although referring to previous projects is common, it has occurred that projects in the same country approved within months or days of each other use different values of SERF or SCF. This implies

Table 1: ADB Practice in Estimating SCFs, 1996 to 2003

	PRACTICE	NO. OF RRP's	SHARE (PERCENT)
1	Source not cited	160	69.0
2	Used in recent projects	36	15.5
3	Calculated/updated, of which	17	7.3
	• using Jenkins' model/Guidelines Appendix 16	4	1.7
	• by consultants	2	0.9
	• using trade data (data from CER or central banks)	7	3.0
	• based on COSTAB	1	0.4
	• others/not specified	3	1.3
4	Based on government-estimated parameters, other studies (inc.	5	2.2
5	Calculated based on the relationship between official exchange rate and shadow exchange rate (or commercial rate)	4	1.7
6	Others	10	4.3
	• Cited no significant distortions, so SCF=1 or close to 1	4	1.7
	• Cited that there is no need for SCF because project costs are mainly imports, so SCF=1	1	0.4
	• SCF not available, so SCF=1	1	0.4
	• Expert judgment	2	0.9
	• Unclear (Econ costs estimated by first identifying ratios of market price to economic costs, and then by multiplying the ratio by the market price for each vehicle category separately); (SCF was assumed based on international competitive bidding for some contracts)	2	0.9
	Total	232	100

Source: RRP's (as of August 2003).

²The survey focused only on the values of SCFs or SERFs used, not on their application. The observed inconsistent application of the SCF or SERF with respect to the price numeraire is a separate issue.

lack of coordination on countrywide parameters during project preparation. This can be prevented if project teams can refer to a set of regularly updated countrywide parameters.

In contrast to usual practice, the SERF or SCF was calculated or updated in 17 RRP's surveyed. Only four of these referred to the model developed by Jenkins and El-Hifnawi (1993). Although this study provided illustrations for Bangladesh, Indonesia, and Philippines, it was referred to only in three Philippine projects (two in 1996 and one in 2000) and one in Bangladesh (in 1997). Even with the illustrations and the estimates of elasticity provided, very few attempts have been made to update the SCFs or SERFs even for these countries. This may indicate that the illustrations were difficult to follow, or there is a misconception that data are not available, or it is simply convenient for the analyst, given limited resources, to refer to recent projects.

Seven RRP's referred to the use of trade data from the Country Economic Review or the central bank of a developing member country (DMC) to calculate the SCF or SERF. Consultants' reports under project preparatory technical assistance (PPTA) of two RRP's (one each in Pakistan and Sri Lanka) used a simple formula based on weighted average of imports and exports, as in DFID's approach. The PPTA for Pakistan's Irrigation Management (which later became Loan 1679-PAK: Punjab Farmer Managed Irrigation) even included data on sales taxes on imports and subsidies on imports. The PPTA of one RRP (Cambodia), however, calculated the SCF based only on average import tariffs—also presented in the DFID Guidelines as an alternative formula.

Five RRP's referred to government-estimated parameters or other studies, including two PPTAs. Two RRP's noted that the SCF or SERF was calculated by consultants, although the PPTAs provided no details on the formula/model used.

Still a few others (six RRP's) cited that the SCF is equal or close to one because there are no significant distortions, or project costs are mainly imports, or because an estimate of SCF is not available. The first reason sounds acceptable, particularly if there indeed has been an assessment resulting to the conclusion that there are no significant distortions in the economy. However, citing that project costs are mainly imports is not justifiable, even assuming that the world price numeraire is used, in which case benefits (normally in domestic price levels) still need to be converted to their world price equivalent. Not using SCF because it is not available is not acceptable, particularly when alternative methods of SCF calculation are available. Finally, there were two RRP's where the SCF derivation was suspect or unclear.

IV. APPLICATION OF SIMPLE TRADE-WEIGHTED METHODOLOGY AND RESULTS

A. The Approach

Recognizing the limited application of the SCF methodology illustrated in the *Guidelines*, it is worth considering practitioner-friendly approaches for calculating SCFs that corrects for at least the minimum level of distortions in the economic price of foreign exchange.

Following the lead provided in the *Guidelines* on the use of the alternative approach when the major distortions to factor and commodity prices are trade-related, the SCF may be approximated using the short-cut and simple trade-weighted formula.

To illustrate the application of this approach, SCFs were calculated for as many DMCs as possible using data from readily available sources. The International Financial Statistics (IFS) in CD-ROM format contains data on import and export values while the *Government Finance Statistics Yearbook* (GFS) contains data on import and export taxes. Both data sources are published regularly by the International Monetary Fund (IMF).

Only 17 DMCs had both sets of data from the IFS and GFS. Annual SCFs were calculated from 1996 to 2002, where data are available, as well as average SCF for each DMC.

B. Findings

Table 2 reveals that the annual SCF estimates per DMC are fairly stable, except for Myanmar and Vanuatu. The table also indicates the possibility of using a time series of SCFs as a simple tracking mechanism for progress (or otherwise) of reforms toward removing price distortions. Not only would better practice in the estimation of SCFs improve analytical rigor in project economic analysis and project design, it would also provide a useful indicator of overall country performance with respect to policy reform.

Table 2: Estimated SCFs using Simple Trade-weighted Formula

	1996	1997	1998	1999	2000	2001	2002	AVER- AGE	RANGE	RRPs, 1996-2003	
										AVER- AGE	RANGE
Transition Economies											
Azerbaijan	.98	.98	.96	.97				.97	.96-.98		
Mongolia	.98	.99	1.00	.99				.99	.98-1.00	.95	.88-1.00
Viet Nam	.93	.94	.94	.95	.96	.95		.95	.93-.96	.89	.80-.96
Pacific Island Economies											
Fiji	.95							.95	.95	.99	.99
Maldives	.90	.90	.90	.90	.89	.89	.89	.90	.89-.90	.90	.90
Papua New Guinea	.97	.96	.92	.92				.94	.92-.97	.92	.90-.96
Vanuatu	.82	.87	.82	.85				.84	.82-.87		
Other DMCs											
Bhutan	1.00	1.00	1.00	1.00				1.00	1.00	.90	.90
People's Republic of China	.99	.99	.99					.99	.99	.92	.71-.93
India	.86	.87	.87	.86	.87	.86		.86	.86-.87	.87	.80-.90
Indonesia	.99	.99	1.01	.98		.96		.99	.96-1.01	.91	.80-.95
Myanmar	.61	.67	.80	.79	.81			.74	.61-.81		
Nepal	.94	.94	.92	.93	.93	.92	.91	.93	.91-.94	.90	.88-.92
Pakistan	.90	.89	.90	.91	.92	.91	.94	.91	.89-.94	.89	.84-.90
Philippines	.93	.95	.95	.95	.95	.95		.95	.93-.95	.86	.82-.91
Sri Lanka	.95	.96	.95	.95	.97	.96		.96	.95-.97	.88	.79-.94
Thailand	.96	.97	.97	.98	.98	.97		.97	.96-.98	.91	.90-.92

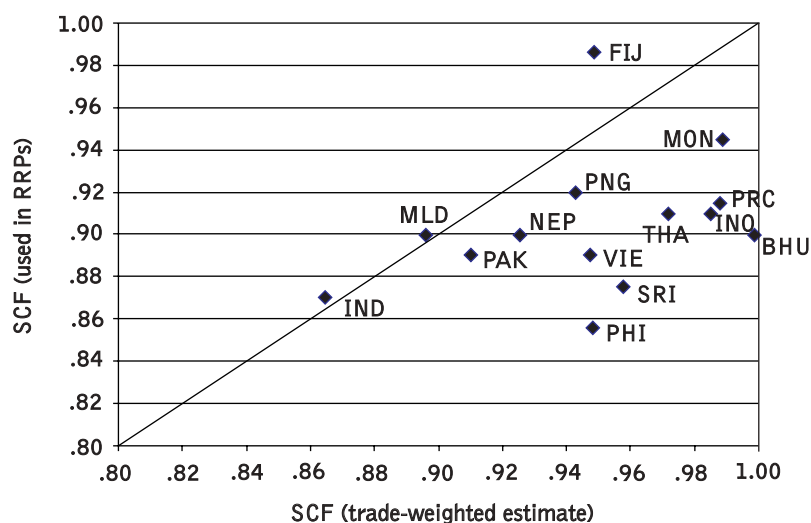
Sources: *Government Finance Statistics Yearbook* (IMF 2002), *International Financial Statistics* (IMF 2003).

For comparison purposes, Table 2 also presents the SCFs (or the reciprocal of SERFs) used in RRP approved from 1996 to August 2003. The estimated SCFs are generally within the range of SCFs used in the RRP. The major exceptions are Bhutan, PRC, Indonesia, Philippines, and Thailand. The difference may be explained by the presence of other distortions that were not captured by the simple trade-weighted approach, or simply because of the use of other approaches. In the case of Bhutan, the most recent RRP noted that the SCF was based on the average level of direct taxation and the level of market distortion present in the economy, and cited the SCF used in a recent World Bank project. It is not clear whether the direct taxation pertains to trade taxes or domestic taxes. For PRC, most of the RRP indicated using SCFs from recent projects, though a few cited calculations done during PPTA.

In the case of the Philippines, the SCF was calculated using the model developed by Jenkins and El-Hifnawi, which accounted for the real exchange rate and sustainability of the trade imbalance. Also included in the calculation is the equivalent tariff of quantitative import restrictions.

In terms of averages, however, only Indonesia and Maldives have practically identical average SCFs (see Figure 1). For all other countries, except Fiji, the average SCFs, estimated using the simple trade-weighted formula, are higher than the average SCFs used in RRP. This provides a rough indication of the possibility that the extent of economic distortions may have been overestimated for most countries, and therefore indicating the need for a more rigorous assessment.

Figure 1: Average SCFs, 1996 – 2002



C. Suggestions for Future Work on SCF or SERF Estimation

The IFS and the GFS are not the only sources of data on trade values and trade taxes. More updated data would be available directly from DMC institutions (central banks, ministry or department of finance and/or customs). Given the incomplete (and sometimes outdated) set of data for some DMCs from the IFS and GFS, country economists would be in a good position to verify the calculated SCFs in this report, based on country data to which they may have ready access. A recent application of this approach was undertaken by the country economist for Azerbaijan, who noted that the calculation did not require much effort. Data were sourced from the State Statistics Committee, National Bank of Azerbaijan, and Ministry of Finance. Staff estimates were used in allocating aggregate data on customs charges and other taxes on international trade between imports and exports. Appendix 2 presents the sample calculation.

It is worth noting that for some projects currently under preparation, SCFs have been estimated using the weighted average tariff rates from imports and customs revenue data. Examples include the draft RRP for FIJ: Suva-Nausori Water & Sewerage Project, SAM: Drainage Project, and AZE: Flood Mitigation Project. More efficient use of resources would however be achieved if SCFs or SERFs are estimated as part of country strategy and program (CSP) formulation, and not on a per project basis. Country economists are encouraged to update the SCF or SERF at least annually, in conjunction with the CSP exercise, with appropriate support from EREA when necessary.

As part of the task of assessing a DMC's macroeconomic environment (or in tracking the progress of policy reform), the formula should not be used mechanically, but to aid in analysis. The country economist, with an intimate knowledge of the DMC, can make further adjustments with respect

to other factors that can affect the true cost of foreign exchange. Such adjustments should however be properly explained, and the logic clarified.

Depending on the trade regime in each DMC, for example, if the DMC imposes quantitative restrictions on certain items that are considered significant, their tariff equivalent should be accounted for. The tariff equivalent should be included in the denominator of the formula, and have the same sign as import taxes and export taxes.

Where subsidies for certain items are significant and data are available, the formula may be extended to:

In summary, the sample SCF estimates in Table 2 are not recommended for direct application. The exercise is meant only to illustrate the ease in estimating SCFs, and this paper should not be cited as a source for SCF estimates for any country. Instead, estimates should come from analyses specific to a country, and should be based on the most recent data.

Given access to more updated data at the country level, the calculated SCFs can be verified and adjusted further to take account of other significant distortions other than trade taxes and specific country circumstances. The exercise is also expected to enhance understanding of economic distortions and their impact on project design, performance, and sustainability.

$$SCF = \frac{\text{Imports (cif) + Exports (fob)}}{(\text{Imports} + \text{Import taxes} - \text{Subsidies}) + (\text{Exports} - \text{Export taxes} + \text{Subsidies})}$$

V. CONCLUSIONS AND RECOMMENDATIONS

EREA recommends periodic reassessment of the SCF or SERF. This echoes the finding in EREA's 2002 retrospective report on the importance of understanding the underlying tariff and macro-economic environment in project economic analysis. This is particularly relevant for transition economies or where various factors are likely to affect the relationship between domestic and world price levels. Tracking the SCF trend can also shed light on the progress of price-related structural adjustment efforts and the need for further reforms, especially as regards trade and subsidy policy.

To improve practice in ADB, the calculation or validation of the SCF or SERF during preparation of the CSP and its updates is recommended. The simple trade-weighted formula for SCF calculation is a good starting point, and adjusted as deemed necessary to take account of other distortions, where data are available. Guidance on the appropriate SCF or SERF to use will ensure consistency in SCF or SERF values across projects during a processing year. The resource implications are almost negligible since the minimum information/data required should already form part of the data set used in CSP formulation.

APPENDIX 1 CONVERSION FACTORS FOR SELECTED PROJECTS, 1996-2003

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
AFG-1997 Emergency Infrastructure Rehabilitation and Reconstruction 3 Jun 03	SCF=0.9		Not cited in RRP, but later information indicated that based on the best estimate of customs revenue and imports in 2002, trade-weighted formula could put SCF at roughly 0.9.
BAN-1952 Rural Infrastructure Improvement 2 Dec 02	SCF=0.8		SCF used for the Bangladesh road transport sector
BAN-1947 Urban Governance and Infrastructure Improvement (Sector), 28 Nov 02	SERF=1.05	Skilled L=0.87 Unskilled L=0.67	Not cited
BAN-1941 Jamuna-Meghna River Erosion Mitigation 25 Nov 02	SCF=0.9	Agriculture L=0.85 Construction L=0.84	Not cited
BAN-1920 Road Network Improvement and Maintenance I 10 Oct 02	SCF=0.8		Not cited
BAN-1884 West Zone Power System Development 17 Dec 01	SCF=0.855	Unskilled L=0.8 Skilled L=1.1	Not cited
BAN-1831 Second Small-scale Water Resources Development Sector, 12 Jul 01	SCF=0.9	SWRF=0.85	Aug 2000. BAN. Draft Development Strategy. Vol. 8 Annex J: Economics, National Water Management Plan Project. Min of Water Resources
BAN-1789 Road Maintenance and Improvement 29 Nov 00	SCF=0.8		Not cited
BAN-1782 Northwest Crop Diversification 21 Nov 00	SCF=0.89	SWRF=0.8	Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
BAN-1771 Chittagong Hill Tracts Rural Development 26 Oct 00	SERF=1.1	Agriculture and road construction L=0.8 Other L=1	A trade-weighted shadow exchange rate of Tk56=\$1 has been assumed, giving a SERF of 1.1
BAN-1730 Dhaka Power System Upgrade 21 Dec 99	SCF=0.855	SWRF=0.9	Not cited
BAN-1708 Southwest Road Network Development 16 Nov 99	SCF=0.8		SCF as conventionally used in Bangladesh
BAN-1643 Sundarbans Biodiversity Conservation 27 Nov 98	SCF=0.86		Not cited
BAN-1634 Rural Livelihood 29 Sep 98	SCF=0.9	Rural labor, land and fixed assets=0.75	SCF as applied in other ADB projects in Bangladesh
BAN-1581 Third Rural Infrastructure Development 20 Nov 97	SCF=0.84	Skilled L=0.84 Unskilled L=0.7 (Various specific CFs provided)	SCF was derived. Shadow price factors were calculated for major Project-related materials and components. A shadow price factor was also derived for agriculture. TA Consultant's Report: Shadow prices calculated based on ADB Guidelines. Supplementary Appendix 4.2, which supposedly shows calculations, is not available.
BAN-1561 Jamuna Bridge Railway Link 2 Oct 97	SCF=0.834	SWRF=0.75	Not cited
BAN-1524 Participatory Livestock Development	SERF=1.7	Agricultural L=0.8	Following the methodology of Jenkins and El-Hifnawi, recent data were obtained from the 1996 CER to update the earlier estimate.
BAN-1505 Ninth Power, 18 Dec 96	SCF=0.855	SWRF=0.9	Not cited
BAN-1486 Forestry Sector 21 Nov 96	SCF=0.75	SWRF=0.8	Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
BAN-1478 Jamuna Bridge Access Roads 5 Nov 96			Economic costs are equal to the financial costs less 17% for taxes and customs duties
BHU-1763 Road Improvement 3 Oct 00	SCF=0.9		SCF based on the average level of direct taxation and the level of market distortion present in the economy. Evidence from recent studies, most notably the WB's Rural Access Project, estimates a SCF of 0.9
BHU-1712 Sustainable Rural Electrification 25 Nov 99	SCF=0.9	Skilled L=1 Unskilled L=0.73 (or SWRF=0.955)	Not cited
BHU-1625 Urban Infrastructure Improvement 30 Jul 98	SERF=1.11		Not cited
CAM-1945 GMS Cambodia Road Improvement 26 Nov 02	SCF=0.85		Not cited
CAM-1862 Northwestern Rural Development 27 Nov 01	SCF=0.9	Farm and Unskilled Labor=0.75	Current ADB SCF for Cambodia
CAM-1794 Provincial Power Supply 5 Dec 00	SCF=0.9		Not cited
CAM-1753 Stung-Chinit Irrigation and Rural Infrastructure 5 Sep 00	SCF=0.9		SCF in accordance with current practice for projects in Cambodia
CAM-1741 Rural Credit and Savings 27 Apr 00	SCF=0.9	Entrepreneurial family L=0.95 General workers=0.75	SCF as used by ADB in recent studies in Cambodia
CAM-1725 Provincial Towns Improvement 20 Dec 99	SCF=0.8		SCF as currently estimated in Cambodia

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
CAM-1697 Primary Roads Restoration 21 Sep 99	SCF=0.86		Not cited
CAM-1503 Siem Reap Airport 12 Dec 96	SCF=0.86		SCF was estimated from historical data available on the level of import and export as well as duties and taxes collected by the Government. TA 2197-CAM: SCF formula based on trade-weighted average imports and exports
CAM-1468 Phnom Penh Water Supply and Drainage, 26 Sep 96	SCF=0.9		SCF as for other scheduled project funded by the World Bank, France, and Japan.
C00-1832 Waste Management, 17 Jul 01	SCF=1	SWRF=0.8	No significant nationwide distortions apart from import duties and taxes
FIJ-1902 Fiji Ports Development 5 Mar 02	SCF=0.986	Labor=0.86	Calculated for Fiji islands
FSM-1459 Water Supply and Sanitation 19 Sep 96	SCF=1	SWRF=0.9 (Chuuk, Kosrae, Pohnpei) SWRF=0.9 (Yap)	Since the country uses the US\$ as its domestic currency and no significant price distortions exist in the market for tradable inputs, the SCF is assumed to be 1.
IND-1981 Railway Sector Improvement, 19 Dec 02	SCF=0.85		Not cited
IND-1958 Madhya Pradesh State Roads Sector Development Program, 5 Dec 02	SCF=0.9		Not cited
IND-1870 West Bengal Corridor Development 11 Dec 01	SCF=0.8		Not cited
IND-1868 Madhya Pradesh Power Sector Development Program, 6 Dec 01	SCF=0.9	Unskilled L=0.85	Not cited
IND-1839 Western Transport Corridor 20 Sep 01	SCF=0.85		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
IND-1813 Calcutta Environmental Improvement 19 Dec 00	SERF=1.11	Unskilled L=0.7	Not cited
IND-1803 Gujarat Power Sector Development Program 13 Dec 00	SCF=0.9	Unskilled L=0.85	Not cited
IND-1764 Power Transmission Improvement Sector 6 Oct 00	SCF=0.9	SWRF=0.85	Not cited
IND-1747 Surat-Manor Tollway 27 Jul 00	SCF=0.9		SCF is utilized in recent foreign-assisted road improvement projects
IND-1704 Karnataka Urban Development and Coastal Environmental Management 26 Oct 99	SCF=0.9		Not cited
IND-1647 Rajasthan Urban Infrastructure Development, 3 Dec 98	SCF=0.9		Not cited
IND-1591 LPG Pipeline, 16 Dec 97	SCF=0.8	SWRF=0.9	Not cited
IND-1556 Mumbai-Chennai Ports 29 Sep 97	SCF=0.9		Not cited
IND-1495 Rural Telecommunications 28 Nov 96	SCF=0.8		Not cited
INO-1983 Power Transmission Improvement 19 Dec 02	SERF=1.053	SWRF=0.75	SERF based on SCF of 0.95
INO-1982 Renewable Energy Development 19 Dec 02	SERF=1.05		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
INO-1909 Poor Farmers' Income Improvement through Innovation, 15 Aug 02	SCF=0.9	Access roads=0.86	Roads CF based on TA3334: Road Rehabilitation
INO-1469 Integrated Pest Management for Smallholder Estate Crop 26 Sep 96	SCF=0.94	SWRF=0.9	Not cited
INO-1428 North Java Improvement 23 Jan 96	SCF=0.943		Latest available estimate of the SCF for Indonesia
INO-1425 North Java Flood Control Sector 18 Jan 96	SCF=0.8	Civil works=0.87 Nontradables=0.9 Tradables=1.0	Specific conversion factors based on latest ADB parameters for use in Indonesia. Nontradables include works that require skilled labor and locally manufactured materials. Tradables include capital-intensive works that require imported materials.
KAZ-1779 Farm Restructuring Sector Development Program 14 Nov 00	SCF=0.95	SWRF=0.9 (or a labor CF of 0.855)	Not cited
KAZ-1592 Water Resources Management and Land Improvement 17 Dec 97	SCF=0.95	SWRF=0.75	No accepted SCF for KAZ. The forex provides one indicator of macro-economic balance, suggesting that SCF is close to 1. Moreover, limited available data on market prices suggest no persistent trade biases. Officially, the Government maintains a flat tariff of 10% on most commodities, which would suggest a SCF of about 0.9. In practice, however, it is believed that tariffs are rarely collected due to a lack of customs posts at international borders and the continuing importance of barter trade. Moreover, official tariffs are expected to decline during the medium term as a result of continuing trade liberalization. Hence, SCF is set at 0.95 which also tests for the sensitivity of this assumption.
KAZ-1455 Road Rehabilitation 27 Aug 96	SCF=1		A CF of 1 was assumed as no CF estimate was available at the time of preparing this Report

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
KGZ-1853 Third Road Rehabilitation 31 Oct 01	SCF=0.9		Not cited
KGZ-1742 Community-Based Infrastructure Services Sector 8 Jun 00	SERF=1		There is no general guidance available on SCFs or SERFs appropriate for Kyrgyz. Previous projects in the highway sector have used an SCF of 0.9, but this is for Kazakhstan and Kyrgyz jointly. An agricultural project used an SCF of 0.98 for agricultural projects in Kyrgyz. The WB's project analysis for rural projects used an SCF of 1 assuming no discernible distortions, and therefore a reciprocal SERF of 1 was used in this case.
KGZ-1726 Agriculture Area Development 20 Dec 99	SCF=0.95	Unskilled L=0.6	A recent WB project used a SCF of 1 while this project's PPTA used specific CFs ranging from 0.91 to 0.98. The SCF of 0.95 seems a realistic estimate, particularly in view of the reforms and liberalization of prices initiated by the Government.
KGZ-1630 Second Road Rehabilitation 10 Sep 98	SCF=0.9		Not cited
KIR-1648 Sanitation, Public Health, and Environmental Improvement, 8 Dec 98		SWRF=0.9	SERF not specified
LAO-1994 Small Towns Development Sector 28 Jan 03	SERF=1.11	Unskilled L=0.5 Skilled L=1.0 Local materials=1.0	Consistent with those used in other ADB-funded projects of a similar nature in Lao PDR
LAO-1989 Northern Economic Corridor 20 Dec 02	SCF=0.8		Not cited
LAO-1949 Smallholder Development 28 Nov 02	SERF=1.1	SWRF=0.9	Not cited
LAO-1933 Nam Ngum River Basin Development Sector 11 Nov 02	SERF=1.1	SWRF=0.6	SERF and SWRF have been estimated employing generally accepted assumptions by other projects and sector studies.

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
LAO-1834 Vientiane Urban Infrastructure and Services, 23 Aug 01	SERF=1.11	In-kind Labor=0.5	Not cited
LAO-1795 Rural Access Roads 7 Dec 00	SCF=0.9		In the FS, a shadow price factor of 0.85 was used, based on local competitive bidding for some contracts. For the final detailed cost estimates, an economic price factor of 0.9 was assumed based on international competitive bidding for some contracts.
LAO-1788 Decentralized Irrigation Development and Management Sector 28 Nov 00	SCF=0.9	Agriculture L=0.77	Not cited
LAO-1710 Water Supply and Sanitation 16 Nov 99	SCF=0.9		Not cited
LAO-1688 Shifting Cultivation Stabilization 11 May 99	SCF=0.9	SWRF (peak season)=0.8 SWRF (off-peak)=0.6	Not cited
LAO-1558 Power Transmission and Distribution 30 Sep 97	SCF=0.9		Not cited
LAO-1533 Xieng Khouang Road Improvement 9 Sep 97	SCF=0.9		Not cited
LAO-1525 Secondary Towns Urban Development 26 Jun 97	SCF=0.9		SCF as used in an earlier ADB project in Lao PDR
LAO-1488 Community-Managed Irrigation Sector 21 Nov 96	SCF=0.8	SWRF=0.8	Not cited
LAO-1456 Nam Leuk Hydropower 10 Sep 96			Because the costs of the Project mainly consist of imported items and most of the skilled labor must be employed from outside the country during the construction period, no SCF was applied.

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
MAL-1500 Klang River Basin Environmental Improvement and Flood Mitigation 5 Dec 96	SCF=0.9	Construction=0.96 Petroleum=0.94 Machinery, Nonelectrical=0.98 Electrical=0.81 Motor vehicles=0.78 Real estate & dwellings=0.89 Other services=0.86	Tan Tok Shiong. 1994. <i>Shadow Prices for Malaysia with an Extended Semi Input-Output Method</i> . Ph.D. thesis, Bradford University.
MLD-1887 Outer Islands Electrification Sector 18 Dec 01	SCF=0.9		Not cited
MLD-1695 Regional Development 2 Sep 99	SCF=0.9	Skilled L=1 Unskilled L=0.6	Not cited
MLD-1637 Postsecondary Education Development 30 Sep 98	SCF=0.9		Not cited. SCF is applied not on the Base Case, but as part of sensitivity test.
MLD-1532 Third Power System Development 9 Sep 97	SCF=0.9		Not cited
MON-1998 Second Health Sector Development 5 Jun 03	SERF=1.1		Based on ADB guidelines for Mongolia
MON-1907 Integrated Development of Basic Urban Services in Provincial Towns 6 Aug 02	SERF=1.018	Unskilled L=1.2 Skilled L=0.8	SERF calculated for 2000
MON-1847 Housing (Finance) Sector 18 Oct 01	SERF=1.11		As inverse of SCF. Nontradable components valued at market prices.
MON-1821 Agriculture Sector Development Program 21 Dec 00	SCF=0.9		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
MON-1700 Second Roads Development 30 Sep 99	SCF=0.88		Not cited
MON-1560 Provincial Towns Basic Urban Services 30 Sep 97	SCF=1	SWRF=0.5	As there are no evident subsidies for other resources to be used in the Project, nor is there a substantial difference between the official exchange rate and the shadow exchange rate, a SCF of 1 has been used for other items.
MON-1548 Ulaanbaatar Heat Efficiency 25 Sep 97	SCF=0.997		SCF calculated from 1995 import and export volume data and import and export tax data
MON-1492 Energy Conservation 26 Nov 96	SCF=1		Based on 1995 import and export volume data and import and export tax data, SCF was calculated at 0.997
NEP-1876 Road Network Development 13 Dec 01	SCF=0.88		Not cited
NEP-1778 Crop Diversification 9 Nov 00	SCF=0.9		SCF as generally adopted for project analysis in Nepal
NEP-1755 Small Towns Water Supply and Sanitation Sector 12 Sep 00	SCF=0.9	Unskilled L=0.7	Not cited
NEP-1732 Rural Electrification, Distribution and Transmission, 21 Dec 99	SCF=0.9		Not cited
NEP-1650 Rural Microfinance 8 Dec 98	SCF=0.9	SWRF=0.5	Not cited
NEP-1609 Community Groundwater Irrigation Sector, 26 Feb 98	SCF=0.9		Not cited
NEP-1512 Tribhuvan International Airport Improvement 23 Jan 97	SCF=0.9		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
NEP-1464 Fourth Rural Water Supply and Sanitation Sector 24 Sep 96	SCF=0.9		With no major distortions in wage and commodity prices in Nepal, the benefits have not been shadow priced.
NEP-1461 Third Livestock Development 19 Sep 96	SCF=0.9		Not cited
NEP-1452 Kali Gandaki "A" Hydroelectric 23 Jul 96	SCF=0.9		Not cited
NEP-1451 Second Tourism Development 2 Jul 96	SCF=0.9		Not cited
NEP-1450 Rural Infrastructure Development 27 Jun 96	SCF=0.9	Civil works=0.82 Transport=0.85 Fruits=1.6	SCF in line with the economic assessments of other projects in Nepal
NEP-1437 Second Irrigation Sector 16 May 96	SCF=0.92	SWRF=0.92	Not cited
PAK-1987/88 Rural Finance Sector Development Program 20 Dec 02	SCF=0.9	SWRF=0.75	Not cited
PAK-1950 Punjab Community Water Supply and Sanitation 28 Nov 02	SCF=0.9	Skilled L=1.1 Unskilled L=0.8 Female L=0.7	Not cited
PAK-1934 Sindh Rural Development 20 Nov 02	SCF=0.9	SWRF=0.75	Not cited
PAK-1928 Punjab Road Development Sector, 31 Oct 02	SCF=0.9		Not cited
PNG-1925 Coastal Fisheries Management and Development, 24 Oct 02	SCF=0.9		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PAK-1891 Road Sector Development Program 19 Dec 01			Economic costs estimated by first identifying ratios of market price to economic costs, and then by multiplying the ratio by the market price for each vehicle category separately
PAK-1854 North-West Frontier Province Urban Development Sector 8 Nov 01			Economic evaluations were based on the domestic price numeraire and exclude taxes (10%) and other market distortions (with a SCF of 0.85). A SERF was applied to tradable components of project costs.
PAK-1787 Northwest Frontier Province Barani Area Development, 28 Nov 00	SCF=0.9	Rural L=0.78	Not cited
PAK-1679 Punjab Farmer-Managed Irrigation 25 Mar 99	SCF=0.9	SWRF=0.85	Based on data from Country Economic Review (Sep 1997), the SER was re-estimated during appraisal. PPTA (2452-PAK) report noted that "SCF is estimated by weighted average of import and export tariff excluding subsidies. The weights are based on the volume of imports and exports in the total trade of the country during the year. An average of five years is taken to account for fluctuation in trade regimes, taxes and subsidies." Derivation of the SCF is provided in Annex 9 Table 23.
PAK-1672 Malakand Rural Development 18 Mar 99	SCF=0.9		Not cited
PAK-1578 Second Flood Protection Sector 13 Nov 97	SERF=1.15	SWRF=0.75	SERF estimated by the consultants
PAK-1539 Korangi Wastewater Management 18 Sep 97	SCF=0.9	SWRF=0.64	Not cited
PAK-1531 Dera Ghazi Khan Rural Development 4 Sep 97	SCF=0.9		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PAK-1467 Bahawalpur Rural Development 26 Sep 96	SCF=0.9		Not cited
PAK-1424 Ghazi Barotha Hydropower 16 Jan 96	SCF=0.837	Unskilled L=0.7	An average SCF was estimated at 0.88 from trade data for a period of 5 years using the standard definition. Based on these assumptions, the SCF for the Project was estimated as 0.837.
PHI-1984 Electricity Market and Transmission Development 19 Dec 02	SERF=1.2	Unskilled L=0.7	SERF as inverse of SCF of 0.83
PHI-1843 Mindanao Basic Urban Services Sector 27 Sep 01	SERF=1.22	Unskilled L=0.7	As inverse of SCF
PHI-1772 Infrastructure for Rural Productivity Enhancement Sector 31 Oct 00	SCF=0.91	SWRF=0.68	SCF calculated using model developed by the Harvard Institute for International Development (HIID) and 1997 data (latest available). Sensitivity analysis used SCF of 0.83, as calculated by the National Economic and Development Authority (NEDA).
PHI-1745 Pasig River Environmental Management and Rehabilitation Sector 20 Jul 00	SERF=1.21	Unskilled L=0.6 Land for resettlement=0.2	Not cited
PHI-1668 Southern Philippines Irrigation Sector 18 Dec 98	SERF=1.11	Unskilled L=0.7	Not cited
PHI-1667 Agrarian Reform Communities 18 Dec 98	SCF=0.83	Skilled L=1	SCF based on the estimate of NEDA
PHI-1665 Metro Manila Air Quality Improvement Sector Development Program 16 Dec 98	SCF=0.9	Domestic machinery, civil works=1.3 Transport=1.2	Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PHI-1658 Clark Area Municipal Development 15 Dec 98	SERF=1.11	Unskilled L=0.6	SCF has been adopted following ADB's standards
PHI-1599 Subic Bay Area Municipal Development 19 Dec 97	SERF=1.19		CF is the same as the one adopted for ADB's Regional Municipal Development Project in 1995
PHI-1590 Power Transmission Reinforcement 16 Dec 97	SCF=0.82		Not cited
PHI-1562 Fisheries Resource Management 16 Oct 97	SERF=1.11	SWRF=0.6	Not cited
PHI-1536 Third Airports Development (Southern Philippines) 16 Sep 97	SCF=0.82		Not cited
PHI-1473 Sixth Road, 30 Sep 96	SERF=1.20	SWRF=0.6	Not cited
PHI-1472 Small Towns Water Supply Sector 30 Sep 96	SCF=0.9	SWRF=0.6	Not cited
PHI-1453 Bukidnon Integrated Area Development 23 Jul 96	SCF=0.82		Based on 1994 economic data, using the model developed by HIID. <i>Economic Parameters for the Appraisal of Investment Projects: Bangladesh, Indonesia and Philippines, Dec 1993.</i>
PHI-1440 Rural Water Supply and Sanitation Sector, 4 Jun 96	SCF=0.9		SCF from World Bank
PHI-1421 Cordillera Highland Agricultural Resource Management 11 Jan 96	SCF=0.8	Transport=0.84	Based on HIID study by Jenkins and El-Hifnawi
PNG-1812 Provincial Towns Water Supply and Sanitation 14 Dec 00	SERF=1.1		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PNG-1754 Rehabilitation of the Maritime Navigation Aids System, 12 Sep 00	SCF=0.96	Local L=0.85	Not cited
PNG-1656 Fisheries Development 11 Dec 98	SCF=0.9		SCF is as recommended by ADB
PNG-1652 Smallholder Support Services Pilot 10 Dec 98	SCF=0.9	SWRF=0.7	Not cited
PRC-1996 Wuhan Wastewater Management 25 Apr 03	SCF=0.89		Not cited, but note: SERF should have been used instead of SCF since the domestic price numeraire is used.
PRC-1995 Harbin Water Supply 11 Mar 03	SERF=1.08	Skilled L=2.0 Unskilled L=0.67	Not cited
PRC-1967 Shaanxi Road Development II 12 Dec 02	SERF=1.08		Not cited
PRC-1922 Hebei Zhanghewan Pumped Storage 18 Oct 02	SCF=0.93	Equipment=1.0 Steel=1.67 Cement=0.76 Timber=0.82 Skilled L=2.0 Unskilled L=0.67	Not cited
PRC-1919 Songhua River Flood Management Sector 20 Sep 02	SERF=1.07	SWRF=0.9	SERF is the inverse of the SCF, which is 0.93 based on recent project economic analysis for PRC-1835: Yellow River Flood Mgt Sector approved in Aug 01
PRC-1918 Southern Sichuan Roads Development 20 Sep 02	SERF=1.08	Unskilled L=0.67	Not cited
PRC-1901 Shen-Da Power Transmission and Grid Rehabilitation 20 Dec 01	SCF=0.93	Equipment=1.0 Steel=1.51 Cement=0.69 Timber=0.63 Skilled L=2 Unskilled L=0.67	SPERC: Report on Shen-Da Transmission Project

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PRC-1890 Acid Rain Control and Environmental Improvement 19 Dec 01	SERF=1.11	Skilled L=0.8 Semi-skilled L=1 Unskilled L=1.2 Average CF=0.8-0.82	SERF as inverse of SCF of 0.9 used by ADB for PRC projects
PRC-1851 Guangxi Roads Development 30 Oct 01	SERF=1.08	Equipment=0.967 Local road construction and maintenance=0.9	Not cited
PRC-1850 Ganzhou-Longyan Railway 30 Oct 01	SERF=1.08	Unskilled L=0.75 Skilled L=1.0	Not cited
PRC-1838 Shaanxi Road Development 30 Aug 01	SERF=1.08	Unskilled L=0.75 Skilled L=1.0	Not cited
PRC-1835 Yellow River Flood Management Sector 28 Aug 01	SERF=1.07	Unskilled L=0.9	As inverse of SCF of 0.93
PRC-1818 Wind Power Development 20 Dec 00	SCF=0.93	Skilled L=2 Unskilled L=0.67 Equipment=1 Steel=1.51 Cement=0.69 Timber=0.63	Not cited
PRC-1797 Tianjin Wastewater Treatment and Water Resources, 11 Dec 00	SERF=1.11	Land=0.51-0.8 Unskilled L=0.8 Skilled L=1	See Supplementary Appendix E for a more detailed discussion.
PRC-1783 Chongqing-Guizhou Roads Development 21 Nov 00	SERF=1.08	Unskilled L=0.75 Skilled L=1 Capital=0.964 O&M=1	Not cited
PRC-1748 Hefei-Xi'an Railway 17 Aug 00	SERF=1.08	Unskilled L=0.75 Skilled L=1	Not cited
PRC-1715 Shanxi Environmental Improvement 7 Dec 99	SCF=0.9	Domestic machinery, civil works & construction=1.3 Transport=1.2 Skilled L=1.3 Unskilled L=0.8	CFs are consistent with those used in ADB projects in PRC.

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PRC-1701 Shanxi Road Development 30 Sep 99	SERF=1.08	Unskilled L=0.75 Skilled L=1 Capital=0.964 O&M=1	Not cited
PRC-1692 Suzhou Creek Rehabilitation 29 Jun 99	SCF=0.93	Unskilled L=0.8 Skilled L=2 Power=1.3	CFs have been used for other ADB projects in PRC
PRC-1691 Southern Yunnan Road Development 24 Jun 99	SERF=1.08	Workers permanent=1 temporary=0.5 (average of 0.85) Civil works, O&M=0.96	Not cited
PRC-1644 Yunnan Dachaoshan Power Transmission 27 Nov 98	SCF=0.93	Skilled L=2 Unskilled L=0.667 Equipment=1 Steel=1.286 Cement=0.623 Timber=1.378	The methodology and presentation of shadow prices are detailed in the report prepared by BERI: <i>Least Cost Study for Yunnan Power System and Economic Analysis on the Dachaoshan Power Transmission Project.</i>
PRC-1641 Changchun-Harbin Expressway 27 Nov 98	SERF=1.08	Capital=0.9 O&M=0.98 SWRF=1	Not cited
PRC-1638 Chengdu-Nanchong Expressway 10 Nov 98	SERF=1.08	Skilled L=1.5 Unskilled L=0.5 (or average SWRF of 0.65) Civil works, O&M=0.95	Not cited
PRC-1636 Fuzhou Water Supply and Wastewater Treatment 30 Sep 98	SCF=0.93	Unskilled L=0.8 Skilled L=2 Domestic machinery, civil works/ construction=1.3	Not cited
PRC-1636 Fuzhou Water Supply and Wastewater Treatment 30 Sep 98	SCF=0.93	Unskilled L=0.8 Skilled L=2 Domestic machinery, civil works/ construction=1.3	Not cited
PRC-1625 Ghuizou-Shuibai Railway 18 Aug 98	SCF=0.926		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PRC-1617 Hebei Roads Development 18 Jun 98	SCF=0.926		Not cited
PRC-1584 Xiamen Port 27 Nov 97	SCF=0.926	Skilled L=1.5 Civil works/ maintenance, equipment/ maintenance=0.99	Not cited
PRC-1582 Northeast Power Transmission 25 Nov 97	SCF=0.98	Various CFS differentiated between North and South for equipment, steel, cement, timber, skilled labor	Not cited
PRC-1553 Shenmu-Yanan Railway 29 Sep 97	SCF=0.9		Not cited
PRC-1544 Zhejiang-Shanxi Water Supply I 24 Sep 97	SERF=1.08	Skilled L=2 Unskilled L=0.8 Domestic machinery, civil works & construction=1.3 Transportation=1.2	CFs consistent with those used in previous ADB projects in PRC
PRC-1490 Anhui Environmental Improvement Project for Municipal Wastewater Treatment, 26 Nov 96	SCF=1.4	Unskilled L=0.8 Semi-skilled L=1 Skilled L=1.2 Utilities=1.4	Not cited, but application seems to indicate that the SCF should be referred to as SERF
PRC-1484 Jiangxi Expressway 19 Nov 96	SCF=0.92	SWRF=0.5	Not cited
PRC-1483 Shenyang-Jinzhou Expressway 19 Nov 96	SCF=0.9		Not cited
PRC-1470 Chongqing Expressway 27 Sep 96	SCF=0.9		Not cited
PRC-1439 Daxian-Wanxian Railway 4 Jun 96	SCF=0.9		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
PRC-1436 Second Industrial Energy Efficiency and Environment Improvement, 9 May 96			Group CF of 1.4 for locally produced goods Group CF of 1.5 for operating cost components
PRC-1427 Fangcheng Port 18 Jun 96	SCF=0.9	Cement=0.7	Not cited
REG-1977 CAR: Regional Power Transmission Modernization 17 Dec 02	SCF=0.9 (TAJ), 0.7 (UZB)		Not cited
REG-1774 Almaty-Bishkek Regional Road Rehabilitation 31 Oct 00		SCF=0.9	Not cited
REG-1969/70/71 GMS: Mekong Tourism Development 12 Dec 02	SERF=1.11	SWRF: CAM=0.75 VIE=0.65 LAO=0.6	Not cited
REG-1727 GMS: East-West Corridor 20 Dec 99	SCF=0.85	CFs not specified	SCF has been established as a standard for similar externally financed projects in Viet Nam and elsewhere
REG-1659 GMS: Phnom Penh to Ho Chi Minh City Highway, 15 Dec 98	SCF=0.85		SCF has been established as a standard for similar externally financed projects elsewhere
RMI-1948 Outer Island Transport Infrastructure 28 Nov 02			Financial costs converted to economic costs by eliminating price escalation and IDC as well as taxes and duties from financial costs
RMI-1694 Ebeye Health and Infrastructure 12 Aug 99	SCF=0.9	Unskilled L=0.7	In March 1999, the Government announced its intention to reduce the general import duty to 5%. Allowing some room for commodity-specific import duties and elements of non-tariff barriers, a SCF of 0.9 is applied
SAM-1886 Power Sector Improvement 17 Dec 01	SCF=0.8		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
SRI-1993 Secondary Towns and Community-Based Rural WSS 16 Jan 03	SERF=1.1	Unskilled L=0.7 Overall adjustment factor=0.82	Not cited
SRI-1913/14 Plantation Development 13 Sep 02	SCF=0.94	SWRF=1.0	Not cited
SRI-1986 Road Sector Development, 19 Dec 02	SCF=0.785		Not cited
SRI-1849 Southern Province Rural Economic Advancement, 26 Oct 01	SCF=0.9	SWRF=0.75	Not cited
SRI-1767 Protected Area Management and Wildlife Conservation 19 Oct 00	SCF=0.9	SWRF=0.81	SCF is consistent with recent SCFs applied in ADB and WB projects
SRI-1757 Water Resources Management 19 Sep 00	SCF=0.94	Skilled L=1 Unskilled l=0.7 Electricity=1.1	SCF computed from 10 years data of the Central Bank of Sri Lanka
SRI-1756 Secondary Education Modernization 12 Sep 00	SCF=0.85		Not cited
SRI-1716 Coastal Resource Management 7 Dec 99	SCF=0.9	SWRF=0.8	Not cited
SRI-1711 Southern Transport Development 25 Nov 99	SCF=0.785		Not cited
SRI-1649 Road Network Improvement 8 Dec 98	SCF=0.785		Not cited
SRI-1639 Tea Development 10 Nov 98	SCF=0.9		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
SRI-1632 Urban Development and Low Income Housing 24 Sep 98	SERF=1.11		Not cited
SRI-1575 Third Water Supply and Sanitation Sector 6 Nov 97	SERF=1.1	SWRF=0.7	Not cited
SRI-1567 Southern Provincial Roads Improvement 30 Oct 97	SCF=0.85		Not cited
SRI-1552 Second Perennial Crops Development 25 Sep 97	SCF=0.9		Not cited
SRI-1545 Upper Watershed Management 24 Sep 97	SCF=0.9	SWRF=0.9	SCF is the most recent estimate calculated by ADB and is consistent with recent World Bank documents
SRI-1462 North Central Province Rural Development 24 Sep 96	SCF=0.9	SWRF=0.9	Not cited
SRI-1438 Emergency Rehabilitation of Petroleum Facilities 16 May 96	SCF=0.8		Not cited
TAJ-1980 Agriculture Rehabilitation Sector Development Program, 18 Dec 02	SCF=0.9	SWRF=0.8	Not cited
TAJ-1819 Road Rehabilitation 20 Dec 00	SCF=0.9	Unskilled L=0.75	Not cited
TAJ-1817 Power Rehabilitation 20 Dec 00	SCF=0.9		Not cited
THA-1528 Nong Khai-Udon Thani Water Supply 1 Jul 97	SCF=0.92	SWRF=0.8	Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
THA-1489 Third Rural Telecommunications 26 Nov 96	SCF=0.9		Not cited
THA-1429 Rural Electrification 23 Jan 96	SCF=0.92		Not cited
TON-1497 Tonga Power Development 3 Dec 96	SCF=0.8	Revenues=0.7	Not cited
TUV-1921 Maritime Training 16 Oct 02			Capital investment costs converted to economic equivalent allowing for transfer payments, taxes and duties, and the effects of inflation. Economic costs, produced as an output from COSTAB, indicate an overall conversion factor of 0.968 for the project baseline costs.
UZB-1903 Western Uzbekistan Rural Water Supply 2 May 02	SERF=1.4	Labor=0.8	SERF based on the relationship between official rate and commercial rate
UZB-1842 Urban Water Supply 27 Sep 01	SERF=2	Labor=0.8	Based on the existing relationship between the commercial rate and the estimated SERF (calculated based on the weighted average of the three exchange rates existing in UZB: official rate, commercial rate, market rate; and the estimated volume of transactions at each rate). Labor: excess employment in communal services for both skilled and unskilled.
UZB-1833 Ak Altin Agricultural Development 23 Aug 01	SERF=2	SWRF=0.8 Civil works=0.93	Highly overvalued exchange rate. Labor: less than full employment in rural areas
UZB-1773 Railway Modernization 31 Oct 00	SCF=0.75		Not cited
UZB-1657 Road Rehabilitation 15 Dec 98	SCF=0.75		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
UZH-1631 Railway Rehabilitation 15 Sep 98	SCF=0.75		Not cited
UZH-1504 Rural Enterprise Development 17 Dec 96	SERF=1.25		SERF was considered appropriate in view of uncertainties in the foreign exchange market vis-à-vis the relatively sound economic fundamentals in the medium term. SERF was sensitivity-tested at 1.12 and 1.50
VIE-1855 Second Red River Basin Sector 13 Nov 01	SERF=1.043		Derived by dividing SER (D14599/\$) with OER (D14000/\$)
VIE-1880 Third Provincial Towns Water Supply and Sanitation, 13 Dec 01	SERF=1.11	Unskilled L=0.65	Not cited
VIE-1888 Provincial Roads Improvement Sector 18 Dec 01	SCF=0.93	Rural L=0.57 Skilled L=0.97	Calculated by means of domestic to border price conversion
VIE-1979 Upper Secondary Education Development 17 Dec 02			No mention of economic pricing assumptions
VIE-1781 Tea and Fruit Development 14 Nov 00	SCF=0.9	SWRF=0.8	Not cited
VIE-1702 Ho Chi Minh City Environmental Improvement 7 Oct 99	SERF=1.11	Unskilled L=0.65 Skilled L=1	Not cited
VIE-1653 Third Road Improvement 10 Dec 98	SCF=0.85		SCF has been established as a standard for similar externally financed projects elsewhere.
VIE-1585 Central and Southern Viet Nam Power Distribution 27 Sep 97	SCF=0.8		Not cited

LOAN NO./TITLE/APPROVAL DATE	SCF/SERF	OTHER CFS	SOURCE/REMARKS IN RRP RE SCF/SERF
VIE-1564 Rural Infrastructure Sector 23 Oct 97	SCF=0.8		Not cited
VIE-1515 Forestry Sector, 20 Mar 97	SERF=1.08		Not cited
VIE-1514 Second Provincial Towns Water Supply and Sanitation, 27 Feb 97	SCF=0.9	SWRF=0.6 Power=1.4	
VIE-1487 Second Road Improvement 21 Nov 96			Economic costs derived by adjusting financial costs by 5% to account for taxes and duties and a small adjustment for the SWR.

Source: RRP's approved from 1996 to August 2003.

Legend:

AFG	Afghanistan	NEP	Nepal
BHU	Bhutan	PAK	Pakistan
CAM	Cambodia	PHI	Philippines
COO	Cook Islands	PNG	Papua New Guinea
FIJ	Fiji, Republic of	PRC	People's Republic of China
FSM	Micronesia, Federated State of	REG	Regional
IND	India	RMI	Marshall Islands, Republic of
INO	Indonesia	SRI	Sri Lanka
KAZ	Kazakhstan	THA	Thailand
KGZ	Kyrgyz, Republic of	TAJ	Tajikistan
KIR	Kiribati	TON	Tonga
LAO	Lao People's Democratic Republic	TUV	Tuvalu
MAL	Malaysia	UZB	Uzbekistan
MLD	Maldives	VIE	Viet Nam
MON	Mongolia		

Other Abbreviations:

CER	Country Economic Report
CF	conversion factor
L	labor
O&M	operation and maintenance
SWRF	shadow wage rate factor

APPENDIX 2:
SAMPLE CALCULATION OF SCF: AZERBAIJAN

	Unit	1998	1999	2000	2001	2002	Average	Source
Merchandise imports (cif)	Million US dollars	1077.0	1036.0	1172.1	1430.9	1665.3		State Statistics Committee
Merchandise exports (fob)	Million US dollars	677.8	1025.2	1799.0	2045.9	2304.9		National Bank of Azerbaijan
Taxes on international trade	Billion manats	246.5	269.5	271.3	237.3	259.5		Ministry of Finance of Azerbaijan
Import duties	Billion manats	0.0	8.1	183.1	39.2	99.3		Ministry of Finance of Azerbaijan
Export duties	Billion manats	0.0	0.0	0.0	0.0	0.0		Ministry of Finance of Azerbaijan
Export Tax	Billion manats	0.0	0.0	0.0	0.0	0.0		Ministry of Finance of Azerbaijan
Customs charges	Billion manats	38.5	40.0	39.8	23.0	17.3		Ministry of Finance of Azerbaijan
Estimated share of imports	Billion manats	23.6	20.1	15.7	9.5	7.2		ADB staff estimate
Estimated share of exports	Billion manats	14.9	19.9	24.1	13.5	10.0		ADB staff estimate
Other taxes on international trade	Billion manats	323.5	357.6	534.1	322.6	393.3		Ministry of Finance of Azerbaijan
Estimated share of imports	Billion manats	198.5	179.7	210.7	132.8	165.0		ADB staff estimate
Estimated share of exports	Billion manats	124.9	177.8	323.4	189.8	228.3		ADB staff estimate
Exchange rate	Manats per US\$	3868.7	4120.2	4474.2	4656.0	4860.8		National Bank of Azerbaijan
Standard conversion factor		0.95	0.97	1.00	0.99	1.00	0.98	

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