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World potential study ????

Margaret M. Golby

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NORTHERN ILLINOIS UNIVERSITY

World Potential Study ????

A Thesis submitted to the

University Honors Program

In Partial Fulfillment of the

Requirements of the Baccalaureate Degree

With University (Upper Division) Honors

Department of Management

by

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DeKalb, Illinois

December, 1990

Approved: Ralph F. Catalanello

Department of: Management

Date: 12/7/90

Abstract

The international realm of the business world is often difficult to fully understand or master. This honors thesis addresses international statistics and their application to a business problem. It is designed to aid MECO, an international tool and machinery manufacturer, in assessing its World Sales Potential.

The study covers the process of initial international data collection, including guidelines for beginning a world study and collecting needed data. Then, an extensive list of sources of international statistics precedes the final regression analysis. This final section is an evaluation of the statistical processes and methods used by MECO. Adjustments to MECO's regression model are recommended. After making those adjustments, MECO will have a good, basic predictor of its world sales potential.

Beginning International Marketing Research

1. As a base, keep thorough and accurate statistics concerning your home sales and other market data. They can be used as a benchmark or in comparisons.
2. Define your objectives clearly and in detail. Specify exactly what data you need to gather and why. Write your objectives down in simple and easy-to-understand language.

Start out thinking BIG. Hope for as much success as you can. Realize that downward adjustment may be necessary, but aim for big results.

As your research progresses, you may need to alter your original objectives. Don't be afraid to make additions, deletions, or adjustments in the objectives. New information may dictate change. Remain flexible while keeping in touch with your underlying needs.

3. Document your every step. Take notes on each source you consult. Write down names, dates, book titles, authors, addresses, phone numbers, contact names, etc. You may need them later, and they will facilitate accurate reporting of your results.
4. Plan on hitting numerous roadblocks. When they occur, don't get frustrated. Have back-up sources, and be ready to utilize them.

Collecting the Data

1. Consult any industry specific journals (ie. Pit and Quarry), periodicals, manuals, trade reports, etc. These sources will give the most useful, timely, and relevant information.
2. Consult the government Documents section of your nearest major library. The department head will direct you to key starting points. Statistical abstracts, yearbooks, and fact books provide general data for most countries. United Nations' publications and reports are often more detailed and industry tailored.
3. If you are having trouble finding data for certain countries, consult the nearest consulate or Chamber of Commerce of that country. The Department of Commerce can provide export information.
4. Individuals and businesses have gone through this research process before. Take advantage of their knowledge and experience. They may know important channels or short-cuts.
5. Consult the following list of available sources. It will provide a good overview of what resources are published and available. In no way is it all-inclusive though.
6. Be creative. Follow any leads, but don't belabor dead ends.

RESOURCES
FOR
INTERNATIONAL MARKETING

Aluminum, Copper, and Steel In Developing Countries. by Martin Brown and Bruce McKern. Organization of Economic Cooperation and Development. 1987.

The Aluminum Multinationals and the Bauxite Cartel. by Steven Kendall Holloway. MacMillan Press. 1988.

The World Aluminum-Bauxite Market: Policy Implications for the United States. by Douglass W. Woods and James C. Burrows. Praeger Publishers. 1980.

American Statistics Index. Has monthly, quarterly, and annual supplements. Contains lists and abstracts all statistical publications issued by agencies of the United States Government.

Associations Directories.

- Research Center Directory (Gale Research)
- New Research Centers
- The Directory of Special Libraries and Information Centers
- Subject Directory of Special Libraries and Information Centers

Austria Documentation. Austria in Figures. Federal Press Service. Vienna: 1989.

Bank of Greece. Monthly Statistical Bulletin. Economic Research Division.

Business Atlas of Western Europe.

Business Books and Serials in Print. Annual book guide.

Business Index. Information Access Corporation. 1979-present, Menlo Park, California. Monthly cumulation on 16-mm microfilm. Indexes articles, reviews, news, and other related material.

Business Information Sources. Lorna M. Daniels.

Business International. Contains 42 indicators for 117 nations. Indicators are weighted and combined to form composite indexes of (1) market size, (2) market intensity, and (3) market growth. Also has regional newsletters. Indicators include: population, Gross Domestic Product, various categories of private consumption expenditures, steel, cement, electricity, energy production or consumption. Address: One Dag Hammarskjold Plaza
New York, NY 10017

Business Latin America and Business Europe. Business International Publications.

Business Periodical Index. H.W. Wilson, 1958-present, New York. Monthly with quarterly and annual cumulations, alphabetically by subject.

Business Travelers Handbook.

Commodity Year Book. Factbook from 1939- present. Annual editions.

Competitor Intelligence. "Foreign Intelligence from U.S. Sources." by Leonard M. Flud. Bibliography of sources of marketing information for most of the world's countries.

Consumer Europe. Euromonitor Publications. Annual marketing indicators and trends for various markets.

Current Business Statistics. "Survey of Current Business."

Demographic Year Book. Factbook, annual United Nations Publication on world economics and trade. New York.

Depository Library Program. Sources for government information. To find the one in your area contact your local library or write to the Superintendent of Documents
Washington, D.C. 20402

The Economist. "Raw Deal For Raw Materials." (April 18, 1987), p. 65.

Encyclopedia of Associations. Annual commercial guide with a quarterly supplement, "New Associations and Projects."

Encyclopedia of Business Charts. Rob D. Carlsen and Donald L. Vest.

Encyclopedia of Geographic Information Sources. Detroit: Gale Research, 1988. Listings by foreign country cover basic sources for statistics, directories, guides for doing business, etc.

Government Publications, cont.

- United Nations Documents and Publications
- Publications of Other International Organizations (IGO's)
- Publications of National Governments (non-U.S.)
- United States Government Publications

Index to Government Periodicals. Government publications. 1970-present, quarterly.

Government Publications and Their Use. Laurence F. Schmeckebier and Roy B. Eastin.

International Directory of Statistics. Government publications.

Monthly Catalog of United States Government Publications. 1895-present.

How to Enter the Soviet Market. Business Week. Four hour audio casset program. 1 (800) 999-1996, ext. 991B
1825 Old Ranch Road
Los Angeles, California 90049

Guide to Reference Books. Eugene Sheehy.

**Illinois Foreign Offices:
Illinois Office in Canada.**

Robert D. Miller
Managing Director
123 Front Street West, Suite 900
Toronto, Ontario
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06600 Mexico D.F.
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fax: 011-525-511-2084

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100 West Randolph, Suite 3-400
Chicago, IL 60601
(312) 814-7164
fax: 312-814-6581

Index to International Statistics. To identify, evaluate, and obtain information contained in the statistical publications of the world's major intergovernmental organizations.

International Business Reference Sources. Cynthia C. Ryans, Lexington, Massachusetts: Lexington Books, 1983. A comprehensive bibliography of reference books.

International Encyclopedia of Statistics.

International Energy Agency. "Coal Prospects and Policies in IEA Countries." OECD/IEA. 1988.

(The) International Executive. American Graduate School of International Management. (Thunderbird) Tempe, Arizona. Quarterly annotated bibliography. Reviews over 195 publications. All articles are on international business topics.

International Financial Statistics. Monthly statistics on exchange rate, international liquidity, money and bank statistics, interest, prices, production, and so on.

International Labour Office. Yearbook of Labour Statistics. Geneva. Annual editions. Current statistics can be found in its Bulletin of Labour Statistics.

International Marketing Data and Statistics. Euromonitor Publications Limited. London. Annual editions. Covers Americas, Asia, Africa, and Australia. Includes data on retail and wholesale sales, living standards, and general consumer data.

International Marketing Handbook.

International Media Guide. Directories International Inc. Contains names, dates, circulation, distribution, etc. figures for newspapers and magazines worldwide.

Journal of Japanese Trade and Industry. "Industrial Survey-Nonferrous Metals: Faring Better." Number One. 1990, p. 21.

MacRae's Blue Book. A five volume commercial guide. Annually updated buying directory for industrial material and equipment.

Market Share Reports. United States Department of Commerce annual publication.

(The) Markets of Asia/Pacific. Thailand, Taiwan, Peoples Republic of China, Hong Kong, South Korea, The Phillipines, Indonesia, Singapore, and Malaysia. London: The Asia Pacific Centre, Ltd., New York: Facts on File, various years. A good source for data on prices, retail sales, consumer purchases, and other country information.

Media Guide International.

Monthly Catalog of United Sates Government Publications. 1895 to present.

The Multinational Corporation: A Guide to Information Services. by Helga Hernes.

National Accounts Statistics. Main aggregates and detailed tables, two parts.

Oceana. Publishes (1) Ernst and Ernst International Series and (2) Digest of Commercial Laws of the World

Oxford Economic Atlas of the World.

PC Globe, Inc. Over 80 categories of information in a computer program-- economic, political, and health statistics and graphics and maps. 407 S. McClintock
Tempe, AZ 85282
1 (800) 255-2789

Pit and Quarry. "A Survey You Can Use." by Bob Drake (August, 1989), p. 22.

----. "Foreign Cement Plants Continue to Grow." by Bruce Adams, ed. (April, 1987), p. CR22.

----. "International Cement Plant Construction Update." by Mark S. Kuhar (April, 1988), p. CR-26.

----. "Overseas Cement Plant Progress." by Don Michard, ed. (January, 1987), p. 42.

Predicasts, Inc. Forecasts and market data by country, product and company.

- Predicasts
- World-Regional-Casts
- World-Product-Casts
- Expansion and Capacity Digest
- Predicasts F & S Index
- Predicasts Basebook

Projected Pulp and Paper Mills in the World 1987-1997. Food and Agriculture Organization of the United Nations.

Pulp and Paper Capacities -- Survey 1983-1988. Food and Agriculture Organization of the United Nations.

Puerto Rico Economic Indicators.

Government Development Bank for Puerto Rico
140 Broadway
38th Floor
New York, NY 10005
(212) 422-6420

Yearbook 1987-1988. Published by:
Ministry of Information
Department of Press and Publications
P.O. Box 5147
Doha, Qatar

McNally Commercial Atlas and Marketing Guide. Updated annually.

Report of the Coal Frontier Discussion Group. Japanese Government, General Directory of the Agency of Natural Resources and Energy, May 1989.

Retail Trade International. Vol. 1, United Kingdom; Vol. 2, Europe; and Vol. 3, The Americas, Africa, Asia, and Oceania Europe. London: Euromonitor Publications, 1980. Data on consumer purchase patterns by product, retail store type. Some prices, middleman markups, and other data.

Sources of Business Information. Edwin Corman, ed.

Sources of European Economic Information. Compiled by Cambridge Information and Research Services Ltd., Cambridge, U.K.: Gower Publishing Co. Ltd., 1983. Alphabetical by country with a separate index listing sources by subject and country.

Statistics Europe: Sources for Social, Economic, and Market Research. Joan M. Harvey, U.K.: CBD Research Ltd./Gale Research, 1987. Arranged by country.

Statistics Sources. by J.W. O'Brien and S.R. Wasserman, eds. Detroit: Gale Research, 1988. Subject guide to data on industrial, business, social, educational, financial, and other topics for the United States and other countries.

Statistical Yearbook for Latin America. United Nations: Economic Commission for Latin America. Updated by Statistical Bulletin for Latin America.

Thomas Register of American Manufacturers. Monthly commercial guide.

United Nations. Annual Bulletin of Coal Statistics for Europe.

United Nations. Industrial Statistics Yearbook.

United States Bureau of the Census. Statistical Abstract of the United States. Annual social, political, and economic statistics, also some state and regional data.

United States Bureau of the Census.

- Census of Manufacturers
- Census of Mineral Industries
- Annual Survey of Manufacturers

United States Bureau of Mines. Washington D.C.

U.S. Department of Interior

- Mineral Commodities Data Summaries
- Mineral Industry Surveys--Bauxite and Alumina

United States Chamber of Commerce. Foreign Commerce Handbook: Basic Information and Guide to Sources.

United States Department of Commerce. Publishes:

- Overseas Business Reports (OBR's)
- Foreign Trade Reports. Amounts and destinations of U.S. exports.
- Market Share Reports. Annual publication.
- Foreign Economic Trends and Their Implications for the U.S. Prepared country by country semi-annually.
- A Basic Guide to Exporting
- Directory of Foreign Organizations for Trade and Investment

United States Government Manual.

Walford's Guide to Reference Material. by A.J. Walford

Wall Street Journal. "Canadian Production of Newsprint Drops." (October 16, 1990), p. B6.

----, "Copper Futures Prices Soar, Reflecting Concern Over Tight Supplies of the Metal in the Short Term." (October 24, 1990), p. C16.

----, "Gold Prices Slip, Other Precious Metals Are Mixed; Dealers Say Quiet Trading Masks Nervous Market." (October 5, 1990), p. C16.

Wall Street Journal Index. Princeton, New Jersey: Dow Jones, 1956-present. Monthly with annual cumulations. Compiled from the final eastern edition. Two sections, Corporate News and General News, divided by broad subject headings.

Where to Find Business Information: A Worldwide Guide for Everyone Who Needs the Answers to Business Questions. by David M. Brownstone and Gorton Carruth.

The World Almanac and Book of Facts. Newspaper Enterprise Association Inc.

Yamaichi Research. "Japan Outlook." Monthly commentary and investment outlook for Japan. Overview/trends in corporate profits, company reports.

----, "Monthly Digest of Statistics." Statistics on Japanese securities, industrial, and economic data and on world commodity and stock markets.

WORLD POTENTIAL STUDY ?????

Marketing Research for MECO

MECO, a company manufacturing tools and machinery for mass materials movement, had collected statistical data on the 50 United States and on 148 countries worldwide in hopes of developing a statistical model to predict world sales. They collected data on the following 22 categories:

Gross National Product
Population
Per Capita Income
Aggregate Production
Number of Pits and Quarries
Number of Sand and Gravel Pits
Cement Production
Number of Cement Plants
Coal Production
Coal Consumption
Number of Coal Fired Power Plants
Total Metals Production
Production of:
 Bauxite Lead
 Copper Nickel
 Gold Silver
 Iron Ore Zinc
Pulp and Paper Production
Number of Pulp and Paper Mills

Many of these statistics proved hard to find.

Throughout the last several months, I used many of the sources listed on the preceding pages to fill in the blanks in MECO's research study. The process proved to be very interesting as well as challenging. After hours researching in the library and consulting governmental sources from many countries, I found some of the missing data. I entered

these additional statistics into a Lotus 1-2-3 master datafile.

Secondary data collection is a tedious and time consuming process that can prove frustrating. Numerous countries do not collect data for all of the concerned categories. Many of the blanks in MECO's datafile could not be filled. (An segment of the statistical database can be seen in Appendix A.)

Removing as many of the voids as possible is an important basis for the next step in the World Potential Study ---- the statistical analysis. The objective of the entire process was to develop a formula to use as a base predictor for world sales of each of MECO's products. The 22 data categories were run through a regression analysis. The more complete the initial international marketing research is, the more accurately the regression formulas can help predict world sales.

Any statistical regression cannot establish cause-effect relationships. It serves only as an indicator of how or to what extent the variables are related. MECO realized that fact and wanted the base sales figure to serve simply as a starting point. With that general idea of each country's potential, MECO's international department could follow-up with a more detailed analysis of promising regions or countries.

Several problems were found in MECO's sales formulas. The dependent variable in the analysis is sales. The 22 categories listed on page ten serve as independent variables. The first step that should have been done was to run a correlation between the independent variables to eliminate any multicollinearity. In MECO's statistical results, the single correlation often gave better sales figures than the multiple correlation. That fact indicated that the independent variables are correlated to some degree with one another. This is not wanted in a valid statistical formula. Any variables that are multicollinear should be eliminated from the model. As a general rule of thumb, statisticians recommend that multicollinearity is a potential problem if the absolute value of the sample correlation coefficient is greater than .7 for any two of the independent variables. MECO should run a within correlation for all independent (x) variables of each model.

The second step for MECO would be to establish the amount of error that they are willing to tolerate in their regression models. The R Squared figure in the computer output (see Appendix B) presents the share of the variance of the dependent variables explained by the regression line. Ideally, this figure should be very high. An R Squared of .05 means that the regression line explains almost nothing. Conversely, a high score of .97 means that the regression line explains nearly all of the variation in the dependent

variable. The higher the R Squared, the stronger the relationship.

MECO's R Squared figures seem low. For example, for their first product the R Squared was only .55. This means that only 55 percent of international sales can be explained using their current regression equation. Forty-five percent is left unexplained. MECO must decide if this is an acceptable range of error. If it is not, the regression model must be re-run until a higher R Squared is achieved. This may mean dropping independent variables or finding additional data.

Any international firm like MECO may have to tolerate high amounts of uncertainty in their models. Fifty-five percent accuracy may be the best that can be expected given the base statistical data. International statistics are often difficult to find and when found, may not be reliable or trustworthy.

Any forecaster must also take cultural as well as economic factors into account when studying a potential foreign market. Rate of unemployment, the opportunity costs of hiring labor, public policy issues, the political climate, and price variations are only a few of the many factors that will affect sales potential in any country. Base formulas like MECO's may be used as an initial starting point, but should be followed by a more thorough analysis to be of real value.

"The sales forecast is only a framework, not a straitjacket," according to the book How Business Economists Forecast by William F. Butler and Robert A. Kavesh.¹ They list the following three essentials for an economic forecast: (1) data on the outlook for the general economy, (2) data on the outlook for the industry, and (3) data on the company's industry position or market share -- the part of total demand that your individual company can expect. MECO included all aspects except part three. They failed to include the competition factor. No matter how much overall potential a country may have, the relevant potential is only that part of the market that the company can realistically expect to cover.

Sales forecasts function as a business tool. They are not intended to provide fool-proof and detailed sales potential figures. According to Mr. Butler, sales forecasts have "the more realistic, if less ambitious, goal of narrowing the frame of reference within which management must decide." The World Potential Study will narrow MECO's frame of reference and provide important insight into its world sales potential. From that base, intensive study into the most promising markets may lead to great sales volume and profits in many international markets.

¹Butler, William F. and Robert A. Kavesh. How Business Economists Forecast. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966.

Appendix A
Raw International Data

PULP & PAPER INDUSTRY

| COUNTRY | PRODUCTION (000 tpy) | # PAPER & PULP MILLS | PROD/MILL (000 tpy) |
|----------------------|-------------------------|-------------------------|------------------------|
| AFRICA | | | |
| ALGERIA | 145 | 9 | 16 |
| ANGOLA | 30 | 3 | 10 |
| BENIN | | | |
| BOTSWANA | | | |
| BURKINA FASO | | | |
| BURUNDI | | | |
| CAMEROON | 6 | | |
| CENTRAL AFRICAN REP. | | | |
| CHAD | | | |
| CONGO | 44 | 1 | 44 |
| EGYPT | 230 | 19 | 12 |
| ETHIOPIA | 11 | 1 | 11 |
| GABON | 347 | 1 | 347 |
| GAMBIA | | | |
| GHANA | 66 | 1 | 66 |
| GUINEA | | | |
| IVORY COAST | | | |
| KENYA | 202 | 11 | 18 |
| LESOTHO | | | |
| LIBERIA | | | |
| LIBYA | 16 | 10 | 2 |
| MADAGASCAR | 11 | 2 | 6 |
| MALAWI | 17 | 1 | 17 |
| MALI | | | |
| MAURITANIA | | | |
| MAURITUS | | | |
| MOROCCO | 223 | 8 | 28 |
| MOZAMBIQUE | 3 | 2 | 2 |
| NAMIBIA | | | |
| NIGER | | | |
| NIGERIA | 119 | 7 | 17 |
| RWANDA | | | |
| SENEGAL | | | |
| SIERRA LEONE | | | |
| SOMALIA | | | |
| SOUTH AFRICA | 3,546 | 27 | 131 |
| SUDAN | 10 | 2 | 5 |
| SWAZILAND | 181 | 2 | 91 |
| TANZANIA | 65 | 6 | 11 |
| TOGO | | | |
| TUNISIA | 58 | 6 | 10 |
| UGANDA | 2 | 1 | 2 |
| ZAIRE | 3 | 1 | 3 |
| ZAMBIA | 6 | 1 | 6 |
| ZIMBABWE | 112 | 5 | 22 |
| TOTAL AFRICA | 5,453 | 127 | 43 |
| ASIA | | | |
| AFGHANISTAN | | | |
| BANGLADESH | 198 | 17 | 12 |

PULP & PAPER INDUSTRY

| COUNTRY | PRODUCTION (000 tpy) | # PAPER & PULP MILLS | PROD/MILL (000 tpy) |
|-----------------------|-------------------------|-------------------------|------------------------|
| BHUTAN | | | |
| BRUNEI DARUSSALAM | | | |
| BURMA | 56 | 5 | 11 |
| CAMBODIA | | | |
| CHINA | 20,995 | 250 | 84 |
| HONG KONG | 17 | 2 | 9 |
| INDIA | 2,965 | 400 | 7 |
| INDONESIA | 1,399 | 57 | 25 |
| JAPAN | 35,039 | 549 | 64 |
| KOREA (NORTH) | 140 | 11 | 13 |
| KOREA (SOUTH) | 3,972 | 155 | 26 |
| LAOS | | | |
| MALAYSIA | 404 | 15 | 27 |
| MONGOLIA | 10 | 2 | 5 |
| NEPAL | 7 | 4 | 2 |
| PAKISTAN | 171 | 18 | 10 |
| PHILIPPINES | 454 | 30 | 15 |
| SINGAPORE | 11 | 2 | 6 |
| SRI LANKA | 33 | 4 | 8 |
| TAIWAN | 3,374 | 9 | 375 |
| THAILAND | 780 | 38 | 21 |
| VIETNAM | 90 | 31 | 3 |
| FAR EAST | 70,115 | 1,599 | 44 |
| BAHRIN | | | |
| CYPRUS | 2 | 1 | 2 |
| IRAN | 207 | 8 | 26 |
| IRAQ | 46 | 3 | 15 |
| ISRAEL | 179 | 5 | 36 |
| JORDAN | 10 | 3 | 3 |
| KUWAIT | 23 | 1 | 23 |
| LEBANON | 14 | 3 | 5 |
| OMAN | | | |
| QUTAR | | | |
| SAUDI ARABIA | 85 | 4 | 21 |
| SYRIA | 15 | 27 | 1 |
| TURKEY | 1,067 | 49 | 22 |
| UNITED ARAB EMERIATES | | | |
| YEMEN (NORTH) | | | |
| YEMEN (SOUTH) | | | |
| MIDDLE EAST | 1,648 | 104 | 16 |
| TOTAL ASIA | 71,763 | 1,703 | 42 |
| PACIFIC | | | |
| AUSTRALIA | 2,905 | 37 | 79 |
| FIJI | | | |
| NEW ZEALAND | 1,913 | 13 | 147 |
| PAPAU NEW GUINEA | | | |
| SAMOA | | | |

PULP & PAPER INDUSTRY

| COUNTRY | PRODUCTION (000 tpy) | # PAPER & PULP MILLS | PROD/MILL (000 tpy) |
|---------------------|-------------------------|-------------------------|------------------------|
| TOTAL PACIFIC | 4,818 | 50 | 96 |
| CARIBBEAN | | | |
| BAHAMAS | | | |
| CUBA | 205 | 12 | 17 |
| DOMINICAN REPUBLIC | 11 | 2 | 6 |
| HAITI | | | |
| JAMAICA | 13 | 1 | 13 |
| PUERTO RICO | 26 | 2 | 13 |
| TRINIDAD & TOBAGO | | | |
| VIRGIN ISLANDS | | | |
| TOTAL CARIBBEAN | 255 | 17 | 15 |
| LATIN AMERICA | | | |
| BELIZE | 0 | 0 | 0 |
| COSTA RICA | 14 | 1 | 14 |
| EL SALVADOR | 29 | 3 | 10 |
| GUATEMALA | 40 | 4 | 10 |
| HONDURAS | 419 | 2 | 210 |
| MEXICO | 3,402 | 82 | 41 |
| NICARAGUA | 6 | 1 | 6 |
| PANAMA | 29 | 3 | 10 |
| CENTRAL AMERICA | 3,939 | 96 | 41 |
| ARGENTINA | 1,791 | 125 | 14 |
| BOLIVIA | 1 | 1 | 1 |
| BRAZIL | 8,935 | 184 | 49 |
| CHILE | 1,360 | 14 | 97 |
| COLOMBIA | 751 | 29 | 26 |
| ECUADOR | 37 | 7 | 5 |
| GUYANA | 0 | 0 | 0 |
| PARAGUAY | 13 | 3 | 4 |
| PERU | 310 | 20 | 16 |
| SURINAM | 0 | 0 | 0 |
| URUGUAY | 92 | 7 | 13 |
| VENEZUELA | 811 | 15 | 54 |
| SOUTH AMERICA | 14,101 | 405 | 35 |
| TOTAL LATIN AMERICA | 18,040 | 501 | 36 |
| EUROPE | | | |
| ALBANIA | 9 | 8 | 1 |
| BULGARIA | 504 | 24 | 21 |
| CZECHOSLOVAKIA | 1,306 | 59 | 22 |
| GERMANY (EAST) | 1,334 | 40 | 33 |
| HUNGARY | 569 | 14 | 41 |

PULP & PAPER INDUSTRY

| COUNTRY | PRODUCTION (000 tpy) | # PAPER & PULP MILLS | PROD/MILL (000 tpy) |
|----------------------------|-------------------------|-------------------------|------------------------|
| POLAND | 1,395 | 67 | 21 |
| ROMANIA | 782 | 32 | 24 |
| USSR | 9,312 | 227 | 41 |
| YUGOSLAVIA | 1,389 | 51 | 27 |
| EAST EUROPE | 16,600 | 522 | 32 |
| AUSTRIA | 2,144 | 47 | 46 |
| FINLAND | 6,493 | 93 | 70 |
| ICELAND | 0 | 0 | 0 |
| MALTA | 0 | 0 | 0 |
| NORWAY | 790 | 52 | 15 |
| SWEDEN | 6,194 | 110 | 56 |
| SWITZERLAND | 932 | 35 | 27 |
| WEST EUROPE | 16,553 | 337 | 49 |
| BELGIUM | 803 | 17 | 47 |
| DENMARK | 322 | 9 | 36 |
| FRANCE | 5,450 | 167 | 33 |
| GERMANY (WEST) | 9,510 | 209 | 46 |
| GREECE | 297 | 27 | 11 |
| IRELAND | 44 | 1 | 44 |
| ITALY | 4,860 | 361 | 13 |
| LUXEMBURG | 15 | 1 | 15 |
| NETHERLANDS | 2,042 | 35 | 58 |
| PORTUGAL | 649 | 98 | 7 |
| SPAIN | 3,315 | 194 | 17 |
| UNITED KINGDOM | 3,812 | 99 | 39 |
| EEC | 31,119 | 1,218 | 26 |
| TOTAL EUROPE | 64,272 | 2,077 | 31 |
| NORTH AMERICA | | | |
| CANADA | 40,317 | 307 | 131 |
| UNITED STATES | 103,099 | 952 | 108 |
| TOTAL NORTH AMERICA | 143,416 | 1,259 | 114 |
| TOTAL WORLD | 308,017 | 5,734 | 54 |

Appendix B
Sample Regression Report

Multiple Regression (Individual Regressor Report)

—B:CORRELAT—

Dependent Variable: LOGFLAID
 Independent Variable: LOGGSP

| | | | |
|-------------------------|-------------------|-----------------------|--------------|
| Parameter Estimate | .7885200410323112 | | |
| 95% Conf. Int. for b | .5787926 | .9962474 | |
| Std. Parameter Estimate | .7394885 | | |
| Standard Error | .1070038 | Variance of Parameter | 1.144981E-02 |
| T for Parameter = 0 | 7.369085 | Prob. Level | 0.0000 |

| | | | | |
|---------------------|--------|----------------------|--------|---|
| Simple Correlation | 0.7395 | Simple R Squared | 0.5468 | * |
| Partial Correlation | 0.0000 | Partial R Squared | 0.0000 | |
| | | Sequential R Squared | 0.5468 | |
| | | Overall R Squared | 0.5468 | |

| | | | |
|------------------------|----------|----------------------|--------------|
| Sequential Sum Squares | 5.813466 | Model Sum of Squares | 6.179531E+09 |
| Last Sum Squares | 5.813466 | Total Sum of Squares | 1.030477E+10 |

| | | | |
|---------------------|----------|-------------------------|--------|
| Mean | 1.596391 | R Squared with other Xs | 0.0000 |
| Standard Deviation | .4508436 | Variance Inflation | 1 |
| Diagonal of Inverse | .1069523 | Tolerance | 1.0000 |

Enter ↵ to continue, or ESC to quit --

Multiple Regression (Multiple Regression Report)

—CORRELAT—

Dependent Variable: LOGFLAID

| Independent Variable | Parameter Estimate | Standardized Estimate | Standard Error | t-value (b=0) | Prob. Level | Seq. R-Sqr | Simple R-Sqr |
|----------------------|--------------------|-----------------------|----------------|---------------|-------------|------------|--------------|
| Intercept | 3.267891 | 0.0000 | .1773618 | 18.42 | 0.0000 | | |
| LOGGSP | .78852 | 0.7395 | .1070038 | 7.37 | 0.0000 | 0.5468 | 0.5468 |