

CHAPTER I

Introduction: Bubbles and Machines

Bubbles: elusive, temporary, and illusory.

Machines: rational, concrete, and useful.

The definition of an economic bubble appears to be very straightforward: it is 'a market phenomenon characterised by surges in asset prices to levels significantly above the fundamental value of the asset.'¹ The word 'phenomenon' assumes that an economic bubble is a temporary problem that can be solved and hopefully prevented in the future. The definition implies that the difference between the asset price and the fundamental value can be known if there is a better formula. An accurate calculation would require better machines. Better machines would control bubbles.

In a financial crisis, bubbles are the feminine; machines are the masculine. Crisis is said to be a temperamental moment in a largely stable market, an irrational moment in a mostly rational market. The term 'irrational exuberance'—first coined by Alan Greenspan (former chairperson of the US Federal Reserve) and later adopted by Yale economist Robert Shiller (2000) as a book title—pointed to the herds of investors who drive up asset price above the fundamental price. An irrational market is seen to be lacking control, a party that has gone wild.

To prevent the market from behaving irrationally, machines are invented to perfect the market. There are machines to report stock prices, machines to communicate between buyers and sellers, and machines to predict the market. Few have asked: can machines be irrational? Can technology do things out of intention? Will irrational machines produce information that leads to financial bubbles? In other words, are financial crises embedded in information technology? If irrational markets are inevitable outcomes of presumably rational machines, then how can we understand the gender discourse of financial information and financial crises?

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These questions may not make immediate sense, but this book aims to make sense of them. I answer the questions by discussing and illustrating how feminist political economic theories and Actor-Network Theory (ANT) of Science and Technology Studies (STS) enrich a political economic critique of financial crises. I argue that a critical political economic approach to communication is the most promising to understand financial crises because it takes into account the capitalist context in which crises occur and because it historicises technology and economy. Current political economic writings on financial crises have however neglected two areas: first, the gendered nature and gender ideology of finance capital. Not only are women used as resources to facilitate the flow of capital to and through financial markets, but gender is also made flexible to accommodate the flow. Second, financial information and finance capital are materially and technologically embedded. The materiality of financial technologies gives a qualitative property to financial information and finance capital, making them appear to be useful to the markets. Because specific financial information creates specific temporality and spatiality, multiple machines lead to multiple temporalities and spatialities. The disjuncture between them is the financial crisis, which can be illuminated from the vantage point of gender.

To advance the arguments that finance capital and the ideology of the crisis are gendered and that financial information is materially and technologically embedded, I develop four themes in this book.

Theme 1: Women serve as resources in financial markets. The circulation of finance capital relies on values produced by women in both the public and private domains.

Theme 2: Gender ideology is used to legitimise an unequal distribution of resources between women and men, and between developed and developing economies.

Theme 3: The production, distribution, and consumption of financial information—be it analogue or digital—rely on machines.

Theme 4: Financial markets are heterogeneous; a market assumes a specific spatiality and temporality which constitute an economy.

The two arguments of the book and the four themes will be unpacked later in this chapter but a concrete example will illustrate the two arguments.

‘It’s One Big Lie’: The Bernie Madoff Case

The discourse of the 2008–9 Global Financial Crisis left us with a few memorable phrases: ‘too big to fail’, ‘toxic assets’, ‘subprime mortgage’, and ‘it’s one big lie’. The latter was uttered by Bernie Madoff when he confessed that he ran the largest Ponzi scheme in US history. Madoff lured clients to entrust their money

in his company but he never invested it in financial markets. When the market was not in a crisis, he had no problem with money circulation. In a crisis mode, his clients withdrew money from their accounts and quickly emptied Madoff's bank accounts. According to news sources, Madoff confessed to his family one morning that 'it's one big lie.' He turned himself into the authorities and was sentenced to 150 years in prison and forfeiture of over \$17 billion.

The general public may find the Madoff story easier to understand than a complicated analysis of financial information. He was not the main culprit of the financial meltdown, but he provided a human face to personalise it. His rags-to-riches tale resonates well with most: born to working-class Jewish parents in Queens, New York, he married his high-school sweetheart and started a family and his own business after college. He was said to be very selective of his clients who were recruited from Jewish networks. Madoff constantly yielded double-digit returns for his clients even though his extraordinary success had raised a few red flags among financial analysts. Before Madoff's confession, he had lived the American Dream.

But this American Dream was one big bubble.

Journalists and commentators rushed to explain why the investors could not see through the bubble and why Madoff could maintain such an illusion for more than four decades. One common explanation is greed—an innate human flaw. Madoff *is* greed, deception, and immorality. The televised liquidation of Madoff's assets showed the struggling majority how the top 0.1% live. The victims who appeared in the documentary *Chasing Madoff* (2011; dir: Prosserman) were disgusted at how Madoff's extravagant lifestyle was built on the hard earned money of the working people. Women victims were particularly convincing in illustrating Madoff's immorality: some of them are single or widowed and lost their life savings; one was rumoured to be Madoff's mistress who trusted that he would take good care of her and her money. Via Madoff, the public could express their outrage at the insatiable Wall Street power players.

The Madoff story has provided materials for fictional and non-fictional films and television shows. Two post-crisis films, *Arbitrage* (2012; dir: Nicholas Jarecki) and *Blue Jasmine* (2013; dir: Woody Allen), satisfy the audience's desire to see bad people being punished. They also manage public anxiety by fictionalising the personal life of upper-class fraudsters. In both films, the filmmakers had to construct women characters because little was known about the private life of Bernie Madoff and his wife Ruth Madoff. In both films, the women characters reflect the immorality of wealthy con men.

Cate Blanchett won the Oscars' Best Actress award for her portrayal of a swindler's wife in Woody Allen's *Blue Jasmine* (2013). Blanchett reportedly used Ruth Madoff as a muse. Jasmine is portrayed as a materialist, a liar, a traitor, and a hysteric. She (not born into wealth) embraces the lifestyle of the wealthy. She turns her nose up at her sister, a working-class woman. After learning that her husband has been unfaithful, she calls the FBI and reports her husband's fraud

to the authorities. With no real assets other than a closet of designer clothing, Jasmine moves to San Francisco to stay with her sister and tries to hold down a regular job. Her lack of employable skills leaves her with one choice: re-marrying rich. She nearly succeeds, but a lie that she tells breaks off the relationship. At the end of the film, she has a nervous breakdown and sits on a bench talking to herself. Woody Allen is critical of Jasmine's ethical decisions, which it is suggested are an indirect cause of her husband's death by suicide. The character of the husband is killed off early on and is not publicly punished or humiliated. In contrast, Jasmine's character lives on and receives the brunt of criticism from other characters such as the stepson and sister's boyfriend, and also from the director and the audience.

The *Blue Jasmine* story draws on two gender assumptions about financial markets. Firstly, women testify to the immorality of men. A dishonest man not only deceives others in public, but he also betrays those who love him. Stereotypes such as the betrayed wife, the needy mistress, and the expensive prostitute regularly appear in both fictional and non-fictional films about financial markets (Lee and Raesch, 2015). The second assumption is that a hysterical female figure directly leads to the downfall of a masculine one. In *Blue Jasmine*, the neurotic wife who exposes the husband's lies brings about the man's death. Despite the fact that it is the feminine that brings down the masculine, the masculine can control the feminine through inventing better technology to control feminine hysteria, as seen from the second explanation of how Madoff successfully deceived so many.

Financial journalists showed Madoff's clients' foolishness by wondering why they did not notice the red flags raised in Madoff's financial information. For example, clients had no electronic access to their accounts, only receiving hard copies of financial statements in the mail a few days after a trade took place.² In short, experts thought the delay in reporting information should have raised suspicion among investors. The experts assumed that 'real-time', digital information reflects a real market; digital prices cannot be false because they are not prone to human error, thus are 'pure' and free of human interference. Digital technology is believed to *simply* transmit information from an unknown central system—such as an abstract market—to the investors' screens.

The assumed quality of digital financial information being 'real', 'true', and 'accurate' is embedded in the medium and technology through which it is disseminated. When financial information is embedded in an analogue technology (such as the paper slips and printed statements in Madoff's case), the information is believed to be likely inaccurate or false. Better machines and technology are invented to produce better information after a financial crisis because ideal information is believed to be truthful, quick, and accurate.

Contrary to the assumption of ideal financial information, this book advances the argument that inaccurate, delayed, or fabricated financial information is as *real* as 'accurate', 'real-time', and 'true' financial information. Either

type of information creates a market of a specific temporality and spatiality. Even though Madoff did not invest clients' money in the financial market, he had facilitated a circulation of finance capital by putting clients' money in bank accounts in the names of himself and others. The banks then circulated Madoff's clients' money in financial markets. If he had stacked the money—in the forms of cash and gold—away in a cupboard, the money would not have constituted a market because no economic activity would have taken place.

To conclude, the Bernie Madoff case shows that finance capital is gendered because gender ideology is used to explain economic crisis: while women could be used to testify against men's morality, women's hysteria is also used to explain why crisis happens. The case also shows the materiality of financial information, that different technologies give different qualities to information which in turn constitutes different markets. In the following, I explain how critical political economy, in conjunction with materialist feminist theories and ANT, will shed light on the gendered nature of financial markets and the materiality of financial information.

Theoretical Framework

Among all communication perspectives to examine financial crises, a critical political economic perspective is the most promising because it pays attention to the historical nature of capitalism and the struggles that led to the domination of finance capital. A critical perspective also pays attention to the unbalanced power relation between the dominant group and the subordinate group. It asks how the unbalanced power relationships between developed and developing economies, between male bankers and women borrowers, stabilise capitalism. Lastly, a critical perspective also advocates for changes, that large-scale societal transformation is only possible when humans exercise their agency. Even though communication scholars from cultural studies and journalism studies have critiqued the relationship between financial crises and capitalist institutions such as the press and popular culture (see Lee 2014c), they stopped short at theorising the relation between finance capital and the media.

Because political economists are interested in the historical nature of capitalism, they reject ahistorical explanation of financial crises in popular culture. The Bernie Madoff case illustrates that human greed and investors' foolishness are often used to explain a crisis. This popular belief fails to take into consideration the broader political economic context in which financial markets operate. The emphasis on innate human nature implies that political economic contexts are irrelevant to human actions and that human actions do not constitute political economic relations. Unsurprisingly, innate human flaws have also been used to explain the tulipomania in the seventeenth-century Dutch Republic (see Ch. 2). Using human psychology to explain the markets also implies that financial crises are *natural* and can neither be stopped nor prevented. Political

economists do not think financial crises are *natural*, instead they point out financial crisis epitomise crises of capitalism.

Political economists are also interested in understanding how the circulation of finance capital can be situated in the trajectory of capitalism. They do not assume any political economic system to be *universal*. Capitalism, along with communism/socialism, feudalism, and slave-based society, is a political economic system that is constituted by social relations resulting from historical struggles. Financial markets are however specific to a capitalist society because its sole function is to lubricate the flow of capital by extending the temporality of value realisation into the future. Madoff probably could not have established a successful business in a communist or slave-based society. A communist/socialist society privileges use value over exchange value; social beings would channel resources and energy to produce goods that can sustain lives such as food and shelter. Social beings in a communist/socialist society may not see the need to reinvest surplus capital in a market because they don't see the need to accumulate so much surplus. The dominant class controls resources (such as land) in a slave-based society by actively denying ownership to other classes.

Political economists do not see capitalism as a static system; it metamorphoses itself over history. According to Amin (1994), capitalism has arrived at a new phase since the mid-1970s when Western economies experienced stagnation. Three schools offer explanations for the long-term economic crisis: first, the regulation school believed that institutions play a role to stabilise an inherent unstable capitalist system. This approach sees history as systematic, logical and coherent. Second, the neo-Schumpeterian approach highlights the role that technology played in initiating and maintaining long-term economic prospects. This approach also believes in the systematic and cyclical nature of capitalism. Third, the flexible specialisation school believed that capitalism accommodates the competing paradigms of mass production and flexible specialisation.

What Have Political Economists Written About Financial Crises?

Political economists seized on the 2008-9 Global Financial Crisis as an opportunity to understand financialised capitalism. Here I review four different explanations of the crisis: financial market as a spatiotemporal fix of an inherent contradiction of capitalism (Harvey, 2010); the dialectics between value and anti-value (Harvey, 2018); the permeation of finance capital into spheres of production, circulation, and consumption (Lapavistas, 2009, 2011, 2014); and social production and resistance from the bottom-up perspective (Hardt and Negri, 2017).

The first explanation is offered by Harvey (2010) who wrote that financial crises epitomise the contradictions in capitalism: the financial market was invented to overcome the inherent problem of surplus overaccumulation by

extending the time for the absorption of excess capital. In a capitalist logic, the exchange value of a commodity must be higher than the cost to produce it. The capitalist will partially pocket the profit made in the market, partially re-invest the money in the market by acquiring more raw materials and labour power. However, capitalism is an inherently contradictory system because excesses always have to be invested in a market. Stagnation is an enemy of capitalism: capital not invested, goods not consumed, and labour power not bought are seen as harmful to the economy. In order to facilitate a continuous absorption of surplus, financial markets were created to offer capitalists a temporal fix to invest excess capital in return of future dividends. However, financial markets only absorb surplus capital, not surplus labour or goods. A rallying financial market only means that the wealthy will be better off, but the working class will not directly benefit from gains on title ownership. As a result, the financial market widens the disparity between the most affluent populations and the rest. According to the Organisation for Economic Co-operation and Development (OECD), income inequality was exacerbated in the past half-decade. Moreover the 1990s, the average income of the top ten per cent was seven times higher than the bottom ten per cent; in mid-2010 it was nine times higher.³

The second explanation of the crisis is the dialectics of value and anti-value. Harvey (2018) explains the financialised economy with debt being an anti-value in 'the paths of value in "motion"' (p. 6) in Marx's political economy. Harvey highlights the dialectics of value and anti-value in the ecosystem of value production and distribution: value is only realised in circulation during which the negation of value occurs. To give an example, capitalists pay for labour hours and raw materials to produce commodities, but commodities on the shelf have no value until consumers buy them. Commodities that are left on the shelves for a long time slow down circulation. Because capitalism relies on a continuous circulation of capital, money, and goods, an economic crisis occurs when goods are left on the shelves for a long time. This signals that consumers may not have money to buy them and capitalists cannot recover the money invested in the production.

The dialectics of value and anti-value were applied to understand the debt economy because 'it is fundamental to [understand] the crisis tendencies of capital' (Harvey, 2018, p. 84). In a debt economy, loans and debt, as interest-bearing capital, are anti-value that circulates in the credit system. Debt can only be redeemed through claiming future value production. If the redemption fails, then a crisis occurs. At a personal level, an unemployed person will have a hard time repaying debt; at a national level, a bankrupt country may be forced by the World Bank and International Monetary Fund (IMF) to revamp its financial system. While Marx saw crisis as a moment of renewal because use value is degraded and exchange value is depreciated, Harvey (2018) is less optimistic than Marx because crisis forecloses the future, leaving no alternative for the present.

The third explanation of a financial crisis is the permeation of finance capital in the spheres of production, circulation, and distribution. Lapavistas (2009,

2011, 2014) asserts that the concept of financialisation is rooted in Marxist political economy, it is that it signals an epochal change of capitalism, a systematic transformation of economy, and a problematic relationship between finance and the rest of the economy. Lapavistas believes that finance capital is not separate from productive capital and that the 2008 housing crisis illustrates three trends of financialisation in mature economies: large multinational corporations relying less on banks; banks restructuring themselves and targeting individuals and households; and consequently financialising individuals' personal revenue in the form of debts and assets. Lapavistas' stance on finance capital permeating productive capital is different from that of political economists belonging to the monopoly school. The different viewpoints will be explained in the next section.

The fourth explanation is offered by Hardt and Negri (2017), who examined financial crises from a bottom-up standpoint. They ask how a crisis is formed from the perspectives of social production and resistance. They argue that high inflation in 1970s had led to social grievance, which pushed government to pay for more services for the disfranchised. Governments then became ridden with debt, and transferred public debt to the private sector. The invention of new economic instruments and the growth of financial power generalise an economy of dispossession 'in which processes of extraction and mechanisms of debt spread exploitation across society' (p. 157). Hardt and Negri further detail that finance extracts value from the commons such as natural materials and societies: not only do industries such as mining and forestry depend on loans from financial institutions, industries of big data also capitalise on social relations. Similar to Lapavistas (2009, 2011, 2014), Hardt and Negri disagree that finance capital only remains in the circulation sphere because it generates wealth through value extraction.

Political economists have offered plausible explanations of financial crises but they have ignored the role financial information plays in crisis. For example, Harvey has not addressed how financial information is generated to measure the value of past, present, and future commodities. Hardt and Negri hint at information being extracted from social relations as a commodity, yet they neglect how financial instruments produce information of different qualities. I will suggest how an ANT approach will remedy these oversights later in this chapter.

What Have Political Economists in the Field of Communication Written About Financial Crises?

The Global Financial Crisis has led many communication journals to publish special issues in which journalism and critical scholars have analysed the relationship between the financial market, everyday life, and the media industry (see Lee 2014 for the scope of this literature, which cannot be adequately covered here). In this section, I focus on political economic work that is at the

forefront in critiquing a historical materialism of financial markets by understanding ‘how capital flows and how capitalism evolves’ (Lee, 2014a, p. 891). Some political economic work published in special issues are Chakravartty and Schiller (2010) in the *International Journal of Communication* and Fuchs, Schafranek, Hakken, and Breen (2010) in *triple C: Communication, Capitalism and Critique*. Given the brief length of this introductory chapter, it is impossible to summarise the conversations between political economists, but I will briefly state in the following what political economists from two schools of thought—the monopoly capital school and the digital capitalism school—have written about financial crises. Both schools of thought are able to fill the gap in the current political economic understanding of financial crises by taking into consideration the role of information in financial capital.

Political economists from these two schools have written about an information economy before the Global Financial Crisis; their critiques of the digital economy are highly relevant to an understanding of financial information. Both schools object to a mainstream economic view of information which believes that information is borne by prices generated in the markets, that perfect information leads to perfect competition, and that sellers and buyers have perfect knowledge of each other in a perfect market. Political economists question these assumptions by questioning the economic value of information. For example, Robert Babe (1995) points out a paradox in mainstream economic thought: if information is generated by prices in a market, then how can the market determine the price of information? In other words, while mainstream economists see information as economically neutral data, political economists see it as a commodity. If financial information is a commodity with exchange value, then how can it measure its own value? While both schools of thought have provided plausible explanations why financial crises occur, each of them has a major blind spot which I will explain in the following sections.

The Monopoly Capital School

The post-Second World War US experienced fast economic growth because of massive infrastructure projects such as interstate construction and military spending. However, the economy cooled down in the 1970s. In 1966, Baran and Sweezy wrote *Monopoly Capital* to forewarn that a concentrated market could lead to economic stagnation and inflation. Magdoff and Sweezy (1977) later explained that inflation and stagnation are inherent in a monopoly economy: a quick expansion of surplus leads to inflation; corporation-controlled prices and wages lead to stagnation. To combat a sluggish economy, the government looked for large-scale game-changing projects, such as the ‘information highway’ initiative in the 1990s. The financial sectors were all deregulated to allow for a freer flow of capital from the productive to the financial sectors. In the US, the repeal of the post-Great-Depression-era Glass-Steagall Act had allowed

commercial banks to engage in investment. In the UK, the Big Bang was implemented to make the London stock markets more competitive. Financial deregulation led to unfettered capital flooding the financial markets, which increased risk for both productive and financial capital. McChesney, Wood, and Foster (1998) and Foster and Magdoff (2009) applied the monopoly capitalism argument to critique the over-blown information economy in the late 1990s and the speculative housing market in the late 2000s. Those authors argued that new information and communication technologies had failed to bring along sustainable growth, like infrastructure construction, in the post-Second World War period. The speculative housing bubble not only failed to stimulate the economy in the long run, but it also created a massive fictitious capital.

The monopoly school sees fictitious capital as separate from productive capital. It has long been suspicious of an economy that is not production-based. Activities such as accounting, marketing, and information-generating—according to Marx—are not productive activities. To the monopoly school, accountants and marketers are parasites who feed on the surplus value created by productive labour. Marx wrote that profit in the financial market is ‘a mere appropriation of the surplus-labour of others’ (Marx 1999/1894, p. 303). Drawing on Marx, the monopoly capital school thinks the production of financial information creates a fictitious market; the value reflected from title ownership is not real value because there is no production of commodities. Financialisation is seen as a cover up of stagflation, since it gives an illusion of a growing economy (Foster and Magdoff, 2009).

The financial market not only does not resolve the problem of overaccumulation, but it also exacerbates the problem because surplus capital is more likely to be invested in the financial markets rather than in production. To give a concrete example, the gains in the financial markets only benefit very affluent populations. They may spend money on luxury property and goods, but they will not need many more daily necessities such as food and basic shelter to sustain their lives. Therefore, even though they may hire more household help, they do not necessarily hire thousands of farmers, factory workers, and construction workers to produce life-sustaining goods. The employment rate will not sharply increase if only a small fraction of surplus labour has exchange value. What makes the matter worse is that capitalists may see the financial markets as a faster way to make money, thus devaluing the temporality for profit realisation in production.

A flaw of the monopoly capital school is that it believes there are two kinds of capital: productive and fictitious. Productive capital is seen as ‘real’ while fictitious capital is seen as unreal. The digital capitalism school that will be discussed below has offered a good reason why the divide between productive and fictitious capital is artificial. Schiller (2007) stated that many production activities rely on information: large-scale farming relies on information technology such as GPS and data analysis, factory production relies on ‘just-in-time’ data. The belief that farming or factory work is all done by hand and by simple

machines is a romantic notion, not the reality. Adding to Schiller (2007), Lapa-vitsas (2014) agrees that finance capital is not fictitious and that the financial market is a refuge of surplus capital because they could not explain the huge nominal value of financial markets. He believes that the financial system is a set of ordered economic relations comprising of markets and institutions which profit-making motives contribute to capitalist accumulation. In other words, there is no distinction between productive and fictitious capital.

This book brings up another flaw of the monopoly school's theorisation of the financial markets: that this school denies the materiality of finance capital and financial information. I assert that financial information are material goods because they are embodied in and through technologies through production, distribution, and consumption. For example, 'real-time' financial information is only possible because of the trading screen; stock price updates were only possible in analogue trading because of the telegraph. Therefore, financial markets are as materially constituted as consumer goods, even though they do not produce tangible goods.

The Digital Capitalism School

Political economists from the digital capitalism school are not entirely convinced by the 'monopoly capital' argument. As mentioned earlier, this school argues that digital information constitutes a 'real' economy because information is crucial to the production sector; agricultural production and manufacturing rely heavily on information to create surplus value. Furthermore, the digital capitalism school points out that information is a commodity in a capitalist society. Political economists such as Mosco and Wasko (1988), and Schiller (2007) highlight the commodification process of information by showing how large corporations privatise public information. Once information is commodified, it is a fetish with an exchange value. For example, advertisers pay a lot to buy information about their targeted customers. However, this information about a specific demographic has little value outside an advertising campaign; it does not help to combat global warming or to build better schools. Information as resources differs from information as commodities. The former is a non-economic good, the latter economic. Political economists desire more information to be public goods because it helps decision-making for the greater goods.

Mosco (1988, 2004, 2014) adds to the 'digital capitalism' argument by showing the power that the information and telecommunication sectors have over national governments. With the help of neo-liberal states, the largest information and technology companies can set a price on information, making an erstwhile public resource into a privatised good. For example, local towns and cities have the capability to build their own broadband network and offer low-cost or free Wi-Fi to residents, but big telecommunications corporations lobby

government to prohibit cities from doing so. As a result, residents have to pay for unreliable, expensive broadband services.

Although the digital capitalism school has underscored the exchange value of information in a market, I argue that this school tends to lump all kinds of digital information together and assume all digital information is qualitatively identical (Lee, 2014a). In their line of argument, there is no difference between the types of commodified information: financial information, Google search results, and digital media are the same as long as they are assigned an exchange value in the market. The digital capitalism school's argument cannot explain why private financial information firms such as Reuters and Bloomberg restrict subscription to professional traders. While Google and television stations welcome as many users and viewers as possible, private financial information firms limit their markets. A limited market means financial information has an exclusive nature. This exclusivity explains why subscribers are willing to pay a hefty price to access this information. The difference between information as in Google search results and information as in stock prices shows that information has different qualities. These qualities help set prices for information.

The digital capitalism school has correctly pointed out that information is a commodity, but it has not attended to the spatiality and temporality of information. The quality of information depends on a certain spatiality and temporality in which a commodity is produced. First, commodities are embodiments of labour power; they must be produced within a time frame in a physical location. Financial information is *not* automatically produced in a market; someone somewhere is paid to write an algorithm to calculate prices; someone somewhere is paid to design a user interface that displays the information. Second, the exchange value of an information commodity depends on the spatiality and temporality of information (Lee, 2013). Financial information companies justify the high exchange value of financial information by the advanced technologies that bridge physical distance and transmit timely information. Different kinds of information are expected to have different spatialities and temporalities. The spatiality of financial information is global: New York traders begin their days learning how the London Stock Exchange closed; traders in the City wake up learning how the Tokyo Stock Exchange closed. The temporality of financial information is immediate; slow and delayed financial information is worthless. In this sense, financial information is very different from information about neighbourhood restaurants. We do not care how other patrons rate restaurants in cities where we don't live in or visit. We also do not care if patrons are rating the restaurant while eating. We prefer online restaurant reviews that have detailed descriptions and mouth-watering pictures. Third, as a commodity, information transforms the symbolic and material space and time. Information is not independent of the technology that produces, distributes, and consumes it. Information is also not independent of space or time. In other words, space and time do not pre-exist for technology,

instead they are simultaneously created when information is created. By paying attention to the spatiality and temporality of the information commodity, I acknowledge that infrastructure (such as broadband cable) has to be built for digital information; buildings (such as those housing stock exchanges) have to be constructed for congregated financial activities. In this sense, not only is information material, but space and time are material as well. In the next section, I turn to writings on materiality in the communication discipline to discuss how they may advance an understanding of financial information being material.

How Have Media Studies Scholars Studied Materiality?

Media studies scholars have not always paid attention to the materiality of media technologies because they have a concerted interest in texts rather than material life (Gillespie, Boczkowski, and Foot, 2014). Materiality is defined as references to physical things and the irreducibly relational characters of reality (Sterne, 2014); as well as the physical character and existence of objects and artefacts that make ‘things’ useful and usable (Lievrouw, 2014). Materiality is said to be a complex, heterogeneous, multidimensional idea and is open to a variety of interpretations, emphases, and disciplinary assumptions (Gillespie, Boczkowski, and Foot, 2014; Suchman, 2014). Drawing on these definitions, it is argued here that materiality is not simply about the material nature of things, but how this material nature conditions human-technology interaction. According to Gillespie, Boczkowski, and Foot (2014) and Lievrouw (2014), technologies act on users by pressing on certain material practices. Lievrouw (2014) uses the term ‘material affordances of technologies’ to describe ‘the physical properties or features of objects and settings that ‘invite’ actors to use them in particular ways’ (p. 23). To this end, she calls for media studies scholars to examine the interplay and mutual shaping of technological tools, human actions, and social/cultural formations. Boczkowski and Siles (2014) also highlight the interplay between texts and technologies. They coined the notion ‘texto-material assemblages’ to describe the bundling of texts and materiality. Writings on materiality underscore how materially embedded financial information conditions human-machine interaction in specific ways. Using the Madoff example, financial statements printed on paper slips invited investors to take a glance and store it. Online financial statements, on the other hand, invite investors to interact with the interface and to return to the online site for constant updates.

I differentiate the concept of materiality from materialism. The former is about the physical properties of things and their existence in human lives while the latter is a method to understand historical changes. Harvey (2018) further differentiates physical materialism from historical materialism. The former only takes into account things and processes that can be physically documented

and directly measured. The latter recognises the importance of immaterial but objective powers, such as value and capital. Value is an immaterial concept; it has to be represented in money's form (such as cash, cheque, credit card, 'I owe you' note). The materiality of money form urges human beings to act on it. A banknote dropped on the ground may prompt a lucky passerby to pick it up while a credit card on the ground demands a kind-hearted passerby to report the loss. Historical materialism of money forms asks how these represent historical changes. For example, who governs value represented by money tokens such as banknotes and precious metals.

ANT and STS Theories on Information and Economy

ANT is the first approach that will enrich a political economic understanding of financial crisis because it attends to the materiality, temporality, and spatiality of financial information. Actor-Network Theory (ANT) belongs to Science and Technology Studies (STS), which encompass a relatively loose body of literature that approaches sciences and technologies from historical, cultural, social, and rhetorical viewpoints. As previously mentioned, media studies scholars pay insufficient attention to the materiality of media technologies. Equally, STS scholars ignore media technologies. Gillespie, Boczkowski, and Foot (2014) explain this with the perception of media technologies having little social significance. They believe that media and ANT scholars could engage in a fruitful dialogue if they acknowledge that media technologies are complex, sociomaterial phenomena; and that technologies are not things, but products of distinct human and institutional efforts. In this section, I summarise ANT and STS writings on information and economy that may challenge political economists to think of the materiality of information technologies. The writings of economic sociologists Alex Preda and Karin Knorr Cetina, and of ANT scholars Michel Callon and John Law, have informed the theoretical framework of this book.

Like political economists, economic sociologists Preda (2009) and Knorr Cetina (2005) reject a mainstream economic view of information. They do not believe the financial market generates, processes, and distributes information. Instead, they believe information is 'contingent, communitarian' (Pardo-Guerra, 2010, p. 86) and is technologically and materially embedded. Information is cognitively processed raw data that are manifested through material objects such as screen displays and written formulae.

ANT scholars such as Michel Callon, John Law, and Bruno Latour do not believe in using social theories to explain an economy. They do not think 'socialising' and 'humanising' economic actors would gain insights into an economy. Their rejection of a social explanation can be reasoned by Latour's rejection of the notion of 'society'. He proposes that the concept 'social' be used to describe the assemblage of human and non-human actors. 'Social' is a glue that connects all human and non-human actors during the process of assemblage. Both

human and non-human actors pick up roles in the network by taking up the network's attributes. STS scholars believe both human and non-human actors have an agency in a network; non-human actors are neither different from nor superior to human actors. In this line of argument, humans do things to non-human actors as much as non-human actors to human actors. One good example is the urgency to respond to a ringing telephone or an incoming text. To STS scholars, we are not responding to other human actors in the network, but to the non-human actors instead.

Unlike political economists, who prefer to see an economy as a macro concept and capitalism as a political economic system, STS scholars prefer to *trace* the movements of capital in a material space. Michel Callon (2007a) suggests that sociologists should see economics as an assemblage of human and non-human actors such as material devices (the keyboard, the screen) and techniques (such as algorithms).

Callon (2007a) does not think economics is merely discursive, so sociologists should not spend time unveiling the ideology of economics. Instead, he thinks economics is performative—it makes the markets 'more real' (Callon, 2007b). Metrology and calculation are two techniques that perform a market. Formulae to calculate GDP and employment rate do not reflect an objective economy, but make an economy real. Lastly, economic models obscure the technologically and materially embedded devices in the measurement and calculation process.

Applying STS writings to analyse the dot-com financial crisis (Lee, 2014a), I have argued that technological devices are introduced to the stock markets in order to make them appear like an external 'thing' devoid of human interactions. In actuality, technological devices enable the formation of a specific kind of market. This specific market is believed to be natural, autonomous, and objective until a financial bubble bursts. After a financial market collapses, journalists and regulators blame the devices for causing market failure.

Political Economy and ANT: A Possible Common Ground?

Finding a common ground between a critical political economy of communication and ANT is not an easy task. At present, there are few conversations between both parties. However, it can be speculated that political economists of communication would be wary of ANT. Nevertheless, some scholars believe ANT could be incorporated into a political economic critique of capitalism.

Political economists who have written about environmental justice and geography have the most heated debate about using ANT to critique capitalism. The criticism is summarised as follows:

- (1) ANT is a discussion, not a theory: Fine (2005) critiques ANT's understanding of economics as atheoretical, seeing ANT as only promoting endless description of network formation. ANT is also said to be

- uninterested in critiquing different types of actor-networks (Castree, 2002).
- (2) ANT is ahistorical and asocial: ANT is criticised for conflating human and non-human into the same things (Castree, 2002). Fine (2005) critiques ANT methodology that posits 'universal notions around actors and networks without regard to specificities that allow and justify the positing of particular forms of dualities' (p. 93). Consequentially, ANT scholars have a hard time differentiating actors from non-actors in the network.
 - (3) ANT has ignored the power of capitalist markets: Fine (2005) and Garcan (2005) believe that ANT is incorrect to assume that markets are historically variable, and each actor-network is unique. They believe capitalism homogenises all variants in the network. Therefore, Fine (2005) has called for a critical political economy to understand the historical nature of capital and to examine the dialectics of the unfolding of structures, processes, relations, and tendencies.
 - (4) ANT does not understand Marxist theories: Garcan (2005) argues that ANT sees Marxist theories as homogenous, and that ANT therefore misunderstands Marxism as involving a rigid society/nature dualism. He contends that relational Marxism, especially Marxist ecological theories, have taken into account the relations between human and non-human actors (such as people and nature). This linkage parallels ANT's concern for agential nature. Moreover, Garcan (2005) has argued that Marx's materialist conceptualisation of labour process implies actors because both labour and nature act as a 'social (people-people) and metabolic (people-nature) relation' (p. 128). Moreover, labour creates a mix of nature with society, which is not unlike ANT's hybrid concept that points to the formation between actors and objects. Ecological Marxists have acknowledged the messiness of the formation of nature-social interaction.

Despite the criticism, some political economists believe ANT's rejection of dualism allows for a flexible understanding of humans and non-humans. For example, Söderberg and Netzén (2010) see a parallel between ANT and Open Marxism (such as the work of Michael Hardt and Antonio Negri), in that both try to overcome dichotomous thinking and see the world as an unfolding of networks of actors, class struggle, and the contingent process that undermines a view of a stable world. Castree believes that ANT will add to Marxist geographers' critique of the nature-society dualism by showing capitalism to be: 'a plethora of otherwise qualitatively distinct econatural networks that have a common processual form or logic' (p. 130).

Castree (2002) has offered a convincing account of how a 'weaker' reading of ANT can be incorporated to green Marxism. A 'weaker' version of ANT is sceptical of binary thinking, asymmetry, limited power of agency, and a centered conception of power. At the same time, this 'weaker' reading acknowledges that

actor-networks are driven by similar global and systematic processes; social processes are more directive than natural, and an asymmetry of power. A 'modest' version of green Marxism is also required to accommodate a weaker reading. A modest green Marxism believes that capitalism is not the only exclusive force to examine socionatural relations. It also believes capitalism has neither a totalising effect nor privilege social actions.

Political economists in the field of communication have not chimed in the discussion of drawing on ANT to critique capitalism. In fact, Couldry (2008) is the only lengthy piece to have discussed how ANT could be incorporated into media studies. Couldry thinks the major insight lent by ANT is its rejection of the assumption that *the media are already social, and thus are natural channels to represent social life and social engagement*. He believes ANT would help point out how the media are highly specific actor-networks that represent social life, and how they are a spatiality of association through which power is hardwired into actions and thoughts in organisations. Despite Couldry's optimism, he cautions that ANT does not offer explanation of the networks once they are formed: how do they develop? How are they reinterpreted? What are the long-term consequences? Couldry is also cautious of power differentials between human and non-human actors. To him, human actors matter more because of 'social consequences that are linked to how these differences are interpreted and how they affect the various agents, ability to have their interpretations of the world stick' (p. 102).

From an ANT perspective, I argue that financial information and finance capital are materially and technologically embedded. As I argued in the previous section, information is not independent of the technology that produces it. In other words, financial information does not exist before the invention of machines such as the ticker and the trading screen. Furthermore, information picks up the attribute of the technologies that transmit it: stock prices printed on a ticker tape were only as quick as the speed of the telegram and the printer. Because information is not monolithic, financial information constitutes multiple, concurrent, heterogeneous markets; each of them occupies a different spatiality and temporality. The attention to the materiality of financial information will fill in one gap of the current political economic critique of financial information. In the following, I argue how the critique can be further enriched by drawing on feminist political economic theories.

A Bizarre Love Triangle? Feminist Political Economy, ANT, and Critical Political Economy

To reconcile the difference between critical political economy and ANT, and to quench political economists' doubts about ANT, I argue in this section how gender may bridge the gap. Feminist political economic theories and ANT may appear like odd bedfellows because feminist political economists have not

widely applied ANT in their analysis. Similarly, ANT scholars who have written about economics have little to say about women and gender. However, Sterne (2014) believes that constructivist theories—such as feminist theories—only differ from ANT in strategy and politics. He explains that both are politically-minded and assume the politics of knowledge. However, feminist theories presuppose power relations exist before the researchers analyse the construction of power, while ANT deals with power from a managerial standpoint. Suchman (2014) also hints at the usefulness of ANT by calling for a feminist critique that ‘recovers the lived experience and the embodied, situated interaction of those immediately implicated in particular assemblages, the material practices and cultural imaginaries that create and articulate those arrangements, and the political/economic investments that sustain them’ (p. 136). In the following, I first discuss what a feminist political economy of communication is, what feminists have written about financial crises and financial markets. Then I argue why feminist political economic theories can bridge the differences between critical political economy and ANT.

What is Feminist Political Economy?

Feminist political economy will fill a gap in contemporary writing on financial crisis. Feminist political economists study ‘the gendered production, distribution, and consumption of goods and resources; and the examination of how ideology is used to stabilise unequal relations’ (Lee 2011, p. 83). This approach believes that gender is both grounded in material realities and constructed in discourses. This approach aims to unveil gendered concepts such as finance capital and global economy, in particular how women have been treated as resources and how gender is made flexible to accommodate capital flow.

A feminist political economic analysis validates individual experiences by understanding how patriarchy and capitalism shape the gender and economic experience of women and other marginalised groups (Riordan, 2002). One way to understand lived experiences is from the vantage points of space and time: who has the right to access markets and to regulate the marketplace. Specific financial information and technologies were invented to grant women access to the credit market. Financial information about those women did not exist *before* women became debtors; it was created once women became borrowers.

Feminist political economy is grounded in historical materialist feminisms such as Marxist and socialist feminisms. Marxism and feminism are often said to mirror each other because the former critiques capitalism and the latter patriarchy, but their merging of both is not deemed feasible. For example, MacKinnon (1982) believes that Marxism and feminism both pose a fundamental question: ‘Is male dominance a creation of capitalism or is capitalism one expression of male dominance? [...] Is there a relationship between the power of some classes over others and that of all men over all women?’ Despite

Marxism and feminism sharing the same fundamental problem, MacKinnon (1982) believes that one subsumes the other. For example, she thought while socialist feminists have brought in a gender perspective to a Marxist analysis, their only contribution is to theorise women's labour in terms of housework. Similarly, Ferguson, LeBaron, Dimitrakaki, and Farris (2016) argued that the earliest materialist feminists failed to understand the interdependent relations between production and reproduction and thus also failed to explain the role of gender and sexuality in forms and structures of oppression.

MacKinnon (1982) has overlooked the disagreements among materialist feminists. While some believe that reproductive labour should be a vantage point of capitalism, others believe that gender's material beings are grounded in discourses. Selma James and Mariarosa Dalla Costa (cited in Haiven, 2014) aim to examine women's reproductive labour in the household, which is believed to be a site of women's oppression. In the household, men's labour power is sustained by women's domestic labour that is made invisible in capitalism. Because women's reproductive labour is not seen to contribute to the production of surplus, it is devalued. More recently, materialist feminists who subscribe to a social-reproductive perspective (Ferguson et al., 2016) believe that capitalism is organised in deeply patriarchal institutions, processes, and values. Therefore, they aim to examine activities that are associated with the maintenance and reproduction of people's lives because they provide the foundations on which market, production, and exchange rely. Bhattacharya (2017) rightly asks the question 'who produces the conditions of existence for workers?' The answer to this question reveals the amount of mental, physical, and emotional work that goes into ensuring the workers have the competencies to labour for capitalists. Jarrett (2016) however believes that reproductive labour power illustrates the contradictions between exploitation and agency in a digital media capitalism: while reproductive labour is exploited and commodified in the market, it also resists being a commodity in the market. Therefore, reproductive work provides an angle to examine digital media labour that manifests both material and immaterial labour that are integral to the digital media economy.

In the face of the global economy, the definition of reproduction has been expanded beyond the household, it includes: how social beings care for each other, sustenance, cultural and ideological reproduction, and community building. Social reproductive feminists have expanded analysis of economic sites beyond the household; they also look at the informal economy, daily and intergenerational, and social reproduction of social beings. Social reproductive theorists aim to show that the spaces of production and reproduction are not separated, but conjoined (Bhattacharya, 2017). Unlike feminist economists, who tend to look at the economies at a macro level (see Karamessini, 2014; Rubery, 2014; Walby, 2009 below), Ferguson et al. (2016) focus on gender relations at the micro level.

Hennessy (1993) and Hennessy and Ingraham (1997) (see Sullivan, 1999) have advanced a form of materialist feminism which distinguishes itself from

materialist Marxism by attending to the question of social analytics and social relations that are grounded in material conditions. Hennessy (1993) believes that the ‘discursive turn’ has pointed out how subjectivity as constructed by language and culture is a key to analyse the intersection between gender and class. She believes that materialist feminists do not need to give up a Marxist critique of totalities when they incorporate subjectivity because ‘what gets to count as “reality” [is] through the assumptions it valorizes and the subject it produces’ (p. xiii). To respond to the rise of the global economy and neo-liberal ideology, Campbell and McCready (2014) state that materialist feminists should pay attention to not only patriarchal capitalism, but also capitalist, colonial, and heteropatriarchal histories and organisations of power. In an interview with Haiven (2014), Federici pointed out that women disproportionately bear the cost of neo-liberal capitalism because they are denied access to common land while asked to provide more free labour and care work. She believes that financial capitalism has developed a new relationship between women and capital in which women are brought into direct contact with capital, making women directly confront capital without the mediation of male family members.

This book aims to build on materialist feminists’ insights and conceptualise gender as both material beings and discursive constructs. Because gender relations are conditioned by the dominant mode of production and they are specific to each mode of political economic arrangement, it is wrong to assume that gender relations have advanced from an agrarian to a feudal and then a capitalist society. Similarly, it is wrong to assume that women in a capitalist society are better off than they are in agrarian and feudal societies.

As suggested earlier, the rise of the financial market is not natural because a non-capitalist political economic system does not require a constant lubrication of capital. Thus feminist political economists ought to examine how gender relations—as institutions—constitute financial markets. Finance capital is a gendered process. The essence of capitalism is the circulation of capital wherein gender is moulded to facilitate and hinder capital flow. Class differentiates women’s experiences as gendered and class beings: while middle-class men rarely ask their wives to manage family finance, working-class women are responsible for the family money (Zelizer, 1989). Middle-class women’s femininity, in comparison to working-class women’s, is seen to be less suitable for manual jobs outside the home. However, working-class women’s labour has less exchange value in the market than men.

How Feminist Scholars Have Studied a Crisis Economy

Here I summarise what feminist scholars outside and within the communication field have written about gender and financial crisis. Karamessini (2014) has argued that austerity poses a major challenge for gender equality because it reduces demand for female labour and eliminates services for women and

children. She has also critiqued government's bailout for being short-sighted because the measure only benefits the rich and harms women's long-term advancement. Rubery (2014) has pointed out the impact of the recession and austerity programmes on the wider labour market, as well as social and political institutional arrangements. She argues that economic models are gender-blind even though they view women primarily as caretakers. These models explain women's disadvantaged economic positions with discrimination; thus the remedy to uplift women is to eliminate discrimination. Rubery (2014) suggests that an institutional approach would shed light on the relationship between cyclical and long-term change in national employment and the social construction of gender relations within a specific institutional and political context. Gender relations are both an input and an outcome of the national model and the associated adjustment process. Gender relations condition how austerity programmes are set up, which in turn change gender relations. During the implementation of austerity programmes, gender ideologies are used to fit new conditions. Similarly, Walby (2009) argues that the causes and consequences of financial crisis are gendered. The institutions and practices that govern the flow of finance capital also have few women in decision-making roles. Consequently, financial crisis hits women harder because of the loss and casualisation of employment, decline in real wages, and reduced food access. She also critiqued remedies to 'cure' an economy for being gender blind because they fail to see how women are affected in areas such as financial governance, taxation, and public expenditures.

Another body of literature that concerns women and financial crisis looks at gender issues in the financial industry. McDowell (1997) argued that gender segregation in the financial industry can be analysed from economic, sociological and geographical standpoints. The 'embeddedness' concept points to the sociological nature of economic activities; the 'location' concept points to the local/global sites where meanings are made. The manifestation of gender and work is often projected onto individuals' bodies. An illustration is that corporate pictures of male bankers rarely show the lower part of the body because it is associated with nature and sexuality. Roth (2006) examined the gross disparities of compensation between women and men, whites and non-whites in the financial industry. She argues that gender and racial inequalities are disguised by the myth of meritocracy. While the industry uses 'objective' performance review to determine compensation, customs and cultures also determine which workers are productive. Fisher (2010, 2012) examined women bankers campaigning for more visibility in the male-dominated industry. They self-proclaimed as feminists and fought for a more democratic decision-making process in the industry.

Despite the fact that feminist scholars have investigated how financial crises impact women as producers and reproducers, the intersection between finance, communication, and media has largely been ignored. For example, among the five communication journals (*Cultural Studies*, *International Journal of*

Communication, Journal of Communication Inquiry, Popular Communication, and triple C: Cognition, Communication, and Critique) that published special issues on the Global Financial Crisis, only one in 49 articles (Palmieri 2010) studied women in relation to a financial crisis (Lee and Raesch, 2015). In terms of book-length projects, Negra and Tasker's (2014) *Gendering the Recession: Media and Culture in an Age of Austerity* was the only one that focuses on women, gender, and sexuality in the post-Global Financial Crisis world. Yet the book does not directly interrogate financial aspects that pertain to the crisis, such as finance capital, trading instruments, and monetary policies. Given the facts that modern financial crises have devastating effects on the global economy and that finance capital is gendered, feminists in the communication field need to pay more attention to the intersection between finance capital and gender.

How Gender Bridges the Difference

The major strength of a gender perspective is its critique of dualistic thinking and patriarchal power: not only do feminist scholars question the dualism between humans and non-humans, but they also question that between masculine and feminine, humans and nature. Feminist scholars are also keen on unveiling how power works through institutions. The institutions that ought to be critiqued by feminist political economists are patriarchy and capitalism. While some materialist feminists pre-suppose power relations exist before the discourses are constructed, a feminist political economic approach believes in the dialectics between the material and discursive process. In other words, the construct of gender relations reinforces and challenges gender relations, which in turn inform how gender is being constructed. During the flow of global finance capital, gender relations dictate which women should be exploited as resources. During the process of women's exploitation, gender is moulded to justify the flow.

A feminist political economic perspective also draws attention to the materiality, temporality, and spatiality of financial information because it is particularly interested in 'how the temporality of capital accumulation transforms its spatialities through technologies' (Lee 2014a, p. 905). Drawing on Couldry's (2008) argument that ANT scholars do not take power in spatiality into account, a feminist political economic approach attends to the dialectics of the materiality of time and space. As argued, the creation of financial information simultaneously creates space and time; a specific kind of financial information circulates and is consumed in a specific spatiality and temporality. To use the example of women's economic activities in developing countries, women have always engaged in small business by rearing animals and growing vegetables. Their sense of time-space is intensely local; they know when to harvest goods for the market and for storage. Participating in a microcredit project, however, disintegrates the local sense of time-space because the production cycle is now

divorced from seasons, relating instead to the repayment period. The market regulates women's sense of time and space by dictating how soon women are expected to repay debt and where they should attend meetings with caseworkers. Finance capital reinscribes the sense of time and space for women. Accounting technologies are essential to this regulated sense of time and space; bank workers need to *record loans* in order to establish the relationship between loaners and borrowers. Rudimentary technologies such as pen, paper, and calculator are not *merely* tools, but they *make an economy real* to the women.

Gender disrupts the grand narrative of the *longue durée* of capitalism by rejecting a linear view of historical events. A conjunctural analysis (Grossberg, 2010) is effective at disrupting the grand narrative because gender and economies are constructed, understood, and created in multiple sites. A conjunctural analysis is absent from current writings that critique financial regulations—such as Joseph Stiglitz's *Free Fall* (2010)—and finance capitalism—such as David Harvey's *The Enigma of Capital* (2011)—which plot the causes and consequences of financial crises on a linear timeline. The assumption that causes and effects occur on a linear timeline ignores the many sites—most of them marginalised—in which women make sense of their relationship with finance. Temporality-wise, because gender relations are specific to each political economic system, it cannot be claimed that gender relations of today are better than those of the past. Similarly, it can also not be claimed that digital financial technologies improve upon the analogue ones. Financial technologies of the bygone days simply produced a different kind of space and time; they are not necessarily more primitive than the current ones. Similarly, space alone cannot be a factor to explain a financial crisis. While a global financial crisis may seemingly affect more countries than a localised one, a small-scale financial crisis in a medium-sized city gives as much evidence about finance capital (one good example is how bankrupted American cities such as Flint, Michigan illustrate the offshoring of manufacturing jobs). In the following, I outline the chapters of the book and main arguments advanced in each of the book chapters.

Structure of the Book

I advance two arguments—finance capital is gendered, financial markets are materially and technologically embedded—in four chapters. To emphasise a dialectic between time and space through the lens of gender, I opt not to discuss financial crises as events on a linear timeline or as global forces on local economies. Instead I discuss financial markets by examining gendered characters and technical devices in an array of discourses about financial crises. The three gendered characters are the Tulip, the Poor Women, and the Shopaholic, and the two technical devices are financial news reporting and the trading screen.

I analyse how different kinds of discourses describe, explain, and critique financial markets and crises through the three characters and the two devices.

In addition to discourses found in contemporary popular culture, I also use historical documents to trace the origins of the characters and devices. For example, the temptress in *Tulip Fever* (a contemporary novel which has been adapted for a film) is an unfaithful wife in the seventeenth-century Netherlands who ruins the lives of her husband and lover in the midst of tulipomania—commonly called the ‘First Financial Crisis’. However, to understand why the tulip bulb became a trading instrument and why the flower became a synonym of a temptress, I consulted historical documents such as the horticultural book *Rariourum Plantrum Historia*, published in 1601, and ‘pulp’ non-fiction *Memoirs of Extraordinary Popular Delusions and the Madness of Crowds*, first published in 1856. Documents from different historical periods allow for an examination of contesting discourses of the flower. Yet the discourse became more homogeneous over time in the way that the Tulip can only be a temptress.

As the work is informed by feminist political economic theories and ANT, it is worthwhile to mention the methodologies that informed the inquiries. Following the tradition of feminist media criticism, I used semiotic analysis, discourse analysis, and narrative analysis to analyse popular culture: culture that was produced primarily to make profits. Some examples are Hollywood films about financial markets, chick lit about shopaholics, and advertisements for credit cards. Popular culture texts were interpreted along with the political economic conditions in which they were produced in order to understand when and why certain populations were invited as consumers. I also used historical documents to illustrate how objects such as the tulip or the ticker were seen in the past. However, I did not adopt a historical analysis because I am more interested in viewing these objects from a contemporary standpoint than understanding how these objects informed the past. For example, when tulip illustrations from a seventeenth-century Dutch book were examined, I did not intend to understand how the illustrations gave hints of the social, economic, cultural, or political conditions of society at that time, but how the illustrations could be understood from a contemporary standpoint. The last type of documents that informed the inquiry is academic books and policy papers. From an ANT perspective, theories are devices that exert power over a reality; they are not merely viewpoints shared among scholars and practitioners. Therefore, theories that explain how an economy works are critiqued as technologies that exert power on the material world. Given this, theories adopted and advanced by this study are also technologies that ought to be critiqued by others elsewhere.

As shown in Figure 1.1, each of the chapters forms a quarter of a rotating circle that corresponds to a panel. When the quarter aligns with a specific panel, the analysis in the chapter may best illustrate that particular theme. However, if we rotate the circle and realign the quarter with another panel, the analysis in the chapter can also illustrate a different theme.

For example, Ch. 2 ‘Tulipomania’ illustrates the theme of gender ideology. The Tulip is said to create a hysteria in the market by making men mad. But if

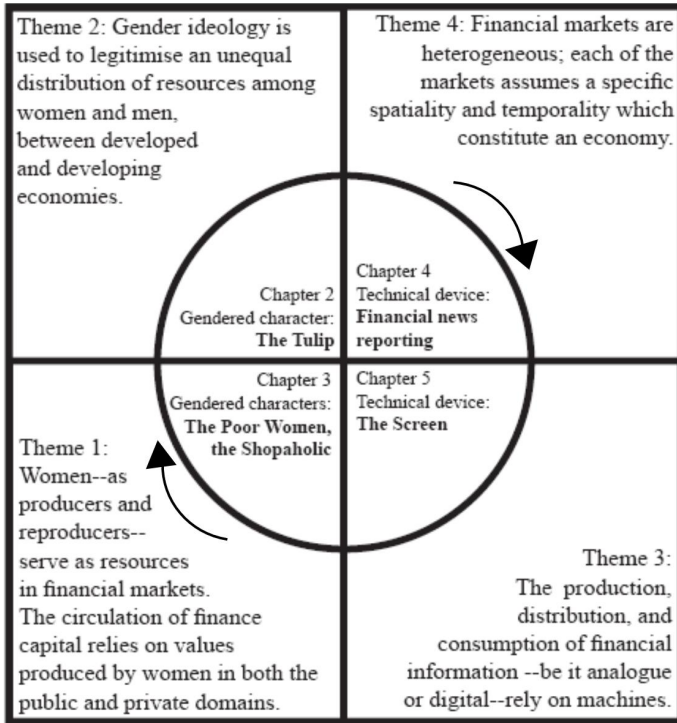


Figure 1.1: Gendered characters/technical devices and the four themes.

we slide the Ch. 2 panel to the bottom right, the analysis of tulipomania also illustrates the production, distribution, and consumption of financial information because the chapter discusses the technological means that recorded and documented the flower bulb as a trading instrument. Similarly, in Ch. 4 I analyse financial news reporting of Dow Jones at its infancy. I argue that different reporting technologies had created different temporalities and spatialities in the market. But if we slide the Ch. 4 panel to the bottom left, the analysis also illustrates how women's work was devalued by virtue of their complete absence in historical records of early Wall Street and the founding of Dow Jones!

In the following section, I lay out the goal of each chapter and explain how the analysis reflects one of the four themes.

In 'Ch. 2 Tulipomania: Unchanging Gender Relations in Financial Capitalism', I show how an assumed unchanging gender relation reinforces an ideology that capitalism is a *natural* political economic system that transcends time and space. I reach this conclusion by advancing three arguments: first, the discourse of the first financial crisis relies on two Orientalist beliefs: the West progresses while the East stays the same; and the mysterious East needs to be unveiled by understanding the feminine. Second, the tulipomania discourse is

citationary so the Orientalist beliefs are reproduced even in discourses that aim to shed light on women's lived experience. Third, technologies of documenting the flower not only changed the material reality of the tulip bulb trade, but they also exert symbolic control over the feminine.

In Ch. 3, 'The Indebted Women: Microcredit and the Credit Card', I draw attention to the spatiotemporal differentiation of a global financialised economy by looking at how credits extended to women in both developing and developed economies. I argue that the separate discursive worlds occupied by the Poor Women and the Shopaholic have to be understood in the context of stagflation since the 1970s. While capital circulation needs spatiotemporal differentiation, gender is used to bridge the gap. Being in debt is one tactic to narrow the gap so that women can catch up with men, developing economies can catch up with developed economies. An Economy and Poor Women have to be invented for microcredit programmes to succeed. By engaging in these programmes, Poor Women are asked to think and act like rational beings in the Economy. In contrast, the gendered subject the Shopaholic in advanced economies is seen as a medical patient who needs the expertise of the Expert. The discourse of shopaholism being a mental disorder strips down the political economic context of excessive consumption. Ironically, women's discourse that is critiqued as fluffy (such as 'chick lit/flick') allows women to talk back at orthodox economic thought, it also enables them to be self-reflexive. However, geographical differentiation pre-determines with what technologies the Poor Women and the Shopaholic use for self-reflexivity. Father figures could also control the technologies of self-reflexivity by belittling women's understanding of money and debt.

In Ch. 4, 'Financial Information Reporting in the Earliest Wall Street', I reconceive financial news reporting as an actor-network by looking at the inception of Dow Jones, the publisher of the *Wall Street Journal*. Communication literature has pointed out that the financial press failed to perform the Fourth Estate role during the Global Financial Crisis, it did not warn the public about a forthcoming crisis. By calling the press the Fourth Estate, it is assumed that journalists understand their roles and responsibilities in a presumed stable organisation. I show in this chapter that the earliest Dow Jones news reporting was an assemblage of communication and reproduction technologies, such as the ticker and the printer. In this assemblage, analogue technology that produced and distributed financial information in turn took up the attributes of the network. For example, a hand-operated printer could only hold 16 lines of type and impress on 5" x 9" paper. The limited space only allowed one sentence for each news item—the earlier Dow Jones financial news was not unlike tweets in the digital age! In another example, runners are seen as a neutral medium that simply delivered messages around Wall Street. Yet the runners were knowledge bearers of financial news. They learned the temporality of financial information by, literally, running in the street. The examples of the ticker, the printer, Wall Street physicality, and the runner show that the assemblage of

machines and humans created a market in which temporalities and spatialities are contingent upon the materiality of the assemblage. Because the assemblage is sociotechnical, the earliest *Wall Street Journal* should not be seen as a stable organisation, but rather, a nexus through which information was transformed from one form to another.

In the last analysis chapter, ‘The Screen, Financial Information, and Market Locale’, I examine how three Hollywood films and a documentary film position the screen in relation to the characters in order to show the locales of the financial markets. I show that in the pre-Global Financial Crisis era, the trading screen in *Wall Street* was seen to be reflective of a real market. The market crisis is said to have been caused by powerful players who traded behind the scene (or the screen?). In the post-Global Financial Crisis era, directors are ambivalent about the locales of the financial market. In the *Wall Street* sequel, the boundary between the real world and virtual world is eradicated. In this world, trading activities are constitutive of those on the trading screen, the mobile phone screen, and face-to-face conversation. In *Arbitrage*, the materiality of the real world is seen to be superior to the digital world because the former provides tangible evidence to unveil the deception enabled by digital technology. In the documentary *Floored*, the computer is seen to have taken over floor-based trading. The director explains financial crisis with the agency of this non-human technical device. I also examine the screen as an affective device on which patriarchy is maintained through father-son relationships.

In the concluding chapter, I discuss how feminist theories grounded in historical materialism would provide a productive discussion of how to apply both the political economic approach and STS to understand financial crises. By focusing on women as both material and discursive beings, I argue that ‘macrostructures’ such as the economy and financial markets are constituted in intensely local settings because concrete objects are needed for a discourse about the meaning of money. When human beings interact with material objects, they act on the discourse about money while simultaneously altering the material world by creating time and space. By acknowledging that financial crisis is produced through gendered discourses and technologically-embedded information, I argue that there exists an alternative explanation of financial crisis, other than human flaws and a natural economic cycle.

Notes

- ¹ Economic Bubble. Nasdaq.com. <http://www.nasdaq.com/investing/glossary/e/economic-bubble>. Last access: 29th April, 2015.
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