

C A M B R I D G E A S S O C I A T E S L L C

GLOBAL MARKET COMMENT: GLOBAL CORRELATIONS

January 31, 2001

Ian Kennedy
Robert Lang
Stuart Wall
Laura Brooks

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Global Correlations - Fact vs Fiction

It is generally well known that global equity correlations have risen sharply in recent years. In fact, the basic notion that investors can diversify portfolio risk by investing across many countries and regions is now called into question. The reality, however, is that, while correlations among regional indexes are indeed high, they are not extraordinarily so.

When making asset allocation decisions based on correlations, investors must be aware of the methodology behind the calculation. Starting dates are crucial: correlations over longer periods are significantly different than those for shorter periods. Furthermore, when correlations are said to be high, does this refer to the current point or to their trend? How many years go into the calculation of the mean? Are correlations calculated with daily, weekly, or monthly data, and in local currency or US\$?

Starting Points and Cycles

Among developed regions, the average correlations of monthly returns over the 31-year period from January 1, 1970 to January 31, 2001 are the highest between U.S./World ex U.S. (0.75), U.S./U.K. (0.76), and U.K./Europe ex U.K. (0.74).¹ However, other regions carry lower correlations, such as U.S./Europe ex U.K. (0.64), U.S./Japan (0.52), Europe ex U.K./Japan (0.50), and U.K./Japan (0.42). Correlations below .70 are typically regarded as offering adequate levels of diversification.

It is important to note, however, that these correlations have been far from stable, having varied considerably over different periods, as Table A illustrates. These data also indicate that although correlations have been relatively high in recent years, compared to the long-term average, they are by no means unprecedented, and have tended in the past to revert to their means. From this, one can reasonably conclude that today's high levels will probably not persist indefinitely.

If one pushes the starting date of the correlation series forward from 1970 to 1994, one receives a different impression of the trend (see Table B). However, even during this shorter time period, correlations appear to have been flat or trending downwards since about 1998, and current levels are not unprecedented, except in the case of U.S./U.K.

¹ In long-term asset allocation planning, investors should use long-term data series as the basis for determining correlations. In addition, they should use shorter or longer periods (annually, quarterly, monthly, weekly) depending on how frequently they intend to rebalance. For capital market analysis purpose, we typically use 36-month data series.

Correlations between emerging markets and developed regions also vary according to the time frame of the calculation (see Tables C and D). Correlation series that begin in 1988 are high (above 0.70) between all regions but two (EMF/U.K. and EMF/Europe ex U.K.), but they peaked in 1997-98. As with developed regions, correlation series that begin in 1994 lose the sense of history—the lows reached around 1995 and the sharp rise thereafter—which thereby emphasizes the flat-to-down trend since about 1998.

Pushing the starting date forward also changes the level of the mean. The 28- and four-year means for U.S./World ex U.S. are 0.63 and 0.70, while they are 0.57 and 0.61, respectively, for the U.S./U.K. Among emerging markets, the ten- and four-year means for EMF/World are 0.63 and 0.76; EMF/S&P 500, 0.50 and 0.67; and EMF/U.K., 0.52 and 0.61.

Local Currency vs US\$

Correlations also vary according to whether they are calculated in local currency or US\$. This difference is more striking between developed and emerging markets, due to currency instability. Local currency and US\$ mean correlations for U.S./World ex U.S. are 0.63 and 0.51; U.S./Europe ex U.K., 0.58 and 0.54; EMF/EAFE, 0.60 and 0.50; and EMF/Europe ex U.K., 0.62 and 0.50.

Monthly, Weekly, Daily?

Investors must also be aware whether they are referring to correlations that are calculated with monthly, weekly, or daily data. Compared with Tables A-D, Table E, which is calculated with daily data, communicates a dramatically different sense of the trend of correlations, as well as their overall volatility. Table E suggests that correlations reached "unprecedented" highs in November-December 2000, before plunging in 2001.

Summary

Generalizations about correlations among equity markets need to be treated with some skepticism. Investors need to ask of the underlying data, are these weekly, monthly, quarterly, or annual data? Why has one such series been chosen over another, and would the choice of a different data series suggest different conclusions? How long are the return series that provide the bases for the correlation calculations? Would different conclusions be suggested if one were to use a shorter period, or a period with different beginning and ending dates?

Having scrutinized correlation data in these ways, we conclude that although the correlations among equity markets have been higher in recent years than the long-term average, this is not unusual, and has occurred in the past. Consequently, investors should be cautious about assuming that the recent trend represents a permanent, secular shift, as opposed to a temporary, cyclical phenomenon.

Table A

ROLLING 36-MONTH CORRELATION ANALYSIS: MSCI GLOBAL INDEXES

January 1, 1970 - January 31, 2001

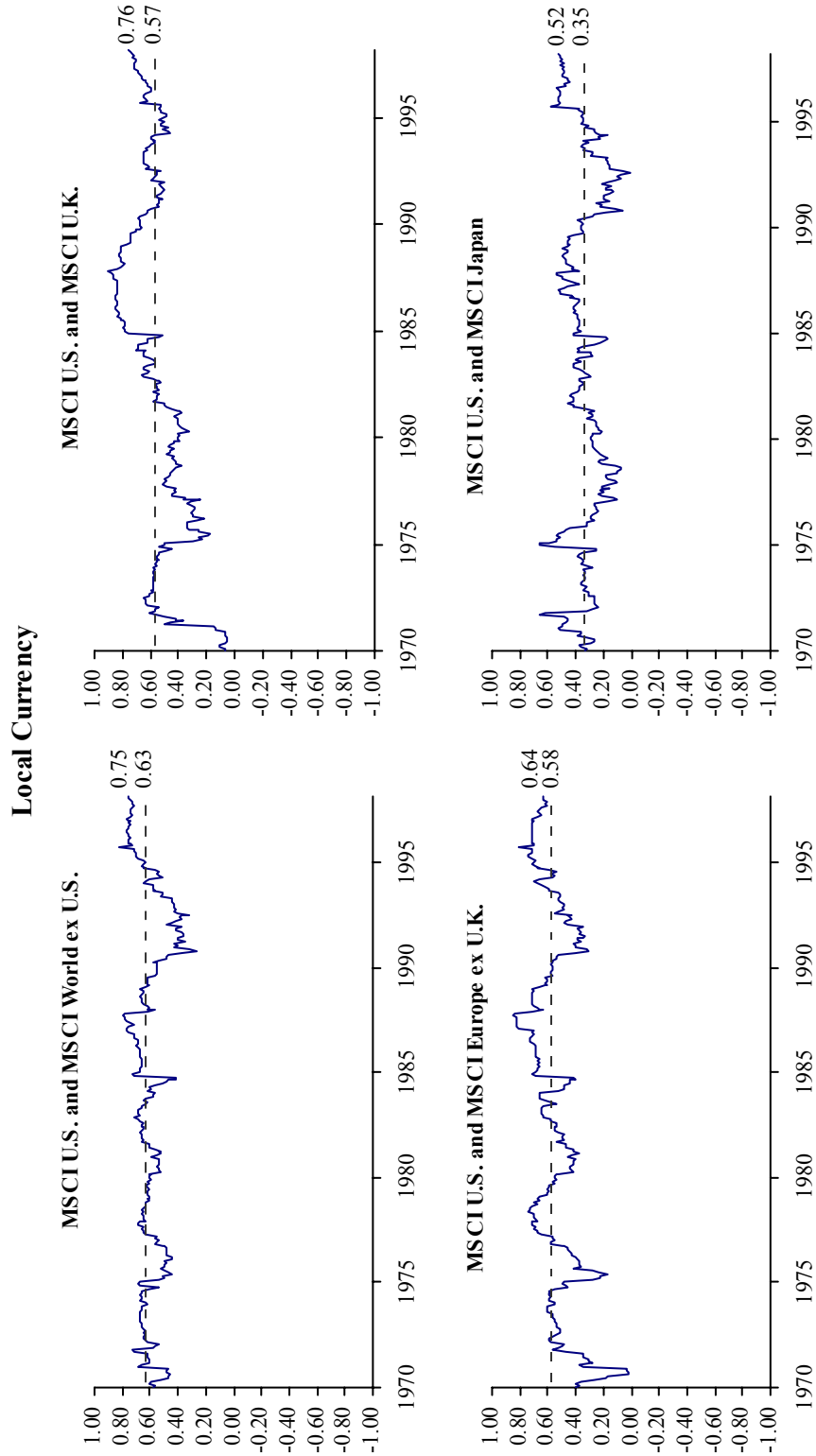


Table A (continued)

ROLLING 36-MONTH CORRELATION ANALYSIS: MSCI GLOBAL INDEXES

January 1, 1970 - January 31, 2001

Local Currency

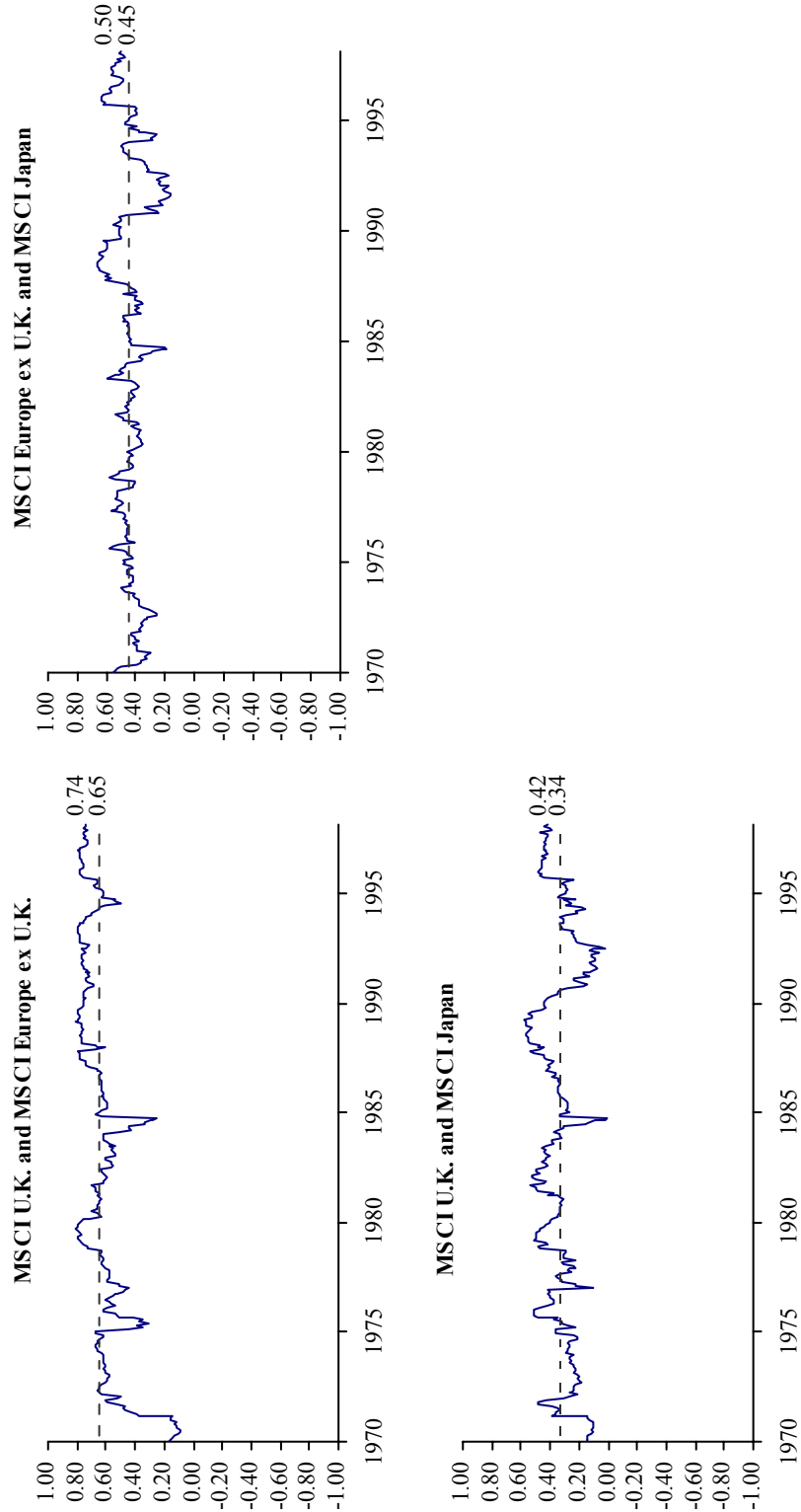


Table A (continued)

ROLLING 36-MONTH CORRELATION ANALYSIS: MSCI GLOBAL INDEXES

January 1, 1970 - January 31, 2001

U.S. Dollar (\$)

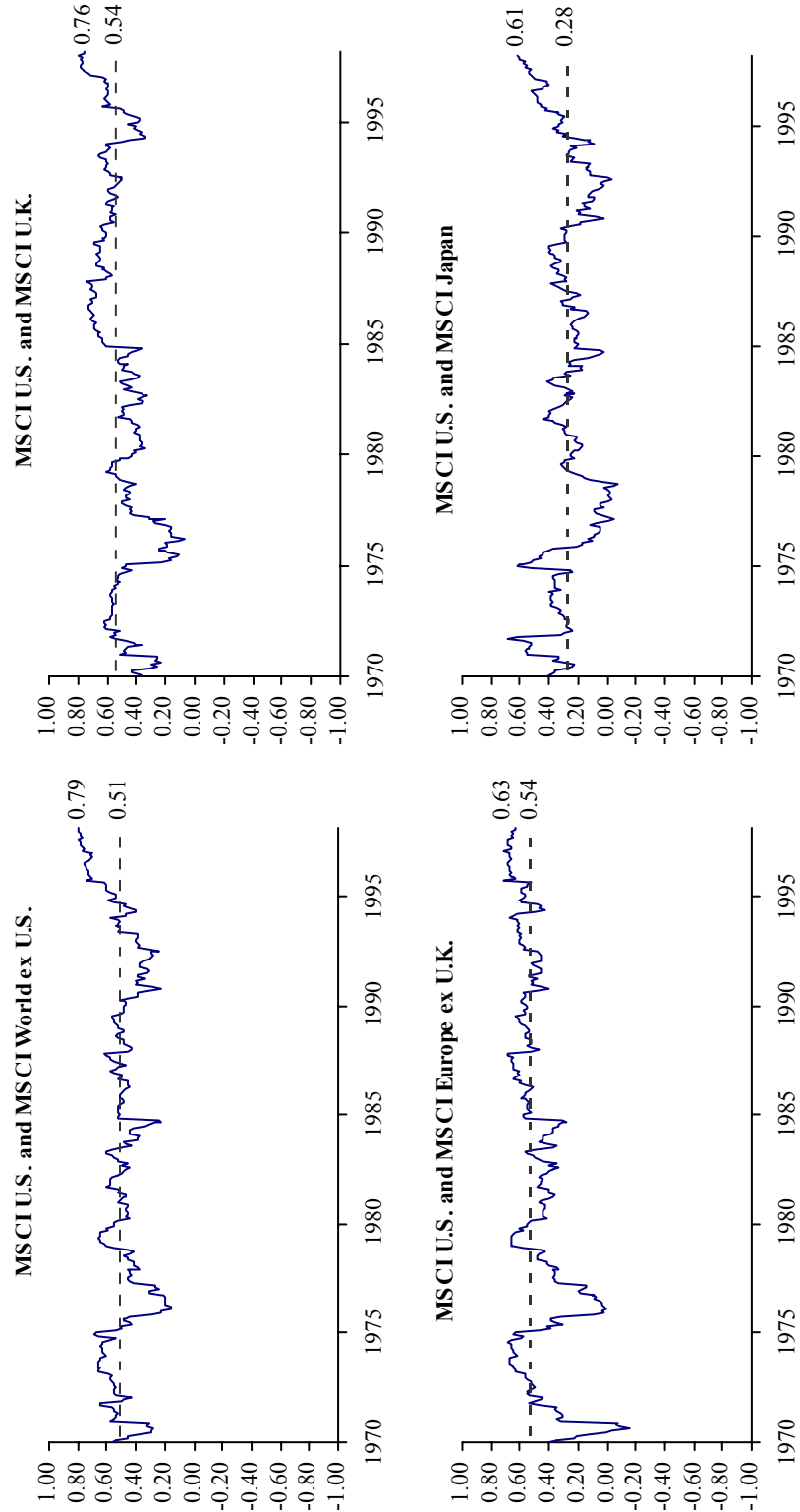
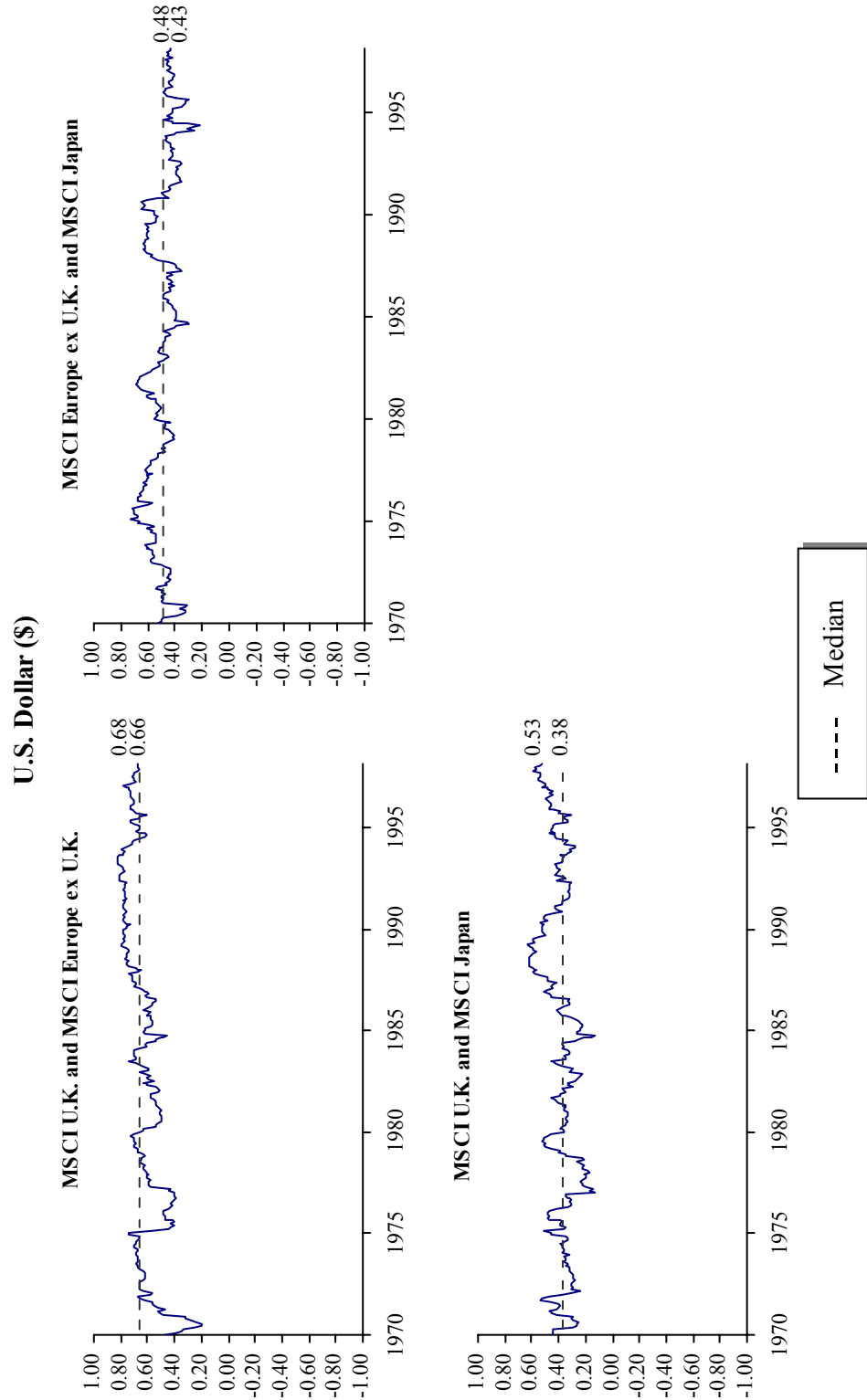


Table A (continued)

ROLLING 36-MONTH CORRELATION ANALYSIS: MSCI GLOBAL INDEXES

January 1, 1970 - January 31, 2001



Source: Datastream International. MSCI data are copyrighted by and proprietary to Morgan Stanley Capital International, Inc.

Table B

**ROLLING 36-MONTH CORRELATION ANALYSIS:
MSCI GLOBAL INDEXES**

January 1, 1994 - January 31, 2001

Local Currency

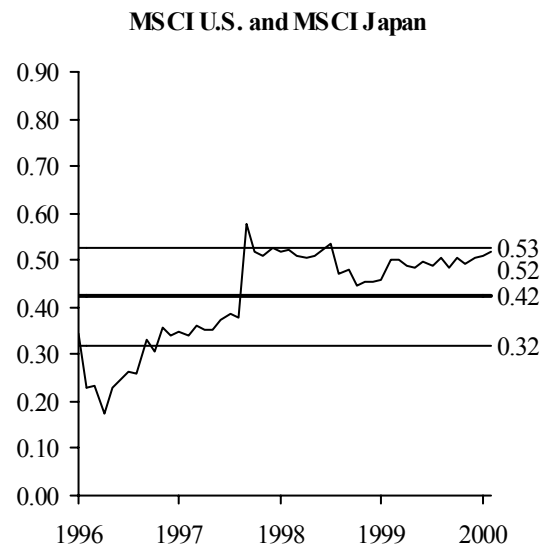
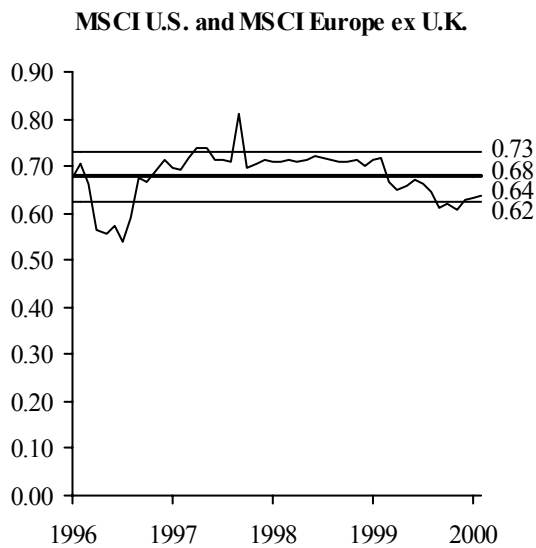
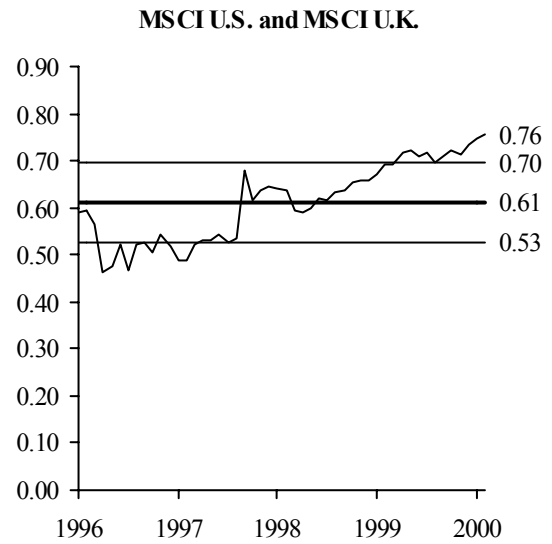
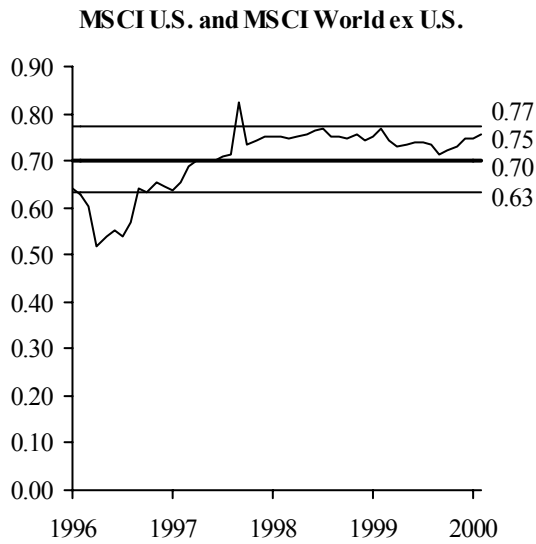


Table B (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS:
MSCI GLOBAL INDEXES**

January 1, 1994 - January 31, 2001

Local Currency

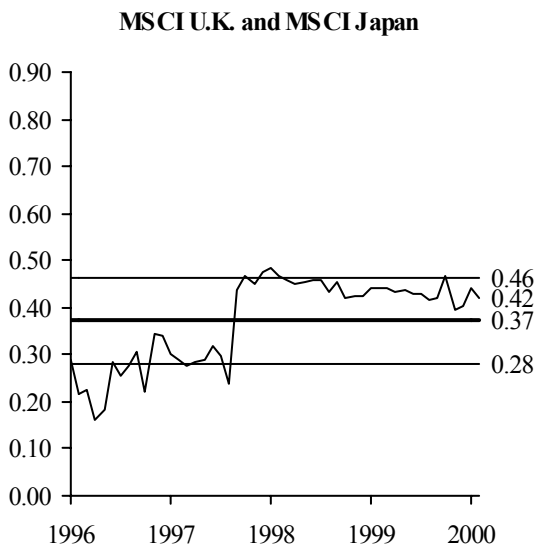
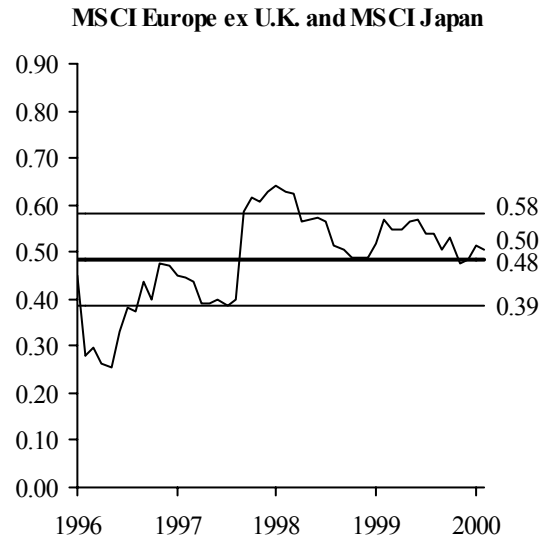
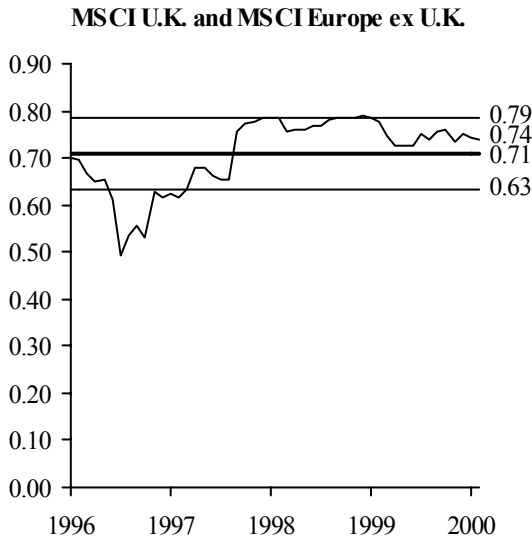


Table B (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS:
MSCI GLOBAL INDEXES**

January 1, 1994 - January 31, 2001

U.S. Dollar (\$)

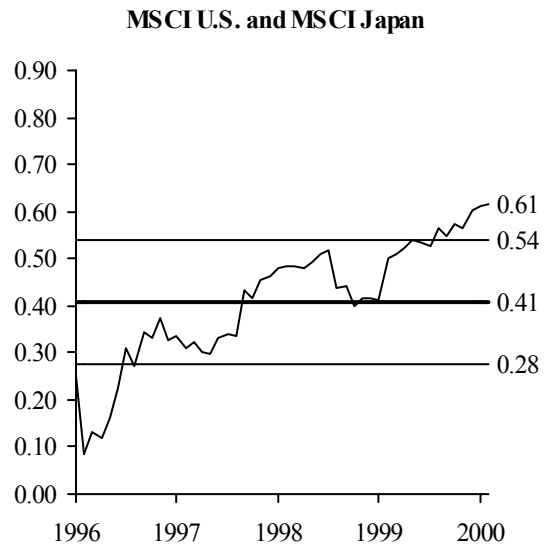
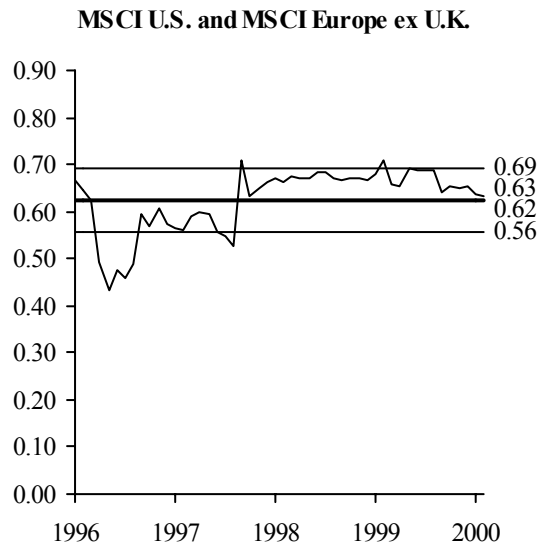
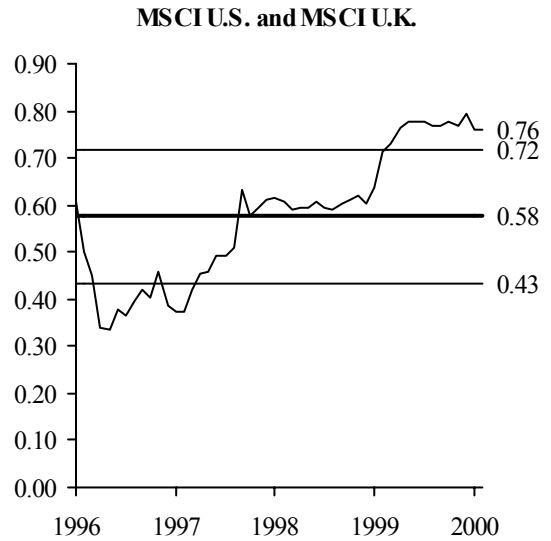
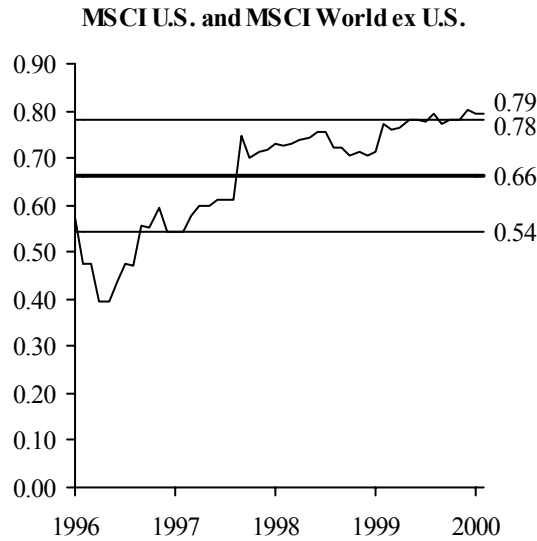
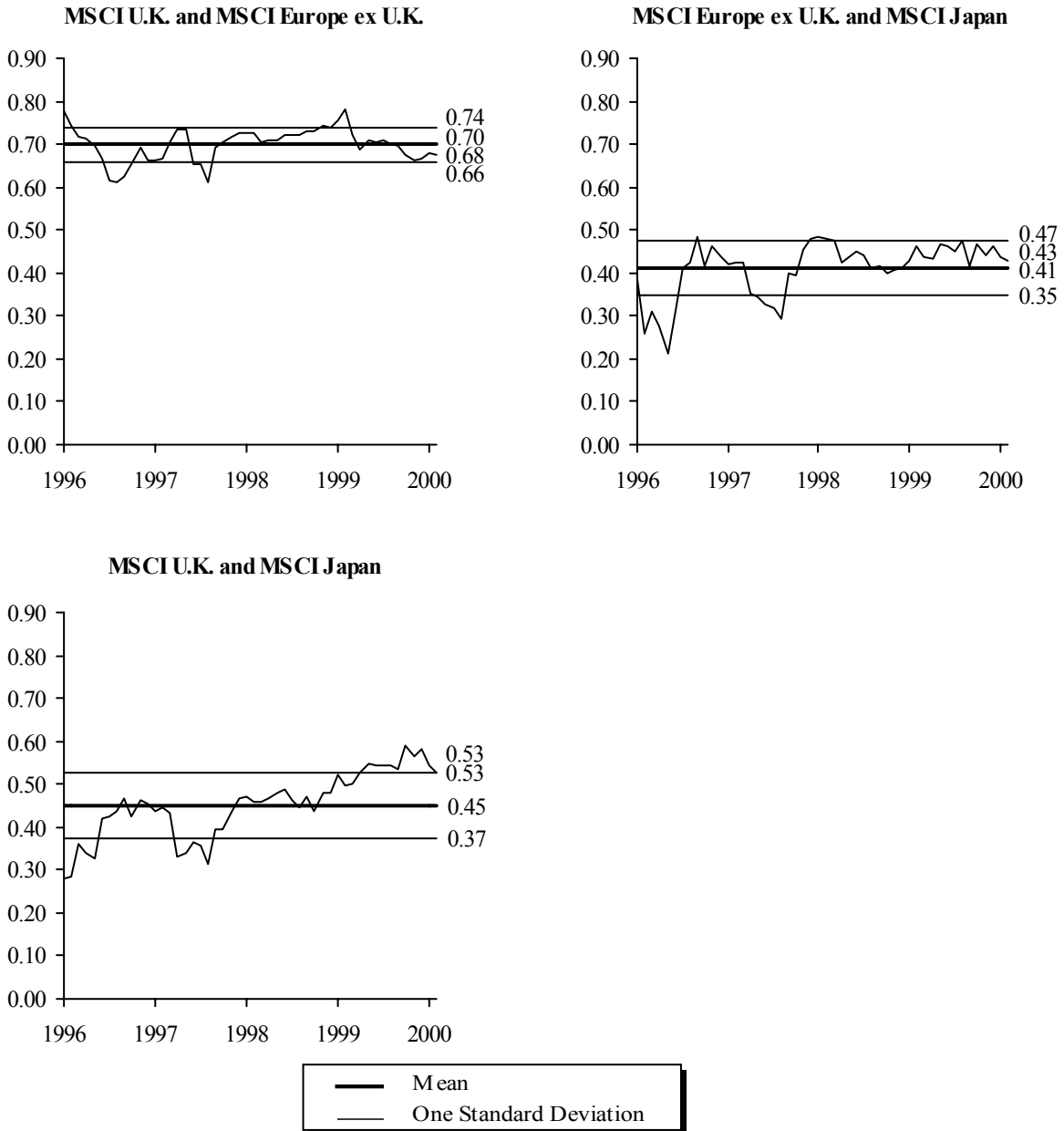


Table B (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS:
MSCI GLOBAL INDEXES**

January 1, 1994 - January 31, 2001

U.S. Dollar (\$)



Source: Datastream International. MSCI data are copyrighted by and proprietary to Morgan Stanley Capital International, Inc.

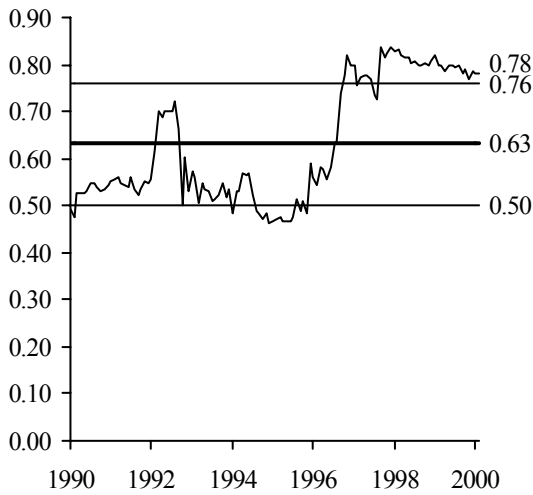
Table C

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

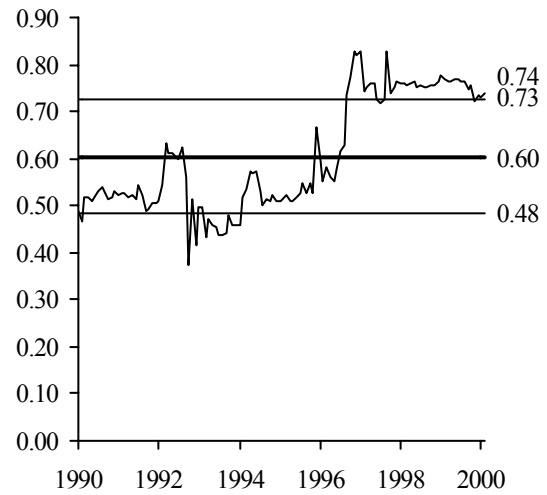
January 1, 1988 - January 31, 2001

Local Currency

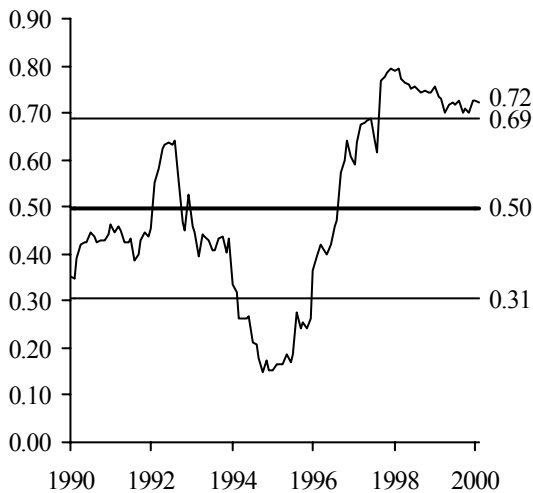
MSCI EMF and MSCI World



MSCI EMF and MSCIEAFE



MSCI EMF and S&P 500



MSCI EMF and Nasdaq

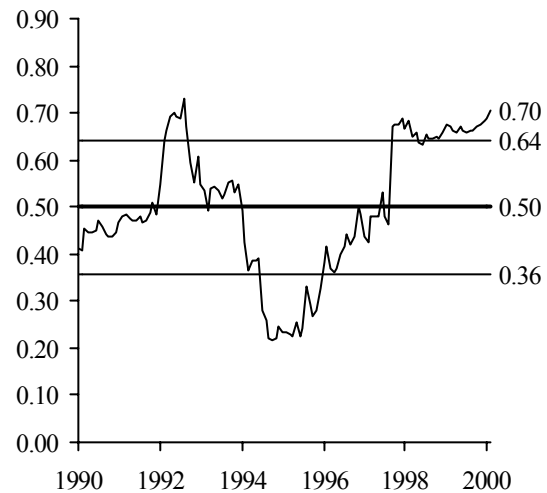


Table C (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

January 1, 1988 - January 31, 2001

Local Currency

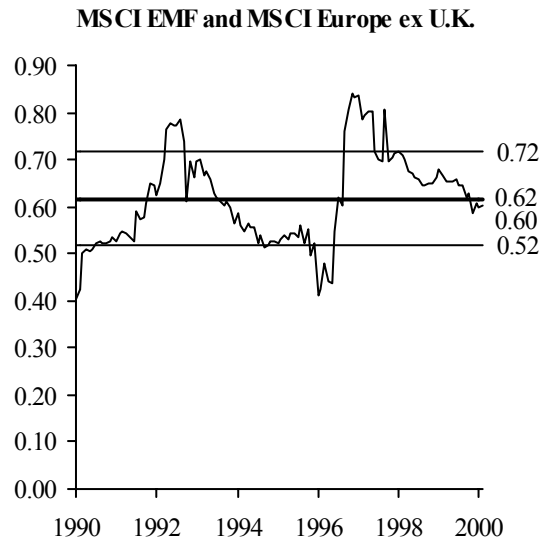
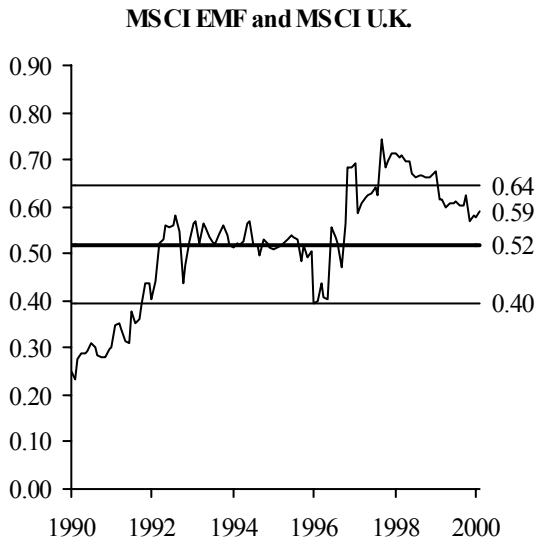


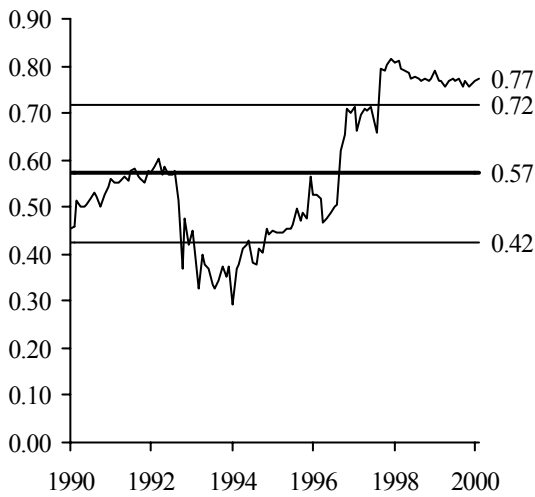
Table C (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

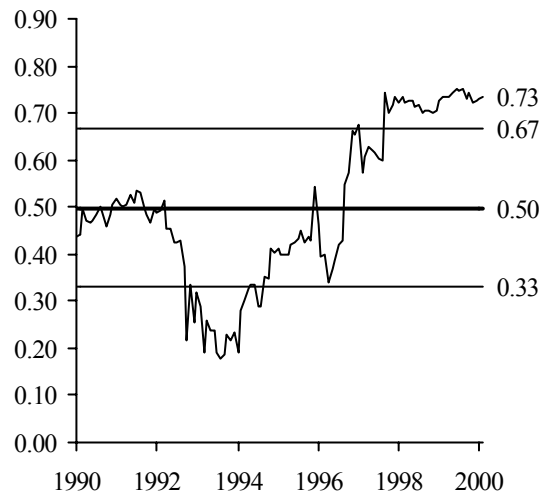
January 1, 1988 - January 31, 2001

U.S. Dollar (\$)

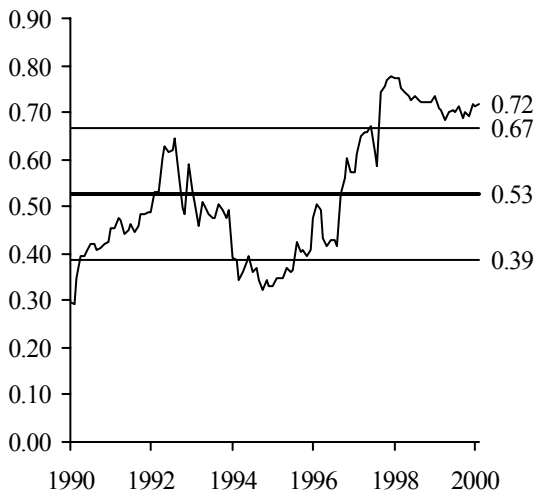
MSCI EMF and MSCI World



MSCI EMF and MSCI EAFE



MSCI EMF and S&P 500



MSCI EMF and Nasdaq

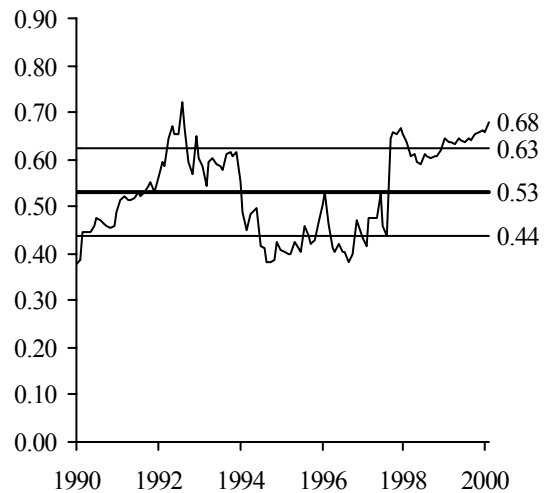
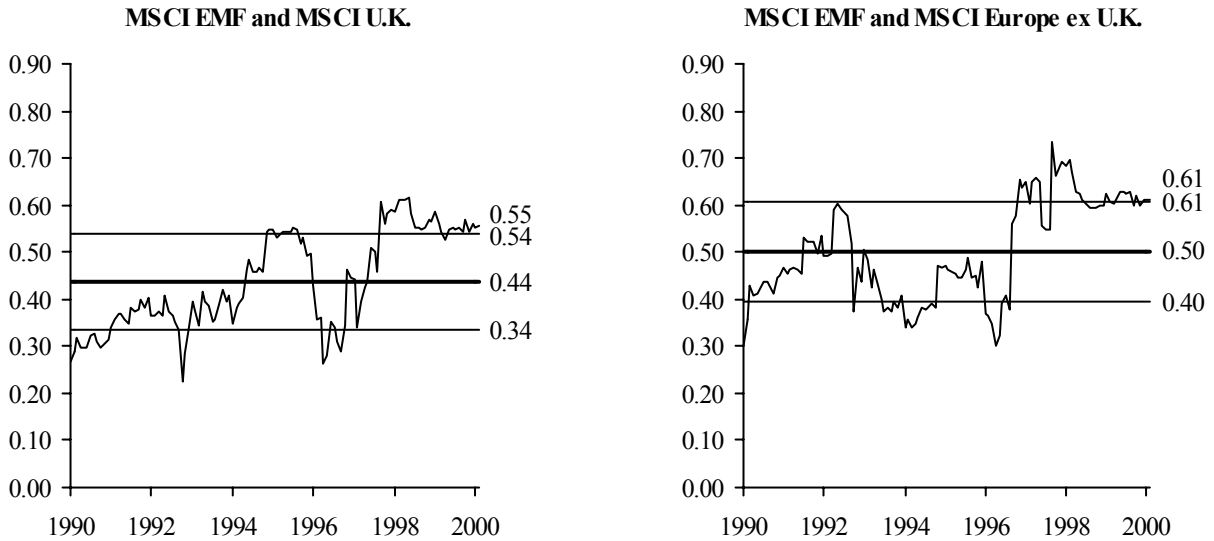


Table C (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

January 1, 1988 - January 31, 2001

U.S. Dollar (\$)



—	Mean
—	One Standard Deviation

Sources: Datastream International, Standard & Poor's, and *The Wall Street Journal*. MSCI data are copyrighted by and proprietary to Morgan Stanley Capital International, Inc.

Notes: Nasdaq data are price returns. MSCI data on emerging markets began in 1988.

Table D

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

January 1, 1994 - January 31, 2001

Local Currency

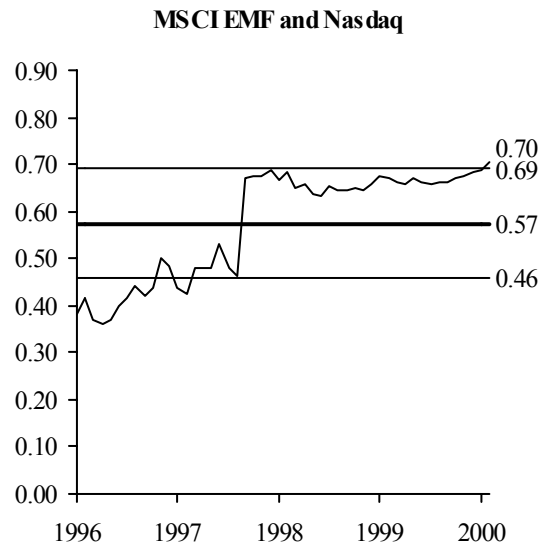
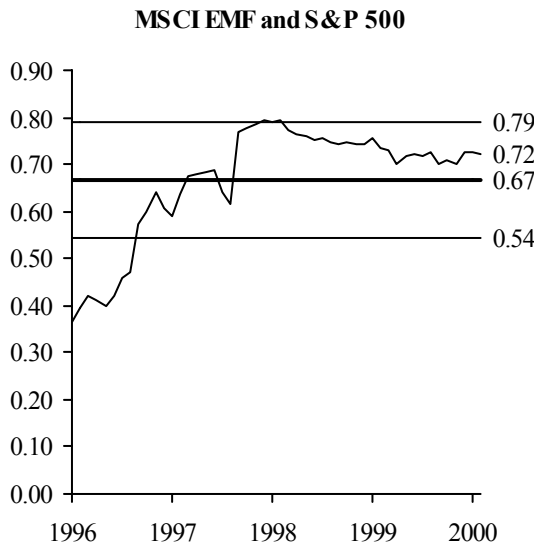
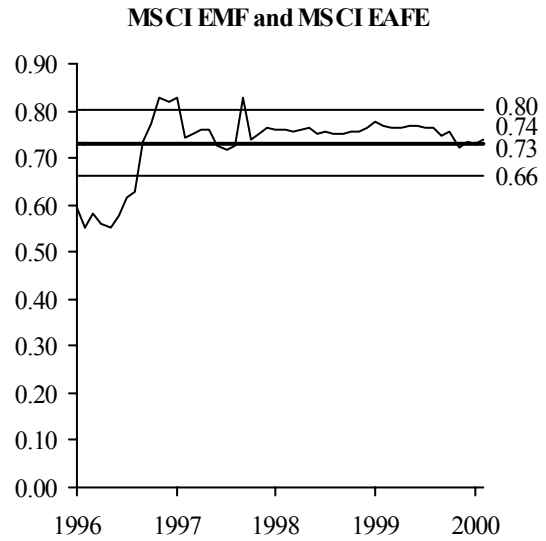
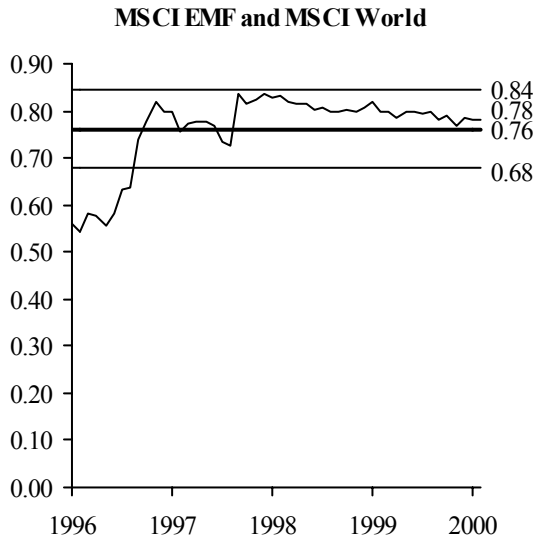


Table D (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

January 1, 1994 - January 31, 2001

Local Currency

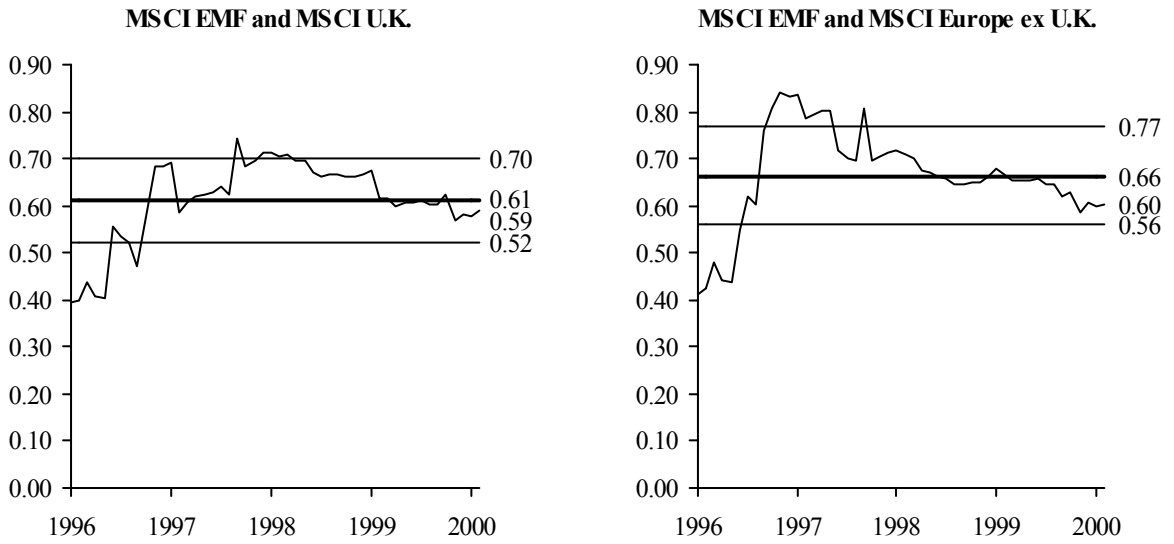


Table D (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

January 1, 1994 - January 31, 2001

U.S. Dollar (\$)

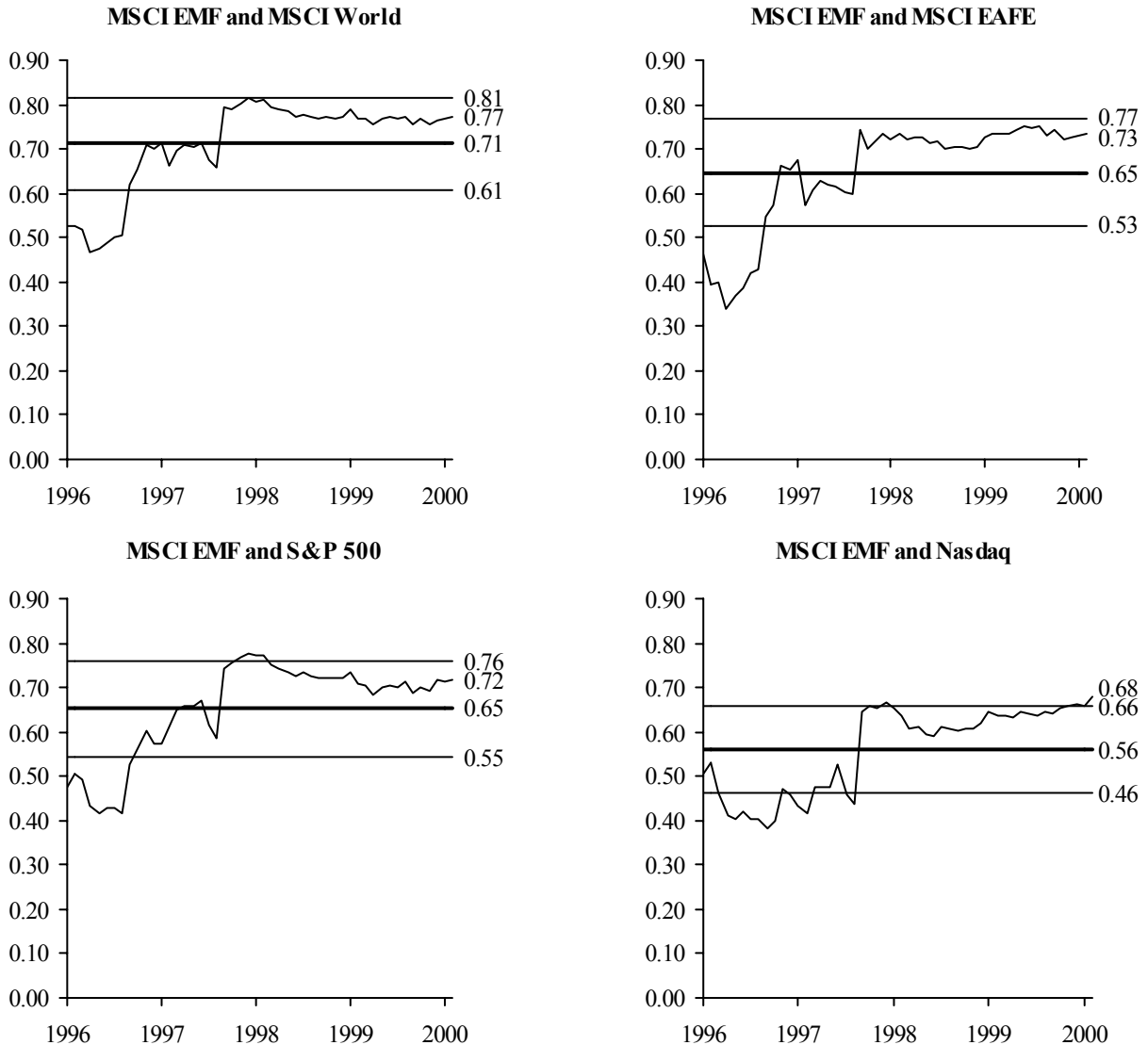
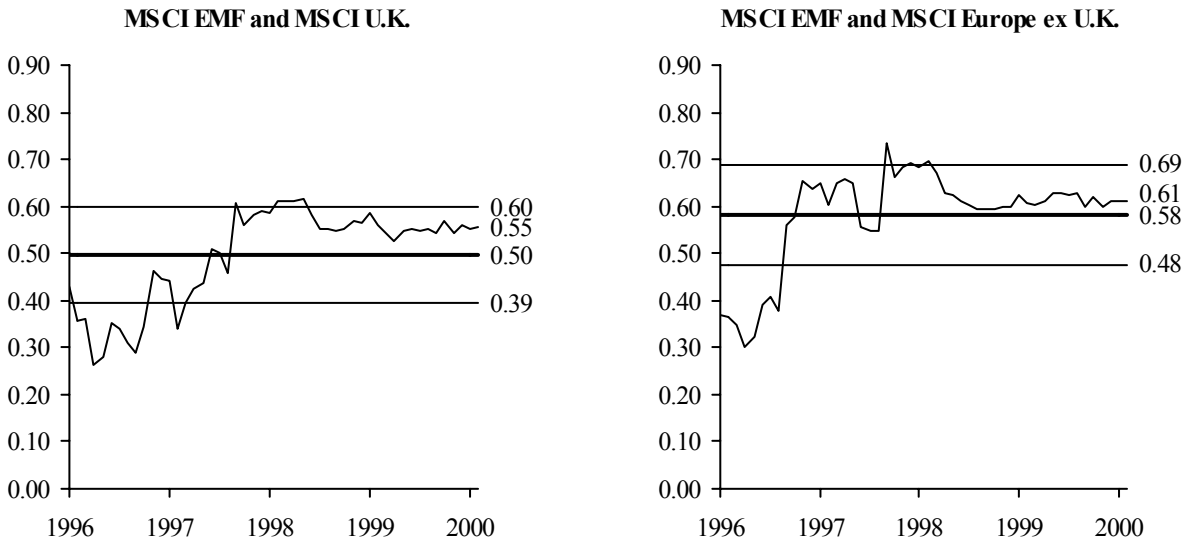


Table D (continued)

**ROLLING 36-MONTH CORRELATION ANALYSIS BETWEEN MSCI EMERGING
MARKETS FREE AND VARIOUS OTHER INDEXES**

January 1, 1994 - January 31, 2001

U.S. Dollar (\$)



—	Mean
—	One Standard Deviation

Sources: Datastream International, Standard & Poor's, *The Wall Street Journal*. MSCI data are copyrighted by and proprietary to Morgan Stanley Capital International, Inc.

Notes: Nasdaq data are price returns. MSCI data on emerging markets began in 1988.

Table E

**ROLLING 40-DAY CORRELATION ANALYSIS:
MSCI U.S. AND MSCI GLOBAL INDEXES**

January 1, 1998 - January 31, 2001

U.S. Dollar (\$)

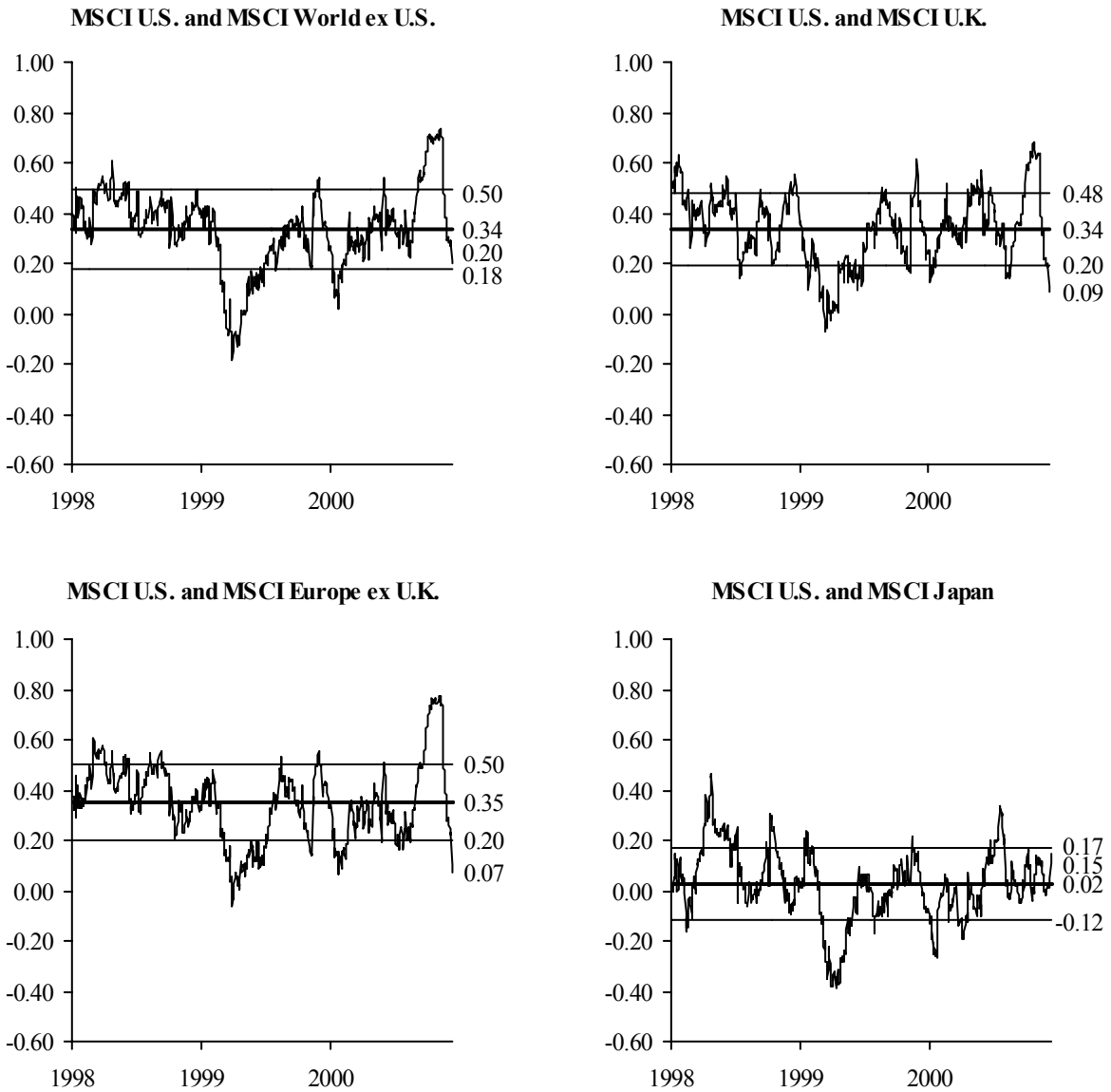
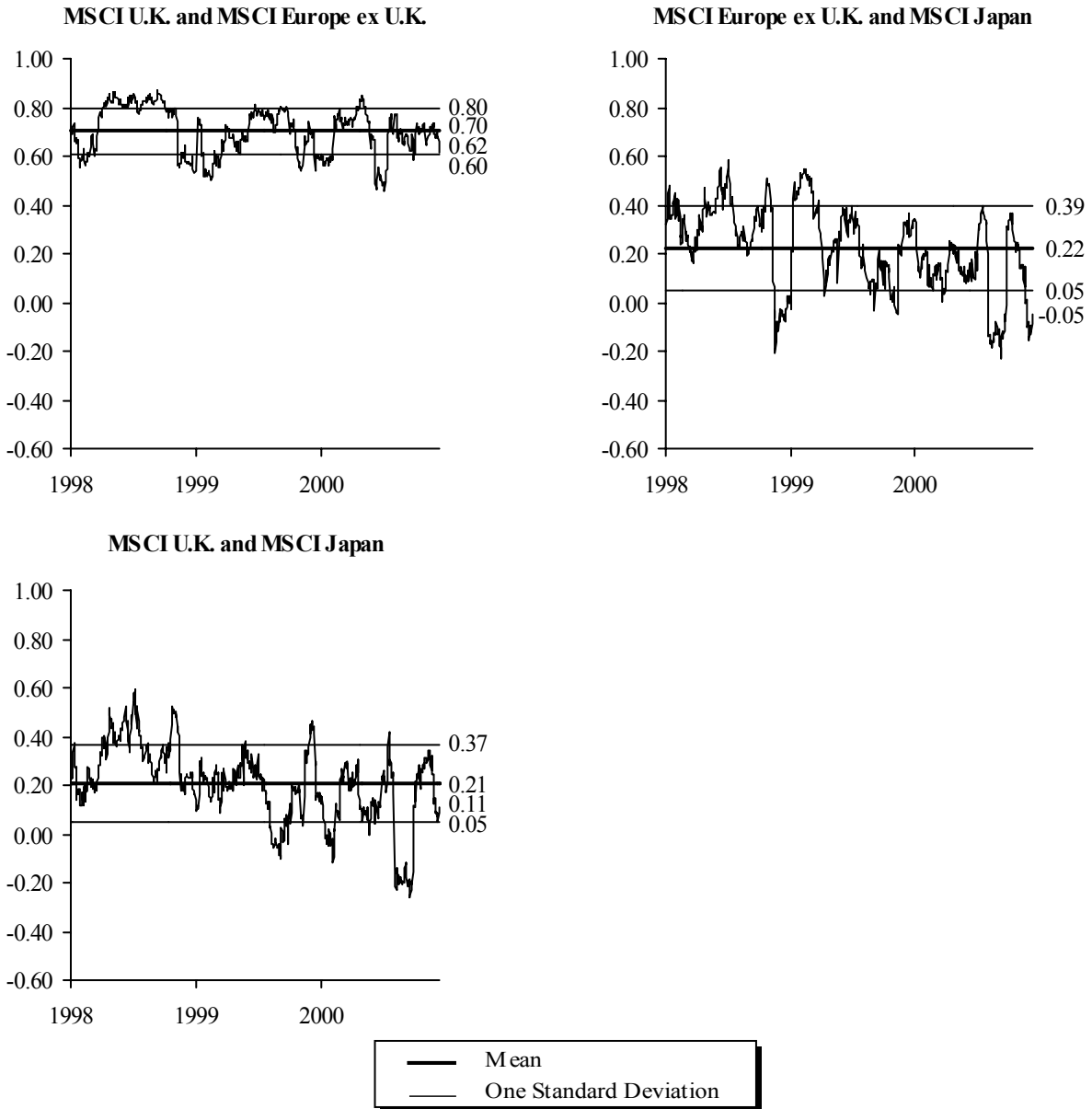


Table E (continued)

**ROLLING 40-DAY CORRELATION ANALYSIS:
MSCI U.S. AND MSCI GLOBAL INDEXES**

January 1, 1998 - January 31, 2001

U.S. Dollar (\$)



Source: Datastream International. MSCI data are copyrighted by and proprietary to Morgan Stanley Capital International, Inc.

Note: Data are based on price returns.