

Topics in Asset Pricing
University of Tokyo
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Homework #3

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Topic: Using LyX and Data Software

Question:

#1. Presenting Data using LyX and Software:

The following data from the World Bank represents the stocks traded within certain nations in the year as a total value of percentage of its GDP over the 20 years.

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Australia	36.120	34.486	38.952	51.151	51.385	63.566	73.807	90.419	88.939	88.399
USA	85.992	107.632	135.384	194.767	289.574	196.610	155.344	139.393	155.627	196.981
Japan	25.269	24.104	26.707	45.768	52.440	40.914	43.523	54.099	74.266	94.878
China	35.749	38.726	27.738	18.809	62.442	34.737	23.135	23.516	26.342	17.296

Table 1: Stocks Traded, Total Value (% of GDP) 1996-2005

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	115.004	160.982	79.629	90.817	99.045	81.191	58.906	50.3776	48.360	56.037
USA	220.713	295.992	320.992	237.929	240.741	264.504	200.241	199.526	224.674	230.671
Japan	126.207	151.178	128.036	76.823	77.660	72.944	56.174	123.922	105.408	135.124
China	42.457	178.975	85.667	154.776	136.725	89.076	59.412	81.091	115.537	361.903

Table 2: Stocks Traded, Total Value (% of GDP) 2006-2015

Using these data figures and inserting them into the software program Mathematica we can graphically represent the data.

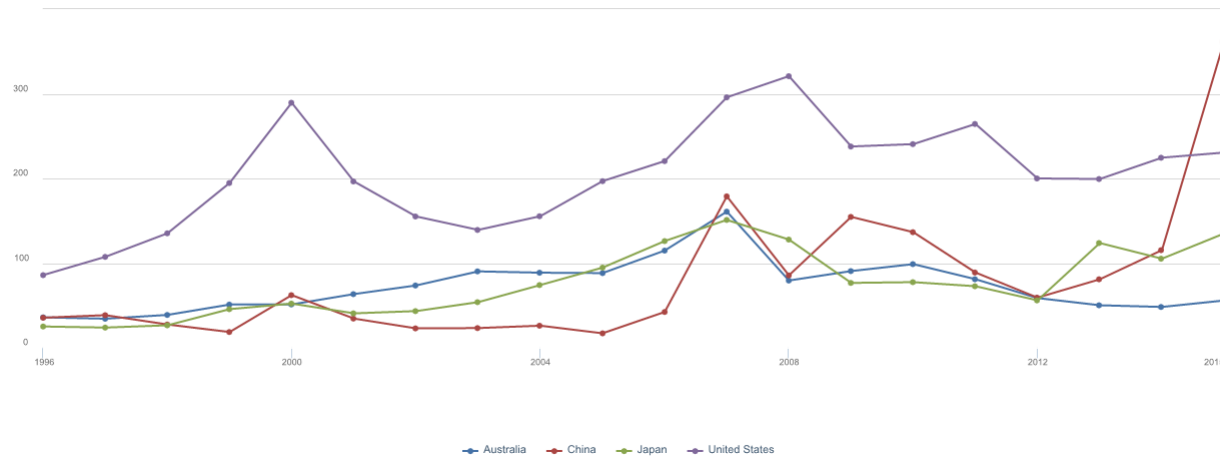


Figure 1: Stocks Traded, Total Value (% of GDP) 1996-2015

The following data shows intriguing trends as to how much emphasis a nations financial market places on security trading in comparison to its GDP. The US shows the strongest emphasis on stock trading in comparison to the other nations as since 1997 it has always traded stocks valued over 100% its GDP peaking at 321% in 2008. Japan and Australia have had similar looking trends generally trading around 70%-80% of stock value compared to GDP and only spiking over 100% leading into the GFC of 2007-2008. China has a steady trend however from 2014-2015 spiked its stocks traded by over 200% with it trading 362% of its GDP value in stocks in 2015. Using Mathematica we can determine the mean over the 20 years for each of the countries as to how much average financial emphasis they place on their stock trading in respects to GDP.



Figure 2: Average Values of Stocks Traded/Total Value (% of GDP) for each country 1996-2015

The average values amongst China, Japan and Australia differ only slightly, even despite the Chinese outlier value of 2015, all valuing at around 70-80%. However as stated the US averages its value of stocks traded at roughly 204% of its GDP total value over the past 20 years. This illustrates the immense financial value of stocks traded within the US as it trades stocks on average double the value of its GDP which has increased from \$8.1 trillion US in 1996 to \$17.947 trillion US in 2015.

Another interesting point of data to investigate is whether financial crises or events within a certain time period affected the percentage of stocks traded within nations. Taking again the 4 respective nations we measure the averages of its stocks traded in each year from 1996.

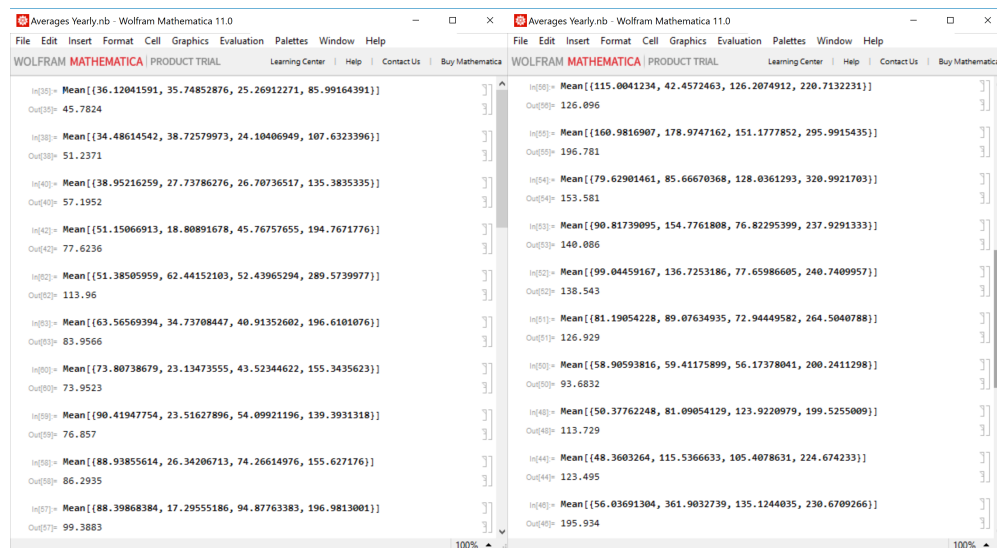


Figure 3: Average Values of Stocks Traded/Total Value (% of GDP) yearly 1996-2015

Now taking the averages and graphing them yearly from 1996 of the 4 countries;

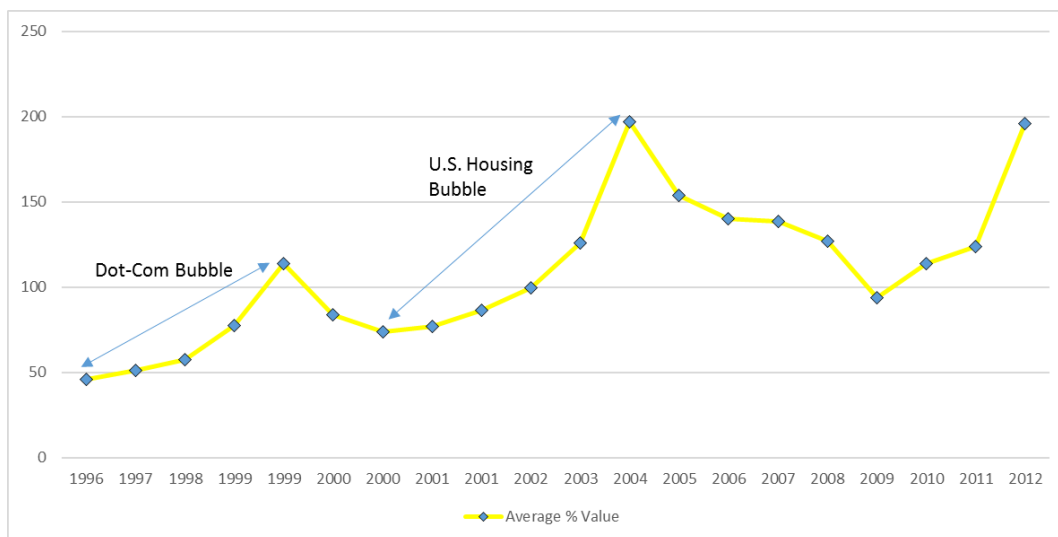


Figure 4: Average Value of Stocks Traded/Total Value (% of GDP) of AUS, USA, JPN and CHN 1996-2015:

From the data there does seem to be distinctive correlation between falls in stocks traded to financial crises. The Dot-com bubble went through the typical boom and bust cycle from 1995-2001. Correspondingly leading to the GFC of 2007-2008 the U.S. housing bubble peaked in 2004 but from there it began to cause the values of securities tied to U.S. real estate pricing to drastically plummet. Thus in times of such financial crises we can expect for stock trading firms and consumers to be more risk-averse due to financial instability and the number of stocks to be traded to decrease. There seems now to be a resurgence in stock trading especially as I mentioned in China. The average value of stocks traded as total value % of GDP is almost back the level it was in 2004. Perhaps we can expect another financial crises in the near future from another blooming asset bubble?

References

- [1] World Federation of Exchanges database. *Stocks traded, total value (% of GDP)*. The World Bank. 2016. [<http://data.worldbank.org/indicator/CM.MKT.TRAD.GD.ZS>] Oct. 14 2016.
- [2] World Bank national accounts data, OECD National Accounts data files. *USA GDP (current \$US)*. The World Bank. 2016. [<http://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2015&locations=US&start=1996>] Oct. 15 2016.
- [3] Software used: LyX, Mathematica, Mendeley, Grammarly.com.