Global financial Data has calculated a new World Index that extends from the beginning of stock markets in Amsterdam in 1601 to the present day. It will succeed the original World Index that GFD first calculated 20 years ago. With the World Index 2.0 we can clearly distinguish the four eras that the stock market has evolved through during the past 400 years: Mercantilism, Free Trade, Regulation and Globalization. We can analyze how the stock market behaved in each of the four eras as well as each global bull and bear market the market has passed through during the past 400 years. Until now, no one has calculated a World Index that precedes 1900 and no one has calculated an index which is reweighted on a regular basis. Now, an index that provides a complete history of global equity markets is available. GFD also provides world bond indices that can be compared to the global equity indices, and calculates sub-indices that include the World excluding the United States, the World excluding the US and UK, a European Index, an index for Emerging Markets and others. Without these global composites, it is impossible to understand the behavior of stocks, bonds and bills over the past 400 years.

The Four Eras

Global Financial Data divides the past four centuries of the stock market into four eras: Mercantilism (1601-1799), Free Trade (1800-1914), Regulation (1914-1981), and Globalization (1981-). The stock market was fundamentally different during those four eras affecting equity and bond returns, the dividend yield and the equity risk premium. During the period of Mercantilism, government favored national monopolies that could trade with the rest of the world. The Dutch had the East India Company (Vereenigde Oost-Indische Compagnie) and the West India Company (Geoctroyeerde Westindische Compagnie). The French had its own East

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India Company (Compagnie des Indes) which traded in all parts of the world. England had three companies which dominated their stock market during the 1700s, the Bank of England, the East India Co. and the South Sea Co. In addition to these three companies, British 3% Consols represented the majority of trading in London as Britain funded its wars in the 1700s through debt and investors sought a reliable source of income. Data in the index before 1692 includes only one company, the Dutch East India Company. The Committee of Public Safety banned all joint-stock companies in France on August 24, 1793. The Dutch East India Company was nationalized in 1796 and dissolved in 1799, and the Dutch West India Company was purchased by the Dutch government on January 1, 1792. While financial markets were closing down on the continent, markets were reborn in England and in the United States. The Bank of Ireland was founded in 1783 and the Irish Grand Canal in 1784. During the 1790s, Britain went through its first canal mania with investors in the British midlands investing in canals that could carry the output of their mills to the rest of the country. The Bank of North America was established in 1784 and the Bank of the United States was incorporated in 1791. Hundreds of banks and insurance companies were incorporated in the United States in the decades that followed. The Banque de France was established in 1800. Growth really began with the establishment of railroads in the 1820s and 1830s which by the 1840s dominated stock markets in the United States, the United Kingdom, France, Germany and other countries. Although free trade didn't exist in 1800, the foundations of the global economy were being laid. The period of Free Trade came to an abrupt end when World War I began. By July 31, 1914, virtually every stock market in the world had closed to prevent shareholders from selling their stocks and bonds. Capital was no longer free to cross borders. Financial markets faced restrictions they had never faced before. During World War I, capital flowed into government bonds, not corporate coffers. Even when stock exchanges reopened, price restrictions limited the amount of trading that could occur. The Berlin and St. Petersburg stock exchanges didn't reopen until 1917, and the St. Petersburg stock exchange closed when the October Revolution led to the Communists seizing power in Russia. The period from 1914 until 1981 was one of government control over financial markets through regulation after World War I, and nationalization after World War II. Capital controls limited the ability of money to flow from one country to another. Before 1914, global financial markets were integrated and bond interest rates converged to the international average. After 1914, national stock and bond markets moved independently of one another. Different domestic inflation rates and risk of default produced different national interest rates. By 1981, interest rates were peaking and equities were in a bear market. The integration of global financial markets was once again seen as a solution to allocating capital more efficiently. After the Soviet Union collapsed in 1991, stock markets were reestablished in St. Petersburg and other former Communist countries including China. European governments privatized industries that had been nationalized after World War II, and in the United States regulated industries were deregulated. Deregulation affected banks, railways, telecommunications and utilities, the steel industry, airlines, and other infrastructure-related industries. The impact of introducing globalization is visible in Figure 1 which adjusts GFD's World Index for inflation. There was almost no change in the value of the index until the 1980s when Globalization began and the index exploded upward.

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Figure 1. World Index Adjusted for Inflation, 1792 to 2018

The impact of these changes is also visible in Figure 2 which shows global stock market capitalization as a share of GDP from 1900 until 2018. Between 1914 and 1981, there was no increase in world stock market capitalization as a share of GDP, but after 1981, this ratio increased dramatically. Despite opposition to Globalization in some countries, the integration of global capital markets is likely to continue for the future.

Figure 2. Global Stock Market Capitalization Relative to Global GDP

Calculation of the Indices

Data from 1601 to 1815 is market-cap weighted by company. The index includes 38 companies from the United Kingdom, 3 from France, 3 from the Netherlands and 29 from the United States creating a total of 73 companies the index is based upon. We have data on the price, dividends

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and shares outstanding for each company. If any of those three variables was unavailable, we excluded the company from the index. Beginning in 1815, we use indices from each country as the basis for the index and weight each country according to actual or estimated market caps for that country. The market caps are revised every five years, and these are used to weight each country in the index for the next five years. We use the market caps on December 31, 1814 for the weights between 1815 and 1819, the market cap on December 31, 1819 for the weights between 1820 and 1825, etc. Price and return indices are monthly in periodicity using end-of-month values. All values were converted to British Pounds for the data through 1815, and all data after 1815 were converted to United States Dollars. Data for the price indices, return indices, and stock market capitalization that were used to calculate these indices are available from Global Financial Data. Twenty-four countries are included in the developed indices: Australia (1825-), Austria (1925-), Belgium (1900-), Canada (1825-), Denmark (1875-), Finland (1915-), France (1718-1793, 1801-), Germany (1835-), Hong Kong (1965-), Ireland (1800-), Italy (1925-), Japan (1915-), Luxembourg (1930-), Netherlands (1601-1794, 1915-), New Zealand (1865-), Norway (1915-), Portugal (1980-), Russia (1865-1928), Singapore (1965-), Spain (1915-), Sweden (1870-), Switzerland (1915-), United Kingdom (1692-) and the United States (1792-). All other countries were treated as emerging markets and excluded from the index. Tsarist Russia before 1918 is treated as a developed market and data for the Russian Federation after 1991 is treated as an emerging market. Twenty-six countries are used in the emerging market indices increasing the total number of countries that are included to fifty.A graph of the index for the twenty-four developed markets is provided in Figure 3.

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Figure 3. GFD World Price Index, 1601 to 2019

Since these are market-cap weighted indices, a few countries figure prominently in the calculation of the index. Figure 4 shows the market cap of countries between 1900 and 2000. The United States clearly represents the largest portion of the market cap. Britain represented a large portion of the market cap until the 1950s and between those two countries, the United States and the United Kingdom represented 60% to 70% of the market cap during most of the twentieth century.

Figure 4. Market Capitalization Weights by Country 1900 to 2018

The role of the Anglo-Saxon countries became particularly important during the period of Regulation between 1914 and 1981. If you add the other Anglo-Saxon countries of Canada, Australia and New Zealand to the United States and the United Kingdom, those five countries represented almost 80% of the global stock market capitalization in the 1950s and 1960s. Even today, these five countries represent over 63% of the total market capitalization of S&P's World Broad Market Index. For this reason, we have calculated a number of indices that exclude the larger countries from the indices so the performance of the smaller countries can be tracked. In addition to the World Developed index, we also calculate equity and bond indices that exclude the United States, exclude the United States and Canada, exclude the United States and the United Kingdom, exclude the five Anglo countries, and include only the Anglo countries. We also calculate indices for Europe, Europe excluding the United Kingdom, Europe excluding the

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United Kingdom, France and Germany, the Euro-11 and the G-7. A comparison of the performance of the United States, the United Kingdom and France with the World index in Figure 5 shows the clear benefits of diversification. The World Index has outperformed all three countries since 1800. France was the top performing country up until the 1860s, primarily because of its strong recovery out of the bear market of 1848, but the French stock market made virtually no progress between the 1860s and 1970s. The United States was the top performer after 1860 and the United Kingdom did well between 1974 and 2008.

Figure 5. GFD World, USA, United Kingdom and France Price Indices, 1800 to 2018

The blip in the index during the 1860s is due to the American Civil War when the U.S. Dollar depreciated relative to other currencies. Although you often hear about the Railway Mania in England in the 1840s, the impact of railroads was even greater in France than it was in England. France had a severe downturn in 1848, but recovered quickly. However, France underperformed relative to the rest of the world between 1914 and 1981, due to the inflation and the nationalizations that France suffered after World War II. Although the British stock market lost half of its value during the 1929-1932 depression, British stocks were hit even more severely during the 1973 crash when the stock market fell over 70% because inflation and government bond yields went over 20%. The United States underperformed in the early 1800s because the U.S. index only included finance stocks. The United States outperformed the rest of the world after the civil war, but had its worst decline during the 1929-1932 Depression. Since 1900, as can be seen in Figure 6, the United States has outperformed the rest of the world. The World excluding the United States has provided a similar performance to Great Britain with French stocks the clear loser. It should be noted that the correlation between different countries was much lower in the 1800s than it was in the 1900s and has increased dramatically during the period of Globalization since 1981.

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Figure 6. GFD World, USA, United Kingdom and France Price Indices, 1900 to 2018

Unfortunately, other World Indices have very little history compared to GFD's world index; however, we were able to compare the performance of GFD's World Index (black), the MSCI Developed World Index (blue) and FTSE World Index (green). GFD's World Index has outperformed the other two indices since 1987, but the overall differences in the performance of the three indices are slight as Figure 7 indicates.

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Figure 7. GFD, MSCI and FTSE World Indices 1988 to 2018

Total Returns

Table 1 presents the returns to stocks and bonds over the past 400 years. Data are available for equities beginning in 1601 and for bonds beginning in 1700.

Era	Years	Equities Price
Mercantilism	1601-1799	1.12
Mercantilism	1700-1799	0.1
Free Trade	1800-1914	1.79
Regulation	1914-1981	3.68
Globalization	1981-	7.28
All Equities	1601-	2.25
Equities & Bonds	1700-	2.38

Between 1601 and 2018, stocks had capital gains of 2.25% per year, paid dividends of 4.62% and provided a total return of 6.98%. Between 1700 and 2018, stocks had annual capital gains of 2.38%, dividends of 3.86% and a total return of 6.34%. Bonds returned 4.81% per annum which makes the equity risk premium 1.46% over the past 318 years. Changes in the Equity Risk Premium can be explained by changes in the relative risk of stocks and bonds over time. During the period of Mercantilism both government bonds and the mercantilist monopolies were managed by the government, so there was little difference in the risk profile of stocks and bonds. Consequently, the equity risk premium was lowest in the period of mercantilism. The equity risk premium was at its highest during the period of government regulation between 1914 and 1981 when Keynesian policies influenced interest rates and markets through regulation and nationalization. Since 1981, declining interest rates have generated high returns to bonds closing the gap between the returns to stocks and bonds. Since financial repression has pushed down interest rates in Europe and the United States over the past ten years, the equity risk premium is likely to grow in the future. Returns varied greatly during the four eras. The past 37 years of globalization have provided the highest capital gains at 7.28%. a dividend yield of 2.52% and a total return of 9.98%. Rising taxes have favored capital gains over dividends during the twentieth century. The Equity risk premium has generally risen over time, rising from 0.87% in the 1700s to 3.02% during the period of regulation and 1.79% during the period of globalization. Era Years Inflation Equities Price Equities TR Bonds Mercantilism 1601-1799 0.33 0.79 6.6 Mercantilism 1700-1799 0.42 -0.32 4.61 3.7 Free Trade 1800-1914 0.37 1.41 5.94 4.86 Regulation 1914-1981 3.27 0.4 3.14 0.11 Globalization 1981- 2.69 4.47 7.1 5.21 All Equities 1601- 1.05 1.19 5.87 Equities & Bonds 1700- 1.31 1.06 4.96 3.45 Table 2. Returns to Stocks and Bonds, Adjusted for Inflation, 1601 to 2018 Table 2 provides total return data adjusted for inflation, using the United Kingdom for inflation from 1601 to 1799 and the United States from 1800 to 2018. After adjusting for inflation, equities provided annual inflation-adjusted capital gains of 1.19% between 1601 and 2018, and a total return of 5.87%. Between 1700 and 2018, bonds provided annual inflation-adjusted returns of 3.45%. There was virtually no inflation between 1601 and 1914. Inflation was highest between 1914 and 1981 and has fallen since

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then. Adjusting for inflation, returns have been the strongest during the period of globalization since 1981. Returns were markedly lower during the period of Regulation between 1914 and 1981. This particularly affected bonds which barely kept up with inflation. Bonds benefitted from declining interest rates after 1981, but now that interest rates have stabilized at such a low level, future returns to bonds are likely to be lower. Bull and Bear Markets Table 3 provides a list of the global bull and bear markets that have occurred in world stock markets between 1600 and 2018. GFD defines a bull market as a 50% increase in the price of equities and a bear market as a 20% decline in the price of equities. It should be remembered that the data from the 1600s represents the behavior of only one stock, the Dutch East India Co. Overall, there were six bear markets in the 1600s, five bear markets in the 1700s, only two bear markets in the 1800s, seven bear markets in the 1900s and so far, only two bear markets in the 2000s. The correlation in the performance of the underlying markets has increased over time.

Month	Value	Change
12/31/1602	1.000	
07/31/1607	1.127	-31.76
12/31/1617	1.121	-45.39
11/08/1625	1.463	-21.12
08/31/1665	3.267	-44.37
06/30/1672	2.903	-47.30
10/09/1696	2.990	-46.71
02/28/1701	5.255	-36.25
03/31/1712	6.522	-39.95
01/29/1762	5.744	-89.28
10/31/1784	6.677	-37.35
05/31/1797	6.813	-41.37
11/30/1848	16.409	-34.20
11/30/1870	36.563	-53.36
7/31/1921	48.041	-39.83
6/30/1932	35.880	-75.32
5/31/1940	64.134	-39.94
9/30/1949	84.830	-26.36
6/30/1970	377.579	-25.27
9/30/1974	384.136	-42.70
9/30/1990	2309.493	-25.10
9/30/2002	4096.959	-47.24
2/28/2009	4290.434	-55.99

Table 3. Global Bull and Bear Markets, 1601 to 2018

It is interesting to note that the market bottom in 1932 was 35% below the market top in 1719. The longest and deepest bear market in world history followed the 1719 Mississippi-South Sea Bubble when the market declined by 89% between 1719 and 1762. The longest bull market occurred between 1791 and 1845, which ended in the railway mania of the 1840s. The 1929 to 1932 decline was the second worst bear market in history, during which the market declined by 75%, primarily because of the large decline in the stock market in the United States. Surprisingly, the most recent bear market in 2007 to 2009 was the third worst bear market in the

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past 400 years. This also emphasizes how severe the 2008 bear market was and the fact that global bear markets with a decline over 50% are rare events. The bull market leading up to the 1719 peak was the strongest bull market in history with prices rising 721% between 1712 and 1719. The market rose 702% between the market bottom of 1974 and the market top in 1989; however, if you use data from MSCI for their Developed World Index, the market declined 23.7% between August 27, 1987 and October 26, 1987, then rose 50.92% by January 4, 1990, barely qualifying the 1987 to 1990 rise as a separate bull market. If you adjust for inflation, you get different results as well. Inflation reduces the 1949 to 1968 increase from 495% to 302% and reduces the 1974 to 1989 rise from 702% to 222%. Definitions count.

Conclusion

Global Financial Data was the first company to calculate a world index that preceded MSCI's World Index. GFD's original index went back to 1919. Over the past 20 years, GFD has added data from new sources that extend the historical indices for different countries. In addition to this, GFD has collected data on the U.S. and London Stock Exchanges so it could calculate market-cap indices that begin in 1692 for London and 1792 for the United States. We have also calculated indices for the emerging markets that listed in London in the 1800s as well as indices for Russia, Denmark and other countries using data we have collected from those countries. Just as the Standard Statistics Composite succeeded the Dow Jones Industrial Average, the Standard and Poor's 500 succeeded the Standard Statistics Composite and the Wilshire 5000 succeeded the Standard and Poor's 500, so GFD's World Index 2.0 succeeded its original World Index. GFD's Global Bond Composites have also been revised to match the new Equity indices that GFD provides. Global Financial Data's World Index 2.0 provides the most complete history of global equity markets ever produced. Since there is virtually no equity history before the advent of the Dutch East India Co. in 1601, it seems unlikely that a world index with more history will ever be produced.

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