

THE USE OF INFOGRAPHICS IN NEWSPAPERS' BUSINESS REPORTING ABOUT GLOBAL MARKET SWING

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ANALYSIS

Introduction

In August 2015, China's central bank devalued its official currency the renminbi, or yuan, nearly 2 percent, causing the biggest one-day loss against the U.S. dollar in nearly two decades. This unusual behavior provoked speculation that the world's second largest economy was slowing, and concern led to a massive sell-off on global stock markets, including those in Asia, Europe and the United States.

On Aug. 24, 2015, China's Shanghai Composite Index declined 8.5 percent, wiping out all its yearly gains. The state news agency Xinhua tweeted that it was "Black Monday!" In Europe, Britain's FTSE 100 index, Germany's DAX index and the Stoxx Europe 600 index all fell more than 4.5 percent. In the U.S., the Dow Jones Industrial Average plummeted more than 1,100 points in August, a fall of 6.6 percent. That's the biggest percentage drop for the Dow since May 2010.

This major economic event attracted worldwide attention. News outlets and business journalists reported it thoroughly, as it had many ramifications on both the U.S. and global economy. *CNN Money* reported that because the Chinese government normally keeps its currency's value pegged to the U.S. dollar, the surprise drop set off a wave of selling in global stock market. *The Street* said China now has "unprecedented"

influence on Federal Reserve and U.S. monetary policy. *Bloomberg* even asked in its report “Could China’s Yuan Devaluation Spark a New Financial Crisis?”

Understanding the implications of the devaluation of the yuan is important because back in August, there was speculation that the International Monetary Fund was likely to add the currency to its global monetary reserve basket. The resulting market volatility to last August may result in worries about the global financial market, especially fears of a “currency war” that other nations would follow China to make their exported goods cheaper on the world market.

On Nov. 30, 2015, the International Monetary Fund (IMF) officially agreed to add the Chinese yuan to its reserve currency basket, known as Special Drawing Rights (SDR). Therefore, it is timely to conduct an analysis about how media reported the market swing created by the devaluation of the currency and its resulting global influence.

Traditionally, news outlets use text, photos and videos for reporting. With the development of graphic technology and data reporting, information graphics, or infographics, are increasingly used to relay information on complex financial topics. This form is popular because the viewer can study a visual piece to gain more knowledge about the news development. Since the 1980s, infographics have been used in newspapers. However, few studies have been done to analyze the information and symbols in infographics and how they work together with text to better tell a story.

This professional analysis will examine infographics produced by several national newspapers related to the devaluation and stock market swing from August 2015 to September 2015. It will attempt to answer this question: what are the ideas or concepts

about finance that are conveyed through infographics in newspapers' reporting about the August 2015 stock market swing?

In the analysis, the literature review examines previous related research and literature to provide a foundation for new research. In considering the definition and development of infographics, the review further looks at infographics as a storytelling method in business and journalism. It also considers previous studies about the 2008 economic crisis, which will inform this analysis in both theoretical framework and method. Finally, it will review the research methodology to be used in the analysis.

Literature Review

Definition of infographics and its usage.

Infographic is the abbreviation of “information graphic” (Lankow, Crooks, & Ritchie, 2012, p. 20). It can also be called as “information visualization (InfoVis) or data visualization” (Stasko, 2010, as cited in Siricharoen, 2013).

Different scholars offer different definitions to infographics, such as that an infographic “is a visualization of data or ideas that tries to convey complex information to an audience in a manner that can be quickly consumed and easily understood” (Smiciklas, 2012, p. 3). But among all the different given definitions, “visual, content and knowledge” are the three key elements (Siricharoen, 2013). An infographic can be a number of elements combined with type to tell a story.

Infographics were first used in the early 1980s with the advent of color and as newspaper design was first used as a tool to make things clear. *USA Today* led the way during what was termed a graphics revolution, but newspapers such as the *St. Petersburg Times*, *Los Angeles Times* and *Chicago Tribune* preferred this use on new Macintosh

computers, which made data visualization more possible with its revolutionary graphics interface. That made graphics more possible for a new group of graphic specialists.

Infographics were simply used to assist journalists to report. Especially for newspapers, infographics can provide much more detailed information in a limited space (Siricharoen, 2013).

USA Today, launched in 1982, is regarded as the originator and leader in the movement of using infographics among U.S. newspapers (Siricharoen, 2013; Tankard, 1989). Lott (1994) noted that *USA Today* used infographics at the bottom of each section's front page as well as throughout the newspaper every day. After the success of *USA Today*, editors of other U.S. newspapers also realized the potential of infographics. In the next decade after *USA Today*'s launch, the usage of visual elements in storytelling totally changed the look of American newspapers (Utt & Pasternack, 1993).

Several studies have been done to examine the reasons why newspapers now use infographics more often than ever. In general, the reasons found by those studies can be categorized into external factors and internal needs.

External factors include the influence of *USA Today*, the development of technology (Smith & Hajash, 1988) and more severe market competition between newspapers (Kenney & Lacy, 1987). The updated technologies of the Macintosh systems (Lott, 1994), graphics wires, electronic scanning and satellite transmission systems (Utt & Pasternack, 1989) helped newspapers develop more infographics themselves.

Infographic service systems like *Associated Press Graphics*, *Knight-Ridder Tribune News Graphics*, *New York Times Computer Graphics*, and *Gannett News Service* also made

infographics more accessible to newspapers (Utt & Pasternack, 1993; Utt & Pasternack, 2000).

Internally, newspaper editors are more aware of infographics (Smith & Hajash, 1988). They hope the use of infographics can supplement text, help readers better understand stories and make the look of their newspapers more attractive (Utt & Pasternack, 1993; Utt & Pasternack, 2000).

Another internal need is that infographics can be used to help serve certain goals of newspapers. One study under the circumstance of general elections in 2000 found that public journalism would use more graphic elements to cover issues, analyze and offer contact information than traditional ones. This finding showed that visual elements can and do convey meanings that are consistent with public journalism (Coleman & Wasike, 2004).

Change of newspapers and the development of infographics.

Utt and Pasternack (1989) found that, by 1983, more color was being used on the front pages of U.S. daily newspapers. Half used four-color photographs on Page 1 regularly and more than half used spot color every day.

However, Smith and Hajash (1988) found that students loved newspapers with color, and the color did not lessen the newspaper's credibility. When evaluating the newspaper, readers may pay attention to other, non-design factors.

Additionally, infographics became a regular feature in newspapers. A 1987 study (Kenney & Lacy, 1987) found that graphics consumed 27 percent of total space on newspaper front pages. Smith and Hajash (1988) also discovered that, the total 210 studied printed editions of 30 U.S. daily newspapers published during one week in 1986

has an average number of 31.56 infographics per newspaper and 4.51 per edition. In 1991, about six infographics were used in the entire paper every day in more than one-third of the studied newspapers (Utt & Pasternack, 1993).

Maps, bar charts, line charts and pie charts are the most commonly used infographic forms in newspapers (Siricharoen, 2013; Tankard, 1987; Utt & Pasternack, 1993), and most of the infographics are distributed in newspaper sections like business/economics, weather and inside news pages (Smith & Hajash, 1988; Utt & Pasternack, 1993). Based on usability, the types of infographics can also be categorized as statistical based, timeline based, process based and geography based (Siricharoen, 2013).

Software advances and increased training created more complex characteristics. As newspapers struggled and shrank in number of pages and newshole, the number of infographics decreased in all sections of newspapers, particularly in the use of bar charts, pictorial graphics and 3D graphics. But Utt and Pasternak (2000) noted that the few information graphics used were “better” -- more complex and content driven -- in today’s newspapers.

As more content moved online, infographics also evolved with the digital environment. Technologies like HTML5 can also make infographics more interesting and interactive (Siricharoen, 2013). Interactive infographics can help online news media offer content and service that print edition cannot provide, which can be referred as “added values” (Schroeder, 2004). With the help of computer software, more colorful and beautiful infographics can be created faster and easier. From this aspect, new interactive infographics can be a valuable study area for later research.

Other countries also experienced the same transition. One study (Bekhit, 2009) found that even though newspapers in the United Arab Emirates newspapers used fewer infographics on their front pages, the general number of infographics still increased. One study (Schroeder, 2004) found nearly all the surveyed news sites in Spain offered interactive infographics. Some of the news sites were recognized internationally for that.

In conclusion, the use of infographics in newspapers has evolved steadily over 30 years to meet reader needs. And because of the impact of globalization and the Internet (Bekhit, 2009), it also becomes a global trend.

Telling business stories with Infographics.

Infographics in newspapers do more than complement stories. They add storytelling value and meaning. Many studies reflect this. Segel and Heer (2010) identify the distinct genres of visual storytelling from 58 visualization samples in their research.

The storytelling potential makes infographics reach wider areas. During major political events, such as general elections, the use of infographics can help newspapers better inform citizens about the candidates and election results (Coleman & Wasike, 2004).

In the real business world, more and more companies and organizations are using infographics as a tool to communicate with their audiences (Smiciklas, 2012) and building their own brands (Lankow, Crooks & Ritchie, 2012). Some companies also use infographics in their financial reports and send them to company officials and news outlets.

Those graphics enhance business sections. But the content and meanings in those infographics have long been ignored.

Conclusion.

Numerous previous studies have been done on infographics. Most involve are quantitative research focused on the actual effects of using infographics in newspapers. This includes helping readers recall or understand the stories in newspapers.

There are several qualitative research studies about the workflow of using infographics in newspapers and how editors and producers approach that workflow. But few involve infographics as media content, instead trying to study the symbols and meanings within them.

The above literature inspired the assumption that when covering the latest market swing, newspapers are more likely to use infographics together with text to tell a story to their audiences. Those infographics may also reflect political economic and cultural changes at that time. Those conveyed meanings can be related to neoliberal capitalism. But no previous academic research has explored this topic and examined those infographics. Therefore, based on the literature, the specific research questions that this project will try to give answers to are:

Q1. What are primary concepts and meanings conveyed through these financial infographics as reported by various news outlets covering the yuan devaluation of August 2015 and resulting market volatility? Are there any similarities and differences between various news outlets?

Q2. What patterns emerge (such as the use of certain symbols, words and images) in those infographics and how are they represented through visual representation techniques?

Methodology

Textual analysis.

To answer the proposed research questions, Textual analysis will be used in this study. Textual analysis is used mostly for studies of the way social issues are represented in mass media. Visual analysis, as part of textual analysis, focuses more on the visual representations (Jewitt & VanLeeuwen, 2001, p.1). It is a systematic, observational qualitative method that can be used to test hypotheses about how media represent events and situations (Bell, 2001).

Content is still vital for infographics. Concepts and meanings conveyed in infographics are normally abstract and lack obvious existing representations (Gershon & Page, 2001). Therefore, symbols with complex social codes are used. To study the concepts and meanings, visual analysis can be used to help search for patterns and meanings (Collier, 2001) of those visual elements, and help to decipher the metaphors for representing information.

To increase reliability and validity, Matthes and Kohring (2008) developed an alternative method in the textual analysis of media frames. They propose that frame elements are systematically grouped in a specific way. The pattern of frame elements can be identified using cluster analysis across several texts. Their approach will inform the method that will be used in this study.

Sample selection.

The body of infographics to be analyzed will comprise infographics in major national newspapers' print business section in different regions of the world, including

the *New York Times*, *USA Today*, *the Washington Post*, *Financial Times* and *South Morning China Post*.

These newspapers were chosen because they are widely recognized as major national newspapers. They all have a business section and have a reputation for providing high-quality financial news content. And newspapers like *The New York Times* (Segel & Heer, 2010) have regularly used dynamic infographics in their news reporting. They also covered the major markets that were affected in the global stock market swing. Therefore, they can be credible and representative sources to collect infographic and text samples.

The analysis will mainly focus on the dynamic infographics and written stories in these newspapers' printed editions and exclude those on their websites. This is because that online infographics may have different components and may involve more interactive elements. Regarding the use of a common denominator, it's misleading to compare printed infographics with online ones.

The time frame of those selected infographics is from Aug. 1 to Sept. 1, 2015. This time frame includes the time when China devaluated its currency nearly 2 percent and when global stock markets fell dramatically, wiping out all gains made in 2015. Therefore, selecting this specific time frame can help narrow down the number of the infographics to be examined, but still can ensure their relevance. Infographics and articles produced during this time directly related to the currency devaluation and market swing were collected as samples used for analysis.

Moreover, infographics normally are not used alone. Most of the time, they are used to accompany stories. For this research, the meaning in stories will also be taken

into account. Moreover, in infographics, there still can be some texts (titles, notes and captions). These texts are part of the infographics, so their meanings will also be examined together with other visual elements.

Analyzing procedure and expected results.

When analyzing the infographics, Collier's (2001) basic model for visual analysis will be used. First, all the infographics will be taken as a whole to discover some repeating or missing patterns. They can be certain symbols, texts and images. Then, they will be coded and make generalizations about their similarities and differences. An inventory of the categories of these patterns can be used to help the analysis. After that, meanings conveyed by those visual records will be found and the political economic approach will be used to produce deeper analysis.

As expected results, meanings related to the economic crisis, like stock markets, currency and finance system might be found conveyed by the infographics. These meanings can be constructed by the use of certain symbols, words and images in the infographics, and they may be related to the neoliberal trend in global media.

The chosen newspapers may have different ownerships, business mechanisms and news philosophies. As a result, the meanings conveyed by each newspaper's infographics might have slight differences. These differences can be an important part of the final result. But because they are covering the same economic event, the infographics produced must share some common meanings and practice. These similarities are the main focus of the result.

Overall, for this research, visual analysis can help answer the research questions in a systematic and academic way. After taking the qualitative research class, I'm

comfortable and prepared to use this method for this project. But visual analysis itself still has some unavoidable limitations. Visual elements such as infographics normally have complex social meanings. This means that we can only study those simple, widely recognized social categories (Bell, 2001). This can also be the limitation of this research.

Results

A total of 301 articles and 116 infographics were collected and coded from five different newspapers – *The New York Times*, the *Washington Post*, *USA Today*, *Financial Times* and *South China Morning Post*.

General.

Table 2

The number of sample articles and infographics by publication

	Number of articles					Number of graphics
	8.1 – 8.11	8.12 – 8.24	8.25 – 8.29	8.30 – 9.1	Total	
New York Times	1	17	16	1	35	35
Washington Post	0	9	23	2	34	10
USA Today	0	18	23	2	43	19
Financial Times	4	62	29	6	101	35
South China Morning Post	7	42	34	5	88	17
Total					301	116

On Aug. 11, the Chinese government suddenly announced the devaluation of the Chinese currency renminbi (yuan). On Aug. 24, there was a large scale stock sell-off starting from the Chinese and other Asian stock markets. It then spread to Europe, and at last ended in the U.S. It was called the “Black Monday” for the global market in many news coverages.

Of the 301 collected articles, most of them were published between Aug. 12 and Aug. 29, which is after the devaluation and during the week of global market turmoil. It is consistent with the general timeline of the actual event. It shows that these media followed this major economic story thoroughly and tried to cover it from all perspectives.

Among all the studied newspapers, *Financial Times* has the most related articles, followed by *South China Morning Post* and *USA Today*. *Financial Times* is a London-based business- and finance-focused newspaper. This devaluation and stock market story is directly related to its interest and expertise.

South China Morning Post, based in Hong Kong, also produced a considerable amount of content because the devaluation and market swing is directly related to China. Hong Kong is an important financial center and renminbi harbor and it worries about its future development. So, it reported this financial incident based on both local interest and international attention. *USA Today* as a national daily newspaper in the United States paid much attention to the influence of market turmoil on U.S. companies and the general U.S. economy.

The *New York Times* is the largest and most influential publication examined in this research. Its business section not only covers business news within the U.S. market, but also regularly pays much attention to the global economy. Therefore, a total of 35 articles and 35 infographics from *The New York Times* were collected and coded.

Of the 35 articles, 14 didn't have any infographics. The most infographics that an article had is 5. It shows that when reporting the devaluation of renminbi and stock market, *The New York Times* is more interested in combining infographics with articles to tell the story.

In terms of the number of articles and infographics, the *Washington Post* both came last. Compared to other major U.S. newspapers, such as the *Times* and *USA Today*, the *Washington Post* didn't pay much attention to the U.S. stock market. So it has

the least content related to that topic in its business section. Most of its report was devoted to national and international financial policies.

Even though there are so many differences in the amount of these newspapers' general coverage about the devaluation and stock market turmoil, they still share some similarities.

On Aug. 25, the day after "Black Monday," the stock market swing hit worldwide headlines. This news appeared on the front page of all the studied newspapers besides the business section. Along with headlines and articles, related infographics were also appeared on the front page, signaling that it was the most important story of the day.

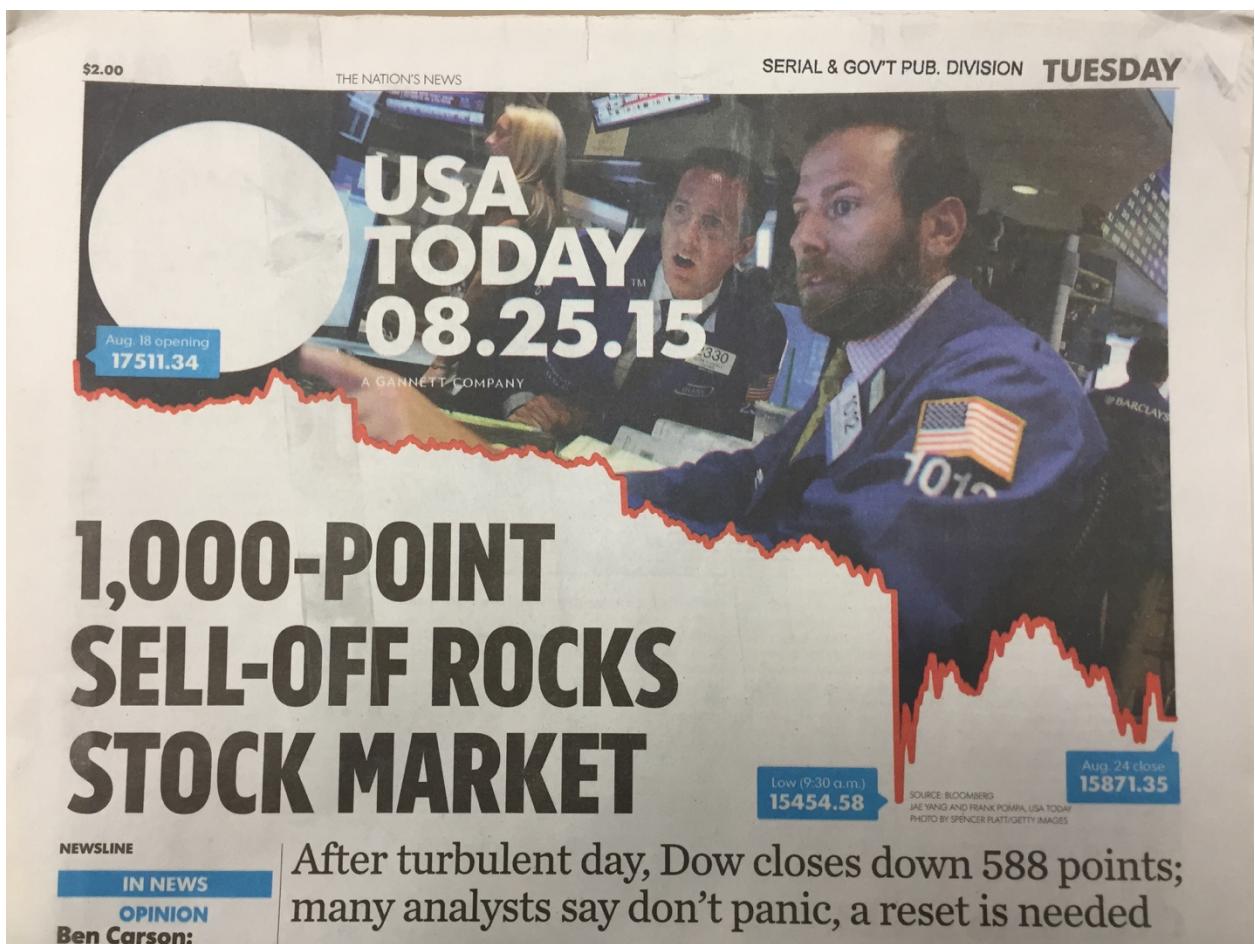


Figure 4: Front page of USA Today on Aug. 25, 2015.

The use of infographics on their front pages adds more visual elements to the newspaper. *USA Today* (Figure 4) even redesigned its title by combining an infographic with a picture. Secondly, those infographics are directly related to the story and can provide an easier way for audiences to understand the context. It turned out to be a national or even international breaking news rather than an ordinary business news. Readers would be naturally attracted and spend more time reading related articles and infographics.

Dominant line charts.

The vast majority of the 116 infographics are fever line charts. A line chart is the most common way to show trends over time and the easiest way to compare more than one group. In this case, line charts were used to show the changes of the stock markets in Shanghai, New York, Japan and Europe in a certain trading day, which is very appropriate. The index of the stock market is changing minute by minute. By using a line chart, a user can easily understand the lows and highs of the market that day. Those sudden slumps can also be shown clearly in the line charts.

For example, in “The Dow Minute by Minute” graphic (Figure 5) published by the *New York Times* on Aug. 25, we can see the sudden 1,000-point slump of the Dow Jones Industrial Average (DJIA) index within minutes after its opening. Here the line chart can show smaller variations than bar charts. Through the curve, a reader can understand how the stock markets changed and can feel the anxiety and shock that came along.

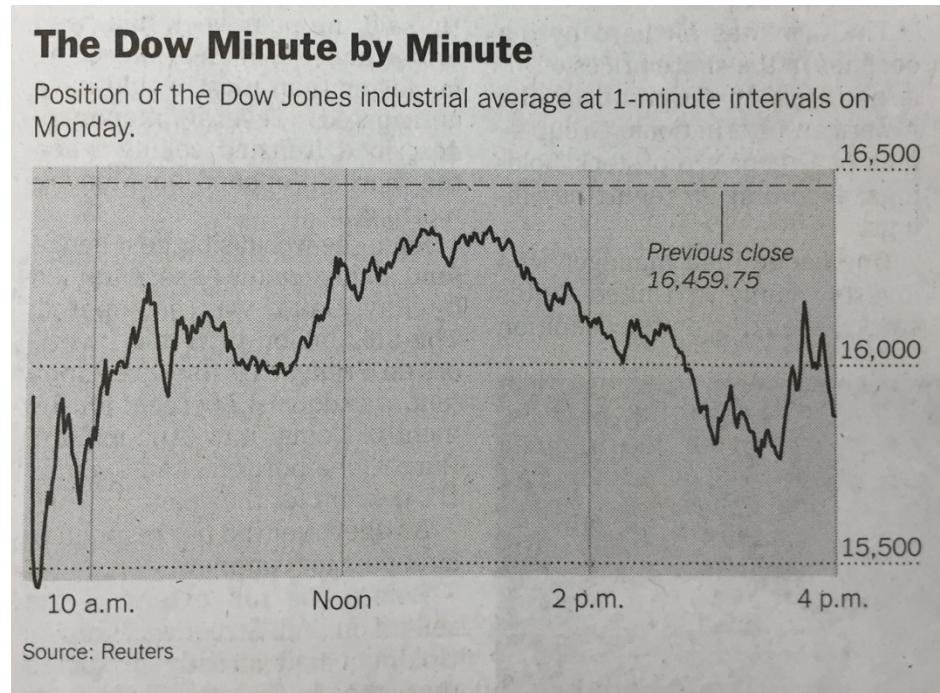


Figure 5: The Dow Minute by Minute, New York Times, Aug. 25, 2015.

Except the stock market, line charts were also used in showing earning yields, treasury high yields, China's economic growth and, most importantly, the rate between U.S. dollar and renminbi. Similarly, these concepts are all related to numbers, changes and trends.

In this line chart (Figure 6) about the value of yuan against U.S. dollar, we can see a nearly straight segment after a turning point on August 11. It can effectively represent the 1.9 percent devaluation, renminbi's biggest one-day drop since 1994. Also, it can reflect the idea of "sudden" and "abrupt" as many media used to describe this surprising move from the Chinese central bank.



Figure 6: Value of yuan against U.S. dollar, Washington Post, Aug. 12, 2015.

Normally, one line can just represent the changes of one element during a certain time. If an infographic just has one line, the information conveyed is very limited. To provide more information and make the best of the space on the paper for infographics, newspaper would either add more comparison data to a single graphic or group several graphics into a new one.

For example, the *Financial Times* graphic (Figure 7) is about global export market share. In this graphic, five different lines with five different colors are used to mark the top five exporters' share in the global market. By doing so, a reader can tell from the lines about every country's export change in decades. Also, they can compare these different lines to tell their relationships and differences, which provides more information and context to the reader.



Figure 7: Global export market share, *Financial Times*, Aug. 20, 2015.

This graphic from the *Washington Post* (Figure 8) used another way, which is to group several graphics into one. Three line charts showing separately the changes of the stock markets in Germany, France and the U.K. were grouped as one to show the suffering among European stock markets. By putting these three lines separately instead of overlaying, a reader will take them as a whole and find the repetitive patterns. They can see the same slump and understand the scale of the stock market turmoil.

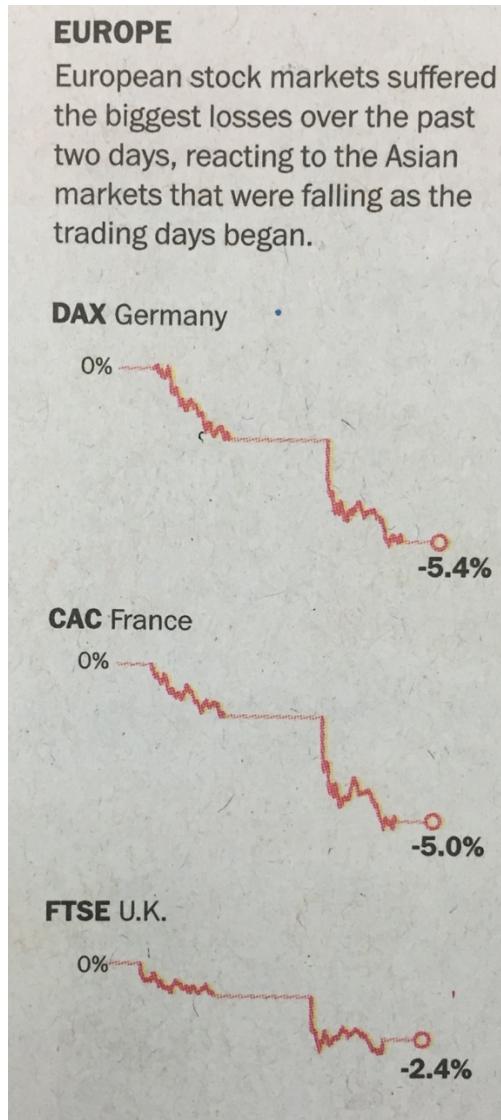


Figure 8: An infographic about European stock markets, Washington Post, Aug. 13, 2015.

In most of the cases, infographics were used in accompany articles in these newspapers. They added more information to the article and sometimes helped to explain certain incidents and concepts.

However, just like articles can be published without infographics, infographics themselves can stand alone and tell a story. For example, *South China Morning Post* has a daily section in its paper called “Chart of the day” (Figure 9). It uses an infographic to

tell the most important business story of that day. Every day on the front page of the *Financial Times*, there's also a section called "Datawatch" to showcase the most important infographic of that day. Even so, infographics were occasionally used alone and were less capable of telling the story in depth.

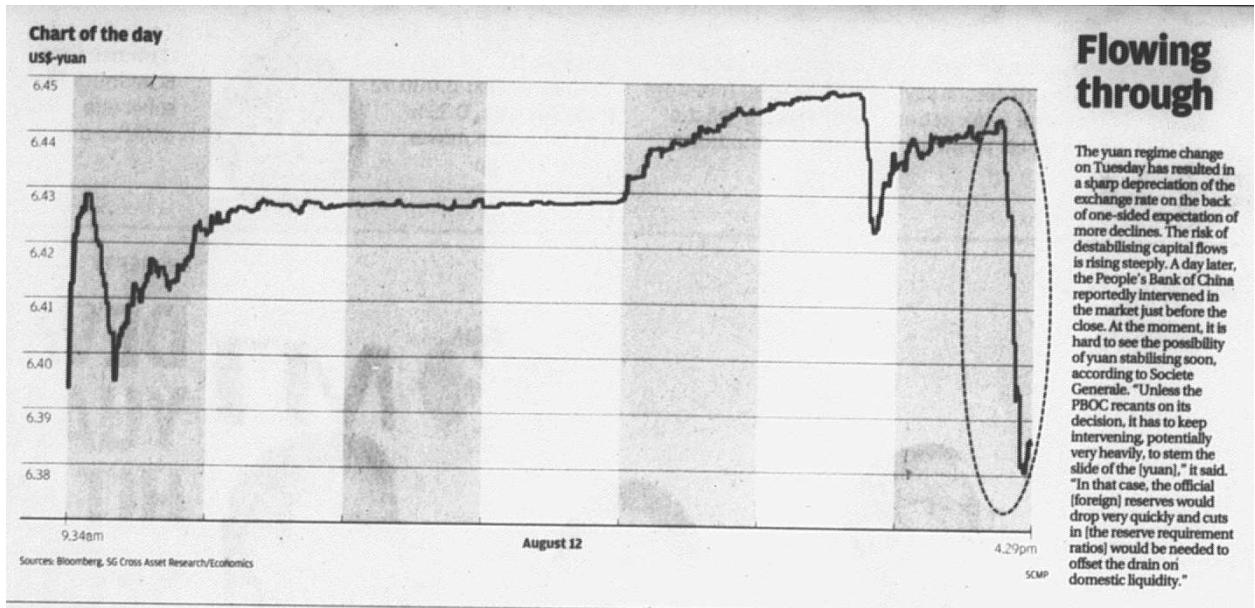


Figure 9: Chart of the day: US\$-yuan, South China Morning Post, Aug. 14, 2015.

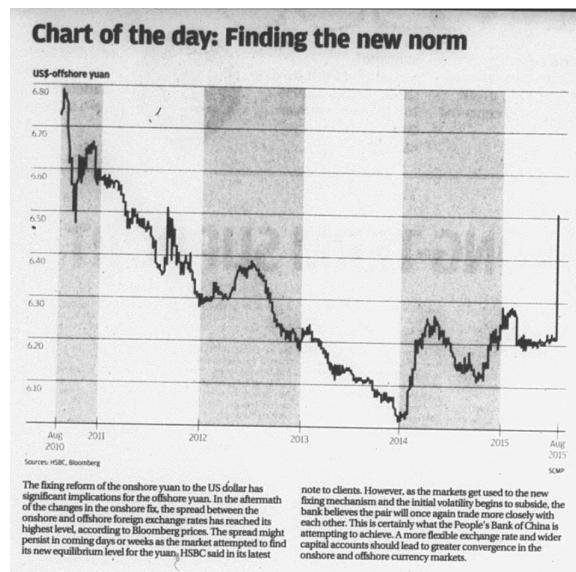


Figure 10: Chart of the day: Finding the new norm, South China Morning Post, Aug. 15, 2015.

Additional symbols and elements.

Besides the basic lines, additional elements such as key points, maps, national flags and currency symbols were added to the infographic to provide more information and to further explain the graphic to audiences.

This annotated chart from the *New York Times* (Figure 10) tells the change in the Shanghai composite index relative to its peak from April 2015 to August 2015. The basic graphic is still a line chart, but based on that, several key points were added to indicate major turning points. Also, they were combined with text notes to further explain what happened on those specific dates.

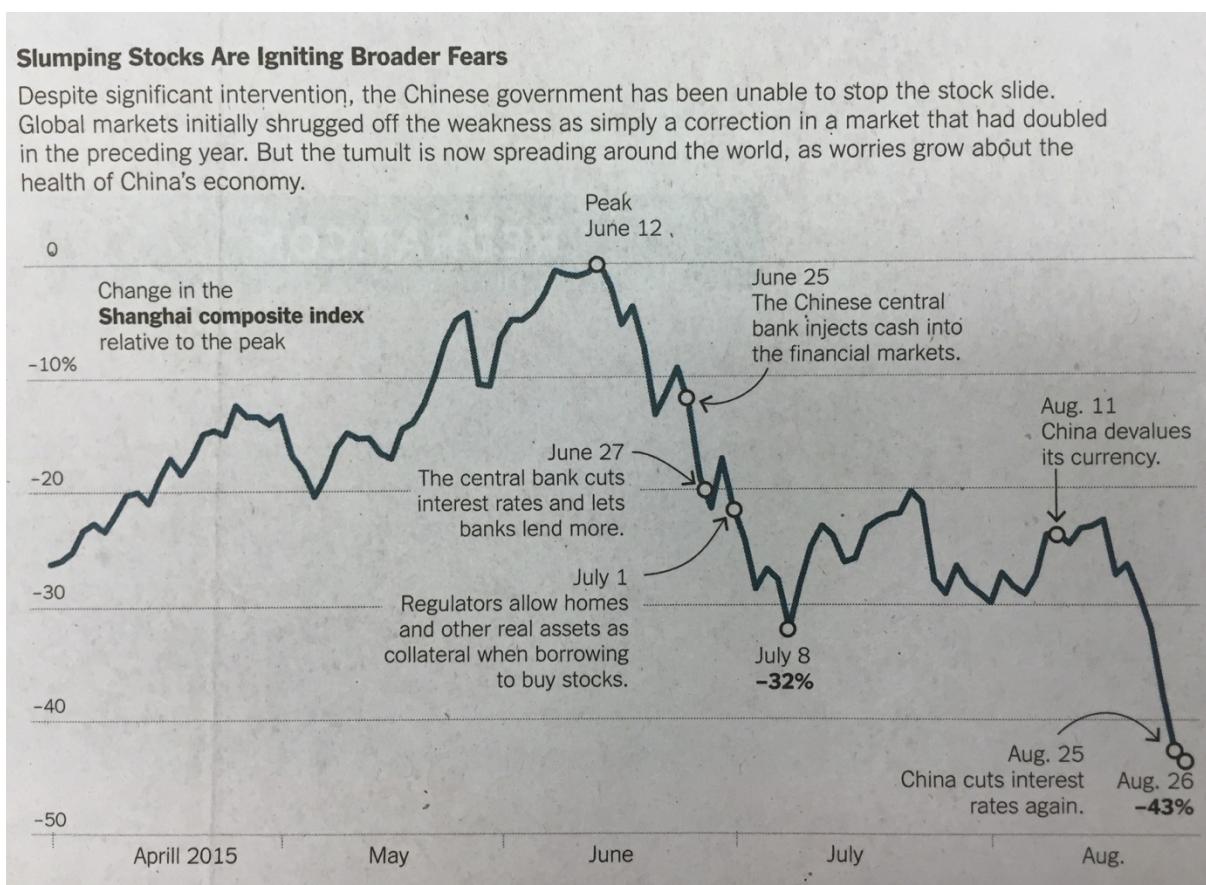


Figure 11: Slumping Stocks Are Igniting Broader Fears, *New York Times*, Aug. 27, 2015.

In this infographic made by *Financial Times* (Figure 11), the basic element there is two lines, one indicating the rate between renminbi and dollar, the other is the Bloomberg Spot Commodity index. Built upon this, four specific dates were pointed out. Besides text explanations like those used in the *Times*' graphic, three images were added. To illustrate the point that China carried out its biggest devaluation of the renminbi, the image of the renminbi was added. Compared to text, this symbolic image can attract reader's attention more easily. At their first glance to the graphic, readers can figure out what information is included. It's the same to the other two images used in the same graphic.

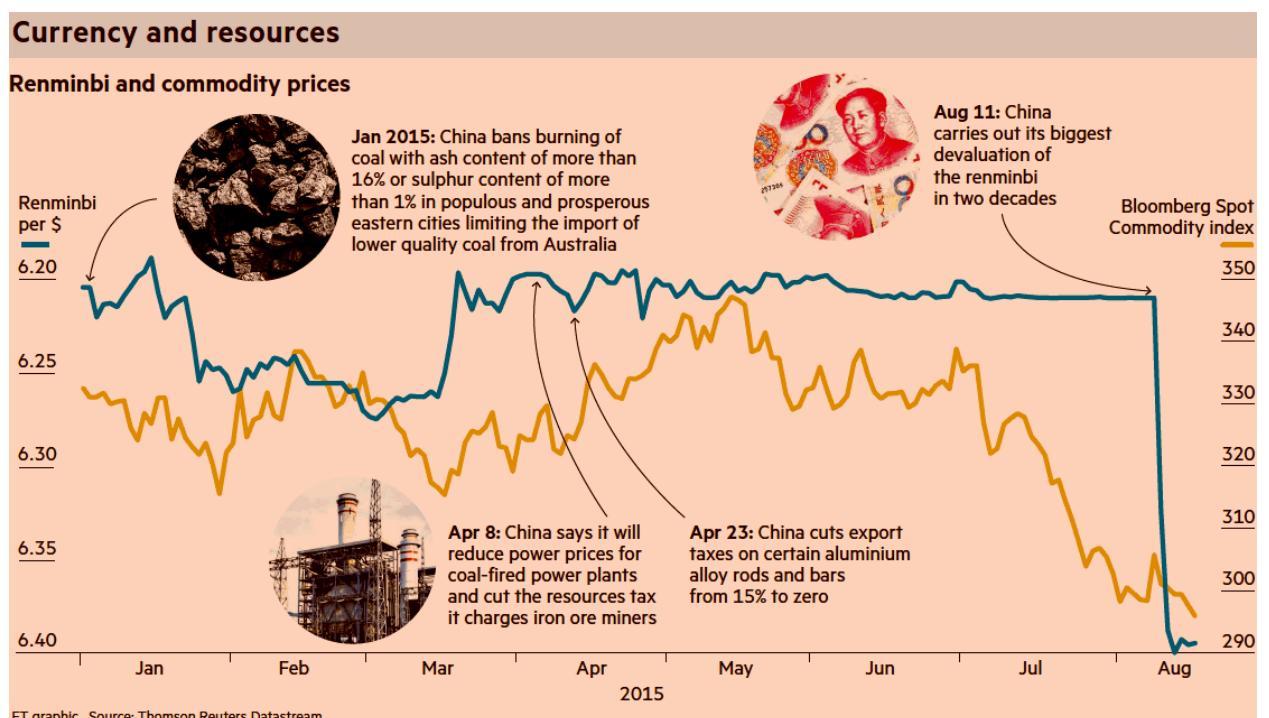


Figure 12: *Currency and resources*, *Financial Time*, Aug. 21, 2015.

Other symbols such as world map (Figure 23) and national flags (Figure 17) can also be seen commonly in these infographics. Besides these symbols, photos were also used together with the infographics.

On Aug. 25, the *Washington Post* used four news photos together with the infographics on its front page (Figure 12). The four infographics showed the percentage change of the stock indexes of United State, China, India and Germany on “Black Monday,” while the four photos were about stock dealers and investors in these four countries. From the line charts alone, readers may not understand how severe the stock market swing was. The human figures and their expression in the photos, instead, added more emotion to the infographic. Readers can feel their anxiety, surprise and devastation directly. Therefore, these additional photos not only made the infographics more visually attractive, but also helped to emphasize the story to be told.



Figure 13: ‘Black Monday’ triggers stock sell-off, the Washington Post, Aug. 25,

2015

Adding more elements into an infographic can help the infographic transform from very simple to very complicated. It depends on how much information the infographic wants to convey and under what context that infographic is used.

The development of the latest computer technology brings new changes and new challenges together to infographics. With technologies such as HTML5, CSS and Java, infographics can be more attractive and interactive on websites. Users can get more information and new experience there.

Because the Internet and newspaper are totally different media, a lot of new characters and elements of interactive infographics cannot be displayed on newspapers. That's a limitation. In that case, the *New York Times* used a note on its paper (Figure 13) to remind users to check their interactive infographic on their website.



Figure 14: The China Factor, New York Times, Aug. 27, 2015

Unlike the static infographics on printed newspapers, online interactive graphics can be altered based on the needs of the user. They can filter the date that is displayed, zoom in and drill down into the data. Also, online interactive graphics can be shared easily on social media platforms, which would get to more targeted users and generate more discussion (Geidner & Cameron, 2014).

Devaluation and the Currency war.

By using symbols and other visual elements, concepts are constructed and used in infographics with these symbols and other visual elements. These concepts are fundamentals to help readers understand the devaluation and the market swing. They can also reflect how these newspapers construct and frame the story.

The first major news here is the sudden devaluation of the Chinese currency, renminbi. On Aug. 12, when reporting this major news, all newspapers except *The New York Times* made infographics to go with the article. All these infographics are simple line charts about the rate change between dollar and renminbi.

The devaluation of currency has significant economic effects. As it was pointed out in the *Times* infographic (Figure 14), China would export much cheaper products to the global market, which would help boost related industries in China. But it has certain side effects too. It would weaken those Chinese companies that have debt in dollars and foreign companies that relied on Chinese exports.



Figure 15: An Abrupt Move, New York Times, Aug. 12, 2015.

Along with the discussion about the influence of currency devaluation on markets and trades, the concept of currency war was also brought up.

The term “currency war” was first used by Brazilian Finance Minister Guido Manfava in 2010 (Eichengreen, 2013). It refers to the situation that a country uses competitive devaluation or monetary policy to drive down the value of a currency to keep a competitive advantage in exports (Bird&Willett, 2011).

On Aug. 12, *South China Morning Post* used the title “Devaluation Sparks Fear of Currency War” for its front-page story. The article speculated that other Asian countries, such as Australia and Singapore, would also follow China’s move to weaken their currency. It said:

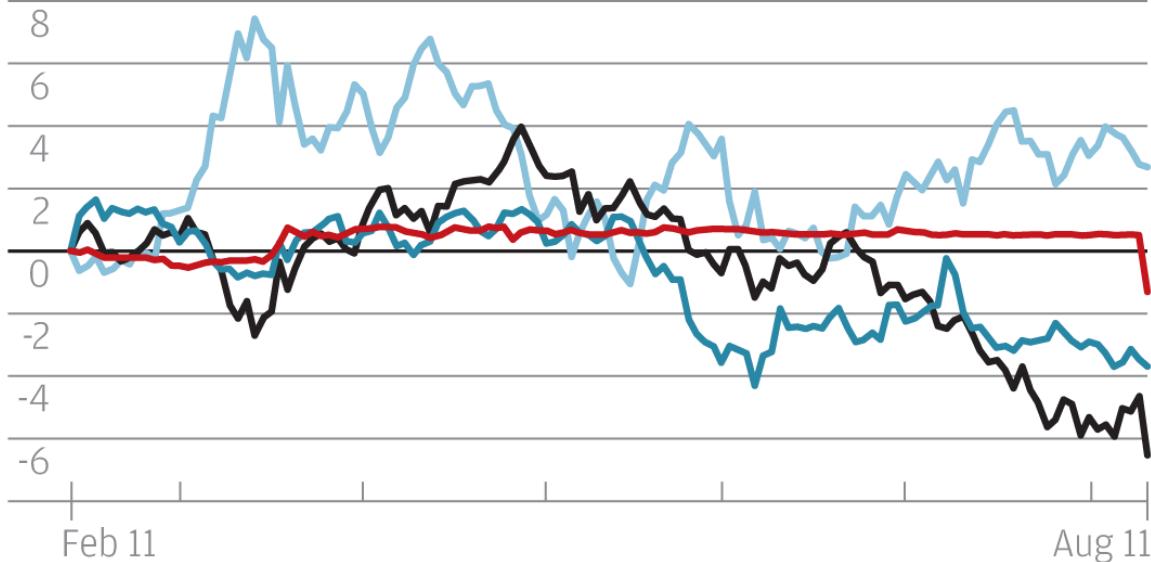
“The instant devaluation would restore its competitiveness vis-à-vis other Asian currencies such as the Japanese yen and the Korean won that have been weakening over the past year.”

To further illustrate this point, *South China Morning Post* made an infographic (Figure 15) showing the movement of four major currencies against the U.S. dollar.

Race to the bottom

Movement against US\$ (%)

— Yuan — Yen — Won — €



Source: Thomson Reuters

Aug 11
SCMP

Figure 16: Race to the bottom, *South China Morning Post*, Aug. 12, 2015.

Same to *South China Morning Post*, on Aug. 14, the *New York Times* published a story titled “A Devaluation that Could Escalate A Currency War.” A graphic (Figure 16) was used to show the relative currency strength of the yen, won and renminbi over the last 15 years. It didn’t directly use the rate between these currencies with the dollar, but used a more abstract concept of their relative strength. By doing so, this infographic is much harder for a reader to understand.

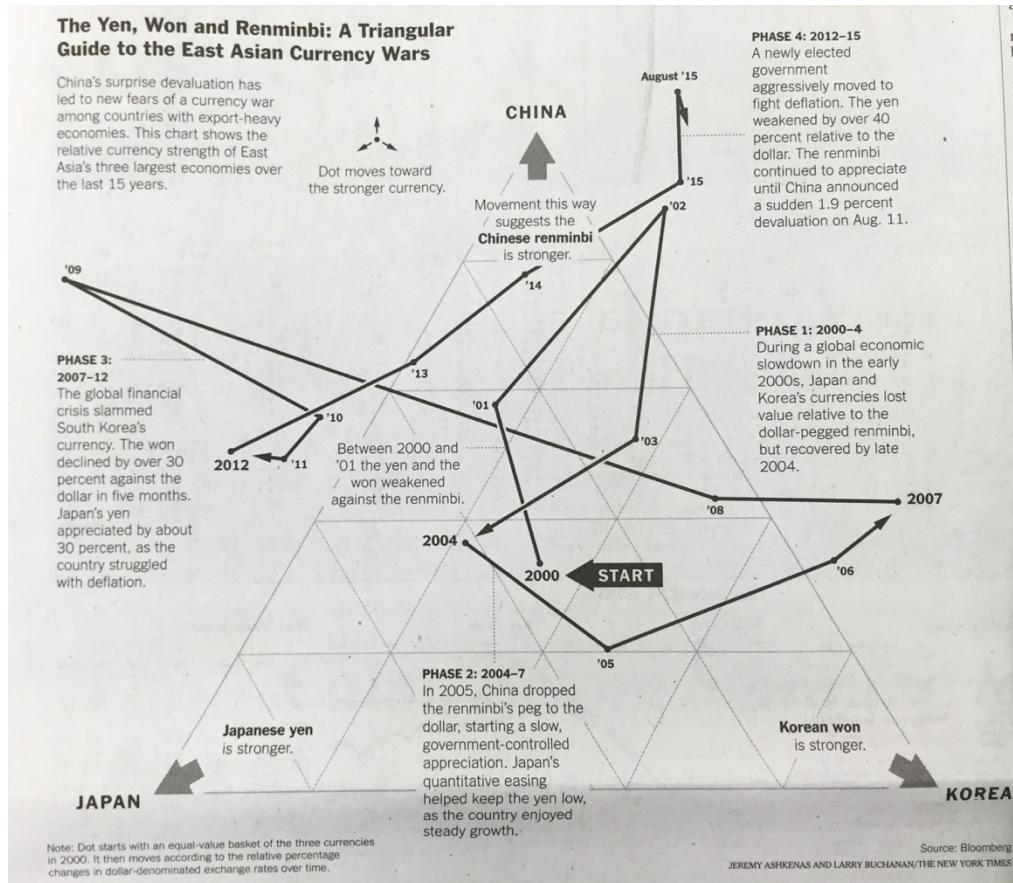


Figure 17: The Yen, Won and Renminbi: A triangular guide to the East Asian currency wars, New York Times, Aug. 14, 2015.

Financial Times started paying attention to renminbi and other currencies at a very early stage. On Aug. 4, it published an article talking about the situation of Malaysia's economy and its currency. The graphic (Figure 17) compared the performance of Malaysian ringgit with other Asian currencies, including renminbi. To indicate those currencies, the national flags of those related counties were used. In the following days, *Financial Times* also published a series of articles about the internationalization of renminbi and its potential risks before the sudden devaluation.

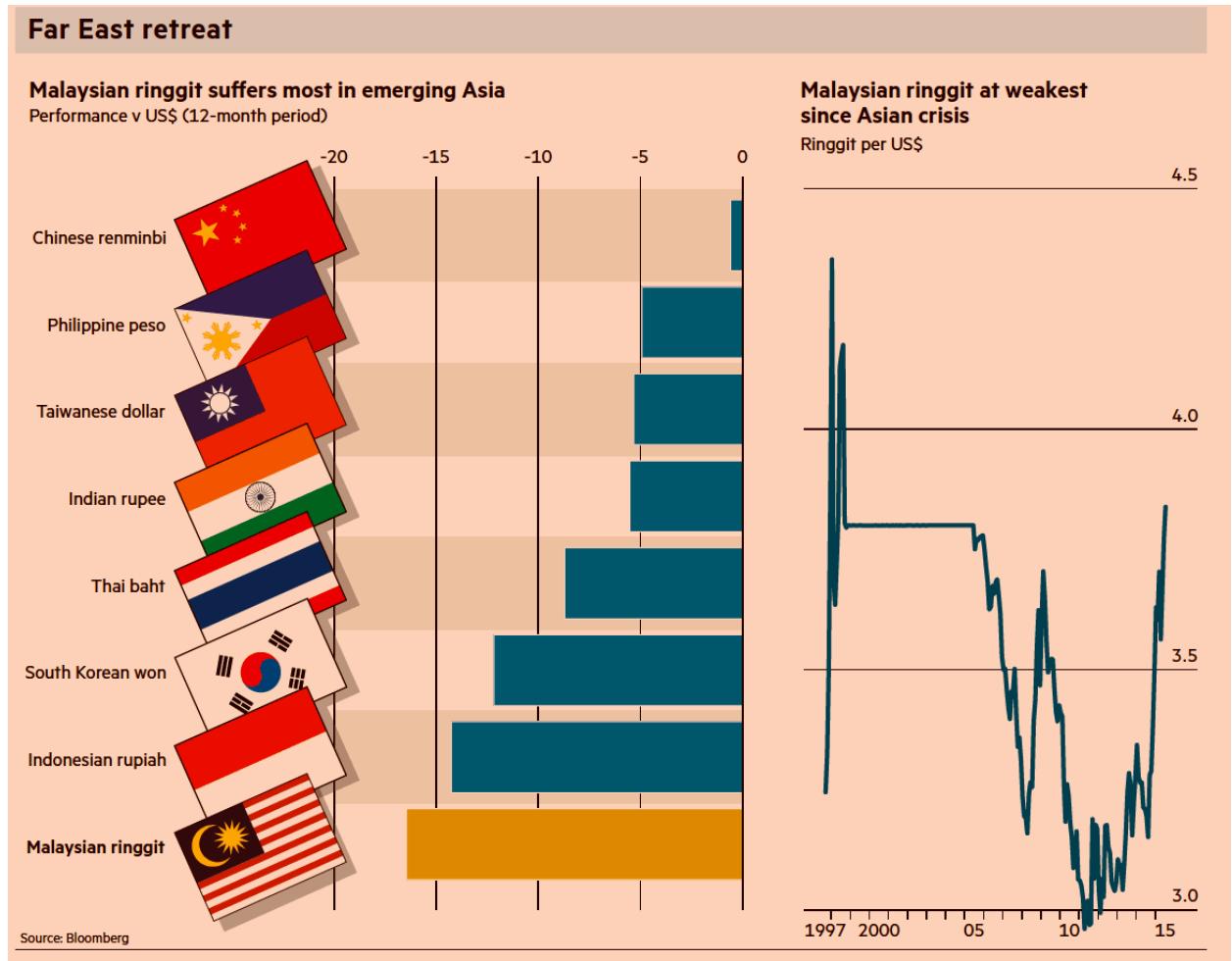


Figure 18: Far East retreat, Financial Times, Aug. 4, 2015.

Because it had paid close attention to currencies, different from other newspapers, the *Financial Times* used an editorial to discuss the potential currency war after the devaluation. It said:

“All currency wars are self-defeating for their combatants. When a country slashes the value of its currency to boost exports, it inevitably triggers competitive devaluations by its trading partners, thereby robbing the first mover of its initial advantage. Thus it is unlikely that China... was intending to whip up currency skirmishes among its trade partners into a full-scale war.”

Even so, the editorial still indicates China’s action would pressure other countries to seek their own currency depreciations and that would lead to a slower growth of the global economy.

In conclusion, different newspapers had different opinions about the potential currency war, but infographics about currency rate and its trend in past years were used to convey this concept. However, the concept of currency war is too abstract and cannot be shown completely from those infographics. Those infographics still must be understood together with related articles.

Stock market index.

In the *New York Times*, there's one chart that is very commonly used in its articles. The chart is titled "The Dow Minute by Minute." It shows the position of the Dow Jones Industrial Average index at 1-minute intervals on one specific trading day. Of the 35 infographics, nearly half (14) of them are this specific chart.

This is not unique to the *New York Times*. Following the market turmoil, the concept of stock market index emerged among related infographics and articles. The Dow Jones Industrial Average index is also used in infographics from the *Washington Post* (Figure 18), *USA Today* and *South China Morning Post*.

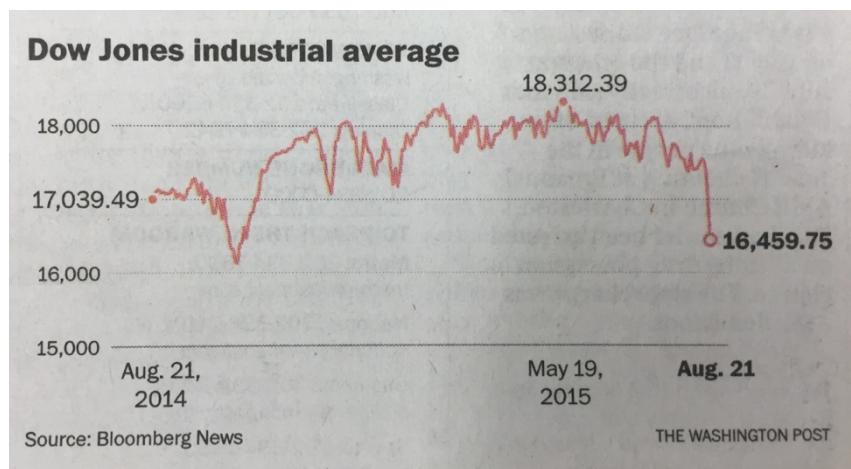


Figure 19: Dow Jones industrial average, Washington Post, Aug. 22, 2015.

The Dow Jones Industrial Average index is a major index of the U.S. stock market. It consists of 30 most capitalized and influential publicly owned companies in the

United States. It indicates how these 30 companies have traded during a standard trading session in the stock market.¹ As what Adam Davison wrote in his article, the Dow remains not only a rough measure of stock performance, but also the most frequently cited indicator of U.S. economic health.²

For example, in this infographic (Figure 19), *USA Today* listed the worst point drops in the Dow's history. The market slump on Aug. 24 was among those worst records and ranked 8th. By comparing that with other records in the infographic, including those days during the 2008 financial crisis and after the Sept. 11 attacks in 2001, readers can better understand this current market slump much better.

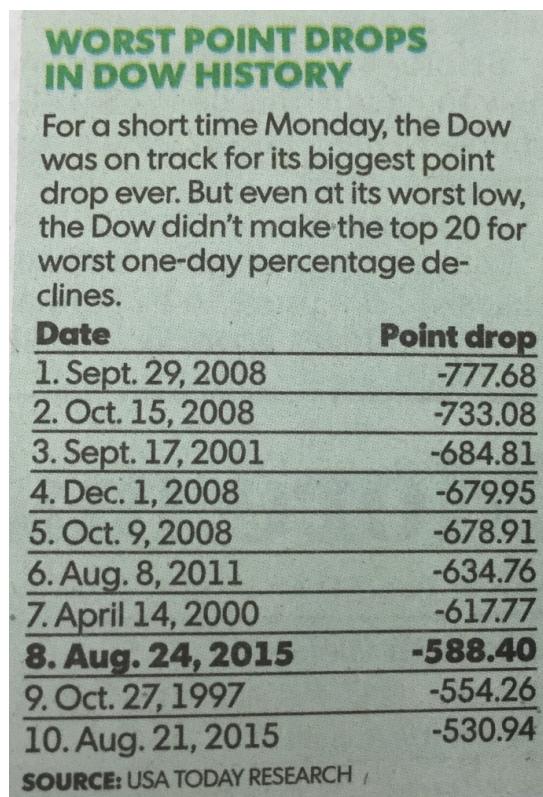


Figure 20: Worst points drops in Dow history, *USA Today*, Aug. 25, 2015.

¹ Paul Kosakowski. Why The Dow Matters, Inversopedia. July 27, 2008.

<http://www.investopedia.com/articles/stocks/08/dow-history.asp>

² Adam Davidson. Why Do We Still Care About the Dow?, The New York Times Magazine. Feb. 8, 2012.

http://www.nytimes.com/2012/02/12/magazine/dow-jones-problems.html?_r=0

Different from other newspapers, *Financial Times* didn't make infographics about the Dow, instead, it used the Standard & Poor's 500 index. Compared to the Dow, the S&P index has more companies listed and it picked those companies based on their market capitalization. There are some previous discussions³ about which one can better represent the market, but overall, they are both major indices for the U.S. stock market.

The common use of these two concepts in infographics indicated that the performance of the U.S. stock market is an important part of this story and the two market indexes can represent the market in the best way. Therefore, many articles and infographics were constructed with this concept.

Besides focusing on the general index, those companies listed in the Dow and S&P were also taken into account in the infographics. For example, both the *USA Today* and *Financial Times* (Figure 19) made an infographic about the performance of Apple's stock during the market swing.

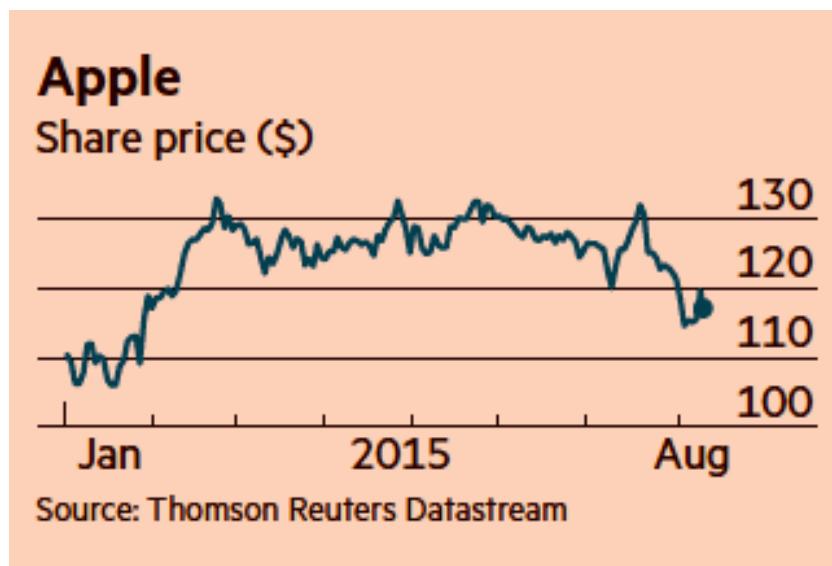


Figure 21: The change of Apple's share price, *Financial Times*, Aug. 12, 2015.

³ Ray Martin. Why the S&P 500 is a better gauge than the Dow, CBS News. August 28, 2014.
<http://www.cbsnews.com/news/dow-jones-industrial-average-sp-500-which-is-better/>

There are several reasons why Apple is among the focus of these newspapers. First, it's listed in both the Dow and S&P. Second, it's a well-known U.S. company which has worldwide operations. Its performance can to some degree indicate the general economic and market situation. Third, recently Apple relies heavily on the Chinese market for profit and growth. Because of the currency devaluation and market slump both started from China, Apple is directly involved into this discussion.

Federal Reserve.

Before the market turmoil, there was speculation that the U.S. central bank, the Federal Reserve, would raise interest rate at its September meeting. It would be the first time for the Federal Reserve to do so in nine years. But after the turmoil, many believe that "the financial markets was a risk to the United States Economy"⁴ and because of that, raising interest rates was not likely a move that the Federal Reserve would take.

In the 2008 financial crisis, the Federal Reserve provided emergency loans to global banks and helped bring the global financial system back to life. In another sense, the Federal Reserve acted as "the central bank to the world."⁵

This time, the global market swing also urged the Federal Reserve to consider its policies more globally. Therefore, the rate hike of the Federal Reserve is not only important to the U.S. economy, but also vital to the global market. Newspapers used this concept and developed it into both articles and infographics in their respective coverages.

For example, *Financial Times* made a graphic (Figure 21) about the move from the Fed with dollar trade-weighted index. In this graphic, decisions from the Fed were put

⁴ Peter Eavis. Soothing Talk by Federal Reserve Officials Buoy Wall Street. The New York Times. Aug. 25, 2015. <http://www.nytimes.com/2015/08/27/business/dealbook/daily-stock-market-activity.html>

⁵ Peter Eavis. Soothing Talk by Federal Reserve Officials Buoy Wall Street. The New York Times. Aug. 25, 2015. <http://www.nytimes.com/2015/08/27/business/dealbook/daily-stock-market-activity.html>

together with renminbi's decline. It was trying to illustrate the point in the article that the Fed would continue a gradual rates policy and would not raise the rate very soon. Except symbols like dollar and the Chinese national flag, a headshot of Janet Yellen, chair of the Fed, was also used in the graphic.

Compared to the Fed, the People's Bank of China is less referred to by those newspapers. *South China Morning Post* used the People's Bank of China most often in its articles. But this concept is rarely shown in infographics.

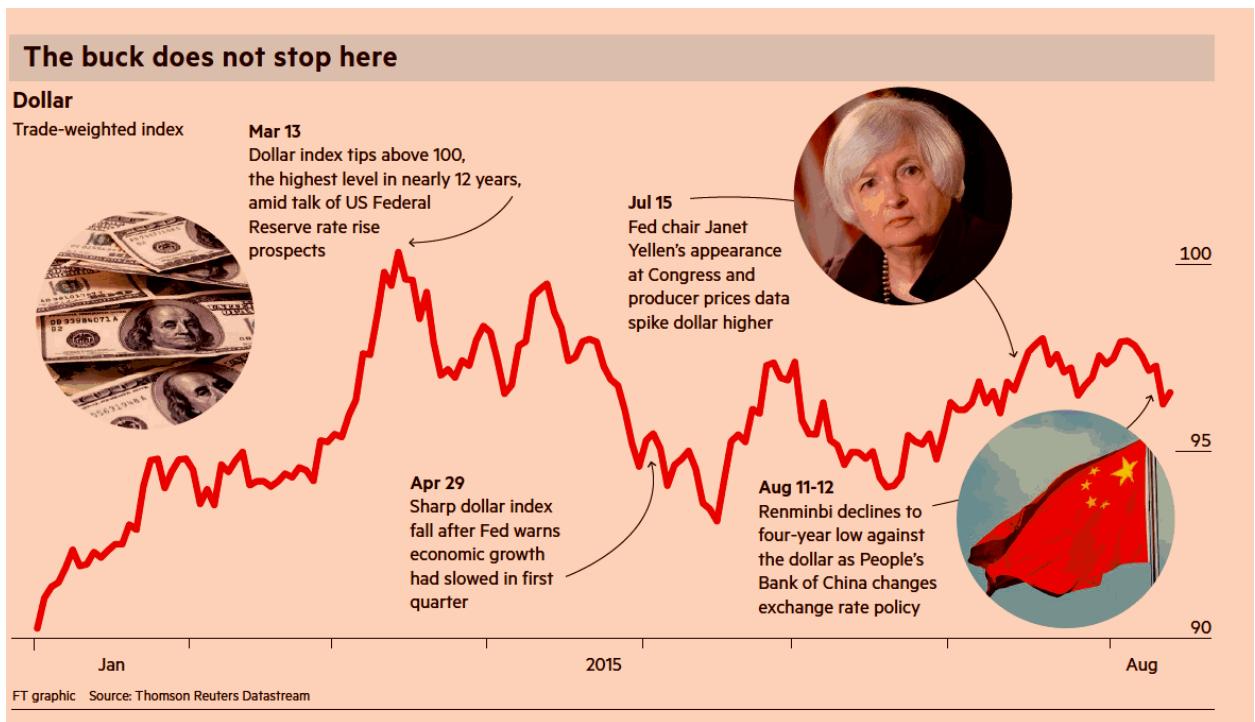


Figure 22: *The buck does not stop here*, Financial Times, Aug. 14, 2015.

A slowing and weakened China.

The surprising currency devaluation by the Chinese government is a simple implication about many severe problems China's facing. The following global market rout just deepened investors' fears about a slowing Chinese economy. This concept is constructed and conveyed through those infographics.

First, many negative words were directly used in the titles or notes of those infographics, such as: “slow,” “slide,” “downward,” “weakens,” “fear,” “worries,” etc. These words conveyed a feeling that the Chinese economy is under great challenge. *Financial Times* (Figure 22) used four different infographics together to show that challenge. Readers can feel how severe this problem is by the words used and the number of infographics there.

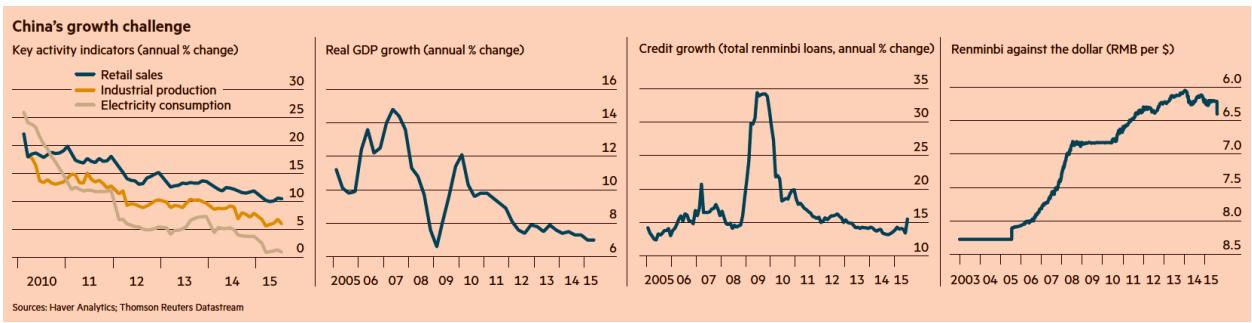


Figure 23: China's growth challenge, Financial Times, Aug. 20, 2015.

The devaluation of renminbi and the market swing is beyond a major economic story. It also gives these media a chance to have a larger discussion about China's political situation, economic reform and even media situations.

On Aug. 25, the *Times* published a story about the reaction of Chinese media to the crumpled stock markets. In the face of this explosive economic story, Chinese mainstream media, such as People's Daily, China Central Television and Xinhua News Agency, all remained relatively silent. The article said:

“It was a telling sign that, while Republican aspirants to the White House have upbraided Beijing over the stock market turmoil, China's leaders were sticking to their habit of staying above the public fray when policies turn sour.”

It's important to understand that in China, the media has a different function and operate differently than those in the United States or other western societies. This article

is a direct reflection of political economy of mass media and is unique among all the coded articles.

Besides the media, this crisis also gives people a chance to take a look at the possible political and economic reforms in China. On Aug. 28, the *Washington Post* published a story named “Chairman of Everything.” It pointed out that, Chinese President Xi Jinping failed to bring China back from slowing down. To reform the system, the Chinese government needs to “relinquishing control and surrendering power.”

Financial Times also argues that President Xi has accumulated more power than any leader since Mao. The centralization of political and economic power would not help implement any major reforms⁶.

To conclude, the general attitude toward China’s current economic situation and future reform is pretty negative. As *South China Morning Post* said in its editorial⁷: “We live in troubled times in which we trust that policymakers push ahead with necessary reforms. Meanwhile, people need to exercise prudence.”

These articles with a political economy angle didn’t have their own infographics. However, they worked together with other infographics that were made during this time period to construct the image of a slowing and weakened China that faces many challenges.

Emerging markets.

These newspapers also constructed and framed the devolution and market turmoil story beyond China to the broader emerging markets. The article “As economies gasp globally, U.S. quickens” published on the Aug. 28’s *New York Times* said:

⁶ George Magnus. The Chinese model is nearing its end, *Financial Times*. Aug. 22, 2015.

⁷ Reforms key to calmer markets. *South China Morning Post*. Aug. 27, 2015.

“Not long ago, the United States was considered the tortoise of the world economy, at least in comparison to emerging powers like China and Brazil.

Lately, however, slow but steady seems to be winning the race.”

The emerging markets is a concept contrary to the developed markets. It refers to the markets in those developing countries which have greater profit potentials along with higher uncertain risks. Current emerging markets include the BRICS countries (Brazil, Russia, India, China and South Africa), Mexico, Indonesia, etc.

On Aug. 25, when reporting the global stock market turmoil, *South China Morning Post* pointed out that there was a huge panic across emerging markets. A senior trader said in the article that: “Emerging markets climb stairs on the way up but take elevators on the way down.”

This infographic (Figure 23) from *Financial Times* was constructed using the concept of emerging markets. The percentage change of the stock market and currency rate in these countries were identified in this graphic. Besides the U.S., U.K., Eurozone and Japan, other major emerging markets were all marked in this graphic. It illustrated that the current financial events are not a problem to China, but a crisis to the whole emerging markets.

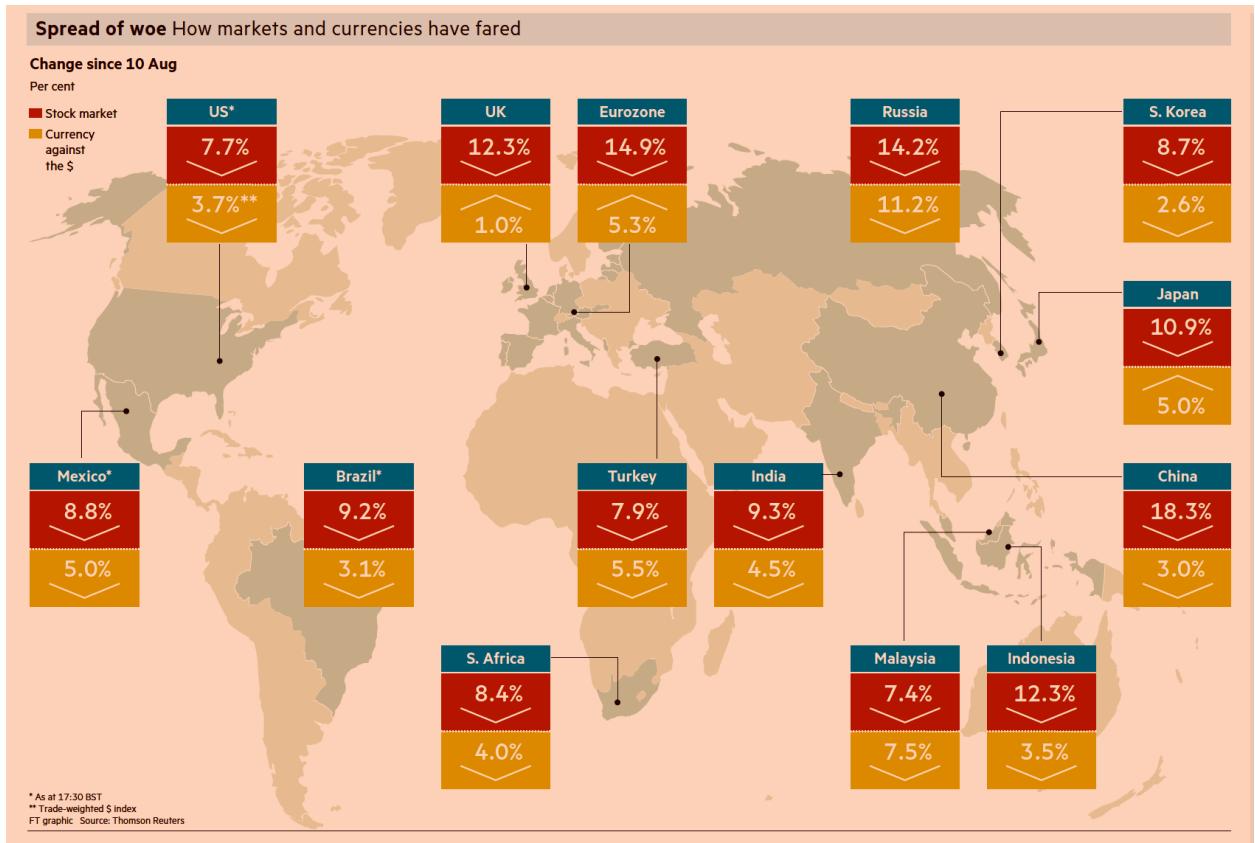


Figure 24: Spread of woe, Financial Times, Aug.25, 2015.

Missing patterns.

Even though the “Black Monday” of Aug. 24, 2015 is among those worst stock market slumps in history, news outlets didn’t use the term “financial crisis” to refer to this financial event. Unlike that in the 2008 financial crisis, most newspapers this time used terms such as stock sell-off or market correction.

China is the major player during the currency devaluation and market turmoil. However, concepts and symbols related to China were relatively less likely used in those articles and stories. Symbols and concepts related to the western financial system were used the most often.

Also, these newspapers didn't take a look at the difference between socialism and capitalism either. Instead, they paid much attention to the difference between emerging markets and developed markets.

To conclude, these infographic and articles just told part of the story. Definitely, the devaluation of the Chinese currency reflected the economic uncertainty and challenge that China is now facing. It's reasonable that they paid attention to these aspects and tried to explain the situation to its readers. However, the bigger picture behind the market swing was missing.

Because of globalization, the Chinese market now has more direct links to other regional markets. That would be the reason why it triggered the stock market swing in such a large scale. But those links and the influence of globalization were missing in the reporting. Besides that, in the current context, the market turmoil was attributed to the slowing Chinese economy. Those newspapers portrayed the west as a victim by China's devaluation, but there lacks articles and infographics to show the economic problems within the U.S. and EU. Those factors might also have contributed to the market turmoil but were ignored.

Conclusion

Based on the results, three conclusions can be summarized to answer the previous research questions.

1.Different newspapers cover the story and use infographics differently, mainly based on its location and targeted audiences. In general, infographics still serve as a complement to articles in newspaper's business reporting.

All newspapers reported this event as a major economic and international story. *The New York Times* and *Financial Times* are better in using infographics together with articles to report this story. The *Washington Post* and *USA Today* mainly focused on the U.S. markets, while the *South China Morning Post* has more original reporting from China and Hong Kong's perspectives.

The usage of infographic in business reporting varies from newspaper to newspaper. But generally speaking, articles are the main part of the reporting. Infographics are used to assist the coverage. Because of the limitation of print media, infographics in newspapers normally just contain simple information. More complicated infographics are less often used.

Even though some newspapers used infographics alone to indicate the most important business news of that day, an infographic in newspapers alone is not enough to a complete in-depth story like the currency devaluation and the market swing. It lacks information and cannot engage audiences. Also, those concepts emerged in infographics can normally be found in articles. But not all the concepts used in articles can be made into infographics. Therefore, infographics in newspapers still need to be viewed together with the accompanied articles. But no doubt, the use of infographic does provide more context and can help improve readers' understanding.

2. When constructing infographics, line charts are often used to convey one or two related concepts. Most frequently those concepts are related to the U.S. and western financial system.

Line charts are simple but very effective in showing trends and changes in the financial industry. When it comes to smaller variations, line charts are better than other

charts. In covering the currency devaluation and the market swing, line charts played an impotent role in showing the minute to minute stock market change and tiny currency value changes. Also, the lines in line charts develop from left to right, which is consistent with user's reading habits. It makes lines charts easy to make, read and understand. Other types of infographic forms such as pie charts, photo infographics, were used depends on the information they have and the context, but generally they were used less often.

Concepts related to the western financial system are used, such as the Dow Jones Industrial Average index, S&P 500 index, the Federal Reserve and currency war. It indicated that this story is still told through a western framework.

To help construct these concepts, symbols like world map, national flags, currency symbols and other photos were used in infographics. They made these infographics more visually attractive and helped build the story to be told.

The western bias can also be seen in the color of those infographics. In Chinese culture, red represents fortune and good luck. Therefore, red is used to indicate rise in the stock market. While in the west context, red means danger and alarm, and is used to indicate decline in the stock market. In the examined infographics, they followed the western tradition regardless of that cultural difference.

3. With those symbols and concepts, China is constructed as a country facing serious economic challenge and future uncertainty. The economic challenges in China and other emerging markets was the main reason behind the global market turmoil.

After decades of high-speed economic growth, China is facing greater economic pressure from both inside and outside. The devaluation of the Chinese currency renminbi

just increased investor fear toward China's hard landing. Through articles and infographics, the problems within the Chinese economic system were conveyed by newspapers to their audiences. It also gave those media a chance to take a look at the other aspects of the Chinese society, such as political situation and media performance. But generally the newspapers used articles to analyze these aspects and it's hard to only use infographics to tell the story.

Besides China, other emerging markets are also facing more and more economic challenges. They were also brought into this broader discussion about global market swing and the potential currency war. However, certain aspects were still missing in those articles and infographics, such as the relations between the Chinese market and other markets, and economic problems within the U.S. and EU. Because the bigger picture behind the devaluation and market turmoil was missing, these newspapers just told part of the story using the infographics.

Discussion

This analysis focused on the usage of infographics in newspaper's business sections. It was done under the circumstance that the sudden devaluation of the Chinese currency renminbi triggered a worldwide fear about the health of China's economy. Reacted to investors' fear, the global stock market suffered the biggest turmoil since the 2008 financial crisis. Many articles and infographics were produced by newspapers to report this major economic news.

The findings from this analysis will enrich the current literature about infographics and provide more updated information about their usage and changes. This analysis would also help readers better understand the importance of infographics in

newspapers. Next time, when they are reading newspapers, they will be more aware of the information and concepts in infographics. Also, this analysis can help infographic designers and editors realize the advantage and limitations of using infographics.

This analysis itself has some limitations too. First, this study focused on infographics that are directly related to the context of renminbi's devaluation and the following market swing. There are also many other infographics used in newspaper's business sections. They were excluded from this study, so the result from this analysis may not represent the overall use of infographic in newspapers nor their business sections.

Secondly, as a qualitative study, the analysis is based on the researcher's social experience and culture background. A different researcher may have different interpretations about the symbols and concepts from the same infographics. Therefore, the results have their limitations and cannot be adapted to another different circumstance.

Future researchers could examine the production process of the infographics and how news editors decide whether to use an infographic or not. It would reveal more insight into decision making and graphic creation.

Future studies can also be done on interactive infographics. Different from printed static infographics, interactive infographics online can contain much more information and interact with users. It will bring new changes to the way reporters tell a story. With more and more readers online and with their mobile devices, interactive infographics are also evolving. However, currently there is few related literatures out there. Studies can be done about the use of interactive infographic in traditional news outlets and the development of technology behind that.

During the research, it's relatively hard to get access to the infographics in printed newspapers. Online databases normally just provide text stories and ignore infographics that are related to the stories. It makes it more difficult for researchers to study infographics on print.

As an exploratory study, this analysis examined the symbols and meanings in infographics. A western framework was found in those infographics and articles. Therefore, it's worth using political economy to further study how different national newspapers cover major international news.

Moreover, the online version of the same story may be different from its printed version. For example, its headline might be changed. Facebook post and Tweets might be included into the article. Their differences and the reasons behind that are also worth studying.