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August 1, 2005

BY HAND
U.S. Department of Commerce
Central Records Unit, Room 1870
14th St. & Pennsylvania Ave, NW.
Washington, DC 20230

Attention: Joseph A. Spetrini
Acting Assistant Secretary for Import
Administration

Re: Comments on the Department's Labor Calculation Methodology

Dear Acting Assistant Secretary Spetrini:

These comments are filed on behalf of Grunfeld Desiderio Lebowitz Silverman & Klestadt, LLP ("GDLSK") in response to the U.S. Department of Commerce's request for comment on the NME labor calculation methodology, as published in 70 Fed. Reg. 37,761 (June 30, 2005).

An original and six copies of GDLSK's comments are attached. These comments were also submitted by email.

Please contact the undersigned if you or your staff has any questions regarding these comments.

Respectfully submitted,

Grunfeld Desiderio Lebowitz
Silverman & Klestadt LLP

B. M. Mitchell/RB

Bruce M Mitchell
Mark E. Pardo
Paul Figueroa
Richard A. Burns

SUBMISSION OF

GRUNFELD DESIDERIO LEBOWITZ
SILVERMAN & KLESTADT LLP

ON

NME LABOR RATE CALCULATION METHODOLOGY

AUGUST 1, 2005

SUBMISSION OF GRUNFELD DESIDERIO LEBOWITZ SILVERMAN & KLESTADT, LLP ("GDLSK")

Grunfeld Desiderio Lebowitz Silverman & Klestadt LLP ("GDLSK"), hereby responds to the United States Department of Commerce's ("Department" or "DOC") request for comment on the NME labor rate calculation methodology, published in 70 Fed. Reg. 37,761 (June 30, 2005).

Factual Background

On June 30, 2005, the Department of Commerce published a request for comment on the nonmarket economy ("NME") labor rate calculation methodology. While the Federal Register notice provides a summary of the calculation methodology in general, the Department failed to mention the impetus behind the request for comment. As such, we begin with the facts.

Pursuant to 19 C.F.R. 351.408(c)(3), Commerce determines the surrogate value for labor by using a regression-based analysis of the observed relationships between wages and national income in market economy countries to estimate wage rates for NME countries.[1] The regulation states, in its entirety:

> *Labor.* For labor, the Secretary will use regression-based wage rates reflective of the observed relationship between wages and national income in market economy countries. The Secretary will calculate the wage rate to be applied in nonmarket economy proceedings each year. The calculation will be based on current data, and will be made available to the public.
>
> 19 C.F.R. 351.408(c)(3).

[1] Wage Rate = (NME country's GNI per-capita * X Coefficient) + Constant. See http://ia.ita.doc.gov/wages/index.html.

On October 6, 2004, the Department made its annual revision to the NME labor rate calculation and posted updated 2002 wage and Gross National Income ("GNI") data.[2] That information was posted on the Department's website at http://ia.ita.doc.gov/wages/index.html. The Department stated that the updated expected wage rate for China, based on the new 2002 information, was $0.93/hour.

GDLSK argued in Wooden Bedroom Furniture from the PRC and Frozen and Canned Warmwater Shrimp from the PRC that this regression analysis labor calculation was improper because it relied on Chinese GNI data, which Commerce deems "unreliable" due to China's non-market economy status. See Allied Pacific's Case Brief at pp. 37-39 (Oct. 19, 2004). In addition, GDLSK noted that Commerce's updated labor calculation contained calculation errors and that it did not appear to utilize all available 2002 wage rate and GNI information.[3] Id. GDLSK argued that, should the Department continue to value labor using its regression analysis based on wage rates and GNI for countries throughout the world, it must disclose additional information and correct specific errors in its calculation. Id. at 39-42. Finally, GDLSK noted that – simply using the countries Commerce acknowledged were included in its calculation – the 2002 data should have yielded a surrogate labor value for China of $0.72 per hour rather than $0.93. Id.

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[2] GNI was previously known as GNP (Gross National Product).

[3] The Department had not disclosed documentation underlying the Department's data points, it did not reveal the "X-Coefficient" or the "Constant" for the updated labor rate calculation as it had done in past-years' updates, and most importantly, the 2002 wage data actually yielded an hourly rate of $0.72/hour, not $0.93/hour as stated by the Department. See Allied Pacific Case Brief, at 39-40. Allied Pacific provided Commerce with a worksheet displaying its correction of the Department's error. See id. at Exhibit 6.

On approximately November 1, 2004, Commerce removed from its web site the back-up information for its original 2002 labor rate calculation. On November 15, 2004, Commerce released a revised 2002 wage rate calculation. However, this revised calculation removed the 2002 wage rate data and replaced it with the 2001 data from the previous year. The Department continued to reach the $0.93/hour wage rate for China by combining 2001 wage rate data and 2001 per-capita GNI data with 2002 GNI data for China. See Commerce's Notes on its surrogate wage rate calculation at http://ia.ita.doc.gov/wages/index.html. The Department mixed 2001 and 2002 data despite the fact that 2002 data was readily available. Commerce had never previously mixed data from separate years, and it provided no explanation for this deviation in its methodology.

In notes accompanying its revised labor rate calculation, Commerce stated that it relied on wages reported in the Yearbook of Labor Statistics 2002 (Chapter 5B), published by the ILO, which includes wage rates from 1996-2001. Id. Per-capita GNI for 2001 for market economy countries was taken from the 2003 World Development Indicators, and per-capita 2002 GNI for China was taken from the 2004 World Development Indicators, published by the World Bank. Id. However, Commerce failed to mention that *2002* per-capita GNI data was available from the 2004 World Development Indicators, and *2002* wage data was available from the Yearbook of Labor Statistics 2003 or the ILO's website.[4] Thus, the very same sources Commerce used for its hybrid 2001/2002 calculation would have enabled Commerce to perform the calculation based solely on the more current 2002 data, as it had originally claimed to do.

[4] Wages by country for Chapter 5B (manufacturing wages) are available on-line at the ILO's website, at http://laborsta.ilo.org/.

In its Final Determination in both Furniture and Shrimp, the Department explained that it needed more time "to determine an accurate construction of a new dataset and to conduct a new regression analysis." Id. at 18. However, Commerce did not explain why it required more time to review this particular calculation, and it did not state how much time would be required.

The Department's labor calculation was appealed to the Court of International Trade in both the Furniture and Shrimp cases. In both cases, the Department consented to a remand on this issue, stating "[u]pon further review of this issue, it appears that Commerce's calculation of the labor wage rate may be erroneous and in need of recalculation." Allied Pacific v. United States, Court No. 05-00056; See also, Dorbest Ltd., Rui Feng Woodwork (Dongguan) Co., v. United States, Court No. 05-0003; citing SKF v. United States, 254 F. 3d 1022 (Fed. Cir. 2001) (a remand is appropriate when the agency has doubts about the correctness of its decision.).[5]

Finally, on June 30, 2005, the Department published a request for comment on the wage calculation methodology. The request, however, makes no mention of its errors in the calculation of the 2002 Chinese labor rate. Instead, the request gives background information about how the wage calculation is made in general and proposes new NME wages for 2003.

[5] Despite requesting a remand in these appeals and acknowledging errors in its calculation, the Department has continued to use the "revised" 2002 labor calculation based on the 2001 data in each Chinese case since Furniture, including the final results of Administrative reviews.

Proposed Modifications

The Department's 2003 Wage Rate Calculation Should Include All Available Data

The Department's proposed 2003 wage rate calculation remains flawed because it does not use all available wage and GNI information.

As discussed above, Commerce states on its website that it obtains country-wide labor rates from the Yearbook of Labor Statistics, and that it obtains per capita GNI data from World Development Indicators. See Commerce's Notes regarding its regression based labor calculation at http://ia.ita.gov/wages.html. The 2003 data set used in Commerce's calculations contain per-capita GNI and wage data from 52 market economy countries.[6] Id. However, the Yearbook of Labor Statistics and the World Development Indicators include per-capita GNI and wage data for numerous other countries that Commerce did not use in its calculation. In fact, these two sources contain the necessary information meeting the Department's criteria for 66 countries.[7] Commerce, however, inexplicably ignored the available 2003 data from 14 of the 66 countries.[8]

Commerce has offered no explanation for the exclusion of this available data from these additional 14 countries, and its omission directly conflicts with Commerce's justification for adopting the regression based calculation. When adopting its regulation

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[6] For the 2003 calculation, the Department dropped the Dominican Republic, Algeria and Kenya because ILO wage rate data were not available for these countries in the instant dataset. Commerce also dropped Zimbabwe because 2003 GNI data were not available.

[7] The Department requires that each country's wage data is no more than 6 years old. The Department also requires that each country has available a consumer price index. See Request for Comment on Calculation Methodology, 70 Fed. Reg. 37761 (June 30, 2005).

[8] Per capita GNI and wage data from the past six years were also available for the following countries that Commerce did not use in its calculation: Albania, Cambodia, Czech Republic, Denmark, Hungary, Indonesia, Iran, Kazakhstan, Kuwait, Latvia, Macedonia, Mongolia, Slovakia and Uruguay.

for use of a regression based wage rate, the Department stated, "we believe that more data is better than less data" and "the regression-based approach will yield a more accurate result" because it relies on multiple countries. Notice of Final Rule Making, 62 Fed. Reg. at 27,367. Clearly if more data is better than less data the Department should use the information from the 14 other countries whose data is available from the same sources.

In addition, it is widely accepted that the omission of available data in a regression analysis results in biased and distorted results. See, e.g., JAN KMENTA, ELEMENTS OF ECONOMETRICS at 341-344 (1971). See also, Report of Daniel W. Klett, included as **Exhibit 1** to this letter; Report of Dr. Tapan K. Nayak, included as **Exhibit 2**. Thus, the exclusion of data from certain countries cannot be reconciled with Commerce's use of a regression-based calculation. This fact is especially pertinent in the instant case since Commerce's methodology purports to calculate a "worldwide" relationship between wages and GNI. The calculation cannot be said to be "worldwide" if 14 out of the 66 countries whose data is published in the sources used by the Department are omitted without justification.

Furthermore, the Department's error cannot be explained away by arguing that its choice of 52 countries is a random sampling. First, in any random sampling, "standard errors decrease as sample size increases." Report of Dr. Tapan K. Nayak, included as **Exhibit 2**. As such, using the data from 66 countries would lead to more accurate results than using 52 countries. Second, record evidence indicates that the 14 countries the Department disregarded were not excluded randomly because these countries have been disregarded without explanation in prior years as well. See

http://ia.ita.doc.gov/wages/index.html. Third, there is no need to sample at all in this situation because the total amount of available data consists of only 66 countries. Including these 14 countries would not result in any additional burden to the Department and would result in a more representative wage rate. See, e.g., Report of Dr. Tapan K. Nayak, in **Exhibit 2.**

In addition, this error in Commerce's calculation calls into question the validity of the reasoning Commerce used when adopting this regression based methodology in the first place. As discussed above, Commerce asserted that the regression-based labor calculation was valid (despite the fact that it appeared to violate the statute's requirements for surrogate country sources that were economically comparable and significant producers of comparable merchandise) because it promoted accuracy, fairness and predictability. Notice of Final Rule Making, 62 Fed. Reg. at 27,367. However, if Commerce is free to cherry-pick a subset of available data and thereby distort the resulting calculation without even informing the public of this irregularity, then this methodology cannot be promoting accuracy, fairness or predictability. Furthermore, it is not performing a true regression based analysis in a representative manner.

For the above reasons, if Commerce continues using a regression-based labor calculation, it should revise its 2003 calculation to include all market economy countries for which a) per-capita GNI data for 2003 is available from the 2005 World Development Indicators, and b) wage data is available from the ILO's Yearbook of Labor Statistics 2004 for any year between 1998 and 2003.

335099

Exhibit 1

Report of Daniel W. Klett, Principal
Capital Trade, Incorporated

Department of Commerce NME Wage Methodology

I. Introduction

I have been retained by Grunfeld Desiderio to provide an opinion on the statistical reliability of the most recent regression-based methodology used by the Department of Commerce ("Commerce") to value non-market-economy (NME) wage rates. My background is included as Attachment 1 to this report.

Pursuant to 19 CFR 351.408(c)(3), the Department relies on regression analysis of the observed relationships between wages and national income in market economy countries to estimates wage rates for non-market economy countries in antidumping duty investigations. This regulation also states that "The calculation will be based on current data, and will be made available to the public." In its response to comments on this proposed change to its methodology for valuing NME wage rates, the Department stated that "In general, we believe that more data is better than less data, and that averaging of multiple data points (or regression analysis) should lead to more accurate results in valuing any factor of production.[1]

The most recent estimates by Commerce for NME wages is based on a regression of market economy 2001 wages and per capita Gross National Income (GNI), the results of which are applied to 2002 per capita GNI for NMEs to estimate NME wages.[2] Previous estimates relied on contemporaneous years for both market economy and NME data.[3]

There are two issues addressed below regarding the methodology for the current estimates of NME wages. First, why is Commerce relying on 2001 market economy data

[1] 62 FR 27367 (May 19, 1997).
[2] See Attachment 2, a PDF version of the November 15, 2004 updates of NME wages for 2002.
[3] See http://ia.ita.doc.gov/wages/index.html, accessed on January 3, 2005.

when more current data are available, and is it appropriate to apply the regression results from 2001 market economy data to 2002 NME GNI data? Second, why are datapoints from some market economies for which data are available excluded from the regression analysis, and what does this mean for the reliability of the statistical results?

II. Reliance on Non-Current 2001 Market Economy Data

In notes supporting its calculations, Commerce reports that it has relied on wages reported in the Yearbook of Labour Statistics 2002 (Chapter 5B), published by the ILO. It states that it included reported wage rates for the years 1996 to 2001. Data for years prior to 2001 are inflated to 2001 based on consumer price indices of the International Financial Statistics Online Service. Per capita GNI for 2001 for market economy countries was from the 2003 World Development Indicators, and per capita 2002 GNI for NMEs was from the 2004 World Development Indictors, published by the World Bank.[4]

Commerce provides no rationale for why it has relied on 2001 data for the market economy regression, when data are available for 2002 per capita GNI from the 2004 World Development Indicators, and for many countries 2002 wages from the Yearbook of Labour Statistics *2003* or the ILO's website.[5] This runs counter to the Department's own regulations that the annual re-calculation of the wage rate be based on "current data." Furthermore, application of the 2001 market-economy regression results to 2002 NME per capita GNI is an apples-to-oranges comparison that departs (with no explanation given since 2002 market economy data are available) from how NME wages were estimated in

[4] See Attachment 2.

[5] See Attachment 3 Table 1.1 from the World Development Indicators. Commerce did present 2002 data for market economy wages and per capita GNI in a prior estimate on its website posted in October 2004, but these data were withdrawn after a critique by respondents in the investigation involving furniture from China which could not replicate the Commerce results. Wages by country for Chapter 5B (manufacturing wages) are available on-line at the ILO's website, at http://laborsta.ilo.org/. Data from this source is included in Attachment 4, which has been modified to exclude lines other than "total" wages.

prior periods. As shown in the tabulation below, the regression based results can vary considerably from year-to-year:

Period	Constant	Coefficient 1/
1995	.3705	.000516
1997	.3715	.000475
1998 2/	.4540	.000464
1999	.3981	.000475
2000	.4622	.000432
2001	.5123	.000437
2002 (used) 3/	.5123	.000437
2002 (actual) 4/	.3620	.000504

1/ applied to per-capita GNP or GNI.
2/ Commerce inexplicably dropped Denmark from the market economy countries for this period, although it had been included in previous regressions.
3/ Based on regression of 2001 market economy data, applied to 2002 NME per-capita GNI. See Attachment 2.
4/ Based on regression of 2002 market economy data for same set of countries as for 2001 regression. However, per capita GNI data for the Dominican Republic was not reported by the World Bank for 2002, so this country is omitted. (See Attachment 5 for data support, and Attachment 6 for results).

As shown in the above tabulation, a regression using the same set of market economy countries as in 2001, but using current 2002 data, yields significantly different results. The Department's arbitrary decision to use less contemporaneous data when more current data is available runs counter to the stated reasons for adopting the regression-based approach as being "fair," and "entirely predictable." It should be noted that predictability in this regard is not with respect to the results, but with respect to a consistent method.

Finally, for some countries, Commerce has relied on dated wage data from the ILO's hard copy 2002 Yearbook, (with the data inflated to 2001), even though actual wage data for later years is available from the on-line database from this same source.[6] In this regard, there is no reason to rely on the hard-copy ILO publication, when more current data

[6] For example, among the countries for which 2002 data are available on-line, but not in the most recent hard-copy publication (2003 Yearbook) are Botswana, Brazil, Chile, Mexico, and the United States. This list is not all-inclusive.

are available from this same source on the ILO website. Reliance on the website data will not result in Commerce continuously having to update its estimates when/if more current data are made available on-line, since it is clear that its estimates are re-calculated only on an annual basis. There is no reason to not rely on the most up-to-date data available when the estimates are made, particularly give the Department's regulations that the estimates be based on "current" data. The online data is available to all potential respondents around the world who have internet access, thereby allowing respondents to have access to the same data as the DOC, thereby enabling them to better predict the annual wage rate calculation.

III. Commerce Has Arbitrarily Selected a Subset of Market Economy Data, Which Distorts its Results and Undercuts the Representativeness of the DOC's Calculated Worldwide Relationship Between Wages and GNI

In its notes to its NME wage rate calculations for 2002, Commerce states that "the selection of countries was based upon the availability of wage data as reported in the Yearbook of Labor Statistics 2002." The notes also state that countries reporting wages for the years 1996 to 2001 are included in the analysis. In its latest calculation, Commerce relied on per-capita GNI and wage data from 56 market economy countries.[7] However, there are a significant number of market economy countries that were excluded from the analysis, where per-capita GNI was available from the World Development Indicators and manufacturing wage data were available from the ILO. These countries are:

Albania	Iran	Saudi Arabia
Bangladesh	Kazakstan*	Serbia & Montenegro
Cambodia	Kuwait	Slovakia
Czech Republic	Latvia	Swaziland

[7] See Attachment 2. The notes indicate that it used countries where data were available from 1996 to the year at issue. Where the most recent wages were for a year prior to that for which the regression was applied, the wages were inflated based on consumer price indices. As discussed in the section above, there is no basis for relying on the 2002 Yearbook of Labour Statistics when more current data are available from the 2003 Yearbook, and on the ILO's website.

Denmark	Macedonia	Uruguay
Gambia	Mongolia	Venezuela
Hungary	Portugal	
Indonesia	Rwanda	

* Kazakstan received market economy status in 2001 so should be in the list of market economy countries for a 2002 regression-based analysis of wages.

There is no reason why data from these countries should be excluded, given Commerce's position that "more data is better than less data" when supporting its use of the regression-based methodology.[8] Furthermore, the exclusion of these datapoints from the analysis seriously undermines the reliability of the results for statistical reasons. It is well known that the results of a regression with missing values is biased.[9] In fact, the distortion can be confirmed by evaluating the results with and without data from these 22 countries, as shown in the following tabulation (based on 2002 market economy wage and per capita GNI data):[10]

	Constant	GNI Coefficient
55 Countries[11]	.362	.000504
77 Countries	.045	.000533

Since the DOC's methodology purports to calculate a worldwide relationship between wages and GNI, using only a subset of countries for which data is available does not yield a representative relationship. As demonstrated above, using the 2002 wage and GNI data from the countries selected by the DOC versus all countries for which data are available yields a different result. Thus, the Department's use of only a subset of the countries for which data are available does not yield a correlation between wage and GNI for all countries for which data is available. Any resulting estimated surrogate wage rate

[8] 62 FR 27367 (May 19, 1997).
[9] See, e.g., Elements of Econometric, Jan Kmenta, 1971, at 341-344 (see Attachment 7).
[10] See Attachment 5 for data and Attachment 6 for results.
[11] There is no 2002 per capita GNI data available for the Dominican Republic in the most recent World Development Report, which is why we include only 55 of the 56 countries that the Department used based on 2001 data.

using the results of a regression calculation based on only a subset of available datapoints is therefore based on a statistically unrepresentative calculation.

IV. Conclusion

For the above reasons, Commerce should revise its 2002 wage rates for NME's based on using 2002 per capita GNI data from the 2004 World Development Indicators, and the most current wage rate data from the ILO (hard copy and on-line), inflated to 2002 when necessary. Commerce should also include in its regression-based wage analysis all market economy countries for which: a) per capita GNI data for 2002 is available from the World Development Indicators, and b) wage data is available from the ILO for any year between 1996 and 2002.

Daniel W. Klett

1/5/05
Date

Attachment 1

[redacted]

DANIEL W. KLETT

EDUCATION

1985, M.A., Economics, Georgetown University
1976, B.A., Economics, College of the Holy Cross

EXPERIENCE

Mr. Klett is a principal with Capital Trade, Incorporated. His background is in international economics and trade regulation, with specific expertise in assessing the economic impact of imports on U.S. industries and consumers. He has participated in studies involving U.S. export control regulations, direct foreign investment in the United States, and financial analysis of the member companies of an international consortium.

Economic Analysis

Mr. Klett's experience in economic analysis of international trade issues includes:

- Analysis of impact of imports on competing U.S. industry, including use of existing economic models, econometric analysis of time series data, and testimony
- Estimation of impact of trade restrictions on consumers
- Economic analysis relating to domestic industry issues in Section 337 investigations at the U.S. International Trade Commission, and expert testimony
- Statistical analysis to support arguments made to the Department of Commerce in antidumping investigations

Case Experience - U.S. International Trade Commission:

- Framing Stock from the UK
- Softwood Lumber from Canada
- Uranium
- Flat Panel Displays from Japan
- Cement (Japan, Mexico, Venezuela)
- Industrial Nitrocellulose
- Atlantic Salmon from Norway
- Silicon Metal from Brazil
- Aspheric Ophthalmoscopy Lenses from Japan
- Honey from China
- Pencils from China
- Bulk Diltiazem (Section 337)

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Case Experience - U.S. International Trade Commission (cont.):

- Polyvinyl Alcohol (Japan, Korea, Taiwan, PRC)
- Salinomycin Biomass (Section 337)
- Rebar from Turkey
- Pasta from Italy and Turkey
- Stainless Steel Wire Rod
- Wheat Gluten (Section 201)
- EEPROMs (Section 337)
- Titanium Sponge (Changed Circumstance Review)
- Cut-to-Length Carbon Steel Plate
- Ferrosilicon (Changed Circumstance Review)
- Roller Chains from Japan (Sunset Review)
- Color Picture Tubes (Sunset Review)
- Silicon Metal (Sunset Review)
- Various carbon steel products
- Table Grapes from Chile
- Steel Wire Rope
- Ammonium Nitrate (Russia, Ukraine)
- Large Diameter Line Pipe
- Low-Enriched Uranium
- Automotive Replacement Glass from China
- Oil Country Tubular Goods
- DRAMs from Korea
- Urea Ammonium Nitrate
- Shrimp
- Outboard Motors from Japan

Case Experience - U.S. Department of Commerce:

- Industrial Nitrocellulose from Seven Countries
- Atlantic Salmon from Norway
- Kiwifruit from New Zealand
- Man-Made Fiber Sweaters from Korea
- Potassium Permanganate from Spain and China
- Aspheric Ophthalmoscopy Lenses from Japan
- Flat-Rolled Carbon Steel Products from various countries
- Oil Country Tubular Goods from various countries
- Stainless Steel Bar from India
- Sebacic Acid from China

Other Projects

Mr. Klett has participated in other international trade-related projects, including:

- Consumer cost study for Japanese semiconductor companies involved in an EC antidumping proceeding.
- Analysis of the impact of U.S. national security export controls on the international business strategies of U.S. high-technology companies.
- Assistance to a Swiss manufacturer in assessing the feasibility of setting up manufacturing facilities in the United States, and site location.
- Analysis of the financial condition of Airbus members, in the context of state support and commercial conditions.
- Section 301 investigation involving modified wheat starch from the EU (on behalf of EU grain industry).

Prior Experience

Prior to forming Capital Trade, Incorporated, Mr. Klett was a Vice President with ICF Consulting Associates (1990-92), and a supervisor at Coopers & Lybrand (1987-90).

From 1979 to 1987, Mr. Klett was an economist at the U.S. International Trade Commission, first in the Office of Economics (1979-1986) and then as the economic advisor to four Administrative Law Judges (1986-1987) involved in Section 337 proceedings.

From 1977 to 1979, Mr. Klett served as a Peace Corps volunteer in Sierra Leone, teaching economics at the high school junior to introductory university levels.

PROFESSIONAL AFFILIATIONS

American Economic Association

PUBLICATIONS AND CONFERENCES

"The U.S. Tariff Act, Section 337: Off-Shore Assembly and the Domestic Industry," Journal of World Trade Law, May-June 1986.

"Price Sensitivity and ITC Injury Determinations: A Matter of Definition," (with T. Schneider) Journal of World Trade, April 1994.

"Proposed Changes Concerning Import Duties and Domestic Indirect Tax Rebates--Conformity to the GATT, and Benefits to the Peruvian Export Sector," Presented at Foro Internacional Sobre Devolucion de Impuestos y Drawback a Las Exportaciones, Lima, Peru, August, 1994.

Attachment 2

EXPECTED WAGES OF SELECTED NON-MARKET ECONOMY COUNTRIES
Expected Wage Calculation: 2002 GNI Data
Regression Analysis: 2001 GNI Data
Revised November 2004

Index of Tables

EXPECTED 2002 WAGES OF SELECTED NME COUNTRIES

Armenia	$790	$0.86
Azerbaijan	$710	$0.82
Belarus	$1,360	$1.11
Estonia	$4,190	$2.34
Georgia	$650	$0.80
Kazakhstan	$1,520	$1.18
Kyrgyz Republic	$290	$0.64
Lithuania	$3,670	$2.12
Moldova	$460	$0.71
People's Republic of China	$960	$0.93
Romania	$1,870	$1.33
Russian Federation	$2,130	$1.44
Tajikistan	$180	$0.59
Turkmenistan	$950	$0.93

Ukraine	$780	$0.85
Uzbekistan	$310	$0.65
Vietnam * *	$430	$0.70
Wage Rate = GNP * 0.000437 + 0.512269		

*** Applicable only to review periods that pre-date the effective date of graduation to market-economy status (Estonia (01/01/03); Lithuania (01/01/03); Romania (01/01/03); and Russia (04/01/02); Kazakhstan (10/01/01)).**

*** * On November 8, 2002, the Department determined that Vietnam will be treated as a non-market economy country for purposes of antidumping duty and countervailing proceedings (see Memorandum for Faryar Shirzad, Antidumping Duty Investigation of Certain Frozen Fish Fillets from the Socialist Republic of Vietnam--Determination of Market Economy Status (A-552-801)).**

Algeria	12,323.00	Dinars	month	192	64.18	1996	1.1912	76.45	77.22	0.99
Argentina	4.29	Pesos	hour	1	4.29	2001	1.0000	4.29	1.00	4.29
Australia	17.38	Dollars	hour	1	17.38	1998	1.1065	19.23	1.92	10.00
Austria	26,104.00	Schillings	month	192	135.96	1999	1.0507	142.85	15.41	9.27
Belgium	417.56	Francs	hour	1	417.56	1998	1.0626	443.68	45.18	9.82
Bolivia	1,120.00	Bolivianos	month	192	5.83	2000	1.0159	5.93	6.61	0.90
Botswana	783.00	Pula	month	192	4.08	2000	1.0656	4.35	5.84	0.74
Brazil	846.00	Reais	month	192	4.41	2001	1.0000	4.41	2.36	1.87
Bulgaria	219.00	Lev	month	192	1.14	2000	1.0736	1.22	2.18	0.56
Canada	18.58	Dollars	hour	1	18.58	2001	1.0000	18.58	1.55	11.99
Chile	213,394.00	Pesos	month	192	1,111.43	2001	1.0000	1,111.43	634.94	1.75
Colombia	420,734.00	Pesos	month	192	2,191.32	2000	1.0797	2,365.94	2,299.63	1.03
Costa Rica	128,207.00	Colones	month	192	667.74	2001	1.0000	667.74	328.87	2.03
Croatia	4,465.00	Kunas	month	192	23.26	2001	1.0000	23.26	8.34	2.79
Dominican Republic	21.60	Pesos	hour	1	21.60	1997	1.3092	28.28	16.95	1.67
Ecuador	346.74	Dollars (US)	month	192	1.81	2000	1.0283	1.86	1.00	1.86
Egypt	121.00	Pounds	week	44	2.75	1999	1.0502	2.89	4.49	0.64
El Salvador	10.09	Colones	hour	1	10.09	2000	1.0375	10.47	8.75	1.20
Finland	12,510.00	Markkaa	month	192	65.16	1999	1.0603	69.09	6.66	10.37
France	10,230.00	Francs	month	192	53.28	1998	1.0391	55.36	7.35	7.54
Germany	14.42	Euros	hour	1	14.42	2001	1.0000	14.42	1.12	12.88
Greece	1,539.76	Drachmas	hour	1	1,539.76	1998	1.0942	1,684.82	381.70	4.41
Guatemala	1,655.25	Quetzales	month	192	8.62	2000	1.0763	9.28	7.86	1.18
India	1,211.10	Rupees	month	192	6.31	1998	1.1288	7.12	47.19	0.15

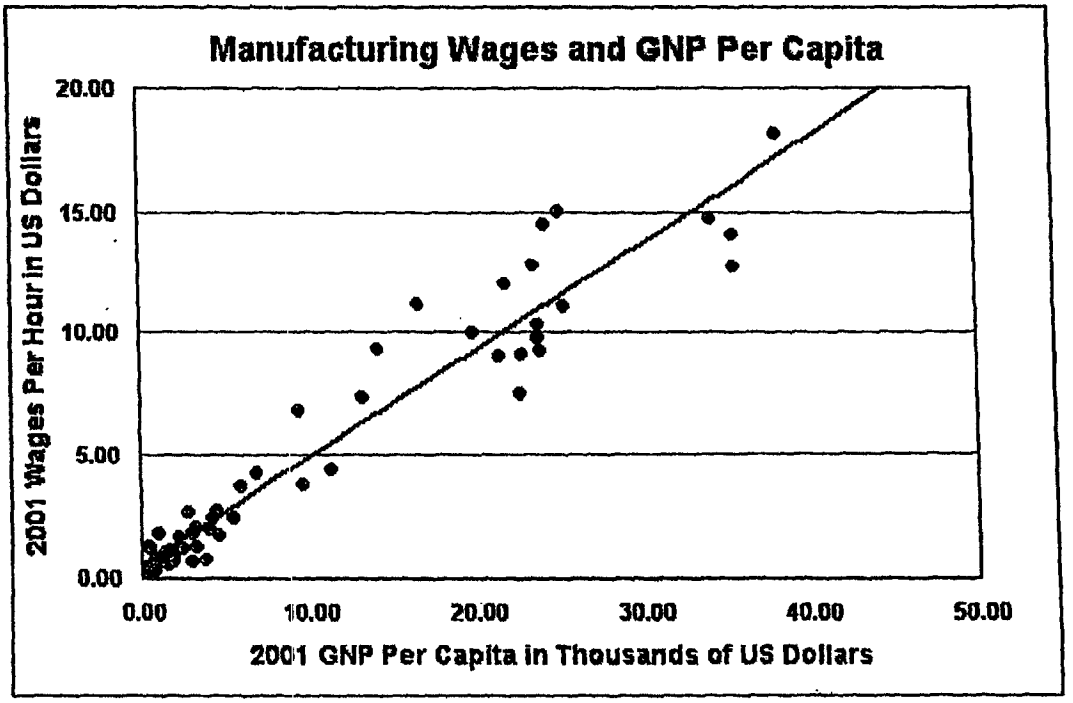
Ireland	7.18	Pounds	hour	1	7.18	1998	1.1251	8.08	0.88	9.16
Israel	9,051.00	New Shekels	month	192	47.14	2001	1.0000	47.14	4.21	11.20
Japan	297,500.00	Yen	month	192	1,549.48	2001	1.0000	1,549.48	121.53	12.75
Jordan	5.54	Dinars	day	8	0.69	1999	1.0246	0.71	0.71	1.00
Kenya	5,510.80	Shillings	month	192	28.70	1997	1.3124	37.67	78.56	0.48
Korea	1,702,400.00	Won	month	192	8,866.67	2001	1.0000	8,866.67	1,290.99	6.87
Malaysia	1,531.00	Ringgit	month	192	7.97	2001	1.0000	7.97	3.80	2.10
Mauritius	174.28	Rupees	day	8	21.79	2000	1.0539	22.96	29.13	0.79
Mexico	23.26	Pesos	hour	1	23.26	2001	1.0000	23.26	9.34	2.49
Netherlands	34.42	Guilders	hour	1	34.42	2000	1.0453	35.98	2.47	14.57
New Zealand	17.53	Dollars	hour	1	17.53	2001	1.0000	17.53	2.38	7.36
Nicaragua	3,272.90	Cordobas	month	192	17.05	2001	1.0000	17.05	13.37	1.27
Norway	24,426.00	Kroner	month	192	127.22	2001	1.0000	127.22	8.99	14.15
Pakistan	2,980.97	Rupees	month	192	15.53	2000	1.0315	16.01	61.93	0.26
Panama	250.90	Balboas	month	192	1.31	1999	1.0181	1.33	1.00	1.33
Paraguay	741,416.00	Guaranies	month	192	3,861.54	1999	1.1690	4,514.15	4,105.92	1.10
Peru	27.12	Nuevos Soles	day	8	3.39	2001	1.0000	3.39	3.51	0.97
Philippines	7,300.00	Pesos	month	192	38.02	2000	1.0610	40.34	50.99	0.79
Poland	1,924.95	New Zlotys	month	192	10.03	2001	1.0000	10.03	4.09	2.45
Singapore	3,117.00	Dollars	month	192	16.23	2001	1.0000	16.23	1.79	9.07
Slovenia	178,596.00	Tolars	month	192	930.19	2001	1.0000	930.19	242.75	3.83
South Africa	4,226.00	Rand	month	192	22.01	2000	1.0483	23.07	8.61	2.68
Spain	10.46	Euro	hour	1	10.46	2001	1.0000	10.46	1.12	9.34
Sri Lanka	27.10	Rupees	hour	1	27.10	2001	1.0000	27.10	89.38	0.30
Sweden	114.90	Kronor	hour	1	114.90	2001	1.0000	114.90	10.33	11.12
Switzerland	5,862.00	Francs	month	192	30.53	2000	1.0095	30.82	1.69	18.24
Thailand	5,907.00	Baht	month	192	30.77	1999	1.0324	31.76	44.43	0.71
Trinidad and Tobago	938.82	Dollars	week	44	21.34	1999	1.0929	23.32	6.23	3.74
Turkey	1,640,856.00	Liras	day	8	205,107.00	1997	7.2813	1,493,455.24	1,225,590.00	1.22
United Kingdom	10.49	Pounds	hour	1	10.49	2001	1.0000	10.49	0.69	15.11
United States	14.83	Dollars	hour	1	14.83	2001	1.0000	14.83	1.00	14.83
Zimbabwe	7,351.16	Dollars	month	192	38.29	2000	1.7671	67.66	50.00	1.35

[illegible]		
Country	2001 GNP per Capita, US$	2001 Wages, US$ per Hour
Algeria	1,650.00	0.99
Argentina	6,940.00	4.29

2002 INCOME DATA - EXPECTED WAGES OF SELECTED NON-MARKET ECONOMY COUNTRIES

Australia	19,900.00	10.00
Austria	23,940.00	9.27
Belgium	23,850.00	9.82
Bolivia	950.00	0.90
Botswana	3,100.00	0.74
Brazil	3,070.00	1.87
Bulgaria	1,650.00	0.56
Canada	21,930.00	11.99
Chile	4,590.00	1.75
Colombia	1,890.00	1.03
Costa Rica	4,060.00	2.03
Croatia	4,550.00	2.79
Dominican Republic	2,230.00	1.67
Ecuador	1,080.00	1.86
Egypt	1,530.00	0.64
El Salvador	2,040.00	1.20
Finland	23,780.00	10.37
France	22,730.00	7.54
Germany	23,560.00	12.88
Greece	11,430.00	4.41
Guatemala	1,680.00	1.18
India	460.00	0.15
Ireland	22,850.00	9.16
Israel	16,750.00	11.20
Japan	35,610.00	12.75
Jordan	1,750.00	1.00
Kenya	350.00	0.48
Korea	9,460.00	6.87
Malaysia	3,330.00	2.10
Mauritius	3,830.00	0.79
Mexico	5,530.00	2.49
Netherlands	24,330.00	14.57
New Zealand	13,250.00	7.36
Nicaragua	457.00	1.27
Norway	35,630.00	14.15
Pakistan	420.00	0.26
Panama	3,260.00	1.33
Paraguay	1,350.00	1.10
Peru	1,980.00	0.97
Philippines	1,030.00	0.79
Poland	4,230.00	2.45
Singapore	21,500.00	9.07
Slovenia	9,760.00	3.83
South Africa	2,620.00	2.68
Spain	14,300.00	9.34

Sri Lanka	880.00	0.30
Sweden	25,400.00	11.12
Switzerland	38,330.00	18.24
Thailand	1,940.00	0.71
Trinidad and Tobago	5,960.00	3.74
Turkey	2,590.00	1.22
United Kingdom	25,120.00	15.11
United States	34,280.00	14.83
Zimbabwe	480.00	1.35



	Regression Output:		
Constant			0.512269436
Std Err of Y Est			1.372926598
R Squared			0.928536609
No. of Observations			56
Degrees of Freedom			54
X Coefficient(s)		0.000436740484	
Std Err of Coef.		0.000016488034	

Wage Rate = GNP * 0.000437 + .512269			

Notes:

General:
The selection of countries was based upon the availability of wage data as reported in the Yearbook of Labour Statistics 2002, International Labour Organisation, (Geneva: 2002); and GNI data as reported in World Development Indicators, The World Bank, (Washington, DC: 2003 and 2004).

Wages:
Wage rates are reported in the Yearbook of Labour Statistics 2002, ILO, (Geneva: 2002), Chapter 5B: Wages in Manufacturing. The years of the reported wage rates range from 1996 to 2001. Wages reported prior to 1996 and after 2002 are excluded from the analysis.

Wages reported by ILO are in most cases based on cash payments received from employers on a regular basis. In addition to remuneration for normal working hours, cost-of-living allowances and other regularly paid allowances are included in wages. Wages do not include remuneration for overtime, bonuses and gratuities, family allowances, or other social security payments made by the employer. See Yearbook of Labour Statistics 2002 for further discussion of wage data.

Where monthly or daily wages are given, hourly wages are calculated assuming 24 working days per month, 5.5 working days per week, 8 working hours per day.

Inflator:
Wages are inflated, where the base year is not 2001, using consumer price index data reported in International Financial Statistics Online Service, International Monetary Fund, (http://www.imf.org). The inflator rate is calculated by dividing the consumer price index for 2001 by the consumer price index for the year the wage rate was reported.

Exchange rates:
Exchange rates are expressed as foreign currency per one U.S. dollar. For the majority of the countries in this analysis, the exchange rates used are as reported in International Financial Statistics Online Service.

Since exchange rates were not available in the International Financial Statistics for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Netherlands, and Spain, the Department relied on the exchange rate information which it regularly obtains from Dow Jones & Co. and the Federal Reserve and posts on the Import Administration web site for these countries. The exchange rates used are 2001 market averages.

National Income:
GNI per capita is reported in World Development Indicators, The World Bank, (Washington, DC: 2003 and 2004). For its regression analysis, the Department used GNI per capita figures from the 2003 publication. For its calculation of expected NME wages, the Department used GNI per capita figures from the 2004 publication. See World Development Indicators for further information.

GNI data was not available in the World Development Indicators for Nicaragua for 2001. Therefore, we used GNI data from the International Financial Statistics. We derived the per capita GNI from the population data included in this source.

Analysis:
Regression based on ordinary least squares method.

Attachment 3

1.1 Size of the economy

	Population	Surface area	Population density	Gross national income		Gross national income per capita		PPP gross national income[a]			Gross domestic product	
	millions 2002	thousand sq. km 2002	people per sq. km 2002	$ billions 2002[b]	rank 2002	$ 2002[b]	rank 2002	$ billions 2002	Per capita $ 2002	rank 2002	% growth 2001–02	Per capita % growth 2001–02
Afghanistan	28[c]	652	43	..	..	..[d]	..	..	..	..	..	..
Albania	3	29	115	4.6	120	1,450	120	16	4,960	112	4.7	4.1
Algeria	31	2,382	13	53.8	48	1,720	114	173[e]	5,530[e]	103	4.1	2.5
Angola	13	1,247	11	9.3	89	710	146	24[e]	1,840[e]	163	15.3	12.0
Argentina	36	2,780	13	154.0	27	4,220	74	387	10,190	72	-10.9	-12.0
Armenia	3	30	109	2.4	145	790	144	10	3,230	139	12.9	13.6
Australia	20	7,741	3	384.1	14	19,530	29	539	27,440	19	2.7	1.4
Austria	8	84	97	192.1	20	23,860	18	233	28,910	12	1.0	0.8
Azerbaijan	8	87	94	5.8	108	710	146	25	3,010	142	10.6	9.8
Bangladesh	136	144	1,042	51.1	51	380	171	241	1,770	165	4.4	2.6
Belarus	10	208	48	13.5	80	1,360	124	55	5,500	105	4.7	5.2
Belgium	10	31	315	237.1	18	22,940	21	291	28,130	18	0.7	0.2
Benin	7	113	59	2.5	144	380	171	7	1,060	185	6.0	3.3
Bolivia	9	1,099	8	7.9	96	900	140	21	2,390	149	2.6	0.5
Bosnia and Herzegovina	4	51	81	5.4	112	1,310	125	..	..	..	3.9	2.5
Botswana	2	582	3	5.1	114	3,010	88	13	7,740	84	3.1	2.1
Brazil	174	8,547	21	494.5	12	2,830	91	1,300	7,450	86	1.5	0.3
Bulgaria	8	111	72	14.1	78	1,770	111	56	7,030	87	4.8	5.5
Burkina Faso	12	274	43	2.9	139	250	187	13[e]	1,090[e]	184	4.6	2.1
Burundi	7	28	275	0.7	179	100	206	4[e]	630[e]	204	3.6	1.7
Cambodia	12	181	71	3.8	126	300	178	25[e]	1,970[e]	159	5.5	3.6
Cameroon	16	475	34	8.7	94	550	156	30	1,910	162	4.4	2.3
Canada	31	9,971	3	702.0	8	22,390	23	907	28,930	11	3.3	2.3
Central African Republic	4	623	6	1.0	171	250	187	4[e]	1,170[e]	183	-0.8	-2.2
Chad	8	1,284	7	1.8	151	210	194	8	1,010	187	9.9	6.7
Chile	16	757	21	66.3	43	4,250	73	147	9,420	76	2.1	0.9
China	1,280	9,598[f]	137	1,234.2	6	960	136	5,792[g]	4,520[g]	125	8.0	7.3
Hong Kong, China	7	..	..	167.6	25	24,690	16	187	27,490	18	2.3	1.3
Colombia	44	1,139	42	79.6	42	1,820	109	269[e]	6,150[e]	96	1.6	0.0
Congo, Dem. Rep.	52	2,345	23	5.0	115	100	206	32[e]	630[e]	204	3.0	0.0
Congo, Rep.	4	342	11	2.2	147	610	153	3	710	202	3.5	0.6
Costa Rica	4	51	77	16.1	75	4,070	77	34[e]	8,560[e]	81	3.0	1.2
Côte d'Ivoire	17	322	52	10.2	87	620	152	24	1,450	177	-1.8	-3.8
Croatia	4	57	80	20.3	66	4,540	71	45	10,000	74	5.2	5.2
Cuba	11	111	103	..	..	..[h]	..	..	..	..	..	..
Czech Republic	10	79	132	56.0	46	5,480	68	152	14,920	55	2.0	2.1
Denmark	5	43	127	162.6	26	30,260	9	164	30,600	8	2.1	1.8
Dominican Republic	9	49	178	..	..	..[h]	..	54[e]	6,270[e]	97	4.1	2.5
Ecuador	13	284	46	19.1	70	1,490	118	43	3,340	138	3.4	1.8
Egypt, Arab Rep.	66	1,001	67	97.6	37	1,470	119	253	3,810	132	3.0	1.1
El Salvador	6	21	310	13.6	79	2,110	101	31[e]	4,790[e]	120	2.1	0.4
Eritrea	4	118	43	0.8	173	190	196	4[e]	1,040[e]	186	1.8	-0.5
Estonia	1	45	32	5.7	109	4,190	75	16	11,630	63	6.0	6.5
Ethiopia	67	1,104	67	6.5	102	100	206	52[e]	780[e]	200	2.7	0.5
Finland	5	338	17	124.2	29	23,890	17	136	26,160	25	1.6	1.4
France	59	552	108	1,362.1[i]	5	22,240[i]	24	1,609	27,040	21	1.2	0.7
Gabon	1	268	5	4.0	123	3,060	87	7	5,530	103	3.0	0.8
Gambia, The	1	11	139	0.4	193	270	184	2[e]	1,860[e]	169	-3.1	-5.7
Georgia	5	70	74	3.4	135	650	151	12[e]	2,270[e]	152	5.6	6.6
Germany	82	357	236	1,876.3	3	22,740	22	2,226	26,980	22	0.2	0.0
Ghana	20	239	89	5.5	111	270	184	42[e]	2,080[e]	156	4.5	2.7
Greece	11	132	82	123.9	30	11,660	48	200	18,770	43	4.0	3.6
Guatemala	12	109	111	21.0	64	1,760	112	48[e]	4,030[e]	129	2.2	-0.4
Guinea	8	246	32	3.2	137	410	169	16	2,060	157	4.2	2.0
Guinea-Bissau	1	36	51	0.2	203	130	205	1[e]	680[e]	203	-7.2	-9.8
Haiti	8	28	301	3.6	129	440	165	13[e]	1,610[e]	172	-0.9	-2.7

Size of the economy 1.1

	Population	Surface area	Population density	Gross national income		Gross national income per capita		PPP gross national income[a]			Gross domestic product	
	millions 2002	thousand sq. km 2002	people per sq. km 2002	$ billions 2002[b]	rank 2002	$ 2002[b]	rank 2002	$ billions 2002	Per capita $ 2002	rank 2002	% growth 2001–02	Per capita % growth 2001–02
Honduras	7	112	61	6.3	105	930	138	17[c]	2,540[c]	147	2.5	0.0
Hungary	10	93	110	53.7	49	5,290	69	133	13,070	58	3.3	3.6
India	1,049	3,287	353	494.8	11	470	161	2,778[c]	2,650[c]	146	4.6	3.0
Indonesia	212	1,905	117	149.9	28	710	146	650	3,070	141	3.7	2.3
Iran, Islamic Rep.	66	1,648	40	112.9	33	1,720	114	438	6,690	91	6.7	5.1
Iraq	24	438	55	..	..	..[h]	..	..	..	..	..	..
Ireland	4	70	57	90.3	38	23,090	20	116	29,570	9	6.9	5.4
Israel	7	21	318	105.2	35	16,020	37	125	19,000	41	-0.8	-2.7
Italy	58	301	196	1,100.7	7	19,060	30	1,510	26,170	24	0.4	0.4
Jamaica	3	11	242	7.0	100	2,690	93	10	3,680	134	1.1	0.3
Japan	127	378	349	4,323.9	2	34,010	7	3,481	27,380	20	0.3	0.2
Jordan	5	89	58	9.1	92	1,760	112	22	4,180	127	4.9	2.0
Kazakhstan	15	2,725	6	22.6	62	1,520	117	84	5,630	101	9.8	10.1
Kenya	31	580	55	11.2	85	360	174	32	1,010	187	1.0	-0.9
Korea, Dem. Rep.	22	121	187	..	..	..[d]	..	..	..	..	..	..
Korea, Rep.	48	99	483	473.0	13	9,930	53	808	16,960	51	6.3	5.7
Kuwait	2	18	131	38.0	55	16,340	36	41[c]	17,780[c]	47	-1.0	-3.3
Kyrgyz Republic	5	200	26	1.4	158	290	181	8	1,560	175	-0.5	-1.5
Lao PDR	6	237	24	1.7	153	310	176	9	1,660	169	5.0	2.6
Latvia	2	65	38	8.1	95	3,480	86	21	9,190	77	6.1	7.0
Lebanon	4	10	434	17.7	72	3,990	79	20	4,600	123	1.0	-0.3
Lesotho	2	30	59	1.0	170	550	156	5[c]	2,970[c]	143	3.8	2.8
Liberia	3	111	34	0.5	190	140	201	..	..	..	3.3	0.8
Libya	5	1,760	3	..	..	..[i]	..	..	..	..	..	..
Lithuania	3	65	54	12.7	81	3,670	83	35	10,190	72	6.7	7.1
Macedonia, FYR	2	26	80	3.5	132	1,710	116	13	6,420	95	0.7	0.6
Madagascar	16	587	28	3.8	124	230	191	12	730	201	-12.7	-15.2
Malawi	11	118	114	1.7	154	160	200	6	570	207	1.8	-0.2
Malaysia	24	330	74	86.1	40	3,540	84	207	8,500	82	4.1	1.9
Mali	11	1,240	9	2.7	142	240	189	10	860	192	4.4	1.9
Mauritania	3	1,026	3	0.8	175	280	183	5[c]	1,790[c]	164	3.3	0.8
Mauritius	1	2	597	4.7	118	3,860	81	13	10,820	67	4.4	3.4
Mexico	101	1,958	53	597.0	9	5,920	66	887	8,800	80	0.9	-0.5
Moldova	4	34	129	1.7	155	460	164	7	1,600	173	7.2	7.6
Mongolia	2	1,567	2	1.1	167	430	166	4	1,710	167	4.0	2.8
Morocco	30	447	66	34.7	58	1,170	128	111	3,730	133	3.2	1.6
Mozambique	18	802	24	3.8	128	200	195	18[c]	990[c]	189	7.7	5.6
Myanmar	49	677	74	..	..	..[d]	..	..	..	..	..	..
Namibia	2	824	2	3.5	131	1,790	110	14[c]	6,880[c]	89	2.7	0.6
Nepal	24	147	169	5.5	110	230	191	33	1,370	179	-0.5	-2.7
Netherlands	16	42	477	377.6	15	23,390	19	458	28,350	15	0.2	-0.4
New Zealand	4	271	15	52.2	50	13,260	44	81	20,550	39	4.3	2.8
Nicaragua	5	130	44	3.8	125	710	146	13[c]	2,350[c]	150	1.0	-1.6
Niger	11	1,267	9	2.0	149	180	197	9[c]	800[c]	195	3.0	-0.1
Nigeria	133	924	146	39.5	54	300	178	106	800	195	-0.9	-3.1
Norway	5	324	15	175.8	23	38,730	3	166	36,690	3	1.0	0.4
Oman	3	310	8	19.9	67	7,830	59	33	13,000	59	0.0	-2.3
Pakistan	145	796	188	60.9	45	420	168	284	1,960	160	2.8	0.4
Panama	3	76	40	11.8	83	4,020	78	18[c]	6,060[c]	99	0.8	-0.7
Papua New Guinea	5	463	12	2.8	140	530	158	12[c]	2,180[c]	153	-0.5	-2.8
Paraguay	6	407	14	6.4	103	1,170	128	25[c]	4,590[c]	124	-2.3	-4.4
Peru	27	1,285	21	54.0	47	2,020	103	130	4,880	117	4.9	3.3
Philippines	80	300	268	82.4	41	1,030	134	356	4,450	126	4.4	2.3
Poland	39	313	127	176.8	22	4,570	70	404	10,450	70	1.4	1.4
Portugal	10	92	111	109.1	34	10,720	50	181	17,820	46	0.4	0.2
Puerto Rico	4	9	436	..	..	..[k]	..	..	..	..	..	..

1.1 Size of the economy

	Population	Surface area	Population density	Gross national income		Gross national income per capita		PPP gross national income [a]			Gross domestic product	
	millions 2002	thousand sq. km 2002	people per sq. km 2002	$ billions 2002 [b]	rank 2002	$ 2002 [b]	rank 2002	$ billions 2002	Per capita $ 2002	rank 2002	% growth 2001-02	Per capita % growth 2001-02
Romania	22	238	97	41.7	53	1,870	108	145	6,490	93	4.3	4.8
Russian Federation	144	17,075	9	306.6	16	2,130	99	1,165	8,080	83	4.3	4.8
Rwanda	8	26	331	1.8	150	230	191	10 [e]	1,260 [e]	182	9.4	6.3
Saudi Arabia	22	2,150	10	186.8	21	8,530	57	277 [e]	12,660 [e]	60	1.0	-1.8
Senegal	10	197	52	4.6	119	470	161	15 [e]	1,540 [e]	176	1.1	-1.2
Serbia and Montenegro	8 [l]	102	..	11.6 [l]	84	1,400 [l]	123	..	..	..	4.0	35.7
Sierra Leone	5	72	73	0.7	177	140	201	3	500	208	6.3	4.2
Singapore	4	1	6,826	86.1	39	20,690	27	99	23,730	31	2.2	1.4
Slovak Republic	5	49	..	21.3	63	3,970	80	68	12,590	61	4.4	4.4
Slovenia	2	20	98	20.4	65	10,370	52	36	18,480	45	2.9	3.6
Somalia	9	638	15	..	..	.. [d]	..	..	..	..	..	..
South Africa	45	1,221	37	113.4	32	2,500	94	445 [e]	9,810 [e]	75	3.0	1.8
Spain	41	506	82	596.5	10	14,580	40	868	21,210	36	2.0	1.6
Sri Lanka	19	66	293	16.1	74	850	142	67	3,510	135	4.0	2.7
Sudan	33	2,506	14	12.2	82	370	173	57 [e]	1,740 [e]	166	5.5	3.3
Swaziland	1	17	63	1.4	159	1,240	127	5	4,730	122	3.6	1.7
Sweden	9	450	22	231.8	19	25,970	12	230	25,820	26	1.9	1.5
Switzerland	7	41	184	263.7	17	36,170	4	232	31,840	7	0.1	-0.7
Syrian Arab Republic	17	185	92	19.1	69	1,130	130	59	3,470	136	2.7	0.3
Tajikistan	6	143	45	1.1	164	180	197	6	930	191	9.1	8.5
Tanzania	35	945	40	9.7 [m]	88	290 [m]	181	20	580	206	6.3	4.1
Thailand	62	513	121	123.3	31	2,000	104	425	6,890	88	5.4	4.7
Togo	5	57	88	1.3	161	270	184	7 [e]	1,450 [e]	177	4.6	2.4
Trinidad and Tobago	1	5	254	8.8	93	6,750	63	12	9,000	79	2.7	2.1
Tunisia	10	164	63	19.5	68	1,990	105	63	6,440	94	1.7	0.6
Turkey	70	775	90	173.3	24	2,490	95	438	6,300	96	7.8	6.1
Turkmenistan	5	488	10	..	..	.. [k]	..	23	4,780	121	14.9	13.1
Uganda	25	241	125	5.9	107	240	189	33 [e]	1,360 [e]	180	6.7	3.8
Ukraine	49	604	84	37.9	56	780	145	234	4,800	119	4.8	5.6
United Arab Emirates	3	84	38	..	..	.. [k]	..	77 [e]	24,030 [e]	30	1.8	-5.0
United Kingdom	59	243	246	1,510.8	4	25,510	13	1,574	26,580	23	1.8	1.5
United States	288	9,629	31	10,207.0	1	35,400	6	10,414	36,110	4	2.4	1.4
Uruguay	3	176	19	14.6	77	4,340	72	26	7,710	85	-10.8	-11.3
Uzbekistan	25	447	61	7.8	98	310	176	41	1,640	171	4.2	2.9
Venezuela, RB	25	912	28	102.3	36	4,080	76	131	5,220	110	-8.9	-10.5
Vietnam	80	332	247	34.8	57	430	166	185	2,300	151	7.0	5.8
West Bank and Gaza	3	..	..	3.6	130	1,110	131	..	..	..	-19.1	-22.6
Yemen, Rep.	19	528	35	9.1	91	490	160	15	800	195	3.6	0.5
Zambia	10	753	14	3.5	133	340	175	8	800	195	3.3	1.6
Zimbabwe	13	391	34	..	..	.. [d]	..	28	2,180	153	-6.6	-6.7
World	6,199 s	133,895 s	48 w	31,720 t		5,120 w		48,462 t	7,820 w		1.9 w	0.7 w
Low income	2,495	33,612	77	1,070		430		5,269	2,110		4.0	2.1
Middle income	2,738	67,886	41	5,056		1,850		15,884	5,800		3.1	2.3
Lower middle income	2,408	54,969	45	3,372		1,400		12,749	5,290		4.9	4.1
Upper middle income	329	12,917	26	1,682		5,110		3,145	9,550		-1.2	-2.4
Low & middle income	5,232	101,498	53	6,123		1,170		21,105	4,030		3.3	2.0
East Asia & Pacific	1,838	16,301	116	1,768		960		7,874	4,280		6.7	5.8
Europe & Central Asia	473	24,206	20	1,023		2,160		3,263	6,900		4.6	5.1
Latin America & Carib.	525	20,450	26	1,721		3,280		3,650	6,950		-0.8	-2.2
Middle East & N. Africa	306	11,135	28	685		2,240		1,733	5,670		3.0	1.0
South Asia	1,401	5,140	293	638		460		3,453	2,460		4.3	2.6
Sub-Saharan Africa	689	24,267	29	311		450		1,174	1,700		2.8	0.5
High income	966	32,397	31	25,596		26,490		27,516	28,480		1.6	1.0
Europe EMU	305	2,474	125	8,207		20,320		7,850	25,700		0.8	0.5

a. PPP is purchasing power parity; see *Definitions*. b. Calculated using the World Bank *Atlas* method. c. Estimate does not account for recent refugee flows. d. Estimated to be low income ($735 or less). e. The estimate is based on regression; others are extrapolated from the latest International Comparison Programme benchmark estimates. f. Includes Taiwan, China; Macao, China; and Hong Kong, China. g. Estimate based on bilateral comparison between China and the United States (Ruoen and Kai, 1995). h. Estimated to be lower middle income ($736–$2,935). i. GNI and GNI per capita estimates include the French overseas departments of French Guiana, Guadeloupe, Martinique, and Réunion. j. Estimated to be upper middle income ($2,936–$9,075). k. Estimated to be high income ($9,076 or more). l. Excludes data for Kosovo. m. Data refer to mainland Tanzania only.

Size of the economy 1.1

WORLD VIEW

About the data

Population, land area, income, and output are basic measures of the size of an economy. They also provide a broad indication of actual and potential resources. Population, land area, income—as measured by gross national income (GNI)—and output—as measured by gross domestic product (GDP)—are therefore used throughout *World Development Indicators* to normalize other indicators.

Population estimates are generally based on extrapolations from the most recent national census. For further discussion of the measurement of population and population growth, see *About the data* for table 2.1 and *Statistical methods*.

The surface area of a country or economy includes inland bodies of water and some coastal waterways. Surface area thus differs from land area, which excludes bodies of water, and from gross area, which may include offshore territorial waters. Land area is particularly important for understanding the agricultural capacity of an economy and the effects of human activity on the environment. (For measures of land area and data on rural population density, land use, and agricultural productivity, see tables 3.1–3.3.) Recent innovations in satellite mapping techniques and computer databases have resulted in more precise measurements of land and water areas.

GNI (or gross national product in the terminology of the 1968 United Nations System of National Accounts) measures the total domestic and foreign value added claimed by residents. GNI comprises GDP plus net receipts of primary income (compensation of employees and property income) from nonresident sources.

The World Bank uses GNI per capita in U.S. dollars to classify countries for analytical purposes and to determine borrowing eligibility. See the *Users guide* for definitions of the income groups used in *World Development Indicators*. For further discussion of the usefulness of national income as a measure of productivity or welfare, see *About the data* for tables 4.1 and 4.2.

When calculating GNI in U.S. dollars from GNI reported in national currencies, the World Bank follows its *Atlas* conversion method. This involves using a three-year average of exchange rates to smooth the effects of transitory exchange rate fluctuations. (For further discussion of the *Atlas* method, see *Statistical methods*.) Note that growth rates are calculated from data in constant prices and national currency units, not from the *Atlas* estimates.

Because exchange rates do not always reflect international differences in relative prices, this table also shows GNI and GNI per capita estimates converted into international dollars using purchasing power parity (PPP) rates. PPP rates provide a standard measure allowing comparison of real price levels between countries, just as conventional price indexes allow comparison of real values over time. The PPP conversion factors used here are derived from price surveys covering 118 countries conducted by the International Comparison Program. For Organisation for Economic Co-operation and Development (OECD) countries data come from the most recent round of surveys, completed in 1999; the rest are either from the 1996 survey, or data from the 1993 or earlier round and extrapolated to the 1996 benchmark. Estimates for countries not included in the surveys are derived from statistical models using available data.

All economies shown in *World Development Indicators* are ranked by size, including those that appear in table 1.6. The ranks are shown only in table 1.1. (*World Bank Atlas* includes a table comparing the GNI per capita rankings based on the *Atlas* method with those based on the PPP method for all economies with available data.) No rank is shown for economies for which numerical estimates of GNI per capita are not published. Economies with missing data are included in the ranking process at their approximate level, so that the relative order of other economies remains consistent. Where available, rankings for small economies are shown in *World Bank Atlas*.

Growth in GDP and growth in GDP per capita are based on GDP measured in constant prices. Growth in GDP is considered a broad measure of the growth of an economy, as GDP in constant prices can be estimated by measuring the total quantity of goods and services produced in a period, valuing them at an agreed set of base year prices, and subtracting the cost of intermediate inputs, also in constant prices. For further discussion of the measurement of economic growth, see *About the data* for table 4.1.

Definitions

• **Population** is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship—except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. The values shown are midyear estimates for 2002. See also table 2.1. • **Surface area** is a country's total area, including areas under inland bodies of water and some coastal waterways. • **Population density** is midyear population divided by land area in square kilometers. • **Gross national income (GNI)** is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. Data are in current U.S. dollars converted using the *World Bank Atlas* method (see *Statistical methods*). • **GNI per capita** is gross national income divided by midyear population. GNI per capita in U.S. dollars is converted using the *World Bank Atlas* method. • **PPP GNI** is gross national income converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power over GNI as a U.S. dollar has in the United States. • **Gross domestic product (GDP)** is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output. Growth is calculated from constant price GDP data in local currency. • **GDP per capita** is gross domestic product divided by midyear population.

Data sources

Population estimates are prepared by World Bank staff from a variety of sources (see Data sources for table 2.1). The data on surface and land area are from the Food and Agriculture Organization (see *Data sources* for table 3.1). GNI, GNI per capita, GDP growth, and GDP per capita growth are estimated by World Bank staff based on national accounts data collected by Bank staff during economic missions or reported by national statistical offices to other international organizations such as the OECD. Purchasing power parity conversion factors are estimates by World Bank staff based on data collected by the International Comparison Program.

Attachment 4

ALBANIA
Source: (CA) Labour-related establishment census
Earnings per month / Leks
Employees
ISIC Rev. 3.1 D

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total		9121	9674	10734	11708	14056	14334

ALGERIA
Source: (DA) Labour-related establishment survey
Earnings per month / Dinars
Employees
ISIC Rev. 3.1 D

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	12323						

ARGENTINA
Source: (DA) Industrial/commercial survey
Earnings per hour / Pesos
Workers

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	4.03	4.07	4.12	4.16	4.23	4.29	

Notes: [1]Local units with 10 or more workers. [2]Production and related workers.

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	16.4		17.38		18.16		20.45

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total					1973	2046	

BANGLADESH
Source: (CB) Industrial/commercial census
Wage rates per day / Taka
Employees
ISIC Rev.2 - 3

	1996	1997	1998	1999	2000	2001	2002
Men and Women	72.42						
311-312	76.16						
313	199						
314	51.9						
321	56.68						
322	53.43						
323	54.45						
324	80.39						
331	67.49						
332	72.78						
341	92.15						
342	140.91						
351	170.65						
352	124.3						
354	89.65						
355	43.02						
356	76.43						
361	72.04						
362	77.21						
369	90.43						
371	38.97						
372	46.84						
381	122.43						
382	93.47						
383	67.11						
384	75.82						
385	84.85						
Calculated Average							

	1996	1997	1998	1999	2000	2001	2002
Men and Women				11			
Total							

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	749	873	972	1055	1120 [2]		

Notes: [1]Main cities, except Pando [2]Sep.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total		598	695	785	783	891	899

Notes: [1]Citizens only. [2]Sep. of each year. [3]March.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	698.95	737.69	717.36	752.21	763.11	844.61	901.85

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	15276	148460	194612	[redacted]	219	227	244

Notes: [1]Employees under labour contract. [2]New denomination: 1 new lev = 1000 old leva.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	243000		243000			243000	

Notes: [1]Private sector.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	17.13	17.23	17.59	17.82	18.29	18.59	19.1

Notes: [1]Employees paid by the hour. [2]Incl. overtime.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	176480	189753	200773	203540	209257	213394	218740

Notes: [1]Incl. family allowances and the value of payments in kind. [2]April of each year.

COLOMBIA
Source: (BA) Labour force survey
Earnings per month / Pesos
Employees
ISIC Rev. 3 - D - 1

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total							353590 [2]

Notes: [1]Fourth quarter. [2]Methodology revised.

COSTA RICA
Source: (BA) Labour force survey
Earnings per month / Colones
Employees
ISIC Rev. 3 - D - 1

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total			85899	97774.5	108777	128207	

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	3034	3358	3681	3869	4100	4465	4794

Notes: [1]Excl. employees of the ministries of Internal Affairs and of Defence.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	9259 [1]	10411 [2]	11513 [2]	12271 [2]	13188 [2]	14130 [2]	14883 [2]

Notes: [1]Enterprises with 100 or more employees. [2]Enterprises with 20 or more employees.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	163.48	167.31	174.59	182.34	188.59	199.1	207.02

Notes: [1]Private sector.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	3226.7	4380.4	6119	8556.2	[redacted]	1.27	

Notes: [1]Figures in thousands. [2]Prior to March 2000: sucres; 25,000 sucres =1 US dollar.

EGYPT

Source: [illegible]

Earnings per week / Pounds

Wage earners

ISIC Rev. 3 - D - 1.2

	1996	1997	1998	1999	2000	2001	2002
Men and Women	93	103	107	121	125	136	147
Total							

Notes: [1]Establishments with 10 or more persons employed. [2]Oct. of each year.

EL SALVADOR

[illegible]

	1996	1997	1998	1999	2000	2001	2002
Men and Women	7.5		10.27	10.68	10.09		
Total							

Notes: [1]Urban areas. [2]Prior to 2002: colones; 8.75 colones=1 US dollar.

FINLAND

[illegible]

	1996	1997	1998	1999	2000	2001	2002
Men and Women				9.07	9.59	10.23	10.66
17							

Notes: [1]Full-time employees. [2]Prior to 2001: FIM; 1 Euro = 5.94573 FIM.

[illegible]

	1996	1997	1998	1999	2000	2001	2002
Men and Women				1459	1477	1507	1563
Total							

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total			969.69				

Notes: [1]Establishments with 5 or more persons employed. [2]Survey results influenced by a low response rate.

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	25.73	26.17	26.78	27.53	27.78	[illegible]	14.72

Notes: [1]Prior to 2001: DEM; 1 Euro = 1.95583 DEM.

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	1349.9	1470.5	1539.76				

Notes: [1]Establishments with 10 or more persons employed. [2]Prior to 1999: GRD; 1 Euro = 340.750 GRD. [3]Nov. of each year.

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	1368.91	1430.13	1541.03	1602.25	1655.25	1732.27	1837.32

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	48195	58915	68872	[illegible]	88551	101700	114297

Notes: [1]Enterprises with 5 or more employees. [2]Full-time employees. [3]Prior to 1999: enterprises with more than 20 employees.

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	1188.8	1137.3	1211.1	1548.5	1280.8	1893.2	

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	45.1	52.4	64.2	75.3	98	129.2	

Notes: [1]Production workers. [2]Figures in thousands. [3]Dec. of each year.

	1996	1997	1998	1999	2000	2001	2002
Men and Women							
Total	364562	471489	567630	698899	867526	1014285	

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total				9.79	10.4	11.47	12.29

Notes: [1]Establishments with 10 or more persons employed. [2]Incl. juveniles.

ISRAEL
Source: Social Insurance records
Earnings per month / New Shekels
Employees
[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total						9088	9179

Notes: [1]Incl. payments subject to income tax. [2]Israeli workers only. [3]Incl. mining and quarrying. [4]Excl. furniture.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	283700	287200	289600	291100	293100	297500	296400

Notes: [1]Private sector; establishments with 10 or more regular employees; June of each year . [2]Regular scheduled cash earnings.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	188.2	192.9	198.5	172	189	185	

Notes: [1]Oct. of each year.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	9288	11092	11357	13821	17717	19982	22130

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	4998.6	5510.8					

Notes: [1]Incl. the value of payments in kind. [2]June of each year.

KOREA, REPUBLIC OF

Source: [illegible] Establishment Survey

Earnings per month / Won

Employees

ISIC Rev. 3 - D. 1.2.3

	1996	1997	1998	1999	2000	2001	2002
Men and Women				1443	1568	1659	1857
Total							

Notes: [1]Incl. family allowances and the value of payments in kind. [2]Establishments with 10 or more regular employees. [3]Figures in thousands.

[illegible]

	1996	1997	1998	1999	2000	2001	2002
Men and Women	1.201	1.219	1.246	1.231	1.355		
Total							

[illegible]

	1996	1997	1998	1999	2000	2001	2002
Men and Women	104.31	114.7	128.31	128.97	135.13	140.34	145.51
Total							

Notes: [1]Beginning 1997: first quarter of each year.

[redacted]
Source: (E) Establishment survey.
Earnings per month / Dinars
Employees
ISIC-Rev.2 - 3

	1996	1997	1998	1999	2000	2001	2002
Men and Women							9944
Total							

Notes: [1]Net earnings.

MALAYSIA
Source: (E) Establishment survey.
Earnings per month / Ringgit
Employees
ISIC-Rev.2 - 3

	1996	1997	1998	1999	2000	2001	2002
Men and Women	1115	1210			1388	1531	
Total							

MAURITIUS
[redacted]
Earnings per month / Rupees
Employees
(E) Establishment survey

	1996	1997	1998	1999	2000	2001	2002
Men and Women				5134	5536	5856	6155
Total							

Notes: [1]March of each year.

[redacted]
Source: (E) Establishment survey.
Earnings per month / Rupees
Employees
ISIC-Rev.2 - 3

	1996	1997	1998	1999	2000	2001	2002
Men and Women	10.16	12.38	14.84	17.82	20.77	23.33	25.19
Total							

[redacted]

	1996	1997	1998	1999	2000	2001	2002
Men and Women					66.0 [2]		68.7
Total							

Notes: [1]Figures in thousands. [2]Fourth quarter.

[redacted]

	1996	1997	1998	1999	2000	2001	2002
Men and Women	30.16	31.05	32.02	33.32	34.42		
Total							

Notes: [1]Excl. overtime payments. [2]Full-time employees only. [3]Dec. of each year. [4]Prior to 2001: NLG; 1 Euro = 2.20371 NLG.

[redacted]

	1996	1997	1998	1999	2000	2001	2002
Men and Women					16.99	17.39	18
Total							

NORWAY
Source: (DA) Labour-related establishment survey
Earnings per month / Kroner
Employees
ISIC Rev. 3: D: 1.2.3

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total		20005	21417	22441	23388	24426	25991

Notes: [1]Excl. overtime payments. [2]Full-time employees. [3]Oct. of each year. [4]Basic chemicals. [5]Other chemical and non-metallic mineral products. [6]Machinery, equipment and transport. [7]Ships, oil platforms and modules.

PAKISTAN
Source: (FD) Administrative reports
Earnings per month / Rupees
Employees

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	2878	3211.54	3705.96	2865.76	2980.97	3002.23	4113.74

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total							1.8

Notes: [1]Median. [2]Aug.

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total					813765	639988	739738

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total		24.45	24.93	25.56	27.23	27.12 [2]	28.07 [3]

Notes: [1]Prior to 1996, Lima; June. Beginning 1996, urban areas; annual averages. [2]Average of the first three quarters. [3]Metropolitan Lima.

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total			6400	6900	7300 [4]		

Notes: [1]Computed on the basis of annual wages. [2]Establishments with 20 or more persons employed. [3]Excl. bonuses and gratuities. [4]Series discontinued.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	859.4	1047.8	1203.9	1660.9	1827.6	1938.9	1999.9

Notes: [1]Incl. the value of payments in kind. [2]Economic units with 10 or more persons employed; prior to 1999, economic units with more than 5 persons employed.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	832.83	1014.9	1164.4	1598.89	1756.43	1866.51	1911.52

Notes: [1]Incl. the value of payments in kind.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total			120803	122327	[1]		

Notes: [1]Prior to 2000: PTE; 1 Euro = 200.482 PTE.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	27400 [1]	27659 [2]					

Notes: [1]Dec. [2]June.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total		657					

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total		647 [1]	823	1053 [1]	2230	4786	7866 [1]

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total			[redacted]	2803	3036	3117	3154

Notes: [1]Methodology revised; data not strictly comparable.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	8230	9197 [2]	9980	10758	11722	12908	13837

Notes: [1]Excl. enterprises with less than 20 employees. [2]From 1991 to 1996: excl. enterprises with less than 25 employees.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	106144	118960	132080	144110	161296	178596	196220

Notes: [1]Confidential.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	3152	3408	3803	4018	4323	4701	5197 [1]

Notes: [1]Series discontinued. [2]Excl. furniture. [3]Furniture, recycling and manufacturing not elsewhere classified.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total				9.75	10.04	10.46	10.97

Notes: [1]Incl. overtime payments and irregular gratuities.

[illegible]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	17.9	18.15	20.34	22.03	24.86	27.1	31.93

Notes: [1]March and Sep. of each year.

[illegible]

Men	1996	1997	1998	1999	2000	2001	2002
Total	2388	2948					

Notes: [1]Private sector. [2]June of each year. [3]Skilled wage earners.

Men	1996	1997	1998	1999	2000	2001	2002
Total	681	863					

Notes: [1]Private sector. [2]June of each year. [3]Unskilled wage earners.

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	115.01	10.24	105.07	106.85	111.3	114.9	118.2

Notes: [1]Private sector; Sep. of each year. [2]Excl. holidays, sick-leave and overtime payments. [3]Adults; prior to 1998: 2nd quarter of each year; 1998-2000: Sept-Oct. of each year. [4]Prior to 1997, incl. holidays and sick-leave payments and the value of payments in kind.

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	5565		5717		5862		6155

Notes: [1]Standardised monthly earnings (40 hours x 4 1/3 weeks).

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total						6064.6	

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	810.09	865.44	908.73	938.82	1170.12	1161.15	1161.63

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total [3]	222.8	428.7	781.6	1397	2163.3	2917.6	

Notes: [1]Excl. overtime payments and irregular bonuses and allowances. [2]Figures in thousands; Jan - June. [3]Establishments with 10 or more persons employed.

[redacted]
Earnings per hour / Pounds
Employees
[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	8.22	8.53	9.1	9.49	9.86	10.49	11.08

UNITED STATES
[redacted]
Earnings per hour / Dollars
[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total	12.77	13.17	13.49	13.9	14.37	14.83	[redacted]

Notes: [1]Private sector; production workers. [2]Series discontinued.

[redacted]
Earnings per month / Pesos
[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total					6855	6856	

Notes: [1]Urban areas. [2]Establishments with 5 or more persons employed.

[redacted]
Earnings per month / Pesos
[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
Total		141122					

Notes: [1]Sep.

[redacted]

Men and Women	1996	1997	1998	1999	2000	2001	2002
[redacted]	12.85	16.37	20.48	29.38	45.94	80.15	144

Attachment 5

Calculation of Hourly Wage Rates

Country	Reported Wage Rate	Measuring Currency	Measuring Unit	Hours per Measuring Unit	Hourly Wages	Reporting Year	Inflator to 2002	Inflated Hourly Wages	2002 Exchange Rate, per US$	2002 Wages, US$ per hour	2002 GNI
Albania	14334	leks	month	192	74.656	2002	1.000	74.66	140.155	0.53	1,450
Algeria	12,323.00	Dinars	month	192	64.182	1996	1.208	77.54	79.72	0.97	1,720
Argentina	4.29	Pesos	hour	1	4.290	2001	1.259	5.40	3.32	1.63	4,220
Australia	20.45	Dollars	hour	1	20.450	2002	1.000	20.45	1.76	11.62	19,530
Austria	2,046.00	Euros	month	192	10.656	2001	1.018	10.85	1.0626	10.21	23,860
Bangladesh	84.85	taka	day	8	10.606	1996	1.306	13.85	57.888	0.24	1,770
Belgium	11	Euros	hour	1	11.000	1999	1.068	11.75	1.0626	11.06	22,940
Bolivia	1,120.00	Bolivianos	month	192	5.833	2000	1.025	5.98	7.49	0.80	900
Botswana	889	Pula	month	192	4.630	2002	1.000	4.63	5.46	0.85	3,010
Brazil	901.85	Reais	month	192	4.697	2002	1.000	4.70	3.53	1.33	2,830
Bulgaria	244	Lev	month	192	1.271	2002	1.000	1.27	1.89	0.67	1,770
Cambodia	243000	Rials	month	192	1265.625	2001	1.032	1306.31	3912.08	0.33	300
Canada	19.1	Dollars	hour	1	19.100	2002	1.000	19.10	1.58	12.09	22,390
Chile	218,740.00	Pesos	month	192	1139.271	2002	1.000	1139.27	712.38	1.60	4,250
Colombia	353,590.00	Pesos	month	192	1841.615	2002	1.000	1841.61	2,864.79	0.64	1,820
Costa Rica	128,207.00	Colones	month	192	667.745	2001	1.092	728.93	378.72	1.92	4,070
Croatia	4,794.00	Kunas	month	192	24.969	2002	1.000	24.97	7.15	3.49	4,540
Czech Republic	14,883.00	koruny	month	192	77.516	2002	1.000	77.52	32.7385	2.37	5,480
Denmark	207.02	kroner	hour	1	207.020	2002	1.000	207.02	7.8947	26.22	30,260
Ecuador	1.27	Dollars (US)	hour	1	1.270	2001	1.125	1.43	1	1.43	1,490
Egypt	147	Pounds	week	44	3.341	2002	1.000	3.34	4.5	0.74	1,470
El Salvador	1.21	Dollars (US)	hour	1	1.210	2002	1.000	1.21	8.75	0.14	2,110
Finland	10.66	Euros	hour	1	10.660	2002	1.000	10.66	1.0626	10.03	23,890
France	1,563.00	Euros	month	192	8.141	2002	1.000	8.14	1.0626	7.66	22,240
Gambia	969.69	dalasis	month	192	5.050	1998	1.161	5.86	19.9182	0.29	270
Germany	14.72	Euros	hour	1	14.720	2002	1.000	14.72	1.0626	13.85	22,740
Greece	1,539.76	Drachmas	hour	1	1539.760	1998	1.134	1745.57	325.12	5.37	11,660
Guatemala	1,837.32	Quetzales	month	192	9.569	2002	1.000	9.57	7.81	1.23	1,760
Hungary	114,297.00	forint	month	192	595.297	2002	1.000	595.30	257.887	2.31	5,290
India	1,893.20	Rupees	month	192	9.860	2001	1.044	10.29	48.03	0.21	470
Indonesia	129,200.00	rupiahs	week	44	2936.364	2001	1.100	3230.76	9311.19	0.35	710
Iran	1,014,285.00	rials	month	192	5282.734	2001	1.143	6040.06	6906.96	0.87	1,720
Ireland	12.29	Euros	hour	1	12.290	2002	1.000	12.29	1.0626	11.57	23,030
Israel	9,179.00	New Shekels	month	192	47.807	2002	1.000	47.81	4.73	10.11	16,020
Japan	296,400.00	Yen	month	192	1543.750	2002	1.000	1543.75	119.9	12.88	34,010
Jordan	185	Dinars	month	192	0.964	2001	1.018	0.98	0.71	1.38	1,760
Kazakstan	22130	tenges	month	192	115.260	2002	1.000	115.26	153.279	0.75	1,520
Kenya	5,510.80	Shillings	month	192	28.702	1997	1.338	38.41	77.07	0.50	360
Korea	1,857,000.00	Won	month	192	9671.875	2002	1.000	9671.88	1,186.20	8.15	9,930
Kuwait	1.355	dinars	hr.	1	1.355	2000	1.031	1.40	0.30	4.60	16,340
Latvia	145.51	lats	month	192	0.758	2002	1.000	0.76	0.62	1.23	3,480
Macedonia	9,944.00	denais	month	192	51.792	2002	1.000	51.79	64.35	0.80	1,710
Malaysia	1,531.00	Ringgit	month	192	7.974	2001	1.018	8.12	3.8	2.14	3,540
Mauritius	6,155.00	Rupees	month	192	32.057	2002	1.000	32.06	29.2	1.10	3,860
Mexico	25.09	Pesos	hour	1	25.090	2002	1.000	25.09	13.31	1.89	5,920

Calculation of Hourly Wage Rates (cont.)

Mongolia	68700	tughrits	month	192	357.813	2002	1.000	357.81	1110.31	0.32	430
Netherlands	15.62	Euros	hour	1	15.619	2000	1.082	16.89	1.0626	15.90	23,390
New Zealand	18	Dollars	hour	1	18.000	2002	1.000	18.00	1.9	9.47	13,260
Nicaragua	13.46	Cordobas	hour	1	13.460	2002	1.000	13.46	14.67	0.92	710
Norway	25,991.00	Kroner	month	192	135.370	2002	1.000	135.37	6.97	19.42	38,730
Pakistan	4,113.70	Rupees	month	192	21.426	2002	1.000	21.43	58.53	0.37	420
Panama	1.8	Balboas	hour	1	1.800	2002	1.000	1.80	1	1.80	4,020
Paraguay	739,738.00	Guaranies	month	192	3852.802	2002	1.000	3852.80	7,103.59	0.54	1,170
Peru	28.07	Nuevos Soles	day	8	3.509	2002	1.000	3.51	3.51	1.00	2,020
Philippines	7,300.00	Pesos	month	192	38.021	2000	1.092	41.53	53.1	0.78	1,030
Poland	1,955.71	New Zlotys	month	192	10.186	2002	1.000	10.19	3.84	2.65	4,570
Portugal	610.16	Euros	month	192	3.178	1999	1.112	3.53	1.0626	3.33	10,720
Rwanda	27,659.00	Francs	month	192	144.057	1997	1.141	164.37	476.327	0.35	230
Saudi Arabia	657.00	Riyals	week	40	16.425	1997	0.962	15.80	3.745	4.22	6,530
Serbia and Montenegro	7,866.00	Dinars	month	192	40.969	2002	1.000	40.97	65	0.63	1,400
Singapore	3,154.00	Dollars	month	192	16.427	2002	1.000	16.43	1.74	9.44	20,690
Slovakia	13,837.00	korung	month	192	72.068	2002	1.000	72.07	45.3267	1.59	3,970
Slovenia	196,220.00	Tolars	month	192	1021.979	2002	1.000	1021.98	221.07	4.62	10,370
South Africa	5,197.00	Rand	month	192	27.068	2002	1.000	27.07	8.64	3.13	2,500
Spain	10.97	Euro	hour	1	10.970	2002	1.000	10.97	1.0626	10.32	14,580
Sri Lanka	31.93	Rupees	hour	1	31.930	2002	1.000	31.93	96.73	0.33	850
Swaziland	1905.5	emalangeni	month	192	9.924	1997	1.527	15.15	10.5407	1.44	1,240
Sweden	118.2	Kronor	hour	1	118.200	2002	1.000	118.20	8.83	13.39	25,970
Switzerland	6,155.00	Francs	month	192	32.057	2002	1.000	32.06	1.39	23.06	36,170
Thailand	6,064.60	Baht	month	192	31.586	2001	1.006	31.78	43.15	0.74	2,000
Trinidad and Tobago	1,161.63	Dollars	week	44	26.401	2002	1.000	26.40	6.3	4.19	6,750
Turkey	2,917,600.00	Liras	hour	1	2917600.00	2001	2.238	6,530,318	1,643,700.0	3.97	2,480
Uruguay	6,856.70	Pesos	month	192	35.712	2001	1.140	40.71	21.28	1.92	4,340
United Kingdom	11.08	Pounds	hour	1	11.080	2002	1.000	11.08	0.62	17.87	25,510
United States	15.3	Dollars	hour	1	15.300	2002	1.000	15.30	1	15.30	35,400
Venezuela	141122	bolivars	month	192	735.010	1997	2.686	1974.24	1160.95	1.70	4,080
Zimbabwe	144	Z. Dollars	hour	1	144.000	2001	1.000	144.00	55.04	2.62	735

Sources: Wages, measuring currency, unit, and reporting year from ILO, Chapter 5B, on-line database, at http://laborsta.ilo.org/
Inflators are based on consumer price indices from the International Monetary Fund (see attached calculations)
Exchange rates from the CIA World Factbook (see attached).
Countries in ***bold italics*** are those not included by the Department in its most recent calculation of NME wages for which both wage and per capita GNI data are available.

Consumer Price Indices

Country	1996	1997	1998	1999	2000	2001	2002	Base	Inflator
Algeria	87.497	92.514	97.093	99.662	100	104.226	105.704	1996	1.208
Argentina	100.674	101.205	102.137	100.945	100	98.933	124.526	2001	1.259
Australia	93.302	93.536	94.334	95.717	100	104.381	107.516	2002	1.000
Austria	95.0269	96.286	97.157	97.704	100	102.66	104.518	2001	1.018
Belgium	93.9984	95.528	96.44	97.519	100	102.474	104.157	1999	1.068
Bolivia	83.001	86.91	93.579	95.601	100	101.596	102.534	2000	1.025
Botswana	73.6942	80.12	85.457	92.08	100	106.559	115.119	2002	1.000
Brazil	80.74	86.332	89.091	93.42	100	106.84	115.866	2002	1.000
Bulgaria	6.429	74.47	88.375	90.649	100	107.361	113.599	2002	1.000
Canada	93.233	94.745	95.68	97.327	100	102.532	104.837	2002	1.000
Chile	83.534	88.659	93.188	96.299	100	103.569	106.147	2002	1.000
Colombia	58.7451	69.587	82.579	91.557	100	107.968	114.822	2002	1.000
Costa Rica	64.751	73.318	81.871	90.096	100	111.227	121.418	2001	1.092
Croatia	82.844	86.299	91.819	94.996	100	104.766	106.547	2002	1.000
Ecuador	18.839	24.612	33.497	50.996	100	137.678	154.866	2001	1.125
Egypt	86.678	90.6874	94.477	97.386	100	102.27	105.069	2001	1.027
El Salvador	90.786	94.862	97.278	97.779	100	103.751	105.686	2001	1.019
Finland	93.2	94.314	95.633	96.742	100	102.566	104.183	2002	1.000
France	96.041	97.194	97.8474	98.337	100	101.663	103.62	2002	1.000
Germany	95.292	97.083	97.992	98.55	100	101.975	103.375	2002	1.000
Greece	95.1486	96.192	94.468	96.947	100	103.361	107.095	1998	1.134
Guatemala	77.01	84.121	89.983	94.36	100	107.634	116.276	2000	1.163
India	75.699	81.122	91.856	96.145	100	103.685	108.239	2001	1.044
Ireland	89.736	90.993	93.204	94.729	100	104.872	109.768	2002	1.000
Israel	81.783	89.145	93.985	98.872	100	101.1	106.8	2001	1.056
Japan	98.65	100.358	101.017	100.675	100	99.267	98.358	2002	1.000
Jordan	92.954	95.7778	98.739	99.338	100	101.768	103.644	2001	1.018
Kenya	72.351	80.5718	85.988	90.926	100	105.739	107.812	1997	1.338
Korea	86.4	90.2	97	97.8	100	104.1	106.9	2002	1.000
Malaysia	88.697	91.059	95.858	98.489	100	101.417	103.25	2001	1.018
Mauritius	78.668	84.0437	89.768	95.97	100	105.389	112.472	2002	1.000
Mexico	56.018	67.573	78.336	91.328	100	106.363	111.714	2002	1.000
Netherlands	91.598	93.573	95.428	97.538	100	104.534	108.159	2000	1.082
New Zealand	95.21	96.329	97.569	97.447	100	102.626	105.373	2002	1.000
Nicaragua	65.287	71.31	80.607	89.649	100	107.358	111.645	2002	1.000
Norway	90.371	92.704	94.7946	97.006	100	103.017	104.344	2002	1.000
Pakistan	77.764	86.611	92.005	95.816	100	103.148	106.542	2000	1.065
Panama	95.504	96.769	97.31	98.523	100	100.307	101.316	2002	1.000
Paraguay	72.031	77.065	85.954	91.757	100	107.268	118.54	2002	1.000
Peru	80.002	86.852	93.147	96.378	100	101.977	102.173	2002	1.000
Philippines	77.32	81.845	89.801	95.825	100	106.123	109.242	2000	1.092
Poland	65.812	75.738	84.618	90.803	100	105.506	107.491	2002	1.000
Singapore	96.962	98.905	98.6402	98.657	100	100.997	100.602	2002	1.000
Slovenia	74	80.2	86.6	91.9	100	108.5	116.6	2002	1.000
South Africa	77.7593	84.445	90.2551	94.932	100	105.702	115.388	2001	1.092
Spain	91.003	92.796	94.498	96.681	100	103.591	106.788	2002	1.000
Sri Lanka	75.072	82.259	89.962	94.163	100	114.158	125.062	2002	1.000
Sweden	98.275	98.926	98.658	99.118	100	102.416	104.64	2002	1.000
Switzerland	97.151	97.658	97.674	98.48	100	100.988	101.636	2000	1.016
Thailand	86.025	90.828	98.167	98.47	100	101.661	102.275	2001	1.006
Trinidad and Tobago	85.302	88.395	93.356	96.567	100	105.537	109.905	2001	1.041
Turkey	11.417	21.205	39.154	64.551	100	154.400	223.825	2001	1.450
United Kingdom	89.697	92.506	95.668	97.156	100	101.821	103.485	2002	1.000
United States	91.086	93.215	94.662	96.733	100	102.826	104.457	2002	1.000
Zimbabwe	25.86	30.705	40.475	64.16	100	176.715	424.256	2001	2.401

Added Countries with Latest Wage Rates Prior to 2002

Bangladesh	80.711	85.062	92.209	97.84	100	102.007	105.407	1996	1.306
Cambodia	81.82	84.415	96.914	100.798	100	99.399	102.594	2001	1.032
Fiji	91.768	97.010	98.920	100.000	104	105.067	109.451	1999	1.095
Gambia	91.849	94.404	97.701	99.81	100	108.083	113.423	1998	1.161
Indonesia	45.174	48.215	76.007	91.453	100	112.549	123.833	2001	1.100
Iran	52.599	61.724	72.752	87.354	100	111.274	127.226	2001	1.143
Kazakstan	64.854	76.144	81.586	88.354	100	108.354	114.679	1997	1.506
Kuwait	94.602	95.224	95.367	98.219	100	101.657	103.075	2000	1.031
Portugal	90.571	92.529	95.042	97.232	100	104.395	106.096	1999	1.112
Rwanda	82.581	92.503	98.248	95.884	100	102.983	105.508	1997	1.141
Saudi Arabia	102.816	102.674	102.507	101.138	100	98.862	98.947	1997	0.962
Solomon Islands	71.180	76.934	86.473	93.409	100	106.886	117.742	1996	1.654
Swaziland	72.535	77.703	84.005	89.12	100	105.942	118.676	1997	1.527
Uruguay	68.042	81.527	90.341	95.453	100	104.359	118.941	2001	1.140
Venezuela	34.184	51.289	69.641	86.055	100	112.535	137.779	1997	2.686

Source: International Financial Statistics of the IMF.

THE WORLD FACTBOOK

Field Listing - Exchange rates

Country	Exchange rates
Afghanistan	afghanis per US dollar - 50 (2003), 50 (2002), 3,000 (2001), 3,000 (2000), 2,000 (1999) note - in 2002, the afghani was revalued and the currency stabilized at about 50 afghanis to one dollar; before 2002, the market rate varied widely from the official rate
Albania	leke per US dollar - 121.863 (2003), 140.155 (2002), 143.485 (2001), 143.709 (2000), 137.691 (1999)
Algeria	Algerian dinars per US dollar - 77.395 (2003), 79.6819 (2002), 77.2[illegible] (2001), 75.2598 (2000), 66.5739 (1999)
American Samoa	the US dollar is used
Andorra	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.12 (2001), 1.09 (2000), 0.94 (1999)
Angola	kwanza per US dollar - 74.6063 (2003), 43.5302 (2002), 22.0579 (2001), 10.041 (2000), 2.791 (1999), 0.393 (1998); note - in December 1999 the kwanza was revalued with six zeroes dropped off the old value
Anguilla	East Caribbean dollars per US dollar - 2.70 (fixed rate since 1976)
Antigua and Barbuda	East Caribbean dollars per US dollar - 2.7 (2003), 2.7 (2002), 2.7 (2001), 2.7 (2000), 2.7 (1999), 2.7 (1998) (fixed rate since 1976)
Argentina	Argentine pesos per US dollar - 2.9003 (2003), 3.0633 (2002), 0.9995 (2001), 0.9995 (2000), 0.9995 (1999)
Armenia	drams per US dollar - 578.763 (2002), 555.078 (2001), 539.526 (2000), 535.062 (1999)
Aruba	Aruban guilders/florins per US dollar - 1.79 (2003), 1.79 (2002), 1.79 (2001), 1.79 (2000), 1.79 (1999)

Australia	Australian dollars per US dollar - 1.5419 (2003), 1.8406 (2002), 1.9334 (2001), 1.7248 (2000), 1.55 (1999)
Austria	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0834 (2000), 0.9386 (1999)
Azerbaijan	Azerbaijani manats per US dollar - 4,910.73 (2003), 4,860.82 (2002), 4,656.58 (2001), 4,474.15 (2000), 4,120.17 (1999)
Bahamas, The	Bahamian dollars per US dollar - 1 (2003), 1 (2002), 1 (2001), 1 (2000), 1 (1999)
Bahrain	Bahraini dinars per US dollar - 0.376 (2003), 0.376 (2002), 0.376 (2001), 0.376 (2000), 0.376 (1999)
Bangladesh	taka per US dollar - 58.15 (2003), 57.888 (2002), 55.8067 (2001), 52.117 (2000), 49.0854 (1999)
Barbados	Barbadian dollars per US dollar - 2 (2003), 2 (2002), 2 (2001), 2 (2000), 2 (1999)
Belarus	Belarusian rubles per US dollar - 1,790.82 (2003), 1,920 (2002), 1,840 (2001), 876.75 (2000), 248.795 (1999)
Belgium	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Belize	Belizean dollars per US dollar - 2 (2003), 2 (2002), 2 (2001), 2 (2000), 2 (1999)
Benin	Communaute Financiere Africaine francs (XOF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
Bermuda	Bermudian dollars per US dollar - 1.0000 (fixed rate pegged to the US dollar)
Bhutan	ngultrum per US dollar - 46.5806 (2003), 48.6103 (2002), 47.1864 (2001), 44.9416 (2000), 43.0554 (1999)
Bolivia	bolivianos per US dollar - 7.65925 (2003), 7.172 (2002), 6.6069 (2001), 6.1835 (2000), 5.8124 (1999)
Bosnia and Herzegovina	marka per US dollar - 1.7329 (2003), 1.7329 (2002), 2.1857 (2001), 2.1244 (2000), 1.8371 (1999)
Botswana	pulas per US dollar - 4.9499 (2003), 4.6827 (2002), 5.8412 (2001), 5.1018 (2000), 4.6244 (1999)
Brazil	reals per US dollar - 3.0771 (2003), 2.9208 (2002), 2.3577 (2001), 1.8301 (2000), 1.8147 (1999) *note:* from October 1994 through 14 January 1999, the official rate was determined by a managed float; since 15 January 1999, the official rate floats independently with respect to the US dollar
British Virgin Islands	the US dollar is used
Brunei	Bruneian dollars per US dollar - 1.7422 (2003), 1.7906 (2002), 1.7917 (2001), 1.724 (2000), 1.695 (1999)
Bulgaria	leva per US dollar - 1.7827 (2003), 2.077 (2002), 2.1847 (2001), 2.1288 (2000), 1.8364 (1999) note: on 5 July 1999 the lev was redenominated; the post-5 July 1999 lev is equal to 1,000 of the pre-5 July 1999 lev

Burkina Faso	Communaute Financiere Africaine francs (XOF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
[illegible]	[illegible]
Burundi	Burundi francs per US dollar - 1,082.62 (2003), 930.75 (2002), 830.35 (2001), 720.67 (2000), 563.56 (1999)
[illegible]	[illegible]
Cameroon	Communaute Financiere Africaine francs (XAF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
[illegible]	[illegible]
Cape Verde	Cape Verdean escudos (CVE) per US dollar - 97.703 (2003), 117.168 (2002), 123.228 (2001), 115.877 (2000), 102.7 (1999)
[illegible]	[illegible]
Central African Republic	Communaute Financiere Africaine francs (XAF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
[illegible]	[illegible]
Chile	Chilean pesos per US dollar - 691.433 (2003), 688.936 (2002), 634.938 (2001), 535.466 (2000), 508.777 (1999)
[illegible]	[illegible]
Christmas Island	Australian dollars per US dollar - 1.5419 (2003), 1.9354 (2002), 1.9320 (2001), 1.7173(2000), 1.5497 (1999)
[illegible]	[illegible]
Colombia	Colombian pesos per US dollar - 2,877.65 (2003), 2,504.24 (2002), 2,299.63 (2001), 2,087.9 (2000), 1,756.23 (1999)
[illegible]	[illegible]
Congo, Democratic Republic of the	Congolese francs per US dollar - NA (2003), 346.485 (2002), 206.617 (2001), 21.82 (2000), 4.02 (1999)
[illegible]	[illegible]

Cook Islands	New Zealand dollars per US dollar - 1.7229 (2003), 2.1622 (2002), 2.3776 (2001), 2.1863 (2000), 1.8886 (1999)
Costa Rica	Costa Rican colones per US dollar - [illegible]
Cote d'Ivoire	Communaute Financiere Africaine francs (XOF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
Croatia	kuna per US dollar - [illegible]
Cuba	Cuban pesos per US dollar - 1.0000 (nonconvertible, official rate, for international transactions, pegged to the US dollar); convertible peso sold for domestic use at a rate of 27 pesos per US dollar by the Government of Cuba (2002)
Cyprus	Cypriot pounds per US dollar - [illegible]; Turkish lira per US dollar - [illegible]
Czech Republic	koruny per US dollar - 28.209 (2003), 32.7385 (2002), 38.0353 (2001), 38.5984 (2000), 34.5692 (1999)
Denmark	Danish kroner per US dollar - [illegible]
Djibouti	Djiboutian francs per US dollar - 177.721 (2003), 177.721 (2002), 177.721 (2001), 177.721 (2000), 177.721 (1999)
Dominica	East Caribbean dollars per US dollar - [illegible]
Dominican Republic	Dominican pesos per US dollar - 30.8307 (2003), 18.6098 (2002), 16.9516 (2001), 16.415 (2000), 16.0331 (1999)
East Timor	the US dollar is the legal tender
Ecuador	Ecuador formally adopted the US dollar as legal tender in March 2000
Egypt	Egyptian pounds per US dollar - [illegible]
El Salvador	the US dollar is the legal tender
Equatorial Guinea	Communaute Financiere Africaine francs [illegible] per US dollar - [illegible]
Eritrea	nakfa (ERN) per US dollar - NA (2003), 13.9582 (2002), 11.3095 (2001), 9.5 (2000), 7.6 (1999)
Estonia	krooni per US dollar - [illegible]
Ethiopia	birr per US dollar - NA (2003), 8.5678 (2002), 8.4575 (2001), 8.2173 (2000), 7.9423 (1999) *note:* since 24 October 2001 exchange rates are determined on a daily basis via interbank transactions regulated by the Central Bank
Falkland Islands (Islas Malvinas)	Falkland pounds per US dollar - [illegible]; note - the Falkland pound is at par with the British pound

Faroe Islands	Danish kroner per US dollar - 6.5877 (2003), 7.89 (2002), 8.323 (2001), 8.083 (2000), 6.976 (1999)
Fiji	Fijian dollars per US dollar - 1.8958 (2003), 2.1869 (2002), 2.2765 (2001), 2.1286 (2000), 1.9696 (1999)
Finland	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
France	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
French Guiana	Euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
French Polynesia	Comptoirs francais du Pacifique francs (XPF) per US dollar - 105.73 (2003), 126.72 (2002), 113.26 (2001), 119.43 (2000), 111.93 (1999); note: pegged at the rate of 119.25 XPF to the euro
Gabon	Communaute Financiere Africaine francs (XAF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
Gambia, The	dalasi per US dollar - NA (2003), 19.9182 (2002), 15.5687 (2001), 12.7825 (2000), 11.695 (1999)
Gaza Strip	new Israeli shekels per US dollar - 4.55 (2003), 4.74 (2002), 4.21 (2001), 4.08 (2000), 4.14 (1999)
Georgia	lari per US dollar - 2.1457 (2003), 2.0957 (2002), 2.0257 (2001), 1.9762 (2000), 2.0245 (1999)
Germany	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Ghana	cedis per US dollar - NA (2003), 7,932.7 (2002), 7,170.76 (2001), 5,455.06 (2000), 2,669.5 (1999)
Gibraltar	Gibraltar pounds per US dollar - 0.6661 (2002), 0.6944 (2001), 0.6596 (2000), 0.6180 (1999), 0.6037 (1998); note - the Gibraltar pound is at par with the British pound
Greece	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 0.867 (99) (2000), 305.647 (1999)
Greenland	Danish kroner per US dollar - 6.5877 (2003), 7.8947 (2002), 8.323 (2001), 8.083 (2000), 6.976 (1999)
Grenada	East Caribbean dollars per US dollar - 2.7 (2003), 2.7 (2002), 2.7 (2001), 2.7 (2000), 2.7 (1999)
Guadeloupe	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Guam	the US dollar is used
Guatemala	quetzales per US dollar - 7.9409 (2003), 7.8216 (2002), 7.8586 (2001), 7.7632 (2000), 7.3856 (1999)
Guernsey	Guernsey pounds per US dollar - 0.6661 (2002), 0.6944 (2001), 0.6596 (2000), 0.6180 (1999), 0.6037 (1998); note - the Guernsey pound is at par with the British pound
Guinea	Guinean francs per US dollar - NA (2003), 1,975.84 (2002), 1,950.56 (2001), 1,746.87 (2000), 1,387.4 (1999)

Guinea-Bissau	[illegible]
Guyana	Guyanese dollars per US dollar - NA (2003), 190.665 (2002), 187.321 (2001), 182.43 (2000), 177.995 (1999)
Haiti	[illegible]
Holy See (Vatican City)	euros per US dollar - 0.886 (2003),1.1324 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Honduras	[illegible]
Hong Kong	Hong Kong dollars per US dollar - 7.7868 (2003), 7.7989 (2002), 7.7988 (2001), 7.7912 (2000), 7.7575 (1999)
Hungary	[illegible]
Iceland	Icelandic kronur per US dollar - 76.709 (2003), 91.6617 (2002), 97.4246 (2001), 78.6159 (2000), 72.3353 (1999)
India	[illegible]
Indonesia	Indonesian rupiahs per US dollar - 8,577.13 (2003), 9,311.19 (2002), 10,260.8 (2001), 8,421.77 (2000), 7,855.15 (1999)
Iran	[illegible]
Iraq	New Iraqi dinars per US dollar - 1,890 (second half, 2003)
Ireland	[illegible]
Israel	new Israeli shekels per US dollar - 4.5541 (2003), 4.7378 (2002), 4.2057 (2001), 4.0773 (2000), 4.1397 (1999)
Italy	[illegible]
Jamaica	Jamaican dollars per US dollar - 57.7409 (2003), 48.4159 (2002), 45.9962 (2001), 42.7011 (2000), 39.0435 (1999)
Japan	[illegible]
Jersey	Jersey pounds per US dollar - 0.6661 (2002), 0.6944 (2001), 0.6596 (2000), 0.6180 (1999); the Jersey pound is at par with the British pound
Jordan	[illegible]
Kazakhstan	tenge per US dollar - 149.576 (2003), 153.279 (2002), 146.736 (2001), 142.133 (2000), 119.523 (1999)

Kenya	Kenyan shillings per US dollar - [illegible] (2003), [illegible] (2002), [illegible] (2001), [illegible] (2000), [illegible] (1999)
Kiribati	Australian dollars per US dollar - 1.5419 (2003), 1.8406 (2002), 1.9334 (2001), 1.7248 (2000), 1.55 (1999)
Korea, North	official: North Korean won per US dollar - 150 (December 2002), 2.15 (December 2001), 2.15 (May 1994), 2.13 (May 1992), 2.14 (September 1991), 2.1 (January 1990); market: North Korean won per US dollar - 300-600 (December 2002), 200 (December 2001)
Korea, South	South Korean won per US dollar - 1,191.61 (2003), 1,251.09 (2002), 1,290.99 (2001), 1,130.96 (2000), 1,188.82 (1999)
Kuwait	Kuwaiti dinars per US dollar - [illegible] (2003), 0.3039 (2002), 0.3067 (2001), 0.3068 (2000), 0.3044 (1999)
Kyrgyzstan	soms per US dollar - 43.6484 (2003), 46.9371 (2002), 48.378 (2001), 47.7038 (2000), 39.0077 (1999)
Laos	kips per US dollar - [illegible] (2003), 10,056.3 (2002), 8,954.58 (2001), 7,887.64 (2000), 7,102.02 (1999)
Latvia	lati per US dollar - 0.5715 (2003), 0.6182 (2002), 0.6279 (2001), 0.6065 (2000), 0.5852 (1999)
Lebanon	Lebanese pounds per US dollar - 1,507.5 (2003), 1,507.5 (2002), 1,507.5 (2001), 1,507.5 (2000), 1,507.84 (1999)
Lesotho	maloti per US dollar - 7.5648 (2003), 10.5407 (2002), 8.6092 (2001), 6.9398 (2000), 6.1095 (1999)
Liberia	Liberian dollars per US dollar - NA (2003), 61.7542 (2002), [illegible] (2001), [illegible] (2000), [illegible] (1999)
Libya	Libyan dinars per US dollar - 1.2929 (2003), 1.2707 (2002), 0.6051 (2001), 0.4994 (2000), 0.3936 (1999)
Liechtenstein	Swiss francs per US dollar - [illegible] (2003), 1.5586 (2002), 1.6876 (2001), 1.6888 (2000), 1.5022 (1999)
Lithuania	litai per US dollar - 3.0609 (2003), 3.677 (2002), 4 (2001), 4 (2000), 4 (1999)
Luxembourg	euros per US dollar - [illegible] (2003), [illegible] (2002), [illegible] (2001), 1.0854 (2000), [illegible] (1999)
Macau	patacas per US dollar - 8.0212 (2003), 8.0334 (2002), 8.0335 (2001), 8.0259 (2000), 7.9919 (1999)
Macedonia, The Former Yugoslav Republic of	Macedonian denars per US dollar - NA (2003), 64.3498 (2002), 68.0371 (2001), 65.9039 (2000), [illegible] (1999)
Madagascar	Malagasy francs per US dollar - 6,210 (2003), 6,831.96 (2002), 6,588.49 (2001), 6,767.48 (2000), 6,283.77 (1999)
Malawi	Malawian kwachas per US dollar - NA (2003), 76.6866 (2002), 72.1973 (2001), 59.5438 (2000), [illegible] (1999)
Malaysia	ringgits per US dollar - 3.8 (2003), 3.8 (2002), 3.8 (2001), 3.8 (2000), 3.8 (1999)
Maldives	rufiyaa per US dollar - 12.8 (2003), 12.8 (2002), 12.2421 (2001), 11.77 (2000), 11.77 (1999)

Mali	Communaute Financiere Africaine francs (XOF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
Malta	Maltese lira per US dollar - 0.3772 (2003), 0.4386 (2002), 0.4501 (2001), 0.4382 (2000), 0.3989 (1999)
Man, Isle of	Manx pounds per US dollar - 0.6125 (2003), 0.6661 (2002), 0.6944 (2001), 0.6596 (2000), 0.6180 (1999); the Manx pound is at par with the British pound
Marshall Islands	the US dollar is the legal tender
Martinique	euros per US dollar - 0.8860 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999); French francs per US dollar - 5.8995 (1998)
Mauritania	ouguiyas per US dollar - NA (2003), 247.789 (2002), 255.629 (2001)
Mauritius	Mauritian rupees per US dollar - 27.9015 (2003), 29.962 (2002), 29.1293 (2001), 26.2496 (2000), 25.1858 (1999)
Mayotte	euros per US dollar - 0.8860 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Mexico	Mexican pesos per US dollar - 10.789 (2003), 9.656 (2002), 9.3423 (2001), 9.4556 (2000), 9.5604 (1999)
Micronesia, Federated States of	the US dollar is used
Moldova	lei per US dollar - 13.9449 (2003), 13.5705 (2002), 12.8651 (2001), 12.4342 (2000), 10.5158 (1999)
Monaco	euros per US dollar - 0.8860 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Mongolia	togrogs/tugriks per US dollar - 1,171 (2003), 1,110.31 (2002), 1,097.7 (2001), 1,076.67 (2000), 1,021.87 (1999)
Montserrat	East Caribbean dollars per US dollar - 2.7000 (fixed rate since 1976)
Morocco	Moroccan dirhams per US dollar - 9.5744 (2003), 11.0206 (2002), 11.303 (2001), 10.6256 (2000), 9.8044 (1999)
Mozambique	meticais per US dollar - 23,782.6 (2003), 23,678 (2002), 20,709.5 (2001), 15,447.1 (2000), 13,028.6 (1999); note - effective October 2000, the exchange rate is determined as the weighted average of buying and selling exchange rates of all transactions of commercial banks and stock exchanges with the public
Namibia	Namibian dollars per US dollar - 7.5648 (2003), 10.5407 (2002), 8.6092 (2001), 6.9398 (2000), 6.1095 (1999)
Nauru	Australian dollars per US dollar - 1.5419 (2003), 1.7611 (2002), 1.9320 (2001), 1.7173 (2000), 1.5497 (1999)
Nepal	Nepalese rupees per US dollar - 76.1414 (2003), 77.8766 (2002), 74.9492 (2001), 71.0938 (2000), 68.2394 (1999)
Netherlands	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Netherlands Antilles	Netherlands Antillean guilders per US dollar - 1.79 (2003), 1.79 (2002), 1.79 (2001), 1.79 (2000), 1.79 (1999)

New Caledonia	Comptoirs Francais du Pacifique francs (XPF) per US dollar - 105.74 (2003), 126.72 (2002), 133.26 (2001), 129.44 (2000), 111.93 (1999)
New Zealand	New Zealand dollars per US dollar - 1.7229 (2003), 2.1622 (2002), 2.3788 (2001), 2.2012 (2000), 1.8896 (1999)
Nicaragua	gold cordobas per US dollar - 14.2513 (2003), 14.2513 (2002), 13.3719 (2001), 12.6844 (2000), 11.8092 (1999)
Niger	Communaute Financiere Africaine francs (XOF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
Nigeria	nairas per US dollar - 129.222 (2003), 120.578 (2002), 111.231 (2001), 101.697 (2000), 92.3381 (1999)
Niue	New Zealand dollars per US dollar - 1.7229 (2003), 2.1620 (2002), 2.3776 (2001), 2.1863 (2000), 1.8886 (1999)
Norfolk Island	Australian dollars per US dollar - 1.5419 (2003), 1.8406 (2002), 1.9320 (2001), 1.7173 (2000), 1.5497 (1999)
Northern Mariana Islands	the US dollar is used
Norway	Norwegian kroner per US dollar - 7.0802 (2003), 7.9838 (2002), 8.9917 (2001), 8.8018 (2000), 7.7992 (1999)
Oman	Omani rials per US dollar - 0.3845 (2003), 0.3845 (2002), 0.3845 (2001), 0.3845 (2000), 0.3845 (1999)
Pakistan	Pakistani rupees per US dollar - 57.752 (2003), 59.7238 (2002), 61.9272 (2001), 53.6482 (2000), 49.1183 (1999)
Palau	the US dollar is used
Panama	balboas per US dollar - 1 (2003), 1 (2002), 1 (2001), 1 (2000), 1 (1999)
Papua New Guinea	kina per US dollar - 3.5635 (2003), 3.8952 (2002), 3.3887 (2001), 2.7822 (2000), 2.5708 (1999)
Paraguay	guarani per US dollar - 6,424.34 (2003), 5,716.26 (2002), 4,105.92 (2001), 3,486.35 (2000), 3,119.07 (1999)
Peru	nuevo sol per US dollar - 3.4785 (2003), 3.5165 (2002), 3.5068 (2001), 3.49 (2000), 3.3833 (1999)
Philippines	Philippine pesos per US dollar - 54.2033 (2003), 51.6036 (2002), 50.9926 (2001), 44.1922 (2000), 39.089 (1999)
Pitcairn Islands	New Zealand dollars per US dollar - 1.7229 (2003), 2.162 (2002), 2.3776 (2001), 2.1863 (2000), 1.8886 (1999)
Poland	zlotych per US dollar - 3.8891 (2003), 4.08 (2002), 4.0939 (2001), 4.3461 (2000), 3.9671 (1999) note: zlotych is the plural form of zloty
Portugal	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
Puerto Rico	the US dollar is used
Qatar	Qatari rials per US dollar - 3.64 (2003), 3.64 (2002), 3.64 (2001), 3.64 (2000), 3.64 (1999)

Reunion	euros per US dollar - 0.886 (2003), 1.0626 (2002), [illegible] (2001), 1.0854 (2000), 0.9386 (1999)
Romania	lei per US dollar - 33,200.1 (2003), 33,055.4 (2002), 29,060.8 (2001), 21,708.7 (2000), 15,332.8 (1999)
Russia	Russian rubles per US dollar - 30.692 (2003), 31.3485 (2002), 29.1685 (2001), 28.1292 (2000), 24.6199 (1999) note: the post-1 January 1998 ruble is equal to 1,000 of the pre-1 January 1998 rubles
Rwanda	Rwandan francs per US dollar - 537.658 (2003), 476.327 (2002), 442.801 (2001), 389.696 (2000), 333.942 (1999)
Saint Helena	Saint Helenian pounds per US dollar - 0.6661 (2002), 0.6944 (2001), 0.6596 (2000), 0.6180 (1999), 0.6037 (1998)
Saint Kitts and Nevis	East Caribbean dollars per US dollar - 2.7 (2003), 2.7 (2002), 2.7 (2001), 2.7 (2000), 2.7 (1999)
Saint Lucia	East Caribbean dollars per US dollar - 2.7 (2003), 2.7 (2002), 2.7 (2001), 2.7 (2000), 2.7 (1999)
Saint Pierre and Miquelon	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.0626 (2001), 1.08540 (2000), 0.93863 (1999)
Saint Vincent and the Grenadines	East Caribbean dollars per US dollar - 2.7 (2003), 2.7 (2002), 2.7 (2001), 2.7 (2000), 2.7 (1999)
Samoa	tala per US dollar - 2.9732 (2003), 3.3763 (2002), 3.478 (2001), 3.2864 (2000), 3.0132 (1999)
San Marino	euros per US dollar - 0.886 (2003), 1.0626 (2002), [illegible] (2001), 1.0854 (2000), 0.9386 (1999)
Sao Tome and Principe	dobras per US dollar - 9,347.58 (2003), 9,088.32 (2002), 8,842.11 (2001), 7,978.17 (2000), 7,118.96 (1999)
Saudi Arabia	Saudi riyals per US dollar - 3.745 (2003), 3.745 (2002), 3.745 (2001), 3.745 (2000), 3.745 (1999)
Senegal	Communaute Financiere Africaine francs (XOF) per US dollar - 581.2 (2003), 696.988 (2002), 733.039 (2001), 711.976 (2000), 615.699 (1999)
Serbia and Montenegro	new Yugoslav dinars per US dollar - official rate: 65 (2002)
Seychelles	Seychelles rupees per US dollar - 5.4007 (2003), 5.48 (2002), 5.8575 (2001), 5.7138 (2000), 5.3426 (1999)
Sierra Leone	leones per US dollar - 2,347.94 (2003), 2,099.03 (2002), 1,986.15 (2001), 2,092.12 (2000), 1,804.19 (1999)
Singapore	Singapore dollars per US dollar - 1.7422 (2003), 1.7906 (2002), 1.7917 (2001), 1.724 (2000), 1.695 (1999)
Slovakia	koruny per US dollar - 36.7729 (2003), 45.3267 (2002), 48.3548 (2001), 46.0352 (2000), 41.3628 (1999)
Slovenia	tolars per US dollar - 207.099 (2003), 240.248 (2002), 242.749 (2001), 222.656 (2000), 181.769 (1999)
Solomon Islands	Solomon Islands dollars per US dollar - NA (2003), 6.7488 (2002), 5.278 (2001), 5.0889 (2000), 4.8381 (1999)

Somalia	Somali shillings per US dollar - 11,000 (November 2000), 2,620 (January 1999), 7,500 (November 1997 est.), 7,000 (January 1996 est.), 5,000 (1 January 1995) *note:* the Republic of Somaliland, a self-declared independent country not recognized by any foreign government, issues its own currency, the Somaliland shilling
[illegible]	[illegible]
Spain	euros per US dollar - 0.886 (2003), 1.0626 (2002), 1.1175 (2001), 1.0854 (2000), 0.9386 (1999)
[illegible]	[illegible]
Sudan	Sudanese dinars per US dollar - 260.983 (2003), 263.306 (2002), 258.702 (2001), 257.122 (2000), 252.55 (1999)
[illegible]	[illegible]
Svalbard	Norwegian kroner per US dollar - 7.0802 (2003), 7.9838 (2002), 8.9917 (2001), 8.8018 (2000), 7.7992 (1999)
[illegible]	[illegible]
Sweden	Swedish kronor per US dollar - 8.0853 (2003), 9.7371 (2002), 10.3291 (2001), 9.1622 (2000), 8.2624 (1999)
[illegible]	[illegible]
Syria	Syrian pounds per US dollar - (Official rate): 11.225 (2003), 11.225 (2002), 11.225 (2001), 11.225 (2000), 11.225 (1999), (Free market rate): 49.65 (2001), 49.4 (2000), 51.7 (1999)
[illegible]	[illegible]
Tajikistan	Tajikistani somoni per US dollar - 3.0614 (2003), 2.7641 (2002), 2.3722 (2001), 2.0763 (2000), 1.2378 (1999) *note:* the new unit of exchange was introduced on 30 October 2000, with one somoni equal to 1,000 of the old Tajikistani rubles
[illegible]	[illegible]
Thailand	baht per US dollar - 41.4846 (2003), 42.9601 (2002), 44.4319 (2001), 40.1118 (2000), 37.8137 (1999)
[illegible]	[illegible]
Tokelau	New Zealand dollars per US dollar - 1.7229 (2003), 2.154 (2002), 2.3776 (2001), 2.1863 (2000), 1.8886 (1999)
[illegible]	[illegible]

Trinidad and Tobago	Trinidad and Tobago dollars per US dollar - 6.2929 (2003), 6.2487 (2002), 6.2332 (2001), 6.2998 (2000), 6.2989 (1999)
Tunisia	Tunisian dinars per US dollar - 1.2885 (2003), 1.4217 (2002), 1.4987 (2001), 1.3707 (2000), 1.3618 (1999)
Turkey	Turkish liras per US dollar - NA (2003), 1,507,230 (2002), 1,225,590 (2001), 625,218 (2000), 418,783 (1999), 151,865 (1997)
Turkmenistan	Turkmen manats per US dollar - 5,200 (2003), 5,200 (2002), 5,200 (2001), 5,200 (2000), 5,200 (1999) note - the official exchange rate has not varied for the last six years; the unofficial rate has fluctuated slightly hovering around 24,000 manats to the dollar
Turks and Caicos Islands	the US dollar is used
Tuvalu	Tuvaluan dollar, or Australian dollars per US dollar - 1.5419 (2003), 1.9166 (2002), 1.9262 (2001), 1.7273 (2000), 1.5492 (1999)
Uganda	Ugandan shillings per US dollar - 1,963.72 (2003), 1,797.55 (2002), 1,755.66 (2001), 1,644.48 (2000), 1,454.83 (1999)
Ukraine	hryvnia per US dollar - 5.3327 (2003), 5.3206 (2002), 5.3222 (2001), 5.4462 (2000), 4.1300 (1999)
United Arab Emirates	Emirati dirhams per US dollar - 3.67 (2003), 3.6725 (2002), 3.6725 (2001), 3.6725 (2000), 3.6725 (1999)
United Kingdom	British pounds per US dollar - 0.6175 (2003), 0.6692 (2002), 0.6947 (2001), 0.6509 (2000), 0.6181 (1999)
United States	British pounds per US dollar - 0.6139 (2003), 0.6661 (2002), 0.6944 (2001), 0.6596 (2000), 0.6180 (1999), Canadian dollars per US dollar - 1.4045 (2003), 1.5693 (2002), 1.5488 (2001), 1.4851 (2000), 1.4857 (1999), Japanese yen per US dollar - 116.08 (2003), 125.39 (2002), 121.53 (2001), 107.77 (2000), 113.91 (1999), euros per US dollar - 0.8866 (2003), 1.0626 (2002), 1.1175 (2001), 1.08540 (2000), 0.93863 (1999)
Uruguay	Uruguayan pesos per US dollar - 28.209 (2003), 21.257 (2002), 13.269 (2001), 12.999 (2000), 11.3893 (1999)
Uzbekistan	Uzbekistani sums per US dollar - 115.9 (2003), 125.3 (2002), NA (2001), 236.608 (2000), 124.625 (1999)
Vanuatu	vatu per US dollar - 122.189 (2003), 139.198 (2002), 175.312 (2001), 133.615 (2000), 129.075 (1999)
Venezuela	bolivares per US dollar - 1,607.79 (2003), 1,160.95 (2002), 723.666 (2001), 679.96 (2000), 605.717 (1999)
Vietnam	dong per US dollar - 15,279.5 (2003), 15,294.5 (2002), 14,776.2 (2001), 14,167.7 (2000), 13,943.2 (1999)
Virgin Islands	the US dollar is used
Wallis and Futuna	comptoirs Francais du Pacifique francs (CFP) per US dollar - 105.73 (2003), 125.72 (2002), 133.76 (2001), 129.43 (2000), 114.98 (1999), 107.35 (1998)
West Bank	new Israeli shekels per US dollar - 4.5541 (2003), 4.7378 (2002), 4.2057 (2001), 4.0773 (2000), 4.1397 (1999); Jordanian dinars per US dollar - fixed rate of 0.7090 (from 1996)

Yemen	Yemeni rials per US dollar - NA (2003), 175.625 (2002), 168.672 (2001), 161.718 (2000), 155.718 (1999)
Zimbabwe	Zimbabwean dollars per US dollar - NA (2003), 55.0358 (2002), 55.0521 (2001), 44.4179 (2000), 38.3012 (1999); note - these are official exchange rates, non-official rates vary significantly

This page was last updated on 5 October, 2004

Attachment 6

SUMMARY OUTPUT, 55 Countries

Regression Statistics	
Multiple R	0.9549
R Square	0.9118
Adjusted R Square	0.9101
Standard Error	1.7788
Observations	55

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1733.0649	1733.06	547.723	1.30E-29
Residual	53	167.6987	3.16		
Total	54	1900.7636			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.36199	0.329653	1.098	0.277	-0.299	1.023	-0.299	1.023
X Variable 1	0.000504	0.000022	23.403	0.000	0.000	0.001	0.000	0.001

SUMMARY OUTPUT, 77 Countries

Regression Statistics	
Multiple R	0.94198
R Square	0.88732
Adjusted R Square	0.88582
Standard Error	2.00321
Observations	77

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2369.9423	2369.942	590.5881	2.70893E-37
Residual	75	300.9639	4.012851		
Total	76	2670.9061			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.044730	0.299901	0.14915	0.88184	-0.55270	0.64216	-0.5527	0.6422
X Variable 1	0.0005331	0.000022	24.30202	0.00000	0.00049	0.00058	0.0005	0.0006

Attachment 7

MACMILLAN SERIES IN ECONOMICS
Lawrence R. Klein, Consulting Editor

Jan Kmenta
PROFESSOR OF ECONOMICS
MICHIGAN STATE UNIVERSITY

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pairs of observations. This can be done by substituting $\hat{\xi}_i$ for the missing values of X in (9.46a). The result is

$$\text{(9.48)} \qquad \text{Est.}\left[\frac{\text{Var}(\hat{\beta}_c)}{\text{Var}(\hat{\beta}_y)}\right] = 1 + \frac{\sum_{0x}(\hat{\xi}_i - \bar{\hat{\xi}})^2 + (n_x m_x/n)(\bar{X}_x - \bar{\hat{\xi}})^2}{\sum_x (X_i - \bar{X}_x)^2}.$$

The estimator $\hat{\xi}_i$ has the desirable asymptotic properties possessed by other maximum likelihood estimators, provided the number of missing values of X does not grow with sample size.

EXAMPLE In the example in Section 7–3, we were concerned with estimating the coefficients of a linear relation between price (X) and quantity or oranges sold (Y) in a given supermarket over twelve consecutive days. The observations were:

X:	100	90	80	70	70	70	70	65	60	60	55	50
Y:	55	70	90	100	90	105	80	110	125	115	130	130

The results of the relevant calculations were as follows:

$$\bar{X} = 70,$$
$$\sum (X_i - \bar{X})^2 = 2250,$$
$$\hat{\alpha} = 210.460,$$
$$\hat{\beta} = -1.578.$$

Suppose now that, in addition to the 12 pairs of observations, we also had the information that the quantity sold on the thirteenth day was 37 pounds but that no price has been reported. That is, $Y_{13} = 37$. This observation has been discarded. We wish to know how much efficiency we would have gained in estimating β if X_{13} had been known. First, we use (9.47) to estimate X_{13} as

$$\hat{\xi}_{13} = \frac{Y_{13} - \hat{\alpha}}{\hat{\beta}} = \frac{37 - 210.460}{-1.578} = 110.$$

Then, the estimated ratio of $\text{Var}(\hat{\beta}_c)$ to $\text{Var}(\hat{\beta}_y)$ is

$$1 + \frac{0 + [(12 \times 1)/13](70 - 110)^2}{2250} = 1.6564,$$

which means that the loss of efficiency is estimated to be 65.64%.

An alternative way of using the information contained in the incomplete pairs of observations is to fill in the gaps by using some approximations of the missing values of X. This approach is probably fairly common in practice. The approximations are obtained by, e.g., interpolation from the observed values of X, or by reference to some other variable Z that is correlated with X. However, if we replace the missing values of X with some approximations, we introduce errors

of measurement into the values of the explanatory variable and, as a consequence, obtain inconsistent estimates of the regression coefficients. This was explained in detail in Section 9–1. How serious this inconsistency will be depends, of course, on the extent of the errors of approximation. In fact, what is being done in this case is giving up consistency in the hope of reducing the variance of the estimator. If we are reasonably certain that the errors of approximation are small while the gain in efficiency is potentially large, this may be a rational procedure. Otherwise, the trade may result in a loss.

Stochastic Explanatory Variable

Let us now turn to the case where X is a stochastic variable that is distributed independently of the disturbance. The formulas for the least squares estimators of the regression coefficients based on complete pairs of observations remain unchanged, and so do the formulas for their variances—except that the latter have to be interpreted as conditional upon the given set of available values of X. Each pair of the observed values of X and Y now comes from a bivariate probability distribution. Our problem is to estimate the regression coefficients when some of the pairs of observations are incomplete. Other than disregarding the incomplete pairs, we may try to fill in the gaps and *then* apply the least squares estimation. One way of filling the gaps is to ask which value of X, or of Y, would one expect to observe *before* making the observation. Commonly, this would be the mathematical expectation of X or of Y, i.e., their means. Since the means are unknown, we can use the available sample means as estimators. That is, we may complete the missing observations in the incomplete pairs by using the available sample means of the respective variables. The least squares estimators of α and β obtained from the sample completed in this way are called *zero order regression estimators.*[7] They are defined as follows:

$$\text{(9.49)} \qquad \hat{\beta}_0 = \frac{\sum_c (X_i - \bar{X}_x)(Y_i - \bar{Y}_y) + \sum_{0x}(\bar{X}_x - \bar{X}_x)(Y_i - \bar{Y}_y)}{\sum_c (X_i - \bar{X}_x)^2 + \sum_{0x}(\bar{X}_x - \bar{X}_x)^2 + \sum_{0y}(X_i - \bar{X}_x)^2}$$
$$+ \frac{\sum_{0y}(X_i - \bar{X}_x)(\bar{Y}_y - \bar{Y}_y)}{\sum_c (X_i - \bar{X}_x)^2 + \sum_{0x}(\bar{X}_x - \bar{X}_x)^2 + \sum_{0y}(X_i - \bar{X}_x)^2}$$
$$= \frac{\sum_c (X_i - \bar{X}_x)(Y_i - \bar{Y}_y)}{\sum_x (X_i - \bar{X}_x)^2}$$

and

$$\text{(9.50)} \qquad \hat{\alpha}_0 = \bar{Y}_y - \hat{\beta}_0 \bar{X}_x.$$

[7] See A. A. Afifi and R. M. Elashoff, "Missing Observations in Multivariate Statistics II. Point Estimation in Simple Linear Regression," *Journal of the American Statistical Association*, Vol. 62, March 1967, pp. 10–29.

In order to see whether these estimators are unbiased, we substitute

$$Y_i - \bar{Y}_y = \beta(X_i - \bar{X}_y) + (\varepsilon_i - \bar{\varepsilon}_y)$$

into (9.49) to get

$$\hat{\beta}_0 = \frac{\sum_c (X_i - \bar{X}_x)[\beta(X_i - \bar{X}_y) + (\varepsilon_i - \bar{\varepsilon}_y)]}{\sum_x (X_i - \bar{X}_x)^2}.$$

The mathematical expectation of $\hat{\beta}_0$, conditional upon the observed values of X, is

$$E(\hat{\beta}_0) = \frac{\beta \sum_c (X_i - \bar{X}_c + \bar{X}_c - \bar{X}_x)[X_i - \bar{X}_c + \bar{X}_c - E(\bar{Y}_y)]}{\sum_x (X_i - \bar{X}_x)^2}$$

$$= \frac{\beta \sum_c (X_i - \bar{X}_c)^2 + n_c(\bar{X}_c - \bar{X}_x)[\bar{X}_x - E(\bar{Y}_y)]}{\sum_x (X_i - \bar{X}_x)^2}.$$

But $$E(\bar{Y}_y) = E\left[\frac{1}{n_y}\left(\sum_c X_i + \sum_{0x} X_i\right)\right] = \frac{1}{n_y}(n_c\bar{X}_c + m_x\mu_x),$$

where μ_x, which is the population mean of X, is used to replace $E(\bar{X}_{0x})$, since $\bar{X}_{0x}$ is not observed. Therefore,

$$E(\hat{\beta}_0) = \frac{\beta\left[\sum_c (X_i - X_c)^2 + (n_c m_x/n_y)(\bar{X}_c - \bar{X}_x)(\bar{X}_c - \mu_x)\right]}{\sum_x (X_i - \bar{X}_x)^2} \neq \beta.$$

The conclusion, then, is that the zero order regression estimator of β is, in general, *biased*. The same is true of the zero order regression estimator of α.

Before we leave the zero order regression method, let us consider some special cases. First, suppose that the values of X are all available and only some of the Y's are missing. In this case,

$$n_x = n,$$
$$n_y = n_c,$$
$$m_x = 0,$$
$$\bar{X}_{0x} = 0.$$

Then,

$$E(\hat{\beta}_0) = \beta \frac{\sum_c (X_i - \bar{X}_c)^2}{\sum_x (X_i - \bar{X}_x)^2},$$

so that, unless $\bar{X}_c = \bar{X}_x$, $\hat{\beta}_0$ is still biased. Alternatively, suppose that the values of Y are all available but some of the X's are missing. Then,

$$n_x = n_c,$$
$$n_y = n,$$
$$m_y = 0,$$
$$\bar{Y}_x = \bar{Y}_c,$$

and $$E(\hat{\beta}_0) = \frac{\beta \sum_c (X_i - \bar{X}_c)^2}{\sum_c (X_i - \bar{X}_c)^2} = \beta,$$

so that in this case the zero order regression estimator of β is unbiased. However, the variance of $\hat{\beta}_0$, conditional upon the observed X's, in this case is

$$\mathrm{Var}(\hat{\beta}_0) = E(\hat{\beta}_0 - \beta)^2 = E\left[\frac{\sum_x (X_i - \bar{X}_x)(\varepsilon_i - \bar{\varepsilon}_y)}{\sum_x (X_i - \bar{X}_x)^2}\right]^2 = \frac{\sigma^2}{\sum_x (X_i - \bar{X}_x)^2},$$

which is the same as the expression for $\mathrm{Var}(\hat{\beta}_c)$ given by (9.44). This means that we have nothing to gain in the way of efficiency by using $\hat{\beta}_0$ instead of $\hat{\beta}_c$.

The zero order regression method of estimation is based on the idea of replacing each of the missing values of X by $\bar{X}_x$, and each of the missing values of Y by $\bar{Y}_y$. An alternative idea is to replace the missing values of X by a parameter ξ, and the missing values of Y by a parameter η. Since each of the missing values of X is replaced by the same parameter ξ and each of the missing values of Y is replaced by the same parameter η, this procedure brings in only two additional unknown parameters, regardless of sample size and the number of missing values. The regression coefficients α and β can then be estimated simultaneously with ξ and η. This can be done by minimizing

$$\sum_c (Y_i - \alpha - \beta X_i)^2 + \sum_{0x} (Y_i - \alpha - \beta\xi)^2 + \sum_{0y} (\eta - \alpha - \beta X_i)^2$$

with respect to α, β, ξ, and η. The resulting estimators, known as *modified zero order regression estimators*,[8] are

(9.51) $$\hat{\beta}_m = \frac{\sum_c (X_i - \bar{X}_c)(Y_i - \bar{Y}_c)}{\sum_c (X_i - \bar{X}_c)^2 + \sum_{0y} (X_i - \bar{X}_{0y})^2}$$

and

(9.52) $$\hat{\alpha}_m = \bar{Y}_c - \hat{\beta}_m \bar{X}_c.$$

[8] *Ibid.*

The estimators of ξ and η, which are of only incidental interest, are

$$\hat{\xi} = \frac{\bar{Y}_{0x} - \hat{\alpha}_m}{\hat{\beta}_m}$$

and

$$\hat{\eta} = \hat{\alpha}_m + \hat{\beta}_m \bar{X}_{0y}.$$

Let us examine $\hat{\alpha}_m$ and $\hat{\beta}_m$ for unbiasedness. For $\hat{\beta}_m$ we have

$$\hat{\beta}_m = \frac{\beta \sum_c (X_i - \bar{X}_c)^2 + \sum_o (X_i - \bar{X}_c)(\varepsilon_i - \bar{\varepsilon}_c)}{\sum_c (X_i - \bar{X}_c)^2 + \sum_{0y} (X_i - \bar{X}_{0y})^2} \tag{9.51a}$$

and the mathematical expectation of $\hat{\beta}_m$, conditional upon the observed X's, is

$$E(\hat{\beta}_m) = \frac{\beta \sum_c (X_i - \bar{X}_c)^2}{\sum_c (X_i - \bar{X}_c)^2 + \sum_{0y} (X_i - \bar{X}_y)^2} \neq \beta.$$

This means that the modified zero order regression estimator of β is, in general, *biased*. The same is true of the modified zero order regression estimator of α.

Again, let us examine some special cases. First, suppose that all of the values of X are available and only some of the Y's are missing. In this case it is easy to show that formulas (9.51) and (9.52) remain the same, which means that we do not get any further ahead. Suppose, on the other hand, that all of the values of Y are available and only some of the X's are missing. In this case formulas (9.51) and (9.52) become the same as (9.42) and (9.43). This means that the estimators $\hat{\alpha}_m$ and $\hat{\beta}_m$ are exactly equal to the ordinary least squares estimators based on complete pairs of observations only.

Summary

To sum up, when we deal with samples in which some pairs of observations are incomplete, the information contained in the incomplete pairs is of relatively little use when estimating the regression coefficients. When X is nonstochastic, the information contained in the pairs for which only the Y's are given enables us to get an estimate of the loss of efficiency due to the fact that some of the X's are missing. If this loss is substantial, it may be worthwhile to go to the trouble of attempting to recover the missing values of X, or to find some good approximations for them. When X is stochastic and we use either the zero order regression method or its modified version, we get estimators that are generally biased. If only values of X are missing, both methods will lead to unbiased estimates of β, but these will be no more efficient than the ordinary least squares estimates based on complete pairs only. One redeeming feature of the estimators of the regression coefficients obtained by the zero order regression method or its modified version is the fact that when the correlation between X and Y is low, the mean square error of these estimators is less than that of the ordinary least squares estimators based on complete pairs.[9] Thus, under certain circumstances, either one of the former methods may be preferable to estimation from complete pairs only..

[9] For a proof and an elaboration of this statement, see *Ibid.*

EXERCISES

9-1. Assuming the "errors-in-variables" model, estimate the relationship between $\log(V/PL)$ and $\log(W/P)$ from the data for the furniture industry given in Table 9-1. Use the weighted regression method with $\lambda = 2$.

9-2. Suppose the income classes given in Table 9-2 in the text are combined as follows:

Income Class	Number of Observations (n_g)
Under 18	51
18 and under 22	44
22 and under 26	36
26 and under 30	26
30 and under 34	16
34 and over	8

Calculate the appropriate values of $\bar{X}_g$ and $\bar{Y}_g$ and use these to estimate the coefficients of

$$Y = \alpha + \beta X + \varepsilon$$

and their standard errors. Compare your results with those based on the information as originally given in Table 9-2.

9-3. Provide a derivation of formula (9-47).

9-4. Consider the following observations on X (price of oranges) and Y (quantity of oranges sold):

X	Y
100	55
90	70
80	90
70	100
70	90
70	105
70	80
65	110
60	125
60	115
55	130
50	130
—	130
—	140

EXPECTED WAGES OF SELECTED NON-MARKET ECONOMY COUNTRIES
2002 INCOME DATA
Revised September 2004

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EXPECTED 2002 WAGES OF SELECTED NME COUNTRIES

Country	2002 GNI per Capita, US$	Expected 2002 Wages, US$ per Hour
Armenia	$790	$0.86
Azerbaijan	$710	$0.82
Belarus	$1,360	$1.11
Estonia	$4,190	$2.34
Georgia	$650	$0.80
Kazakhstan	$1,520	$1.18
Kyrgyz Republic	$290	$0.64
Lithuania	$3,670	$2.12
Moldova	$460	$0.71
People's Republic of China	$960	$0.93
Romania	$1,870	$1.33
Russian Federation	$2,130	$1.44
Tajikistan	$180	$0.59
Turkmenistan	$950	$0.93
Ukraine	$780	$0.85
Uzbekistan	$310	$0.65
Vietnam	$430	$0.70

Wage Rate = (GNP per Capita * X *Coefficient*) + *Constant*

CALCULATION OF 2002 WAGES PER HOUR IN US DOLLARS

Country	Reported Wage Rate	Measuring *Currency*	Measuring *Unit*	Hours per Measuring *Unit*	Hourly Wages	Reporting Year	Inflator to 2002	In H W
Algeria	12,323.00	Dinars	month	192	64.18	1996	1.1912	
Argentina	4.29	Pesos	hour	1	4.29	2001	1.0000	
Australia	20.45	Dollars	hour	1	20.45	2002	1.0000	
Austria	2,046.00	Euros	month	192	10.66	2001	1.0000	
Belgium	11.00	Euros	hour	1	11.00	1999	1.0508	
Bolivia	1,120.00	Bolivianos	month	192	5.83	2000	1.0160	
Botswana	889.00	Pula	month	192	4.63	2002	1.0000	
Brazil	901.85	Reals	month	192	4.70	2002	1.0000	
Bulgaria	244.00	Lev	month	192	1.27	2002	1.0000	
Canada	19.10	Dollars	hour	1	19.10	2002	1.0000	
Chile	218,740.00	Pesos	month	192	1,139.27	2002	1.0000	
Colombia	353,590.00	Pesos	month	192	1,841.61	2002	1.0000	
Costa Rica	128,207.00	Colones	month	192	667.74	2001	1.0000	
Croatia	4,794.00	Kunas	month	192	24.97	2002	1.0000	
Ecuador	1.27	Dollars (US)	hour	1	1.27	2001	1.0000	
Egypt	136.00	Pounds	week	44	3.09	2001	1.0000	
El Salvador	9.29	Colones	hour	1	9.29	2001	1.0000	
Finland	10.66	Euros	hour	1	10.66	2002	1.0000	
France	1,563.00	Euros	month	192	8.14	2002	1.0000	
Germany	14.72	Euros	hour	1	14.72	2002	1.0000	
Greece	1,539.76	Drachmas	hour	1	1,539.76	1998	1.0941	
Guatemala	1,655.25	Quetzales	month	192	8.62	2000	1.0763	
India	1,280.80	Rupees	month	192	6.67	2000	1.0369	
Ireland	12.29	Euros	hour	1	12.29	2002	1.0000	
Israel	9,051.00	New Shekels	month	192	47.14	2001	1.0000	
Japan	296,400.00	Yen	month	192	1,543.75	2002	1.0000	
Jordan	185.00	Dinars	month	192	0.96	2001	1.0000	
Kenya	5,510.80	Shillings	month	192	28.70	1997	1.3124	
Korea	1,857,000.00	Won	month	192	9,671.88	2002	1.0000	
Malaysia	1,531.00	Ringgit	month	192	7.97	2001	1.0000	
Mauritius	6,155.00	Rupees	month	192	32.06	2002	1.0000	
Mexico	25.09	Pesos	hour	1	25.09	2002	1.0000	
Netherlands	15.62	Euros	hour	1	15.62	2000	1.0453	
New Zealand	18.00	Dollars	hour	1	18.00	2002	1.0000	
Nicaragua	13.46	Cordobas	hour	192	0.07	2002	1.0000	
Norway	25,991.00	Kroner	month	192	135.37	2002	1.0000	
Pakistan	2,980.97	Rupees	month	192	15.53	2000	1.0315	
Panama	1.80	Balboas	hour	1	1.80	2002	1.0000	

Paraguay	739,738.00	Guaranies	month	192	3,852.80	2002	1.0000	
Peru	28.07	Nuevos Soles	day	8	3.51	2002	1.0000	
Philippines	7,300.00	Pesos	month	192	38.02	2000	1.0612	
Poland	1,970.09	New Zlotys	month	192	10.26	2002	1.0000	
Singapore	3,154.00	Dollars	month	192	16.43	2002	1.0000	
Slovenia	196,220.00	Tolars	month	192	1,021.98	2002	1.0000	
South Africa	4,695.00	Rand	month	192	24.45	2001	1.0000	
Spain	9.47	Euro	hour	1	9.47	2002	1.0000	
Sri Lanka	31.93	Rupees	hour	1	31.93	2002	1.0000	
Sweden	118.20	Kronor	hour	1	118.20	2002	1.0000	
Switzerland	5,862.00	Francs	month	192	30.53	2000	1.0099	
Thailand	6,064.60	Baht	month	192	31.59	2001	1.0000	
Trinidad and Tobago	1,161.15	Dollars	week	44	26.39	2001	1.0000	
Turkey	2,162,800.00	Liras	hour	1	2,162,800.00	2000	1.5440	3,33
United Kingdom	11.02	Pounds	hour	1	11.02	2002	1.0000	
United States	15.30	Dollars	hour	1	15.30	2002	1.0000	
Zimbabwe	80.15	Dollars	hour	1	80.15	2001	1.0000	

CPI INFLATORS

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002
Algeria	56.809	73.726	87.497	92.514	97.093	99.662	100	104.226	105.704
Argentina	97.235	100.518	100.674	101.205	102.137	100.945	100	98.933	124.526
Australia	86.896	90.927	93.302	93.536	94.334	95.717	100	104.381	107.516
Austria	91.254	93.307	95.0269	96.286	97.157	97.704	100	102.66	104.518
Belgium	90.771	92.102	93.9984	95.528	96.44	97.519	100	102.474	104.157
Bolivia	66.997	73.625	83.001	86.91	93.579	95.601	100	101.596	102.534
Botswana	60.576	66.944	73.6942	80.12	85.457	92.08	100	106.559	115.119
Brazil	42.016	69.749	80.74	86.332	89.091	93.42	100	106.84	115.866
Bulgaria	1.79	2.901	6.429	74.47	88.375	90.849	100	107.361	113.599
Canada	89.839	91.7866	93.233	94.745	95.68	97.327	100	102.532	104.837
Chile	71.889	77.809	83.534	88.659	93.188	96.299	100	103.569	106.147
Colombia	40.391	48.857	58.7451	69.587	82.579	91.557	100	107.968	114.822
Costa Rica	44.725	55.096	64.751	73.318	81.871	90.096	100	111.227	121.418
Croatia	76.41	79.428	82.844	86.299	91.819	94.996	100	104.766	106.547
Ecuador	12.326	15.1473	18.839	24.612	33.497	50.996	100	137.678	154.866
Egypt	69.867	80.8661	86.678	90.6874	94.477	97.386	100	102.27	105.069
El Salvador	75.154	82.691	90.786	94.862	97.278	97.779	100	103.751	105.686
Finland	91.725	92.6289	93.2	94.314	95.633	96.742	100	102.566	104.183
France	92.505	94.15	96.041	97.194	97.8474	98.337	100	101.663	103.62
Germany	92.342	93.933	95.292	97.083	97.992	98.55	100	101.975	103.375
Greece	80.7262	87.941	95.1486	90.192	94.468	96.947	100	103.361	107.095

Guatemala	63.963	69.343	77.01	84.121	89.983	94.36	100	107.634	116.276
India	63.02	69.463	75.699	81.122	91.856	96.145	100	103.685	108.239
Ireland	86.031	88.199	89.736	90.993	93.204	94.729	100	104.872	109.768
Israel	66.789	73.498	81.783	89.145	93.985	98.872	100	101.1	106.8
Japan	98.642	98.517	98.65	100.358	101.017	100.675	100	99.267	98.358
Jordan	85.273	87.28	92.954	95.7778	98.739	99.338	100	101.788	103.644
Kenya	65.443	66.46	72.351	80.5718	85.988	90.926	100	105.739	107.812
Korea	78.8	82.3	86.4	90.2	97	97.8	100	104.1	106.9
Malaysia	82.8482	85.707	88.697	91.059	95.858	98.489	100	101.417	103.25
Mauritius	69.633	73.831	78.668	84.0437	89.768	95.97	100	105.389	112.472
Mexico	30.88	41.687	56.016	67.573	78.336	91.328	100	106.363	111.714
Netherlands	87.944	89.7868	91.598	93.573	95.428	97.538	100	104.534	108.159
New Zealand	89.7155	93.071	95.21	96.329	97.569	97.447	100	102.626	105.373
Nicaragua	52.7252	58.491	65.287	71.31	80.607	89.649	100	107.358	111.645
Norway	87.108	89.248	90.371	92.704	94.7946	97.006	100	103.017	104.344
Pakistan	62.714	70.456	77.764	86.611	92.005	95.816	100	103.148	106.542
Panama	93.391	94.319	95.504	96.769	97.31	98.523	100	100.307	101.316
Paraguay	57.849	65.599	72.031	77.065	85.954	91.757	100	107.268	118.54
Peru	64.544	71.726	80.002	86.852	93.147	96.379	100	101.977	102.173
Philippines	65.66	70.918	77.32	81.845	89.801	95.825	100	106.123	109.242
Poland	42.868	54.927	65.812	75.738	84.618	90.803	100	105.506	107.491
Singapore	94.022	95.639	96.962	98.905	98.6402	98.657	100	100.997	100.602
Slovenia	59.4027	67.4	74	80.2	86.6	91.9	100	108.5	116.6
South Africa	66.647	72.433	77.7593	84.445	90.2551	94.932	100	105.702	115.388
Spain	83.951	87.876	91.003	92.796	94.498	96.681	100	103.591	106.768
Sri Lanka	60.138	64.753	75.072	82.259	89.962	94.183	100	114.158	125.062
Sweden	95.399	97.738	98.275	98.926	98.658	99.118	100	102.416	104.64
Switzerland	94.66	96.362	97.151	97.658	97.674	98.48	100	100.988	101.636
Thailand	78.801	81.2551	86.025	90.828	98.167	98.47	100	101.661	102.275
Trinidad and Tobago	73.429	82.493	85.302	88.395	93.356	96.567	100	105.537	109.905
Turkey	3.3654	6.331	11.417	21.205	39.154	64.551	100	154.4	223.825
United Kingdom	84.665	87.553	89.697	92.506	95.668	97.156	100	101.821	103.485
United States	86.077	88.492	91.086	93.215	94.662	96.733	100	102.826	104.457
Zimbabwe	17.371	21.295	25.86	30.705	40.475	64.16	100	176.715	424.256

EXCHANGE RATES

Country	2002
Algeria	79.723
Argentina	3.32
Australia	1.76

Austria	0.954
Belgium	0.954
Bolivia	7.49
Botswana	5.46
Brazil	3.53
Bulgaria	1.885
Canada	1.58
Chile	712.38
Colombia	2864.79
Costa Rica	378.72
Croatia	7.146
Ecuador	1 ^
Egypt	4.5
El Salvador	8.75
Finland	0.954
France	0.954
Germany	0.954
Greece	325.124 *
Guatemala	7.807
India	48.03
Ireland	0.954
Israel	4.73
Japan	119.9
Jordan	0.709
Kenya	77.072
Korea	1186.2
Malaysia	3.8
Mauritius	29.197
Mexico	13.313
Netherlands	0.954
New Zealand	1.899
Nicaragua	14.67
Norway	6.966
Pakistan	58.534
Panama	1
Paraguay	7103.59
Peru	3.514
Philippines	53.096
Poland	3.839
Singapore	1.737
Slovenia	221.071
South Africa	8.64
Spain	0.954
Sri Lanka	96.725
Sweden	8.625

Switzerland	1.387
Thailand	43.152
Trinidad and Tobago	6.3
Turkey	1643700
United Kingdom	0.62
United States	1
Zimbabwe	55.036

NOTES:

* 1 Euro = 340.750 Drachmas, as of Jan. 17, 2000

^ Ecuador's monthly wage was listed in U.S. dollars per month (entered "1" in table above)

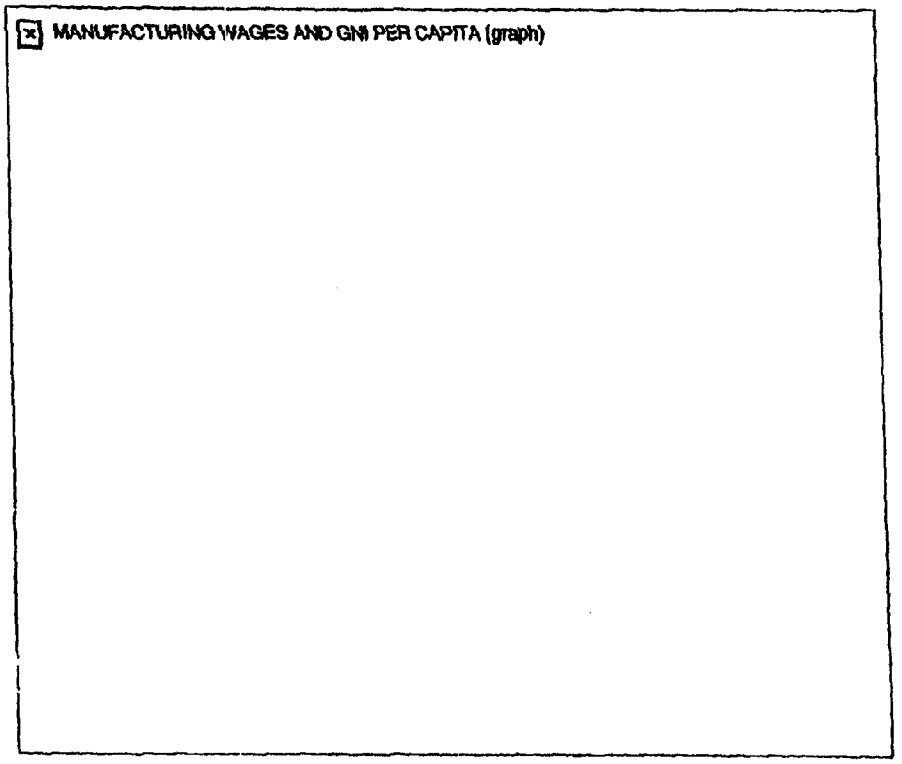
WAGES AND GNI PER CAPITA IN US DOLLARS

Country	2002 GNI per Capita, US$	Expected 2002 Wages, US$ per Hour
Algeria	1720	0.96
Argentina	4220	1.29
Australia	19530	11.62
Austria	23860	11.17
Belgium	22940	12.12
Bolivia	900	0.79
Botswana	3010	0.85
Brazil	2830	1.33
Bulgaria	1770	0.67
Canada	22390	12.09
Chile	4250	1.60
Colombia	1820	0.64
Costa Rica	4070	1.76
Croatia	4540	3.49
Ecuador	1490	1.27
Egypt	1470	0.69
El Salvador	2110	1.06
Finland	23890	11.17
France	22240	8.53
Germany	22740	15.43
Greece	11660	5.18
Guatemala	1760	1.19
India	470	0.14
Ireland	23030	12.88
Israel	16020	9.97
Japan	34010	12.88
Jordan	1760	1.36
Kenya	360	0.49
Korea	9930	8.15
Malaysia	3540	2.10

Mauritius	3860	1.10
Mexico	5920	1.88
Netherlands	23390	17.11
New Zealand	13260	9.48
Nicaragua	710	0.00
Norway	38730	19.43
Pakistan	420	0.27
Panama	4020	1.80
Paraguay	1170	0.54
Peru	2020	1.00
Philippines	1030	0.76
Poland	4570	2.67
Singapore	20690	9.46
Slovenia	10370	4.62
South Africa	2500	2.83
Spain	14580	9.93
Sri Lanka	850	0.33
Sweden	25970	13.39
Switzerland	36170	22.23
Thailand	2000	0.73
Trinidad and Tobago	6750	4.19
Turkey	2490	2.03
United Kingdom	25510	17.77
United States	35400	15.30
Zimbabwe	735	* 1.48

NOTES:

* GNI per capita for Zimbabwe was estimated for Year 2002 by World Development Indicators, The World Bank.



Notes:

General:
The selection of countries was based upon the availability of wage data as reported in the Yearbook of Labour Statistics 2003, International Labour Organisation, (Geneva: 2003); and GNP data as reported in World Development Indicators, The World Bank, (Washington, DC: 2004).

Wages:
Wage rates are reported in the Yearbook of Labour Statistics 2003, ILO, (Geneva: 2003), Chapter 5B: Wages in Manufacturing. The years of the reported wage rates range from 1997 to 2003. Wages reported prior to 1996 and after 2002 are excluded from the analysis.

Wages reported by ILO are in most cases based on cash payments received from employers on a regular basis. In addition to remuneration for normal working hours, cost-of-living allowances and other regularly paid allowances are included in wages. Wages do not include remuneration for overtime, bonuses and gratuities, family allowances, or other social security payments made by the employer. See Yearbook of Labour Statistics 2003 for further discussion of wage data.

Where monthly or daily wages are given, hourly wages are calculated assuming 24 working days per month, 5.5 working days per week, 8 working hours per day.

Inflator:
Wages are inflated, where the base year is not 2002, using consumer price index data reported in International Financial Statistics Online Service, International Monetary Fund, (http://www.imf.org, Downloaded July 9, 2004). The inflator rate is calculated by dividing the consumer price index for 2002 by the consumer price index for the year the wage rate was reported.

Exchange rates:
Exchange rates are expressed as foreign currency per one U.S. dollar. For the majority of the countries in this analysis, the exchange rates used are as reported in International Financial Statistics Online Service.

Wages for Austria, Belgium, Ireland and the Netherlands were reported in schillings, Belgian francs, pounds and guilders, respectively. These wages were converted to euros using the European Central Bank's conversion rates made effective on January 1, 1999 (http://www.ecb.int). No wage data used for these countries was reported before 1999.

National Income:
GNI per capita is reported in World Development Indicators, The World Bank, (Washington, DC: 2004). See World Development Indicators for further information.

World Development Indicators did not have a GNI per capita figure available for Zimbabwe so it supplied an estimate for 2002.

Analysis:
Regression based on ordinary least squares method.

Exhibit 2

Report of Dr. Tapan K. Nayak, Ph.D.

Department of Commerce NME Wage Estimation

I Introduction

I have been retained by Grunfield, Desiderio, Lebowitz, Silverman and Klestadt LLP to provide an expert opinion on the appropriateness of the statistical regression used by the Department of Commerce (DOC) to estimate non-market-economy (NME) wage rates using market economies' per capita Gross National Income (GNI) and hourly labor rates. My professional background is included is appended to this report.

Regression analysis is a statistical methodology for relating a variable of interest, called the dependent (or response) variable, to one or more independent (or predictor) variables. The objective is to use the observed data to build a regression model, or prediction equation, which can then be used to describe, predict, or control the dependent variable on the basis of the independent variable(s). For example, a company may use regression analysis to model the relationship between sales and advertising expenditure, and then use that to decide how much they should spend for advertising.

A simple linear regression model relates a response variable (Y) and a single independent variable (X) by postulating that the mean value of the response variable, E(Y), varies with the value of the independent variable following an unspecified linear pattern, i.e.,

$$E(Y) = \beta_0 + \beta_1 X.$$

The values of β_0 and β_1, called the regression parameters, are estimated from the observed data. The actual value of Y would be different from the mean value E(Y), and the data points would scatter around the regression line.

Many textbooks[1] present the specific methods and formulas for calculating the estimates, making predictions or model evaluation using a regression analysis.

II. Application of Regression Analysis by DOC for Estimating NME Wage Rates

The Department of Commerce applies a regression analysis to estimate the wage rates of NME countries in antidumping duty investigations. For its proposed 2003 calculation, DOC modeled wage rate (Y) as a function of per capita GNI (X) using a simple linear regression model. In other words, DOC is using the observed relationship between GNI and wage rates in countries throughout the world to predict or estimate the wage rates in NME countries based on their respective GNI. The model parameters were estimated using hourly wages and per capita GNI of 52 market economy countries, and the method of ordinary least squares.[2] The wage rates for the NME country is then estimated by plugging-in its per capita GNI in the estimated regression equation, as described above.

III. Bias Due to Arbitrary Data Selection by DOC

For estimating the regression equation, DOC used 52 countries whose wage data are available in the Yearbook of Labor Statistics 2004, published by the International Labor Organization, and whose GNI data was available from the 2005 World

[1] See, e.g., *Applied Linear Regression Models*, M. H. Kunter, C. J. Nachtsheim, and J. Neter, 2004, and *Applied Regression Analysis*, N. R. Draper, and H. Smith, 1998.
[2] See discussion below on ordinary least squares.

Development Indicators, published by the World Bank. However, the DOC ignored, without an explanation, many other countries whose GNI and wage data are also contained in the same sources.

As is well known, statistical estimates are not expected to be fully accurate, and they change from sample to sample. There are two aspects of estimation errors. One is "bias", which is under or over-estimation "on the average." The other one is variation of the estimates from sample to sample, which is measured technically by "standard error." The total error is often measured by "mean squared error", which is the sum of the squares of bias and standard error.

In general, the least square method (used by DOC) yields unbiased estimates (i.e., no systematic under or over-estimation) of the regression parameters provided that the assumed model is correct and that the data being utilized has been selected by a random sample. In addition, the standard errors decrease as sample size increases. The Department of Commerce also recognizes the fact that estimates based on a larger sample size are better, as evidenced by their statement: "In general, we believe that more data is better than less data, and that averaging of multiple data points (or regression analysis) should lead to more accurate results in valuing any factor production."[3] Thus, one would expect more reliable estimates if more countries are included in the regression analysis for estimating NME wage rates.

Therefore, the most serious concern about the DOC analysis stems from the fact that the Department excluded 14 countries that have data that meets the Department's selection criteria (i.e. countries with wage data that is not more than 6 years old, and for which there is consumer price indexes available) and whose data is available from the

[3] Notice of Final Rule Making, 62 Fed. Reg. 27296 at 27,367 (May 19, 1997).

same sources already being used by DOC. These market economy countries that the DOC excluded were not excluded randomly, as these countries have previously been excluded.[4] Given that the Department has not excluded these countries through a random sampling, the DOC results are biased.

More importantly, sampling of the available data is employed when dealing with large amounts of data points. Given the small size of the data set available for this regression analysis, random sampling will not result in a more accurate representation of the relationship between wages and GNI. Furthermore, given that the universe of available data would be complete with the inclusion of these 14 additional countries, there is no valid reason for the Department to exclude these countries' data. Thus, DOC should revise its 2003 wage rate estimates for NME countries by recalculating its regression equation including the 14 countries excluded for no reason.

[4] This has been the case for at least the last four years.

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B.Sc. (Honors in Statistics), University of Calcutta, Calcutta, India, 1976.
M. Stat., Indian Statistical Institute, Calcutta, India, 1979.
Ph.D., University of Pittsburgh, Pittsburgh, U.S.A., 1983.
Ph.D. Dissertation, written under the supervision of Professor C. R. Rao, entitled, "Applications of Entropy Functions in Measurement and Analysis of Diversity."

Awards and Honors:

Elected member of the International Statistical Institute, 1996.
Recipient of ASA/USDA-NASS Senior Research Fellowship, July 1997 - August 1998.
Recipient of Mellon Predoctoral Fellowship, University of Pittsburgh, Pittsburgh, 1982 - 1983.
Secured top position in B.Sc. (Honors in Statistics), University of Calcutta, Calcutta, India, 1976.
Recipient of Merit Scholarship, Govt. of India, 1969 - 1973.
Ranked First in Higher School Certificate Examination, Visva-Bharati, Santiniketan, India, 1973.
Recipient of National Scholarship, Govt. of India, 1973 - 1976.

Professional Record:

Professor and Chairman, Aug. 2001 - Present; Professor, Sept. 1997 - Present; Associate Professor, June 1989 - August 1997; Assistant Professor, June 1984 - May 1989; Visiting Assistant Professor, Sept. 1983 - May 1984, Department of Statistics, George Washington University, Washington, DC 20052.

ASA/USDA-NASS Senior Research Fellow, National Agricultural Statistics Service, Research Division, 3251 Old Lee Highway, Fairfax, VA 22030, July 1997 - August 1998.

Visiting Scientist, Division of Theoretical Statistics and Mathematics, Indian Statistical Institute, Calcutta, India, September 1990 - December 1990.

Teaching/Research Assistant, Mathematics and Statistics Department, University of Pittsburgh, Pittsburgh, Sept. 1980 - Aug. 1983.

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Book Reviews:

Review of *Statistical Significance: Rationale, Validity and Utility* by Siu L. Chow. *Technometrics*, (1998), 40, 161-162.

Review of *Theory of Point Estimation (2nd ed.)* by E.L. Lehmann and George Casella. *Journal of Statistical Planning and Inference*, (2001), 93, 323-324.

Ph. D. Students Supervised:

Mary C. Christman. Thesis: "On Estimation of the Number of Classes in a Population" (1993).

Christopher L. Moriarity. (Co-advisor) Thesis: "Statistical Properties of Statistical Matching" (2001).

Abeer El-Baz. Thesis: "Some Contributions to Statistical Prediction Theory" (2004).

Professional Service:

Associate Editor, *Communications in Statistics - Theory and Methods*, 2002-present.

Associate Editor, *Communications in Statistics - Simulation and Computation*, 2002-present.

Guest Editor of *Sankhya, Ser. A, Vol. 64(2)*, (2002); a special issue in honor of Professor C.R. Rao.

Reviewer, *Mathematical Reviews*, 1995 - present.

Member, Review Panel for evaluating research grant proposals submitted to Bureau of Transportation Statistics (2001).

Organizing Committee member of the international conference "Statistics: Reflections on the Past, Visions for the Future" (in honor of Professor C.R. Rao's 80th birthday) held in San Antonio, Texas, during March 16 - 20, 2000.

Methodology Program Chair, Washington Statistical Society, 1991-1992.

Methodology Section Chair, Washington Statistical Society, 1992-1993.

Treasurer, International Indian Statistical Association, 1997-1999.

Reviewer of research proposals for agencies such as NSF, EPA.

University Service:

Member, Faculty Senate Committee on Faculty Development and Support, 1993-1994.
Member, Junior Scholar Research Incentive Award Committee, 1994-1995.

Member, Dean's Council, 2000-2003.

Departmental Service:
Chairman, 2001 - present.
Ph. D. Committee, Chair, since 1991; member, since 1983.
Tenure and Promotion Review Committee, Chair, 1996-1997; member, 1992-1993, & 1995-1996.
Departmental representative to the University (Gelman) Library, 1985-1990.
Faculty Search Committee, 1991-1992, 1993-1994, 1996-1997, 1998-1999.
Served as a reader or examiner of a dozen or more Ph. D. dissertations.

Research Grants:

Junior Scholar Research Incentive Program Award, George Washington University, 1986.

University Research Grant, George Washington University, 1988.

IPA (Intergovernmental Personnel Act) assignment. Funded by National Agricultural Statistics Service, July 1997 - August 1998

Co-PI on a cooperative research agreement with the Office of Waters of the US Environmental Protection Agency, 1999-2001.

Statistical Methods in Marketing Research. (PI), Capital One Services, Inc., 2004-2005.