

## WRDS World Indices

Analytic Tool	Description
Daily WRDS World Indices	Daily WRDS World Indices are market-capitalization weighted indices with/without dividends at daily frequency available for 39 countries/areas.
Monthly WRDS World Indices	Market-capitalization weighted indices with/without dividends at monthly frequency available for 39 countries/areas.
WRDS World Index Constituents	Member securities of the WRDS World Indices.

### Methodology

Compustat Global - Security Daily was used to construct the WRDS World indices, which are market-capitalization weighted indices. For each country, portfolio is rebalanced annually at the end of the last trading day of June.

Adjusted daily securities prices, for stock splits and dividends, were calculated as  $(PRCCD/AJEXDI)*TRFD$ . Daily security returns are the growth rate of these adjusted prices. The daily return of each index is the daily return of the portfolio. Portfolios are formed following the rules indicated below.

The monthly returns of the portfolio were calculated from the daily portfolio returns,

$$Return_{monthly} = \left( \prod_{t=\text{beginning of the month}}^{t=\text{end of the mon}} (1 + Return_{daily}) \right) - 1$$

To build the WRDS World indices, we applied the following screens,

- Only common ordinary shares are included, which means the issue type TPCI of each security has to have a value of "0".
- Securities have to trade in the stock exchanges located within the country of interest, with company incorporation and headquarter in the same country as well. The currency of the security price has to be consistent with its ISO currency code ('EUR' is used for Eurozone countries).
- For companies that have multiple issues (IID), the issue with the largest market capitalization is selected. As a result, we are not using firm level market capitalization, only issue level.
- A security has to belong to the top 50% of market capitalization of that country.
- Returns are only calculated if previous available security price is not more than 10 days ago (for Colombia, returns are set to be zero on Jul 30, 2010 and Aug 02, 2010 due to apparent data error).
- Daily returns are set to be missing if:
  - Daily return is more than 50%

- Daily return is more than 35% and rebound with a next available return less than -25% (Germany is an exception because those cases were manually checked)
  - Daily return is < -35% and a rebound return > 50% (German is an exception)
  - Other cases (See Appendix A), we either visually inspected or used statistical method to identify those outliers.
- Observations are removed,
    - If market capitalization is not positive.
    - If exchange information is missing.
    - After company deletion date (DLDTE) or security inactivation date (DLDTEI), daily return is set to be negative 100% on the day when bankruptcy or liquidation happened.
  - For Ireland, on portfolio formation day, securities with price less equal than 1 (local currency) are excluded for weight calculation purpose.
  - For a country to be included (Morocco, Pakistan and Russia are removed due to gaps in the time series), it has to:
    - Have at least 20 securities on the portfolio formation day.
    - Have the overall correlation coefficient between calculated portfolio returns and the known indexes (See GVKEYX in Appendix B.) provided by Compustat index database greater than or close to 90%.

We notice that there exist gaps in the time series. For some occasions, they are just normal market closure due to holidays. However there also exist some prolonged gaps. They are: Czech Republic, 1995/12/16-1996/01/09; Egypt, 2011/01/28-2011/03/22; Greek, 2015/06/27-2015/08/02.

WRDS Research Team  
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## Appendices

### Appendix A: Outliers

GVKEY	IID	Datadate
025903	01W	9/21/1998
102902	01W	10/21/2008
061538	01W	4/6/2001
222169	01W	5/17/2001
022821	01W	8/26/2004
101151	01W	1/28/1998
030112	02W	4/6/2006
233252	01W	3/25/2008
015321	01W	3/16/2009
015321	01W	10/29/2014
225597	01W	4/1/2005
102647	01W	12/11/2000
014894	01W	2/24/2014
245672	01W	6/8/2012
016590	01W	6/11/1987
061548	01W	6/4/2003
121957	02W	5/14/2001
015862	02W	5/19/2008
210035	01W	5/19/2008
019625	02W	2/7/2001
104129	01W	4/23/2008
112116	01W	5/26/2011
061214	01W	11/26/2012
317102	01W	8/10/2015
012383	01W	10/1/2007
018378	01W	10/14/1991
018378	01W	12/2/1993
222761	01W	10/21/2002
104831	01W	11/23/2011
206518	01W	12/5/2007
100340	01W	12/30/2013
242657	01W	12/30/2013
017346	03W	7/8/1991
025608	01W	3/10/1993
203784	03W	2/24/2010

Appendix B: Correlation with known Compustat Indexes

Country	FIC	Start date <sup>1</sup>	End date <sup>1</sup>	Correlation Coefficient <sup>2</sup>	GVKEY X <sup>3</sup>	Index name
Australia	AUS	7/1/1986	12/10/2015	0.98125746	150289	FT - Australia Index
Austria	AUT	7/1/1999	12/9/2015	0.985820958	150151	ATX Index
Belgium	BEL	7/1/1999	12/9/2015	0.972253657	150291	FT - Belgium Index
Brazil	BRA	7/3/1995	12/9/2015	0.936600276	151093	FTSE World Index - Brazil
Switzerland	CHE	7/1/1986	12/9/2015	0.982110614	150316	FT - Switzerland Index
Chile	CHL	2/28/2002	12/9/2015	0.954757294	151094	FTSE World Index - Chile
China	CHN	7/1/1994	12/10/2015	0.963081589	150164	Shanghai SE Composite Index
Colombia	COL	7/1/2005	12/9/2015	0.897174972	151095	FTSE World Index - Colombia
Czech Republic	CZE	7/3/1995	6/28/2002	0.948351602	151314	Prague Stock Exchange PX 50 Index
Germany	DEU	7/1/1999	12/9/2015	0.961549232	151251	FT - Germany Index
Denmark	DNK	7/1/1986	12/9/2015	0.972453745	150293	FT - Denmark Index
Egypt	EGY	1/3/2000	12/9/2015	0.884369437	151107	Hermes Egypt Stock Market
Spain	ESP	7/1/1999	12/9/2015	0.989133243	150314	FT - Spain Index
Finland	FIN	7/1/1999	12/9/2015	0.993747774	150022	Helsinki General Index (HEX)
France	FRA	7/1/1999	12/9/2015	0.989650989	150094	MSCI - France Index (12/31/69)
United Kingdom	GBR	7/1/1986	12/9/2015	0.995783932	150036	FTSE 350 Index
Greece	GRC	7/2/2001	12/9/2015	0.970246841	150098	Athens Stock Exchange General Index
Hong Kong	HKG	7/1/1986	12/10/2015	0.97620539	150945	FT - Hong Kong Index
Hungary	HUN	7/1/1996	12/9/2015	0.971334316	151210	Budapest Stock Exchange Index
Indonesia	IDN	7/2/1990	12/10/2015	0.957312866	150029	Jakarta Stock Exchange Composite Index
India	IND	7/2/1993	12/9/2015	0.957262823	150012	BSE 100 Index
Ireland	IRL	7/1/1999	12/9/2015	0.945838873	151246	FT - Ireland Index
Italy	ITA	7/1/1999	12/9/2015	0.984500374	150047	MSCI - Italy Index (12/31/69)
Japan	JPN	7/1/1986	12/10/2015	0.98268529	150048	MSCI - Japan Index (12/31/69)
South Korea	KOR	7/1/1988	12/10/2015	0.970004201	150035	Korea Stock Exchange Composite Index
Mexico	MEX	7/1/1993	12/9/2015	0.915339611	150304	FT - Mexico Index
Malaysia	MYS	7/3/1989	12/10/2015	0.974399989	150033	KLSE Composite Index
Netherlands	NLD	7/1/1999	12/9/2015	0.971641622	150262	Amsterdam AEX - Index
Norway	NOR	7/1/1988	12/9/2015	0.968383304	150307	FT - Norway Index
New Zealand	NZL	7/1/1991	12/10/2015	0.936528314	150309	FT - New Zealand Index
Philippines	PHL	7/1/1992	12/10/2015	0.93619581	151125	Philippines SE Composite Index
Poland	POL	7/3/1995	12/9/2015	0.974735006	150270	Warsaw W.I.G Index
Portugal	PRT	7/1/1999	12/9/2015	0.979471135	150354	PSI 20 Index
Singapore	SGP	7/1/1986	12/10/2015	0.955326627	150313	FT - Singapore Index
Sweden	SWE	7/1/1986	12/9/2015	0.977320427	150315	FT - Sweden Index
Thailand	THA	7/4/1988	12/9/2015	0.946743263	150068	The Stock Exchange of Thailand (SET) Index
Turkey	TUR	2/21/2006	12/9/2015	0.98330036	151337	ISE 30 INDEX
Taiwan	TWN	7/4/1988	12/10/2015	0.959847345	150072	Taiwan Weighted Index
South Africa	ZAF	6/25/2002	12/9/2015	0.921649135	150943	JSE/FTSE All Share Index

<sup>1</sup> Date range we used to make the comparison.

<sup>2</sup> Correlation coefficient between WRDS World Index and the index shown in GVKEYX

<sup>3</sup> Unique identifier and primary key for each index in Compustat database