Review of the IMF's Trade Restrictiveness Index
(Background Paper to the Review of Fund Work on Trade)

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I. Introduction

1.   The IMF's Trade Restrictiveness Index (TRI) was first developed for use in the 1997 review of *Trade Liberalization in IMF-Supported Programs* (EBS/97/163), which assessed the Fund's role in trade liberalization among program countries in the early 1990s. Unlike trade policy indices that are designed to quantify the distortionary effects of a country's policies, the TRI was designed to measure the policies themselves, and provide policy handles for discussions with national authorities. In particular, the index was constructed to provide a baseline of each country's overall trade policy stance at the start of Fund involvement, and allow the measurement of significant changes to those policies over the program period.

2.   Subsequent to its appearance in the trade policy review, the TRI was recognized as a useful tool and began to appear more widely in the surveillance work of the Fund. While unique among existing indices of trade policy in the scope of country coverage, ease of calculation, and timeliness, the TRI has a number of limitations, and has been the subject of criticism from both within and outside the Fund. This paper examines the construction of the index and its use over the past seven years, identifies its limitations, examines several alternative measures of trade policy, and highlights some options for improving the Fund's use of trade policy indicators.

II. The Original Trade Restrictiveness Index

3.   The IMF's TRI consists of three components: The Overall Trade Restrictiveness Index, the Tariff Restrictiveness Rating, and the Nontariff Restrictiveness Rating.

4.   The tariff portion of the index consists of a 5-point scale, based on the simple unweighted average of a country's most-favored-nation (MFN) applied tariff rates, plus any additional surcharges or fees which are applied only to imports. Based on information available at the time, the TRI rating was designed so that broadly equal numbers of countries were represented in each of the 5 categories.

Classification Scheme for Tariff Restrictiveness

Rating	Simple Average Tariff + Surcharges
1	$0 \leq t < 10$ percent
2	$10 \leq t < 15$ percent
3	$15 \leq t < 20$ percent
4	$20 \leq t < 25$ percent
5	25 percent $\leq t$

5.   The nontariff component of the index consists of a three-point scale evaluating a country's use of nontariff trade restrictions (such as quotas, restrictive licensing requirements, bans, state trading, or exchange restrictions) based on the aggregate amount of trade or production affected. While the use of more than three categories would have been

preferable for accuracy in identifying policy changes, the information requirements for quantifying individual nontariff barriers (NTBs) are substantial. The use of only three broad categories allowed for very high confidence in the application of the ratings.

Classification Scheme for NTB Restrictiveness

Rating	Incidence of Nontariff Barriers
1	NTBs are absent or minor. Less than one percent of production or trade are subject to NTBs.
2	NTBs are significant, applied to at least one important sector. Between one and 25 percent of production or trade are affected by NTBs.
3	Many sectors, or entire stages of production are covered by NTBs. more than 25 percent of production or trade is affected.

6.	The overall trade restrictiveness rating is a ten-point scale arrived at by combining the Tariff Restrictiveness Rating with the Nontariff Rating, as illustrated in the matrix below:

Classification Scheme for Overall Trade Restrictiveness Index[1]

		NTB Rating	
	1	2	3
Tariff Rating 1	1	4	7
2	2	5	8
3	3	6	9
4	4	7	10
5	5	8	10

[1] Overall ratings appear shaded, derived by looking up the intersection of the Tariff and NTB ratings.

7.	The assignment of the 10-point scale places more weight on the restrictiveness of NTBs, which are inherently less transparent and more distortionary than tariffs. The result is an easily understood scale which assigns a "one" overall rating to countries that have the most open trade policies, and a 10 overall rating to the most restrictive.

III. USES OF THE TRADE RESTRICTIVENESS INDEX

A. Intended Use

8.   The TRI turned out to be a particularly useful tool in the 1997 Board paper on "Trade Liberalization in IMF-Supported Programs." The index was calculated on an annual basis for 27 countries, for the period 1990–96, and identified changes in trade policy over that period. A sensitivity analysis was undertaken to assess whether the results of the review would be significantly affected by changes in the tariff or NTB classifications. First, an alternative tariff classification with wider tariff ranges was specified. This left virtually unchanged the degree of movement toward liberalization targeted and achieved during programs. NTBs were tested by omitting certain NTBs, i.e., assuming information problems. While in principle the index missed some significant trade liberalization within the broad NTB index categories, this rarely occurred in the programs reviewed, and did not affect the results of the study.

9.   The Index was received as a useful measure by the Executive Board during the 1997 discussion, but its limitations were recognized even then. The summing up read:

> "Directors generally welcomed the staff's development of an index of trade restrictiveness, and viewed it as a valuable tool for classifying the relative restrictiveness of trade regimes. However, some Directors noted the limitations of the index and cautioned against placing undue emphasis on it. Some other Directors felt that the index should be used as an input in designing and monitoring trade liberalization components of Fund supported programs, as well as in surveillance, and some of those Directors suggested that the index be calculated at the start and the end of planned programs."

10.   In April 1998, Management authorized the inclusion of the TRI in staff reports for new medium-term (two or more years) adjustment programs. Staff were asked to use the TRI to assess the trade policies of program countries at the outset of programs, and again after the implementation of any trade related program measures. It was noted that the calculation of the Index should not require significant additional work for the area departments and that due regard would be given to appropriate caveats on the use of the index, and to elements of the trade system not captured by it, such as tariff dispersion and exemptions.

B. Use in Trade Policy Surveillance

11.   While originally intended only for countries with medium-term programs, the TRI was soon recognized as a useful tool for surveillance, and began to appear regularly in Article IV Staff Reports and Selected Issues papers. Responding to requests from area department surveillance mission teams, PDR developed a *Note on the Collection of Trade Policy Information* which laid out the informational requirements of the index, and suggested issues for discussion with national authorities.

12.   By relying on a common set of easily collected and calculated tariff indicators and NTB categories, it has been possible to compile the Index on an annual basis for 178 IMF member countries. The result has been an improvement in the quality of bilateral trade policy discussions. In addition, the ratings are frozen at the end of each year, creating over time, a cross-country time series of trade liberalization efforts. Nevertheless, given shortcomings in its methodology and data (see below), cross-country comparisons of index values for individual countries can be misleading, and the Fund has therefore not actively promoted or published the index. Use of cross-country comparisons in Staff Reports has been generally discouraged.

IV.   SHORTCOMINGS OF THE TRADE RESTRICTIVENESS INDEX

13.   The design of the TRI is motivated in part by practical constraints. It was to be applied to all member countries, had to be relatively easy to understand, and was to involve a minimum of additional work by Fund missions. Nevertheless, the Trade Restrictiveness Index has been subject to criticism on a number of levels, including with respect to its narrow policy coverage, the weights assigned to various components, and the fact that it does not adequately reflect the production biases induced by trade policy measures.

14.   In response, in 2003 the Fund contracted William Cline, of the Institute for International Economics, to examine the Trade Restrictiveness Index, evaluate the strengths and weaknesses of several alternatives measures, and provide recommendations for enhancing and/or replacing it. Cline's paper "Enhancing the IMF's Index of Trade Restrictiveness" (forthcoming as an IMF Working Paper) provided a useful review of key problems in measuring trade restrictions. The section below discusses the technical and methodological problems identified by Cline.

A.   Problems with the Tariff Rating

15.   It was recognized during the design process of the Index that using the unweighted average MFN tariff results in an indicator that does not always best describe a country's tariff policies.

16.   On occasion, national authorities have argued that a trade-weighted average should be used in the Index, rather than an unweighted average, because it would better reflect the actual incidence of the tariff. Indeed, an "unweighted" average is not a neutral benchmark but incorporates an arbitrary (equal) set of weights. In principle, one might want weights to be the free-trade counterfactual value; actual levels of trade would be a better proxy than equal weights when protection is low. The traditional argument against a trade-weighted average is that items with high tariffs rates will, by their very nature, have low trade weights, and thus there will be a downward bias. Indeed, a quick review of data for 75 countries for which both indicators are available indicated a downward bias in 54 of them, with an average margin of four percentage points. For many countries, the decision on which indicator is most appropriate is moot, since the data required for trade weighting are not available. Relying on the simpler unweighted average methodology has ensured the broadest country coverage. In

his review of the tariff portion of the Index, Cline suggests that a simple way to lessen endogeneity bias was to use the higher of either the unweighted or trade-weighted average.

17.   The argument can also be made that the use of the unweighted MFN average does not accurately reflect the policies of countries that conduct a significant share of their trade under regional or preferential trade agreements. Extreme examples of this would be Israel and Mexico, where more than 85 percent of trade is conducted with the European Union (EU) and United States under preferential agreements. In these cases, it has been suggested that an average that incorporated both the amount of trade, and the preferential rate, for each product, would be more appropriate. However, a high share of trade under preferential arrangements may well indicate significant trade diversion, or else there would be little reason to maintain high MFN tariff rates. In addition, the informational requirements for calculating this type of directional trade-weighted average tariff are beyond what most IMF members are able to produce.

18.   A second area where the tariff portion of the index might be improved is through the inclusion of a measurement of tariff dispersion and tariff peaks. Some developing country authorities have argued that the average tariff rate of OECD countries does not properly reflect peak rates on agricultural and other products in which developing countries are competitive. Cline (2003) suggests a method to combine tariff levels and dispersion in a single indicator (requiring assumptions about import elasticities). [1]

19.   An important weakness identified by Cline relates to the tariff index's coverage of agricultural tariff rate quotas. While the Uruguay Round eliminated the use of standard quotas, a number of countries replaced them with equally restrictive tariff rate quotas[2] with high out-of-quota tariff rates. Cline (2002) estimates that the inclusion of out-of-quota rates would increase the average tariff on agricultural goods applied by the EU from less than 5 percent, to 67 percent. The difficulty in including these tariff rate quotas in the index, however, is that they are often administered separately from the tariff schedule itself (as is the case in the United States) and use a different product classification system. In cases where tariff rate quotas do appear in the schedule, the Fund uses the higher out-of-quota rates in its TRI calculations (as does the WTO in its Trade Policy Review reports).

20.   In view of global tariff liberalization that has occurred since the rating's initial design, countries are no longer evenly distributed between the five tariff index categories. As a result, the tariff index is now less useful for comparative purposes. At end-2004, 75 percent of member countries are rated as either "1" or "2" on the tariff index. The rating could be

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[1] Cline suggests that it may be unnecessary to make any special accounting for tariff dispersion or tariff peaks, since it is not clear *a priori* whether their omission biases the implied welfare costs up (because there tend to be high tariffs on lower-elasticity products) or down (because the welfare cost of a tariff increases more-than-proportionately to its level).

[2] A tariff rate quota is a two-tiered tariff. A lower in-quota tariff is applied to the first "x"quantity of imports, and a higher over-quota tariff is applied to all subsequent imports.

rebased by lowering the threshold of each category by 5 percentage points. Figure 1 (below) illustrates the new distribution. While this might be a useful adjustment, it would likely lead to confusion about the methodology and use of the index in historical references.
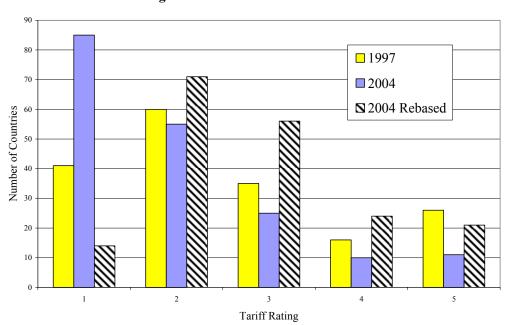
Figure 1. Distribution of Tariff Index

B. Problems with the NTB Rating

21.   The principal weakness of the NTB Index is insufficient differentiation of intensity between the ratings. While simple to understand and implement, the use of only three broad categories results in the lumping together of countries with significantly different non-tariff policies. For example, both a country with only minor barriers, covering 5 percent of trade and a country with up to 25 percent of trade affected, will have the same rating. Due to this lumping effect, 108 of 183 member countries are currently grouped together under the moderate "2" NTB rating. An Index that allowed greater differentiation would more accurately measure changes in policy over time.

22.   The use of a trade/production coverage ratio as the basis for the NTB ratings can also be criticized for failing to differentiate between different types of NTBs. A country with 20 percent of its trade covered by product bans is rated the same as one with non-automatic licensing requirements, while clearly the former is much more distortionary. It would be preferable if different types of NTBs were measured using weights that were more proportionate to their impact.

23.   In addition to its methodological flaws, the NTB rating has suffered from problems with its application. The ease with which it is possible to classify most countries into the three broad categories may discourage Fund staff from closer investigation of the application and effects of some types of barriers. In most cases, the NTB rating is loosely estimated by staff, and not accurately calculated through a detailed analysis.

C.   Problems with the Overall Rating

24.   In his review of the index, Cline notes that the methodology used to combine the tariff and NTB index numbers into the overall rating can be improved. The 10-point integer scale of the overall index overweights the impact of NTBs. The aggregation formula implicit in the structure of the overall index calculation matrix is:

$$Z = 1 + (T\text{-}1) + 3(N\text{-}1)$$

where Z is the overall Index, T the tariff Index, and N the NTB Index.

25.   By examining the average and midpoint coverage ratios of each tariff and NTB rating category, Cline estimates that in the current overall index, each percentage point of the NTB coverage ratio has the same impact as 1.0 percentage points in the average tariff rate. Thus, implicit in the calculation of the overall index is the assumption that an NTB coverage ratio of 50 percent is equivalent to a 100 percent tariff on 50 percent of imports. By comparison, other studies[3] which attempted to calculate tariff equivalents of NTBs have suggested that the proper weights for converting NTB coverage ratios into tariff equivalents are in the range of 0.1 to 0.6, depending on the type of NTB.

26.   The overall index is also incomplete in that it does not include several types of distortionary policies. For example, the current methodology does not provide adequate procedures for measuring the distortionary effects of agricultural subsidies and anti-competitive practices (such as price-fixing) tolerated by the authorities. More broadly, it could be argued that the index penalizes developing countries for their heavy reliance on tariffs as a policy instrument, while more developed countries protect their markets with technical or phytosanitary barriers, or complex rules of origin requirements, which are not as easily quantified.

27.   The overall index has also been a victim of its own success. The ease with which countries can be classified, and their trade policies summarized, led for a time to an over reliance on the index by staff. While intended to be only a broad indicator of relative policies capable of measuring changes over time, many staff reports relied on the index as the primary description of a country's trade policies. Used alone, the index is not sufficient for proper surveillance of member countries' trade practices. However, more recently, there have

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[3] Bouet and others (2001); Cline (2002); and GTAP-5.

been efforts to de-emphasize the use of the index in favor of more robust qualitative analysis, with positive effect.[4]

V. THE TOTAL TARIFF EQUIVALENT

28.   Cline's paper suggests that many of the limitations of the TRI could be addressed through the calculation of a Total Tariff Equivalent (TTE). The key attribute of the TTE is the replacement of the TRI's three NTB categories with the sum of the tariff equivalents of core NTBs for each product. Regarding tariffs, Cline suggests that the higher of the unweighted or trade-weighted average be used as the most reasonable indicator of tariff protection. Stressing the severity of tariff-rate quotas on agricultural products, Cline also argues that the out-of-quota tariff rates be used when calculating the average. The TTE for each country, then, is the average of the tariffs and the tariff equivalents of NTBs:

$$\text{TTE } = \text{Average}(\textstyle\sum \text{(Tariff} + \text{NTB Tariff Equivalent))}$$

29.   Recognizing that detailed tariff equivalents of NTBs are not readily available at the tariff line level, Cline recommends that NTB coverage ratios (the share of production or trade affected by NTBs) be converted to ad valorem equivalents through the use of benchmark NTB weights. The benchmark NTB weights are estimates of the distortionary effects of NTBs relative to an equivalent average tariff rate.

30.   For example, Cline tests applying either a 0.5 or 1.0 benchmark weight to NTB coverage ratios.

Example: United States

Simple average tariff = 5.1 percent
NTB coverage ratio = 18.4 percent of tariff lines (using 1999 UNCTAD TRAINS data)
Applying a 1.0 NTB weight, the TTE is 23.5 percent
Applying a 0.5 NTB weight, the TTE is 14.3 percent

31.   When the necessary detailed data is available, Cline suggests that the NTB coverage ratio should be weighted depending on the type of NTB. Drawing on several empirical studies, Cline proposes that the following benchmark factors should be used:

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[4] Despite its various flaws, some authors have suggested that the TRI's basic approach to compile a policy index as a means of representing the restrictiveness of trade regimes, may be relatively robust in practice. A recent review of the literature on trade policy and growth concludes: "It is common to assert in this literature that simple trade-weighted tariff averages or non tariff coverage ratios—which we believe to be the most direct indicator of trade restrictions—are misleading as indicators of the stance of trade policy. Yet we know of no papers that document the existence of serious biases in these direct indicators, much less establish that an alternative indicator "performs" better (in the relevant sense of calibrating the restrictiveness of trade regimes)."(Rodriguez and Rodrik (2000)).

Core NTB Type	Benchmark NTB Weights
Anti dumping	.25
MFA Quotas	.10
Agricultural TRQs	.60
Prohibitions	2.00

32.   Cline's TTE measure addresses the key weakness of the index—its treatment of NTBs. Reformulating the index, by converting NTBs to tariffs, is intuitively appealing. However, there are significant constraints on the application of the index due to its data requirements. Key to Cline's suggestions is the use of a standardized source for data on NTBs. In his review, Cline recommends that UNCTAD's Trade Analysis and Information System (TRAINS) database of nontariff measures be used as the primary source of NTB data. The TRAINS database classifies NTBs uniformly by frequency and type. Unfortunately, because of the information requirements and resources required, the TRAINS NTB data is not updated regularly. In fact, NTB data have been compiled for only 38 countries since 2000, with 14 of those dating back to 2001. The latest data for the EU and the United States is from 1999, and UNCTAD has reported that it will not be providing additional updates for these countries because of the complexity of their NTBs. Table 1 below illustrates the TRAINS dataset of core NTBs.

Table 1. UNCTADs TRAINS Nontariff Barrier Data [1]

	Argentina	Algeria	China	Colombia	Egypt	EU (1999)	Japan	Jordan	Mexico	Nigeria	Peru	Philippines	USA (1999)
	(number of product lines subject to barrier)												
Core NTB Frequency	1,123	194	614	2,118	398	2,203	1,111	40	2,511	167	111	32	1,692
ADMINISTRATIVE PRICING	0	0	0	117	0	0	0	0	263	0	0	0	0
VOLUNTARY EXPORT PRICE RESTRAINT	0	0	0	0	0	0	0	0	0	0	0	0	0
VARIABLE CHARGES	12	0	0	604	0	0	667	0	0	16	66	0	0
ANTIDUMPING MEASURES	110	0	0	46	8	231	0	0	1,981	0	39	18	1,274
COUNTERVAILING MEASURES	4	0	0	0	0	27	0	0	0	0	0	0	320
PRICE CONTROL MEASURES N.E.S.	0	0	0	0	0	0	0	0	0	0	0	0	0
NON-AUTOMATIC LICENSING	316	0	362	1,325	114	5	354	12	267	42	2	3	98
QUOTAS	62	0	252	0	0	1,393	68	0	0	0	0	11	0
PROHIBITIONS	619	192	0	26	276	547	0	0	0	109	4	0	0
EXPORT RESTRAINT ARRANGEMENTS	0	0	0	0	0	0	0	0	0	0	0	0	0
QUANTITY CONTROL MEASURES N.E.S.	0	0	0	0	0	0	0	0	0	0	0	0	0
MONOPOLISTIC MEASURES	0	0	0	0	0	0	0	0	0	0	0	0	0
SINGLE CHANNEL FOR IMPORTS	0	2	0	0	0	0	22	28	0	0	0	0	0
MONOPOLISTIC MEASURES N.E.S.	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: UNCTAD TRAINS database.

[1] Data is from 2001, unless otherwise specified.

Table 2. Nontariff Data Sources Recommended by Cline

	Core NTB Coverage Ratios[1]		Difference in
	TRAINS	WTO TPR[2]	Coverage Ratios
	(a)	(b)	(a)-(b)
Egypt	6.0	57.3	-51.3
Tunisia	20.4	54.2	-33.8
Indonesia	8.4	31.3	-22.9
Korea	2.4	25.0	-22.6
Sri Lanka	3.2	22.7	-19.5
Thailand	3.0	17.5	-14.5
Malaysia	5.9	19.6	-13.7
Morocco	0.0	13.4	-13.4
Zimbabwe	11.0	22.7	-11.7
Philippines	0.5	11.5	-11.0
Argentina	11.9	21.0	-9.1
Cameroon	0.0	8.2	-8.2
South Africa	1.2	8.3	-7.1
Mauritius	9.6	16.7	-7.1
Costa Rica	0.0	6.2	-6.2
Dominica	0.0	6.2	-6.2
Peru	1.6	6.3	-4.7
Ghana	0.0	3.1	-3.1
Uganda	0.1	3.2	-3.1
Nigeria	8.4	11.5	-3.1
Hong Kong	0.0	2.1	-2.1
Turkey	18.0	19.8	-1.8
Zambia	0.0	1.0	-1.0
Singapore	3.1	2.1	1.0
Venezuela	19.0	17.7	1.3
Mexico	21.4	13.4	8.0
Brazil	33.6	21.6	12.0
Chile	24.1	5.2	18.9
El Salvador	25.1	5.2	19.9
Colombia	30.8	10.3	20.5
Bangladesh	36.4	2.1	34.3

Source: Cline (2003)

[1] Percent of total tariff lines affected by NTBs.

[2] WTO Trade Policy Review Reports, 1995-98 or 1989-94.

33.   As a secondary source of NTB information, Cline recommends the WTO's periodic Trade Policy Review reports. The WTO reports, however, do not identify the barriers at the tariff line level, and require a significant amount of work to quantify. Table 2 shows the core NTB coverage ratios Cline calculated from the TRAINS database versus those he compiled using WTO data. The two sources show considerable disagreement on the coverage ratio, averaging a difference of more than 12 percent. Cline suggests that the discrepancy between

the two sources may stem from different review periods, but it is also likely due to differences in compilation methods, and demonstrates the difficulties in arriving at accurate figures for NTB coverage using existing sources.

34.　　In some cases it is possible to construct the NTB portion of the TTE using information published by national authorities. While it would be resource prohibitive for the Fund to compile a comprehensive set of all NTBs, it is sometimes possible to compile an indicative subset of NTBs. Table 3 below is an example of this method for the Quad countries, including estimates of the coverage ratios of applied textile and clothing quotas, tariff rate quotas, and antidumping. The coverage ratios are converted to tariff equivalents using the benchmark factors suggested by Cline above. While several industrialized countries publish structured NTB information of this type, for most developing countries it would have to be requested from the national authorities.

Table 3. Quad Countries: Estimate of Total Tariff Equivalent (TTE) Using National Authorities Data (2004)
(in percent)

	Canada	EU	Japan	United States
Total Tariff Equivalent (TTE)	7.3	11.0	7.0	10.3
Average Tariff	6.8	6.5	6.9	6.1
MFA quota coverage ratio	...	13.3	0.0	16.7
Tariff rate quotas	0.3	1.6	0.1	3.0
Antidumping	1.1	8.7	0.1	3.1

Source: IMF staff estimates based on data from national authorities and WTO notifications.

VI. ALTERNATIVE MEASURES OF TRADE RESTRICTIVENESS

35.　　A number of other methods have been proposed to calculate quantitative indicators of trade restrictiveness, and several of them are being actively developed by international institutions and scholars. This section briefly examines some of the more promising alternatives, identifying their strengths and weaknesses. Measures of trade policy can be classified into two main groups. First, there are those that take an "inventory" approach of trade policies, using statistical descriptions of the policies such as tariff averages and NTB frequency ratios. The second group of measures attempts to measure more directly the effects and outcomes of trade policies on prices, production, or income. The advantage of the first method is that it identifies the restrictions clearly and provides policy handles for discussion with authorities. The second method provides more useful information on the impact of individual measures, but typically has difficulty separating the effects of trade policy from other distortions in the economy. The Fund's TRI is an example of the inventory approach, and perhaps could have been better named the "trade policy index" rather than the "trade restrictiveness index."

A. Market Access Maps (MacMaps)

36.   Under development by the Geneva based International Trade Centre (ITC) in collaboration with the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), UNCTAD, and WTO, the Market Access Maps (MacMaps) initiative consists of a large database of bilateral tariffs and surcharges for 169 countries. The MacMaps dataset is unique in that it accounts for the many bilateral, regional, and preferential tariff systems in place, allowing for an extremely accurate picture of tariff levels facing individual country exports. The ITC has also made considerable efforts to calculate ad-valorem equivalents for products with specific and mixed duty rates, incorporate anti-dumping charges, and account for agricultural tariff-rate quotas. MacMaps does not include any information on nontariff measures. PDR has worked with the ITC to produce several summary country reports based on the MacMaps system, and distributed them to a number of area department teams for reference in discussions with member countries.

B. Anderson and Neary's Mercantilist Trade Restrictiveness Index

37.   Anderson and Neary (1994) were the first to propose using a measure of the distortionary effects of trade barriers, rather than an average or incidence ratio of the indicators themselves. Their Trade Restrictiveness Index (AN-TRI)[5] is defined as the uniform tariff rate which would yield the same effect on real income as the tariff schedules and NTBs that are being evaluated. They subsequently developed an easier-to-implement alternative[6] which is the uniform tariff rate that maintains the same trade volume as a given tariff and NTB structure, referred to as the "mercantilist trade restrictiveness index" (MTRI). Calculation of the MTRI involves the use of a relatively simple computable general equilibrium (CGE) model, and requires the collection of several national income account items, and assumptions about demand and supply elasticities. Operationally, the calculation of the MTRI appears to impose significant data requirements that would be difficult to meet for many Fund member countries.

C. World Bank's Overall Trade Restrictiveness Index (WB-OTRI)

38.   First constructed for use in the 2004 Global Monitoring Report, the OTRI is a variant of the Mercantilist Trade Restrictiveness Index created by Anderson and Neary (2003), as modified by Kee, Nicita, and Olarreaga (2004 a, b and c). Instead of calculating the MTRI using a computable general equilibrium model, the OTRI uses an econometric approach to estimate the index. The OTRI does not suffer from the drawbacks of simple or import-weighted tariff averages and allows the impact of both tariffs and NTBs to be estimated. The methodology entails the estimation of import demand elasticities by country and product at the 6-digit level of the Harmonized System (HS) of product classification. Then, an estimate

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[5] Anderson and Neary's use of the abbreviation "TRI" for their trade restrictiveness index predates the development of the IMF's TRI. For the purposes of distinguishing between the two here, the Anderson Neary index is referred to as the "AN-TRI."

[6] Anderson and Neary (2003).

is made of the impact on imports of core NTBs as well as domestic support granted to agriculture, following Leamer's (1990) comparative advantage approach.[7] These impact estimates are transformed into price equivalents using the import demand elasticities. The resulting tariff equivalents of NTBs are added to the average tariff rates to produce an overall measure of trade restrictiveness. One interesting finding of Kee, Nicita, and Olarreaga (2004) was that there is a strong and positive correlation between the frequency ratios of NTBs and their tariff equivalents. On average, every 10 percent of lines covered by an NTB was equivalent to an increase in the average tariff by 3.4 percentage points. While methodologically sound, the WB-OTRI also relies primarily on UNCTAD's NTB data for its analysis. Because of this, it was possible to calculate the OTRI for only 32 countries using data from 2000 or later. Partly due to these data constraints, there are no plans to produce the OTRI on a regular basis.

D. Index of Economic Freedom (Heritage Foundation)

39.   The Heritage Foundation maintains an index of trade policy as a factor in its annual Index of Economic Freedom. The Trade factor is very similar to the tariff portion of the Fund's TRI, utilizing a 5-point scale. The Heritage Index uses a hierarchy of indicators for evaluating tariffs, with the preferred being an import-weighted average, followed by the simple average, followed by the collections rate (duties collected divided by imports). NTBs are accounted for by the simple addition of "one point" to the tariff index number. Methodologically, the Heritage foundation index is too simplistic to replace the Fund's current index. However, it has been chosen for use as the indicator of Trade Policy by the United States' Millennium Challenge Corporation, and could be monitored by Fund staff for general consistency with Fund analysis.

E. Price-Gap Measures

40.   The cumulative effects of tariffs and NTBs on a country's imports can be measured in terms of their impact on the domestic price of each product, in comparison to foreign or international prices. The advantage of this approach is that it makes it possible in principle to ascertain the effects of all type of trade barriers, without having to know exactly what barriers are in place. The primary difficulty in using price-gap based measures is that it is not easy to construct a comparable basket of products across countries, nor to collect the price data itself. Even a basket of 100 products will only convey information on barriers to those particular products, so this type of measure can be limited by its inherent selectivity bias. Methodologically, the price-gap measure relies on the assumption of the law of one price, which does not apply well in practice, even for perfect substitutes. In addition, it is not easy to isolate the price effects of trade barriers from those caused by differences in transportation, marketing, and distribution costs. However, there have been recent improvements in methodology[8] and data availability. [9] In view of the potential usefulness of price-gap

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[7] The logic of the approach is to predict imports using factor endowments and observe its deviations when NTBs are present. However, Leamer makes strong assumptions about technology, relative endowments and factor prices that may not hold in the data.

[8] Andrianmananjara and others (2004).

measures in analyzing trade distortions, an interdepartmental working group has recently been set up to examine the feasibility and operational usefulness of constructing a price-gap based index for Fund members.

F. Supplemental Indicators

41.   There are several additional indicators of trade policy that, while not meant to provide an aggregate measure of restrictiveness, could be very useful when trying to analyze a country's trade policies. For example, a measure of market access would be the calculation of an average tariff weighted by a basket of developing country exports. Similarly, the UN's classification of products by factor intensity could be used to analyze whether a country's tariff schedule was biased against labor or capital goods. Collection rates, measured by the amount of duties collected divided by imports, while not adequate as a measure of tariff policies, do provide useful information on the "effective" tariff rate by cumulatively capturing the effects of the tariff rate, preferential arrangements, exemptions, and customs efficiency. The OECD's Total Support Estimate (TSE) provides an annual measure of agricultural subsidies and support which have significant effects on the trade of a number of countries.[10]

42.   Although they share many components in their calculation, there is no strong correlation between the different trade policy indicators. Table 4 lists five of the indicators discussed above. The indices are largely in agreement on those countries that are highly restrictive or mostly open. Not surprisingly, considering the methods of construction, the indices are correlated most strongly with the simple average tariff. However, the indices are weakly correlated with each other, and show large differences in many specific cases.

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[9] Price data are available from the Economist Intelligence Unit (EIU CitiData) and the forthcoming round of the International Comparison Program (ICP).

[10] OECD (2004).

Table 4. Comparison of Restrictiveness Indicators

	IMF-TRI[1]	Simple Average MFN Tariff[1]	Cline TTE	WB-OTRI	Freedom Index[3]
New Zealand	1	3.2	...	14.8	2
Australia	1	4.2	...	12.7	2
Bahrain	1	5.0	...	8.5	3
Kyrgyz Republic	1	5.2	...	8.7	3
Chile	1	5.9	...	14.2	1
Honduras	1	6.1	...	5.8	3
Moldova	1	6.2	...	6.6	2
Papua New Guinea	1	8.3	...	11.0	...
Bolivia	1	9.4	...	15.2	2
Peru	2	10.4	11.2	21.0	4
Uruguay	2	11.4	...	27.9	2
Zambia	2	11.5	...	12.5	3
Colombia	2	11.7	27.1	25.3	4
Malawi	2	13.6	...	13.7	4
Senegal	2	14.7	14.7	46.2	3
Uganda	2	14.9	...	9.0	3
Cameroon	3	18.0	...	19.0	5
Nepal	3	18.0	...	14.1	5
Madagascar	3	19.2	...	4.9	2
Iceland	4	3.1	...	6.3	2
Philippines	4	4.2	6.5	34.5	2
Lebanon	4	4.8	...	13.8	3
Oman	4	5.0	...	12.5	3
Nicaragua	4	5.1	...	9.0	2
United States	4	5.1	10.3	10.7	2
Costa Rica	4	6.0	...	5.8	3
Saudi Arabia	4	6.0	...	18.3	4
European Union	4	6.5	11.0	16.7	...
Canada	4	6.8	7.3	8.4	2
Japan	4	6.9	7.0	15.8	2
Guatemala	4	7.0	...	16.7	3
Ukraine	4	7.0	...	17.2	3
Norway	4	7.2	...	13.5	2
Kazakhstan	4	7.4	...	16.2	4
Switzerland	4	8.9	...	9.9	2
Egypt	4	9.1	12.1	84.9	4
Malaysia	4	9.2	...	39.7	3
Chad	4	20.0	...	18.4	5
Gabon	4	20.3	...	18.3	5
Sudan	4	22.6	...	63.5	...
Algeria	4	23.7	25.3	60.0	5
Brazil	5	10.4	...	30.1	4
Paraguay	5	10.7	...	24.0	3
Russian Federation	5	11.1	...	23.8	3
Ecuador	5	11.3	...	18.4	4
South Africa	5	11.4	...	11.5	2
Sri Lanka	5	12.0	...	9.9	3
China, Peoples Republic of	5	12.3	16.5	21.2	4
Tanzania	5	12.5	...	54.0	5
Turkey	5	12.7	...	15.1	3
Jordan	5	13.0	13.3	30.0	4
Venezuela	5	13.2	...	21.8	4
Mali	5	14.6	...	14.2	3
Argentina	5	14.7	20.7	22.8	4
Thailand	5	14.7	...	22.9	3
Morocco	5	31.5	...	62.0	5
Pakistan	6	17.1	...	22.2	5
Mexico	6	17.3	28.0	32.0	3
Kenya	6	19.0	...	19.0	5
Zimbabwe	6	19.7	...	22.8	4
India	7	22.2	...	46.7	5
Bangladesh	7	23.0	...	23.6	5
Belarus	8	12.2	...	17.5	3
Tunisia	8	31.6	...	40.2	5
Nigeria	8	37.2	38.8	67.8	5
Vietnam	9	16.5	...	48.2	5

[1] Most current year available.

[2] The 5-point Trade portion of the Heritage Foundation's 2005 Economic Freedom Index.

VII. CONCLUSIONS

43.   As indicated by the wide variety of measures that have been proposed over time, it is clear that there is no single best indicator of trade policy. Each measure has its strengths and weaknesses, and each captures important information regarding the impact of different policies. Neither Cline's TTE nor any of the alternative measures address all of the criticisms of the Fund's TRI.

44.   In addition to the need for an accurate measure of trade policies, the Fund has an operational need for measures that reflect current conditions, for use in discussions with member countries. While academic research may be content with three- to five-year-old data, that is rarely adequate for operational Fund work. Any policy indicator used by the Fund needs to balance requirements of accuracy, coverage, timeliness, and methodological soundness.

45.   Despite its weaknesses, the TRI remains a valuable quantitative indicator of trade policy. It is easy to calculate on a frequent basis for all member countries and provides a useful starting point for policy discussions with Fund member countries. At the same time, however, in order to avoid unnecessary confusion, country-specific index values should not be published. Efforts are ongoing at other international organizations to improve the quality and availability of NTB data. Fund staff will monitor these efforts closely. Cline's TTE measure could be calculated as NTB data improves and be made available to mission teams in much the same way as (and in parallel to) the TRI. Finally, as noted, staff is considering the practical and operational feasibility of calculating a price-gap based measure of trade restrictiveness.

46.   No single index can capture the complexity of a country's trade policy environment. The Fund's policy dialogue should therefore not be guided by any single aggregate measure but draw on a more nuanced and qualitative analysis (focused on those cases, of course, in which a closer analysis of a country's trade policy environment is warranted under the Fund's policies; see staff report on *Review of Fund Work on Trade* (SM/05/47, February 7, 2005)). This will be true, also and especially, of policy towards services trade for which information is particularly scarce, hard to standardize, and therefore absent from existing trade policy indices including the Fund's. The systematic dissemination of trade policy information within the Fund, and stepped-up efforts to draw on the work of other institutions, will be helpful in this regard.

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