

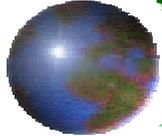


A Decomposition of Global Linkages in Financial Markets

*Global Linkages Preconference
International Monetary Fund
April 26, 2002*

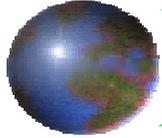
Menzie Chinn and Kristin Forbes

Key Questions



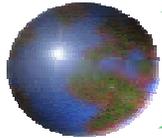
- ▶ How important are cross-country linkages in explaining high levels of global integration?
- ▶ Which cross-country linkages are most important?
 - ✱ Bilateral trade flows
 - ✱ Trade competition in third markets
 - ✱ Bank lending
 - ✱ Investment exposure
- ▶ Has the importance of these different linkages changed over time?
- ▶ Does the importance of these linkages differ across asset markets (stocks, bonds, ERs, and interest rates)?

Talk & Paper Outline



- ▶ Brief Introduction
- ▶ Related Literature
- ▶ Estimation Framework
- ▶ Data
- ▶ Estimation Results
- ▶ Key Issues for Discussion

Introduction



- ▶ High and increasing levels of global integration
- ▶ But what explains this increased integration?
 - ✱ Cross-country linkages
 - ✱ Sectoral composition and/or sectoral shocks
 - ✱ Global shocks
- ▶ Why understanding this question is important
 - ✱ Better understand costs & benefits of integration

Related Literature



- ▶ Determinants of stock returns
- ▶ Stock-market comovements and transmission of volatility across countries
- ▶ Contagion literature tracking the transmission of crises across countries

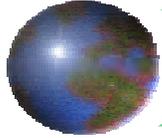
Estimation Framework



- ▶ *Stage 1:* Estimate bilateral linkages between country pairs after controlling for global and sectoral shocks to asset returns

- ▶ *Stage 2:* Decompose bilateral linkages into their various components
 - ✿ Bilateral trade flows
 - ✿ Trade competition in third markets
 - ✿ Bank lending
 - ✿ Investment exposure

Model: Stage 1



► VAR framework

$$X_t^i = \phi(L)X_t^j + \Theta(L)S_t + \Phi(L)G_t + \eta_t$$

$$X_t^i \equiv \{x_t^1, x_t^2 \dots x_t^c\}$$

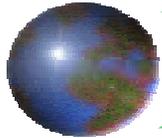
$$X_t^j \equiv \{x_t^1, x_t^2 \dots x_t^c\} \text{ w/ } i \neq j \text{ for lag zero}$$

x_t^i =asset return in country i ; c countries; t periods (days)

S_t =vector of sectoral shocks; G_t =vector of global shocks

$\phi(L)$, $\Theta(L)$, and $\Phi(L)$ are vectors of lags

Model: Stage 2



$$\beta_{it}^j = \alpha_i + \alpha_1 \text{DirectTrade}_{it}^j + \alpha_2 \text{TradeCompetition}_{it}^j + \alpha_3 \text{BankExposure}_{it}^j + \alpha_4 \text{InvestmentExposure}_{it}^j + \varepsilon_{it}$$

β_{it}^j = estimated impact of asset returns in country i from country j after controlling for global and sectoral shocks (from stage 1);

α_i = country specific effects;

$\text{DirectTrade}_{it}^j$ = bilateral trade flows from i to j as share of country i GDP;

$\text{TradeCompetition}_{it}^j$ = export competition in 3rd markets between i and j ;

$\text{BankExposure}_{it}^j$ = bank exposure from country i to country j ;

$\text{InvestmentExposure}_{it}^j$ = total investment by country i in country j ;

Estimation issues: nonstationarity; consider panel cointegration estimation methods

Data



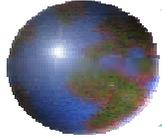
▶ Asset returns

- ✿ Most literature focuses on stock returns
- ✿ Include stock returns, bond spreads, interest rates, exchange rates (main source: Datastream)

▶ Direct Trade

- ✿ Bilateral trade flows
- ✿ Source: World Trade Data (Feenstra)
- ✿ Coverage: Annually from 1980-1997; about 160 countries
- ✿ Supplemented by UNCTAD trade data 1994-1999

Data



► Trade Competition

- Competition in 3rd markets based on 4-digit SITC export information (over 1,000 industry groups)
- Same underlying source as Direct Trade data

$$= \frac{100}{Max_{Compete}} \sum_k \left(\frac{Exp_{ikw}}{GDP_i} \frac{Exp_{jkw}}{Exp_{WkW}} \right)$$

- Exp_{ikw} = exports from country i to world in industry k
- Exp_{WkW} = total global exports in industry k
- $Max_{Compete}$ is maximum value

Data



▶ Bank Exposure

- ✿ Bilateral bank exposure as share of total lending from country i
- ✿ Source: Bank of International Settlements
- ✿ Coverage: quarterly from 1985 through 2001
- ✿ Only 19 countries as country i but 200 countries as country j

Data



▶ Investment Exposure - Suggestions?

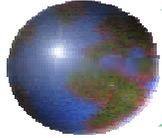
- ✿ Ideally: decompose into stock investment, bond investment, and FDI by country pairs
- ✿ Cross-Border Capital in London (Portes & Rey)
 - Transactions data; records purchases and sales by country residents in portfolio equity markets
 - 8 years of panel data; 1989-96; 14 countries
- ✿ OECD *International Direct Investment Statistics Yearbook*
 - FDI flows and stocks, sourced from and received by OECD countries; accounts for 2/3 of FDI flows
 - Data from approximately 1984; some aggregated

Results



- ▶ Estimate the relative importance of cross-country linkages versus global and sectoral shocks in explaining global linkages
- ▶ Decomposition of bilateral linkages into specific trade and financial linkages
- ▶ Test for changes in the relative importance of specific bilateral linkages over time
- ▶ Test for differences in the relative importance of various linkages for different asset markets (stocks, bonds, ERs, & interest rates)

Questions for Discussion



- ▶ Suggestions for estimation techniques
 - ✿ Stage 1: Estimating bilateral linkages after controlling for global and sectoral shocks

- ▶ Suggestions for bilateral investment data
 - ✿ Equity investment
 - ✿ Bond investment
 - ✿ FDI
 - ✿ Stocks versus flows

A Decomposition of Global Linkages in Financial Markets By Menzie Chinn and Kristin Forbes

Key questions: How important are cross-country linkages in explaining recent increases in global integration? Which cross-country linkages (bilateral trade flows, trade competition in third markets, bank lending, or investment exposure) are most important? Has the importance of these different cross-country linkages changed over time? How important are these various linkages in explaining integration in different types of asset markets (for stocks, bonds, exchange rates and interest rates)?

1) Introduction

- a) *High and increasing levels of global integration*
 - i) Provide examples: correlations in stock returns, bond spreads, interest rate movements, and exchange rate movements
- b) *But what explains this increased integration?*
 - i) Increased cross-country linkages (such as trade integration or financial integration)?
 - ii) Greater similarity in the sectoral composition of output (and/or increased importance of sectoral shocks relative to country-specific shocks)
 - iii) Increased importance of global shocks relative to country-specific shocks
- c) *Why understanding this question is important*
 - i) Better understand the costs and benefits of global integration
 - ii) Insights on how integration is likely to occur in the future

2) Related literature

- a) Extensive finance literature on determinants of stock returns
- b) Extensive finance/international literature on stock-market comovements and the transmission of volatility across countries
- c) Contagion literature tracing the transmission of crises across countries

3) Model and estimation framework

- a) *Stage 1: Estimate bilateral linkages between country pairs after controlling for global and sectoral shocks to asset returns.* Model will tentatively be a VAR framework:

$$X_t^i = \phi(L)X_t^j + \Theta(L)S_t + \Phi(L)G_t + \eta_t \quad (1)$$

$$X_t^i \equiv \{x_t^1, x_t^2 \dots x_t^c\}'$$

$$X_t^j \equiv \{x_t^1, x_t^2 \dots x_t^c\}' \quad \text{with } i \neq j \text{ for the zero lag term}$$

where x_t^i is the asset return in country i ;
 there are c countries and t time periods (in days);
 X_t is a transposed vector of returns in the same set of c countries;
 $\phi(L)$, $\Theta(L)$, and $\Phi(L)$ are vectors of lags;
 S_t is a vector of sectoral shocks;
 G_t is a vector of global shocks; and
 η_t is a vector of reduced-form disturbances.

- i) This estimation approach has a number of benefits. First, it controls for serial correlation. Second, by using 2-day or 2-week returns, this framework can control for different trading hours across countries. Third, it is straightforward to add controls for day-or-the-week or monthly effects. Fourth, this strategy will allow us to formally test for the importance of lagged effects (of either other markets or the global or sectoral shocks) and allow us to control for any significant effects.
- b) *Stage 2: Decompose bilateral linkages (as estimated above) into their various components.*

$$\beta_{it}^j = \alpha_i + \alpha_1 \text{DirectTrade}_{it}^j + \alpha_2 \text{TradeCompetition}_{it}^j + \alpha_3 \text{BankExposure}_{it}^j + \alpha_4 \text{InvestmentExposure}_{it}^j + \eta_{it} \quad (2)$$

where β_{it}^j is the estimated impact on asset returns in country i from country j after controlling for global and sectoral shocks (as estimated in stage 1);

β_{it}^j is calculated over annual periods t ;

α_i captures any country-specific effects (such as capital controls) that may affect asset market integration;

$\text{DirectTrade}_{it}^j$ measures bilateral trade flows from country i to country j as a share of country i GDP;

$\text{TradeCompetition}_{it}^j$ measure export competition in 3rd markets between country i and country j ;

$\text{BankExposure}_{it}^j$ measures bank exposure from country i to country j ;

$\text{InvestmentExposure}_{it}^j$ is total investment by country i in country j .

- i) Will also test the impact of including control variables for the geographic distance between countries, regional effects, etc.
- ii) Estimation issues: The regression of β_{ijt} on explanatory variables will likely be complicated by issues of nonstationarity, as the right hand side variables (and perhaps the left hand side) may be characterized by stochastic trends. In this case, it might be necessary to implement panel cointegration estimation methods (Pedroni, 1999; Mark, Ogaki and Sul, 2000). In the event that more complicated patterns of integration and stationarity are obtained, alternative means of inducing stationarity can be implemented.

4) Data

a.

Asset Returns

- Most literature focuses on stock market returns. We examine a larger range of asset returns and see if the importance of global linkages varies by asset type.
- Stock returns: daily US\$ returns from Datastream
- Bond spreads: daily bond spreads from JPMorgan or Datastream
- Interest rates: daily short-term interest rates as reported by Datastream
- Exchange rates: daily US\$ exchange rates as reported by Datastream

b. *Direct Trade*

- Bilateral trade flows (divided by country i GDP)
- Source: World Trade Data (Feenstra)
- Coverage: Annually from 1980-1997; about 160 countries
- Supplemented by UNCTAD trade data from 1994-1999

c. *Trade Competition*

- Competition in trade based on 4-digit SITC trade information
- Source: World Trade Data (Feenstra)
- Coverage: Annually from 1980-97; about 160 countries
- Supplemented by UNCTAD trade data from 1994-1999
- Defined as:

$$TradeCompetition_{it}^j = \frac{100}{Max_{Compete}} \sum_k \left(\frac{Exp_{i,k,W}}{GDP_i} * \frac{Exp_{j,k,W}}{Exp_{W,k,W}} \right)$$

Where Exp_{ikW} are exports from country i to the world in industry k ; GDP_i is GDP for country i ; Exp_{WkW} are total global exports in industry k ; and $Max_{Compete}$ is the maximum value for this variable

- See attached table for sample of data from recent crises; source is Forbes (2001)

d. *Bank Exposure*

- Total bilateral bank exposure (as a share of total lending from country i)
- Source: Bank of International Settlements
- Coverage: Quarterly from 1985 (Q4) through 2001
- Only 19 countries as country i (Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Taiwan, UK, US)
- But 200 countries as country j

e. *Investment Exposure: Any suggestions?*

- Possibly Cross-Border Capital in London (used in Portes and Rey (2002))
 - 8 years of panel data from 1989-96; 14 countries
 - Transactions data; record purchases and sales by residents of each country in the portfolio equity markets of the other country; ideally want stocks but Portes and Rey argue that for US, the stock data is highly correlated to the flow data
- Possibly OECD *International Direct Investment Statistics Yearbook*
 - Information on FDI flows and “stocks”, sourced from and received by OECD countries
 - Accounts for about 2/3 of FDI flows
 - Data from approximately 1984, although some of historical data could be aggregated and not bilateral
- Ideally would like to decompose this variable into stock investment, bond investment and FDI by country pairs

5) Estimation results and discussion

- a) Estimates of relative importance of cross-country linkages versus other shocks (global and sectoral shocks)
- b) Decomposition of cross-country linkages into various trade and financial linkages
- c) Test for significant differences in relative importance of different cross-country linkages for different asset types (ie stock returns versus bond spreads, etc)
- d) Test for significant changes in relative importance of different cross-country linkages over time (given limited time series of data, will probably involve testing for differences across two periods)

Key Questions for Discussion:

- 1) Suggestions for estimation techniques
- 2) Suggestions for bilateral investment data

References

Forbes, Kristin, 2001, "Are Trade Linkages Important Determinants of Country Vulnerability to Crises?" NBER Working Paper #8194.

Mark, Nelson, Masao Ogaki and Dongyul Sul, 2001, "Panel Dynamic OLS Cointegration Vector Estimation and Long-Run Money Demand," Mimeo (Columbus: OSU).

Pedroni, Peter, 1999, "Critical Values for Cointegration Tests in Heterogeneous Panels with Multiple Regressors," Oxford Bulletin of Economics and Statistics 61(4 supp.):653-670,604.

Addendum: Selected “Trade Competition” Statistics for Recent Crisis Countries

Country <i>n</i>	CRISIS EVENTS															
	Mexico 1994	Ecuad. 1995	Argent. 1995	Venez. 1995	Venez. 1997	Czech 1997	Thail. 1997	Philip. 1997	Indon. 1997	Korea 1997	India 1998	Russia 1998	Venez. 1998	Slovak 1998	Ecuad. 1998	Brazil 1999
Argentina	1.69	0.21	.	0.84	1.49	0.52	1.61	0.34	1.48	2.35	2.63	3.25	1.77	0.27	0.35	7.67
Australia	2.43	0.31	2.44	2.06	1.52	1.30	2.88	0.72	6.29	6.28	2.67	7.41	2.03	0.39	0.35	8.34
Austria	8.23	0.11	1.14	0.45	0.41	3.56	4.29	1.41	3.47	11.20	2.63	8.11	0.46	1.25	0.13	4.80
Bangladesh	1.71	0.89	0.98	0.08	0.11	0.93	6.26	1.90	5.97	5.14	9.18	0.95	0.14	0.46	1.28	1.31
Belgium	15.26	0.79	3.39	1.41	1.37	5.99	11.19	2.39	7.32	28.50	19.46	17.85	1.66	3.10	2.14	13.88
Brazil	2.06	0.50	3.46	0.63	0.45	0.55	1.37	0.36	1.47	2.17	1.96	2.65	0.40	0.28	0.13	.
Canada	9.11	0.47	2.14	2.73	3.04	3.30	3.88	1.92	5.89	12.76	1.87	26.29	3.87	1.37	0.65	8.75
Chile	7.48	0.34	2.29	0.53	0.31	0.99	3.68	4.79	19.37	6.34	1.78	15.54	0.37	0.41	0.44	4.72
China	7.46	0.33	2.03	0.87	0.82	2.14	8.24	2.59	6.29	11.80	5.49	3.97	0.99	0.69	0.31	3.16
Colombia	5.38	5.44	0.66	2.45	4.39	0.82	3.34	1.11	6.36	2.86	2.73	6.97	5.02	0.25	4.04	13.13
Croatia	7.24	0.33	2.17	0.66	0.67	2.79	5.36	2.11	5.01	17.71	3.68	4.15	1.06	1.32	0.40	4.44
Cyprus	1.36	0.04	1.55	0.17	0.18	0.53	1.45	0.50	1.09	1.02	1.34	0.46	0.25	0.25	0.05	0.85
Czech Rep.	9.05	0.18	2.04	1.35	1.18	.	6.96	1.79	6.10	16.55	4.99	10.80	1.32	2.41	0.20	9.25
Denmark	5.40	0.52	1.72	0.67	0.90	2.33	5.93	1.28	3.78	8.90	3.17	7.11	1.49	0.89	0.75	3.98
Ecuador	17.01	.	3.33	12.52	13.73	0.57	18.10	9.45	21.30	5.29	10.11	20.17	16.99	0.24	.	5.41
Egypt	2.88	0.56	1.06	2.62	2.14	0.42	2.01	0.23	2.94	0.91	3.38	3.44	2.12	0.15	0.29	0.62
Estonia	.	.	.	.	0.99	7.67	14.60	4.33	18.19	17.36	9.21	20.89	1.88	2.94	4.68	.
Finland	6.78	0.35	0.76	0.45	0.42	3.02	3.62	1.67	8.12	17.95	1.56	7.79	0.52	1.59	0.10	6.37
France	4.71	0.12	1.89	0.35	0.32	1.84	3.05	1.04	1.76	8.29	1.79	3.81	0.36	0.74	0.17	3.56
Germany	5.79	0.09	0.99	0.38	0.37	2.27	3.02	0.98	1.70	10.15	2.09	4.47	0.45	0.94	0.12	3.92
Greece	2.14	0.26	1.10	0.39	0.46	0.78	2.55	0.88	2.23	3.46	3.39	1.66	0.50	0.39	0.16	2.00
Hong Kong	5.95	0.07	0.70	0.17	0.15	1.36	7.24	4.28	4.24	12.88	4.58	1.40	0.13	0.38	0.10	0.79
Hungary	7.89	0.13	4.45	0.62	0.66	3.77	6.98	2.08	4.48	11.73	4.33	7.64	0.77	1.87	0.21	8.65
Iceland	2.07	2.12	12.95	2.93	2.08	0.57	24.05	1.39	10.44	12.89	4.91	15.04	2.21	1.02	2.99	5.42
India	1.54	0.42	1.23	0.26	0.25	0.68	5.04	0.83	2.93	3.65	.	1.23	0.29	0.23	0.47	.
Indonesia	7.79	2.18	1.65	5.01	4.35	1.55	14.31	3.47	.	9.58	5.21	16.66	5.96	0.66	2.07	12.65
Ireland	13.00	0.36	4.17	0.64	0.51	4.80	15.15	6.23	4.26	21.60	6.45	12.25	0.57	1.30	0.32	8.64
Israel	3.86	0.13	0.80	0.44	0.21	1.01	7.29	1.39	1.86	6.69	18.89	2.03	0.22	0.38	0.15	1.74
Italy	4.91	0.09	1.16	0.29	0.25	2.43	4.69	1.29	3.17	10.82	3.29	1.81	0.28	0.82	0.16	3.59

Addendum: Selected “Trade Competition” Statistics for Recent Crisis Countries (continued)

Country <i>n</i>	CRISIS EVENTS															
	Mexico 1994	Ecuad. 1995	Argent. 1995	Venez. 1995	Venez. 1997	Czech 1997	Thail. 1997	Philip. 1997	Indon. 1997	Korea 1997	India 1998	Russia 1998	Venez. 1998	Slovak 1998	Ecuad. 1998	Brazil 1999
Japan	2.87	0.02	0.26	0.11	0.10	0.72	1.81	0.90	0.62	6.95	0.53	1.47	0.13	0.31	0.02	1.28
Korea	7.54	0.10	1.13	0.36	0.38	1.84	6.66	4.08	4.19	.	3.07	2.73	0.49	1.04	0.18	5.57
Malaysia	32.64	1.94	3.36	6.40	5.72	3.71	40.40	17.17	71.43	59.60	5.16	15.30	7.07	1.48	1.67	10.61
Mauritius	6.41	0.70	3.39	1.13	0.46	1.99	45.86	10.77	11.45	14.93	18.29	1.34	0.39	1.08	0.91	70.29
Mexico	.	0.67	1.03	2.65	5.26	2.46	6.70	2.48	5.47	14.49	2.92	10.73	6.71	0.97	1.24	5.82
Morocco	4.45	0.47	1.81	0.19	0.19	0.71	6.04	1.74	3.70	5.81	3.33	7.89	0.26	0.32	0.63	.
Netherlands	10.54	0.64	3.84	0.98	1.00	3.41	8.94	3.42	5.30	17.60	5.38	17.24	1.20	1.52	1.03	8.70
New Zealand	3.52	0.30	5.17	1.54	1.32	2.30	3.60	0.63	3.10	5.73	2.23	9.44	1.58	0.83	0.35	4.78
Norway	16.18	2.79	3.87	18.16	21.86	1.14	2.92	0.72	13.08	6.92	1.75	69.73	28.16	0.83	3.51	4.09
Oman	50.53	8.59	8.69	57.49	59.71	0.87	1.69	0.76	28.24	4.69	1.53	97.31	78.46	0.39	9.16	.
Peru	3.16	0.67	0.82	0.35	0.78	0.24	1.96	1.57	3.59	5.69	2.27	4.36	0.96	0.09	0.82	4.89
Philippines	6.15	2.37	0.95	0.35	0.17	1.25	12.69	.	9.53	25.59	4.07	2.13	0.20	0.45	2.23	3.81
Poland	5.82	0.14	1.05	0.67	0.49	3.17	3.80	1.34	4.26	9.64	2.59	5.15	0.53	0.97	0.23	3.79
Portugal	7.64	0.20	0.97	0.25	0.28	2.62	5.27	2.55	5.35	10.76	4.55	1.98	0.34	1.02	0.35	6.42
Romania	5.12	0.09	2.38	1.66	1.02	4.10	5.93	2.35	8.98	12.96	5.37	10.09	1.10	2.18	0.11	5.30
Russia	.	.	.	.	6.82	1.48	1.25	0.48	5.42	4.11	1.19	.	8.39	0.96	0.91	6.79
Singapore	46.04	1.39	3.68	1.18	1.02	6.24	60.04	27.60	23.22	100.00	9.21	15.44	1.06	1.94	0.55	10.93
Slovak Rep.	12.08	0.21	3.11	1.96	1.83	6.01	6.72	1.69	6.50	18.81	5.00	21.46	2.56	.	0.24	12.43
Slovenia	14.80	0.21	1.99	1.47	1.09	6.61	9.16	2.49	9.16	21.10	5.48	7.83	1.28	2.69	0.22	8.24
South Africa	2.29	0.07	1.39	0.61	0.94	1.64	3.34	0.92	3.62	4.74	7.29	8.25	0.47	0.56	0.12	6.77
Spain	5.70	0.18	1.20	0.34	0.35	1.76	3.12	0.89	2.01	8.76	2.35	2.92	0.43	0.76	0.32	3.94
Sweden	8.64	0.08	1.16	0.80	0.45	3.35	4.21	1.63	3.29	11.52	2.27	10.20	0.55	1.43	0.16	7.98
Switzerland	4.62	0.07	0.94	0.28	0.26	2.53	4.51	1.20	2.21	8.92	5.35	2.01	0.32	0.79	0.08	3.13
Thailand	10.74	2.14	2.44	0.56	0.48	2.22	.	5.80	17.93	19.09	12.81	4.45	0.93	0.88	2.82	.
Tunisia	14.02	0.86	1.75	3.97	4.21	2.60	9.28	5.20	10.15	9.78	8.59	9.61	4.92	1.19	0.96	2.78
Turkey	4.21	0.11	1.32	0.40	0.35	1.83	3.82	1.59	3.67	7.39	6.47	3.19	0.40	0.61	0.14	2.93
U.K.	6.22	0.29	1.02	1.71	1.90	1.79	3.94	1.52	2.69	9.33	2.81	4.66	2.06	0.59	0.29	2.56
U.S.	1.89	0.04	0.72	0.14	0.13	0.63	1.39	0.64	0.73	3.40	0.66	1.46	0.15	0.23	0.04	1.64
Venezuela	19.27	3.56	3.69	.	.	0.97	1.24	0.20	14.06	2.79	1.37	41.34	.	0.56	3.80	3.73

**Addendum: Selected “Trade Competition” Statistics for Recent Crisis Countries
(Summary Statistics)**

	CRISIS EVENTS															
	Mexico	Ecuad.	Argent.	Venez.	Venez.	Czech	Thail.	Philip.	Indon.	Korea	India	Russia	Venez.	Slovak	Ecuad.	Brazil
	1994	1995	1995	1995	1997	1997	1997	1997	1997	1997	1998	1998	1998	1998	1998	1999
Mean	8.79	0.84	2.28	2.69	2.85	2.26	8.15	2.90	7.90	12.59	4.85	10.97	3.60	0.94	0.99	6.86
Std. Dev.	9.52	1.47	2.08	8.10	8.43	1.72	10.82	4.39	10.45	14.83	4.21	16.12	11.03	0.70	1.57	9.58
Minimum	1.36	0.02	0.26	0.08	0.10	0.24	1.24	0.20	0.62	0.91	0.53	0.46	0.13	0.09	0.02	0.62
Maximum	50.53	8.59	12.95	57.49	59.71	7.67	60.04	27.60	71.43	100.00	19.46	97.31	78.46	3.10	9.16	70.29