Unfinished business: change in the US securities industry since 2008

Dariusz Wójcik

dariusz.wojcik@ouce.ox.ac.uk

Theodor Cojoianu

theodor.cojoianu@ouce.ox.ac.uk

School of Geography and the Environment, Oxford University

This research was supported under the Australian Research Council's Discovery Projects funding scheme [project number DP160103855], the European Union's Horizon 2020 research and innovation programme [grant agreement number 681337], and the Hong Kong Research Grants Council [grant number T31-717/12-R].

October, 2017

Financial Geography Working Paper #9

Unfinished business: change in the US securities industry since 2008

Abstract

The global financial crisis was underpinned by the securitization of subprime mortgages led by US investment banks, and its outbreak was marked by the bankruptcy of Lehman Brothers on 15 September 2008. This paper uses employment data to investigate how the geography of US investment banking, and US securities industry as a whole, has changed since 2008, with focus on location, remuneration, sell-side versus buy-side dynamics, and gender. Results show that the hierarchy of securities industry centres has been stable, but the industry has shrunk significantly and became more spatially dispersed, pointing to the processes of offshoring and nearshoring in the value chain. Despite the pressure to cut costs, generated by the forces of depressed financial markets and demand, stricter regulation and new technology, remuneration per person including bonuses, remained very high. Probably for the first time in the US history, asset management (buy-side) surpassed investment banking (sell-side) in terms of employment, and was slowly catching up with the latter in terms of payroll per person. Finally, both buy-side and sell-side remained strongly male-dominated, with women becoming only slightly better paid on average and only marginally better represented on boards of directors. Overall, the US securities industry has undergone significant restructuring, and the rise of power on the buy-side may have positive implications. Lack of diversity and remuneration practices out of touch with the rest of the economy, however, suggest that this restructuring has been forced upon the industry externally, rather than driven by change in corporate culture, including gender relations and incentive schemes..

Introduction

Investment banks have been at the epicenter of the subprime crisis in the USA, and its transmission to Europe and the rest of the world, which led to what is referred to as the global financial crisis (GFC) or the great recession (Sorkin, 2009; Tett, 2009). They are the key players in the securities industry involved in the production and circulation of financial securities and derivatives. Albeit with significant interruptions, the securities industry had boomed between the late 1970s and 2008 in the US, and this boom has spread to the rest of the world, accompanied by the growth of capital markets, cross-border capital flows, securitization of different forms of credit (from mortgages to car and student loans) and the invention of new types of securities and financial derivatives. Over thirty years ago Susan Strange described investment banks as croupiers in casino capitalism (1986). Recently, the economic, political, social and cultural power of investment banks in the world, and particularly the US, has been captured in the term 'investment bank capitalism' (Wójcik, 2012). This term drew attention to investment banks as keystone species of contemporary capitalism, waging extraordinary influence not only in the world of financial markets, corporations and governments, but also in shaping the very way we perceive and measure the world economy. When we consider concepts such as emerging markets, frontier markets, BRICs, or value at risk, all of those owe their popularity, if not conception, to investment banks.

The goal of this paper is to describe and account for whether and how the US securities industry has changed since 2008. Investment banks, hedge funds and other securities firms feature as main characters (mostly culprits) in many books on the roots of the GFC and the ongoing reform of the international financial system (Lewis, 2010; Sorkin, 2009; Tett, 2009), but to the best of our knowledge there are no systematic accounts of how the industry as a whole has changed since the crisis. Surely, if we recognise the position of securities industry at the fulcrum of a system that failed, we need to investigate whether it has changed sufficiently to give us hope that the system will operate better in the future. With the tenth anniversary of Lehman Brothers' collapse fast approaching as we write, the time is ripe for such an analysis. Geography is particularly well-suited to the task, as it allows us to consider a wide range of economic, political, social, cultural and technological factors, which all potentially shape the post-crisis transformation of the securities industry or lack thereof.

We use census data on the US securities industry. The US is the cradle of the modern securities industry and by far its biggest market (Morrison and Wilhelm, 2007). The North American Industry Classification System (NAICS) offers a clear categorization of the securities industry and its constituent parts, and the US census offers quarterly data on employment, its location, payroll and gender structure. To the best of our knowledge, such data on securities industry is not available for any other country. We capitalize on this opportunity by focusing on four key dimensions of the industry: size and location of employment, levels of remuneration, the sell-side and buy-side subsectors, and the gender inequality. As such, the emphasis is on the securities industry in the US, and not on how the US investment banks and securities industry project their influence and power abroad. The latter, however important, would require a separate paper. Quantitative data is enhanced with qualitative data based on a review of trade magazines and websites, with the Financial News, the American Banker, and the Wall Street Oasis online forum in the lead, as well over 30 semi-structured interviews with investment bankers and other finance professionals conducted since 2008 in New York and London. While the focus is on the US, where appropriate we use comparative evidence from other parts of the world, mainly Europe, to put US developments in perspective and make sense of them.

Results show that the hierarchy of securities industry centres has been stable, but the industry has shrunk significantly and became more spatially dispersed, pointing to the processes of offshoring and nearshoring in the value chain. Despite the pressure to cut costs, generated by the forces of depressed financial markets and demand, stricter regulation and new technology, remuneration per person including bonuses, remained very high. Probably for the first time in US history, asset management (buy-side) surpassed investment banking (sell-side) in terms of employment, and was slowly catching up with the latter in terms of payroll per person. Finally, both buy-side and sell-side remained strongly male-dominated, with women becoming only slightly better paid on average and only marginally better represented on boards of directors. Overall, the US securities industry has undergone significant restructuring, and the rise of power on the buy-side may have positive implications. Lack of diversity and remuneration practices out of touch with the rest of the economy, however, suggest that this restructuring has been forced upon the industry externally, rather than driven by change in corporate culture, including gender relations and incentive schemes.

The paper will proceed as follows. In the next section, we will review literature on the post-crisis change in the securities industry, which will help us derive hypotheses with regard to the four dimensions of the sector: size and location, remuneration, sell-side versus buy-side structure, and gender relations. The following four sections present analysis, results, and their interpretation for each of these dimensions. The final section will elaborate on what the results tell us about the nature of change in the US securities industry, its future trajectory, and further research needed on this topic.

The four Rs of change in the securities industry 2k

In order to form our expectations about the post-2008 changes in the US securities industry, we need to discuss major changes in the environment of this industry. To help us structure this discussion, we will start by using the industry's own and popular description of challenges facing it, which focuses on the four Rs: returns, revenues, regulation, and robots (The Economist, 2017).

The primary function of the securities industry lies in the production and circulation of securities, which help companies and governments raise capital and match both, as issuers of securities, with institutional and individual investors. Other things being equal, the industry thrives when risk-adjusted returns on securities are high. Since 2008, however, returns on securities and financial markets in general have been at historically low levels. One major reason is a slowdown in the global economy, combined with high uncertainty. Some expect that the subprime crisis in the US, and the lingering Eurozone crisis, will be followed by a third crisis, this time focused on emerging markets, possibly with China as its epicenter (Stewart, 2015). Another reason is the unprecedented level of government and central bank intervention in financial markets, with headline interest rates close to zero, and in some countries, even below zero. Economists refer to this situation as financial repression, whereby governments keep interest rates below inflation rate, thus transferring wealth from savers/lenders to borrowers. Alongside savers, the financial sector becomes repressed in the process as well.

The second big challenge to the securities industry is new financial regulation introduced in the wake of the crisis. This was led by the 850-page long Dodd-Frank Wall Street Reform and Consumer Protection Act in the US, signed into law in 2010. The body of new regulations based on Dodd-Frank Act has now exceeded 10,000 pages, and has been supplemented with numerous international regulations led by the Financial Stability Board, housed by the Bank for International Settlements in Basel. Regulatory changes focus on higher capital requirements, restrictions on proprietary trading (in contrast to trading on clients' accounts) called Volcker rule, stricter disclosure requirements, more responsibility for internal risk management, and restrictions on securitization of loans. These have been accompanied by regular stress tests of banks conducted by the Federal Reserve Bank, to simulate how they would perform under crisis conditions, and numerous lawsuits conducted by federal agencies, against investment banks in particular, related to mis-selling of securities, market manipulation, and other misdeeds. US investment banks have paid over $100bn in fines since 2008 (The Economist, 2016). To be sure, the securities industry, as key players in the financial sector lobby, has worked hard to influence the reforms, both in the US and internationally, and in many respects the reforms to date should be considered inadequate. While we return to this question later, at this point it is important to recognize the sheer scope of new regulation, to prepare the ground for analyzing its potential effects on the structure of the securities industry.

The next major group of factors has to do with technology, encapsulated in the third R - 'robots'. The central function of the securities industry involves matching issuers with investors on primary markets, when new securities are issued, as well as on secondary markets, where securities are traded (Wójcik, 2011). With new technology, however, these functions can be performed, at least partly, by computers and Internet. In primary markets this can take the form of crowdfunding, whereby entrepreneurs obtain capital directly from investors through online platforms, and Internet IPOs (initial public offerings) where shares of a company are distributed to investors directly via Internet. In secondary markets, computer algorithms are used to conduct trading of securities with minimal human intervention. Majority of stock trading in the US takes this form. At the same time, investment advisory services are being computerized with the introduction of robo-advisors. These and other technologies that transform financial services, grouped together under the name fintech, have in recent years attracted a lot of attention and investment (Langley and Leyshon, 2017). A subgroup of fintech, called regtech, focuses on the automation and digitization of monitoring, reporting and compliance functions.

For the securities industry, technological change results in increasing capital intensity, with labour being replaced with capital necessary to pay for improvements in technology. In a sense, this is a continuation of the process that started at least with the introduction of the first computers in the industry, and enhanced economies of scale and scope (Clark, 2002). The recent wave of new technology, encapsulated in fintech, however, brings a much bigger challenge, with startups and established technology and Internet companies potentially replacing some functions and parts of the securities industry. Fintech, combined with low returns and regulation, weighs down on the revenues of the securities industry, and erodes their profit margins. Low financial market returns depress demand for the services of the securities industry, and regulation increases costs. Of course, securities firms can use fintech to their advantage to reduce costs and generate new services and markets, but overall fintech represents a major source of competition and disruption.

To be sure, the four Rs are just a simplification. We could add other factors, possibly including another R for reputation affecting the public perception of the securities industry and its ability to attract talent. This simple introduction, however, helps us reflect on possible implications of changes in the environment of securities industry, on the size and location of employment, remuneration, buy-side vs sell-side structure, and gender relations within the industry.

Labour-saving technologies and falling revenues make us expect falling employment in the securities industry. This might be partially offset by growing employment in compliance functions, due to more regulation, but we would still expect the overall net change in employment to be negative and significant. In the 30-year period up to 2008, the securities industry grew in size and expanded geographically, with interruptions, but not as major as that of the 2008 crisis. As it grew, the industry expanded down the urban hierarchy, and in New York as its hub it pushed less ‘glamorous’ parts of the financial sector, such as credit banking and insurance, out of Manhattan (Wójcik, 2011b). In the wake of the crisis, major cost-cutting in securities firms inevitably involved changes in their location strategies. We would expect them to downsize or close branches, particularly in areas with depressed demand and states where recession was the deepest, such as Nevada or Michigan. New technology and falling revenues have also intensified pressures on and opportunities for nearshoring and offshoring (Massini and Miozzo, 2012; Grote and Täube, 2006). Data analyses, preparation of spreadsheets, pitch books and presentations for clients could increasingly be moved away from headquarter locations like New York to other parts of the US and abroad. Overall, we would probably expect a selective spatial dispersion of employment, with job losses concentrated in the largest established centres and other areas most affected by the recession, with gains in centres offering highly-skilled but relatively cheap labour and relatively prosperous local economies.

With all four Rs squeezing profits and necessitating major cost-cutting we would expect a significant decline in remuneration per person. In the decades preceding the crisis, securities firms, and investment banks in particular, have become famous for the highest salaries and bonuses in the whole US economy. As highlighted by social movements, such as Occupy Wall Street, the securities industry has undeniably contributed to income and wealth inequality in the US both directly and indirectly, by adding to inflation in executive pay, and dislocation of labour through corporate mergers & acquisitions, one of their main activities.

The expectation of falling pay, however, has to be moderated by considering the following factors. Firstly, in contrast to the EU, which introduced a cap on bankers' bonuses, in the US the only related regulation was for banks rescued by the government. This stated that compensation above $500k could only be paid in stock, and was lifted once a bank paid back the government funds, which in most cases happened shortly after 2008. The lack of any further regulation of pay is no doubt a reflection of the strong US securities industry lobby (Wright, 2014). Secondly, again in contrast to Europe, in the US the securities industry faces fierce competition for talent with highly lucrative high-technology industry. As an illustration of the competition between Wall Street and Silicon Valley consider that Uber is also known as 'Goldman West', because of the large number of former bankers it employs (The Economist, 2015). Thirdly, there are good reasons to think that faced by the necessity of cost-cutting, high remuneration is the last thing securities industry employees would give up. Firms representing the bulk of the industry are no longer partnerships. As the crisis proved, stock options are a poor way of linking the incentives of executives to the long-term performance of their companies. With growing employee turnover, employer loyalty in the securities industry has been low for a long time, but with fundamental uncertainty facing the industry now, we might even expect a degree of 'sinking ship' mentality, which encourages short-term opportunistic behavior and runs counter to moderating pay in the name of long-term responsibility.

The next issue to consider is the differential impact of the above changes on the two principal parts of the securities industry: sell-side, with investment banks in the lead, working primarily with issuers of securities; and buy-side, with asset managers in the lead, serving mainly investors. As captured in the concept of 'investment bank capitalism' in the decades prior to 2008, asset management operated in the shadow of investment banking, with lower salaries and bonuses. Part of this difference is structural. Sell-side is more wholesale-oriented, high-value, low-volume business, focused on big deals for big customers. Buy-side is more retail-oriented, low-value, high-volume business, focused on process, and a more bureaucratic, low-profile activity. In the wake of the crisis, however, there are signs that the investment bank dominance may be waning. While investment banks are associated with the roots of the crisis, asset managers have suffered little reputational damage. New regulation of the securities industry has focused almost exclusively on the sell-side. Meanwhile, demand for the services of the buy-side remains strong, underpinned i.a. by growing numbers of the super-rich, and the continuing shift to funded pension systems, as a response to population ageing. This is part and parcel of a general imbalance in the world economy between a glut of savings and inadequate investment in the real economy (Pettis, 2013). The literature on the rise of institutional investors, including pension funds, was well established before 2008, but arguably it took the global financial crisis to potentially catalyse a shift away from investment bank capitalism (Clark, 2000; Clark, Dixon and Monk, 2013). As a paragon of this shift, consider the meteoric rise of Blackrock and its CEO Larry Fink, now managing over $5tn. To be sure, the impacts of technology, passive investment strategies and robo-advisors mean that this growth in power would not necessarily manifest itself as rise in employment.

It is well-documented that the securities industry, and investment banking in particular, is a male-dominated testosterone-packed industry (Ho, 2009; McDowell, 1997; Tett 2009). The male-dominance is particularly strong at higher levels of organization and on trading floors, with accounting, human resources and legal departments, as well as clerical functions employing more women. Recent research also shows that gender inequality in investment banking often starts with MBA education (Hall and Appleyard, 2012). Gender inequality, and more general lack of diversity, has been criticized for encouraging group-think, herd behavior and excessive risk-taking, key cultural factors that created conditions for the crisis (McDowell, 2010). We do not expect the industry to have changed significantly with regard to gender relations. Corporate cost-cutting is not conducive to more inclusive employment policies. Women are likely to be more vulnerable to layoffs, and it is mostly men who are in charge of firing. Moreover, more technology in securities industry calls for more skills in science, engineering and technology, and women are underrepresented in these branches of education and so have limited access to such careers. Meanwhile, there has been no significant government regulation to improve diversity in the financial sector. Focus on 'purely' financial issues, such capital requirements and trading, have pushed concerns about diversity to the background. If any progress was to be made, it would be due to the pressure of social movements and voluntary internal changes, undertaken perhaps in an effort to repair damaged reputations.

To summarise, we focus on location, remuneration, subsector structure, and gender, as key dimensions of the securities industry partly for pragmatic reasons, because data on these dimensions are available from the US Census, but also because they help us gain an insight into spatial and social divisions of labour shaped by factors both internal and external to the securities industry itself. Consequently, this analysis also offers us an opportunity to understand changing corporate culture in the industry. In this regard, we build on a tradition of research in economic geography on corporate and industrial change and corporate culture, as well as financial geography (Massey, 1984; Schoenberger, 1997; Martin and Pollard, 2017).

Contraction, offshoring and nearshoring

Figure 1 shows the evolution of employment since the start of 2008 until the first quarter of 2016. Securities industry consists of two 3-digit NAICS categories: securities, commodity contracts, and other financial investments and related activities (523), and funds, trusts, and other financial vehicles (525). The whole financial sector is defined as FIRE (finance, insurance and real estate), consisting of: monetary authorities and central bank (521), securities industry (defined above), insurance (524), and real estate (531).

Employment in the securities industry across the US fell, largely through redundancies, from 1,009k to 930k. It was in decline from the last quarter of 2008 until the first quarter of 2013, but has recovered slightly since then, as the US financial markets have rallied. Its share in total US employment fell from 0.8% to 0.7%. While not dramatic, the decline in employment in the securities industry was significant and larger in relative terms than that in the financial sector as a whole. Overall, the share of FIRE in total US employment fell from 5.8% to 5.4%.

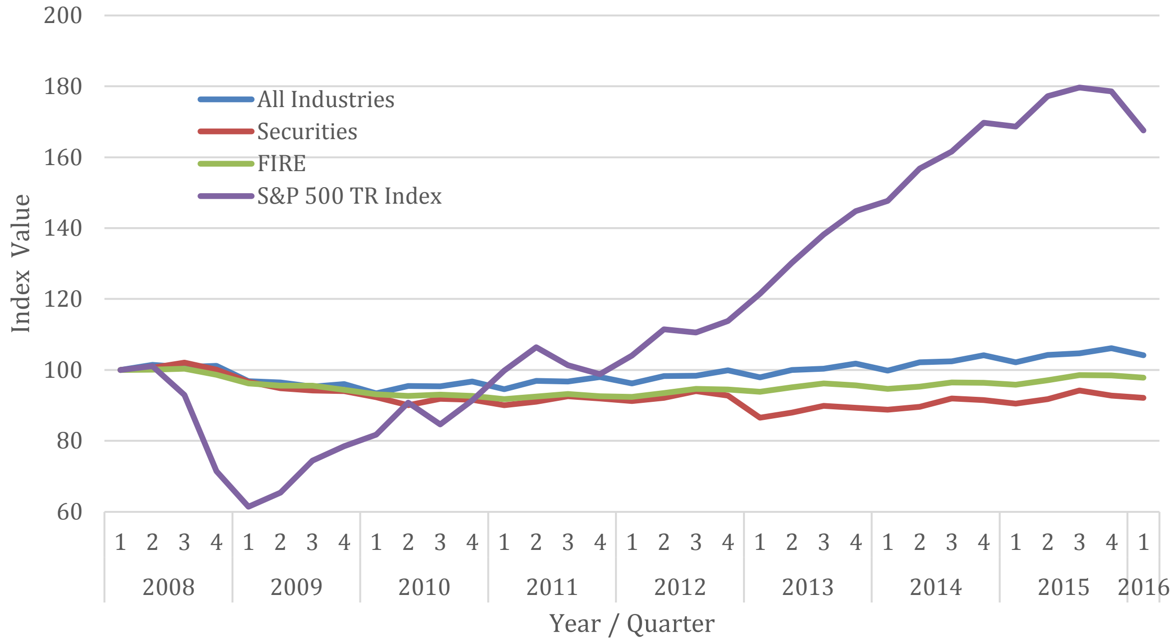

Fig. 1. Indices of employment in the US securities industry, financial sector (FIRE) and the whole economy.
Source: Authors based on data from the US Census and County Business Patterns (also for figures 2, 4, 5 and 6) and Yahoo Finance for S&P 500 Total Return Index.

Since the end of 2008, media have been full of reports on US financial firms cutting jobs, particularly in investment banking. Already in November 2008 Morgan Stanley announced plans to cut 10% of its staff in the institutional securities division (The New York Times, 2008). In 2015, the same company decided to cut jobs in short-term credit and regional broker-dealerships, with reduced bond trading and new labour-saving technologies, such as electronic trading systems and credit platforms, quoted as the main reasons. As returns and revenues in US capital markets declined, foreign banks found it increasingly difficult to compete with their US counterparts. In 2016, for example, Australia's Macquarie laid off 15% of its US investment banking employees (Reuters, 2016a). Employment decline in the US was also driven by offshoring. Goldman Sachs, for example, moved some of their US employees to Asian centres, including Singapore, where demand for capital market services has not suffered as much as it did in the US (Huffington Post, 2011). Back- and mid-office jobs were increasingly being moved from the US to lower-cost locations, with Asia and Eastern Europe in the lead. Already by the end of 2011, US banks were estimated to have outsourced IT and back office projects worth $5bn to India (The Economic Times, 2011). In 2015, approximately 12% of the global workforce of the six largest US banks (Bank of America, Citigroup, JPMorgan, Morgan Stanley, Wells Fargo and Goldman Sachs) was in Asian support centres (Financial Times, 2017a). While new regulation boosted employment in compliance departments of investment banks, most likely by tens of thousands, new regulatory technology allowed some of these jobs to be offshored as well (Financial Times, 2015).

Job cuts and offshoring, offset only partially by new jobs in compliance, were accompanied by significant changes in the distribution of securities employment across the US. As table 1 shows, the leading three securities industry centres suffered much bigger employment losses than the rest of the country. New York MSA lost a sixth of its jobs in the industry, while Boston lost over 38%, losing its second position to Chicago, which suffered an 8% loss. In Dallas and Houston, in contrast, the industry grew by 13% and 22% respectively, partly a reflection of the relatively buoyant economy of Texas. Net employment change in Los Angeles, Philadelphia, San Francisco, Miami and Minneapolis was relatively low.

Redistribution of employment within the US is also reflected in appendix 1, showing employment and location quotient by state. The latter was calculated as the share of a state in the US securities industry employment divided by its share in total US employment. Some of the largest job losses were concentrated in the North-East, not only in New York and Massachusetts, but also in Pennsylvania, New Jersey and Connecticut. The latter two states include parts of the New York MSA, which in the run up to the crisis of 2008 enjoyed job gains that represented spill-overs from Manhattan (Wójcik, 2011b). While New Jersey, particularly Jersey City, just across the Hudson River from Manhattan, hosted many offices of the large investment banks like Goldman Sachs, Connecticut hosted the world's largest concentration of hedge funds. Pennsylvania hosted major operations of Lehman Brothers, which went into bankruptcy in 2008.

MSA	Securities Industry		Sell-Side		Buy Side	
	Q1 2008	Q1 2016	Q1 2008	Q1 2016	Q1 2008	Q1 2016
New York-Newark-Jersey City, NY-NJ-PA	268,105	224,874	180,941	130,829	84,017	92,700
	-16.12%		-27.70%		10.33%	
Chicago-Naperville-Elgin, IL-IN-WI	51,194	47,283	29,382	26,156	18,320	18,767
	-7.64%		-10.98%		2.44%	
Boston-Cambridge-Newton, MA-NH	68,317	42,193	18,572	11,698	49,622	30,486
	-38.24%		-37.01%		-38.56%	
Los Angeles-Long Beach-Anaheim, CA	40,283	39,413	15,811	12,463	24,305	26,919
	-2.16%		-21.18%		10.75%	
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	35,694	36,501	9,998	10074	25,340	26,292
	2.26%		0.76%		3.76%	
San Francisco-Oakland-Hayward, CA	29,810	28,499	10,147	11,017	19,591	17,440
	-4.40%		8.57%		-10.98%	
Dallas-Fort Worth-Arlington, TX	24,021	27,181	13,846	12,902	10,156	14,272
	13.16%		-6.82%		40.53%	
Houston-The Woodlands-Sugar Land, TX	16,368	20,032	7,911	8,740	8,454	11,290
	22.39%		10.48%		33.55%	
Miami-Fort Lauderdale-West Palm Beach, FL	19,685	19,633	12,135	11,147	7,533	8469
	-0.26%		-8.14%		12.43%	
Minneapolis-St. Paul-Bloomington, MN-WI	18,369	18,843	12,721	11,707	5,569	7130
	2.58%		-7.97%		28.03%	

Table 1: Top 10 Metropolitan Statistical Areas with the largest employment in the securities industry.
Source: Authors based on data from US Census and County Business Patterns

As many as 25 out of 51 states recorded gains in securities employment. Those with a more than 10% increase are Texas, Delaware, Colorado, Rhode Island, Utah, Arizona, North Carolina, Nebraska, Washington, Kentucky, Iowa, North Dakota, South Dakota and Wyoming. In some states, this is likely driven by fast economic growth, in North Dakota and Wyoming, for example, propelled largely by shale gas and oil. Delaware is the US hub for company registration and incorporation, accompanied with a centre for corporate legal services. It is likely that Delaware has benefited from new regulations boosting compliance jobs in the securities industry. But many states on this list, including Utah, Arizona, North Carolina, Nebraska and Iowa, are also likely to have benefited from US banks moving back- and mid-office functions to lower-cost locations within the US, instead of or in addition to moving them abroad. Salt Lake City, for example, hosts an office of Goldman Sachs employing several thousand people (Hoyt, 2013).

With the largest securities industry centres losing jobs and those in the periphery gaining, the geographical concentration of employment in the industry has been in decline. Measured with the following conventional index, it fell from 0.0334 to 0.0265.

$$C = \sum_{i=1}^{N} (x_i - s_i)^2$$

where i is state; N is the total number of states; x is the fraction share of securities industry employment of a state in the US securities industry employment; and s is the fraction share of total employment of a state in total US employment. This contrasts with increasing concentration since 2008 in credit banking and insurance, and research showing that in the UK, for example, geographical concentration of the financial sector has increased significantly since 2008 (Wójcik and MacDonald-Korth, 2015). This suggests, that in contrast to insurance and particularly credit banking, restructuring in the US securities industry has focused on cuts in headquarter locations and large firms, often overstretched in global markets, and not on cutting regional and local offices and branches or bankruptcies of small regional and local firms.

Continued high pay

Defying all expectations, payroll per person in the securities industry increased in nominal terms, from $185k in 2008 to $205k in 2015 (figure 2). It fell sharply in 2009, along with financial market returns (see the S&P500 index in figure 1), but it has recovered quickly ever since. This increase of 11% was below the 2008-15 inflation rate of 12.5%, thus representing a slight, almost negligible decline in real terms. In the same period, average annual payroll per person in the financial industry increased by 18% and across all industries by 15.5%. As such, remuneration in the securities industry remained out of touch with the rest of the economy, with average pay still 3.86 times higher than that in the whole economy, compared to 4.03 times higher in 2008.

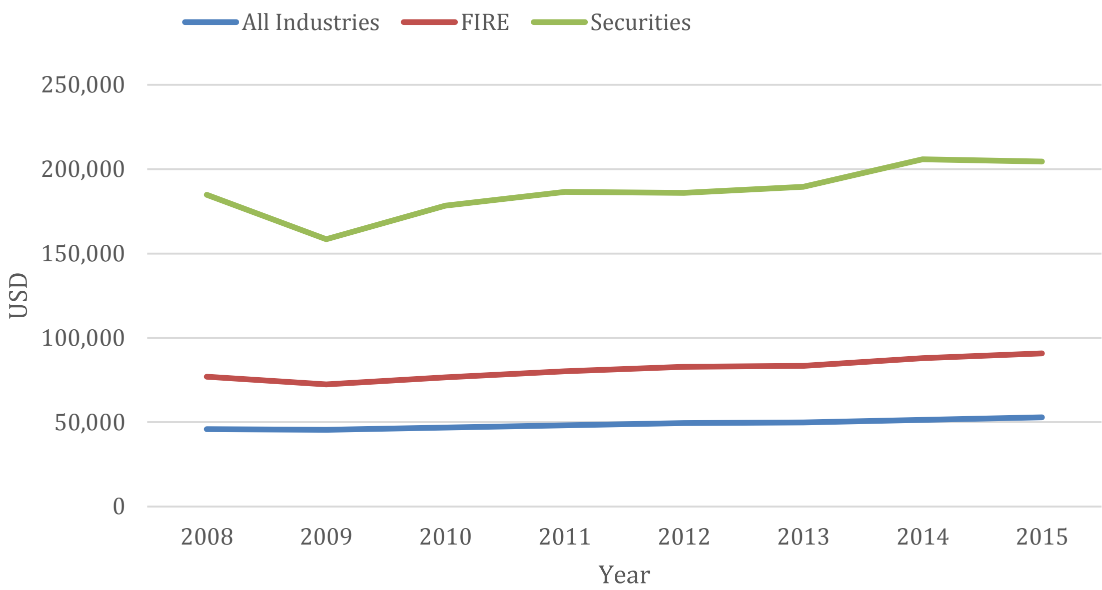

Fig. 2. Average annual payroll per employee

Census data includes bonuses, but in order to corroborate this surprising result, we have plotted data on bonuses in the securities industry in New York City, as compiled by the Office of the New York State Comptroller, in figure 3. While the Wall Street bonus pool has not recovered to its levels exceeding $30bn registered in 2006 and 2007, in years 2009-10 and 2012-16 it was higher than ever before with the exception of 2005-7. Average bonus has remained over $100k ever since 2004, and at $170k in 2013 it was the highest ever with the exception of 2006-7. This confirms the lack of any significant moderation in the remuneration practices of the industry infamous for its excessive rewards (Philippon and Reshef, 2012). Prior analysis, focused on samples of leading banks, also suggested that pay in the industry has barely changed (The Economist, 2014).

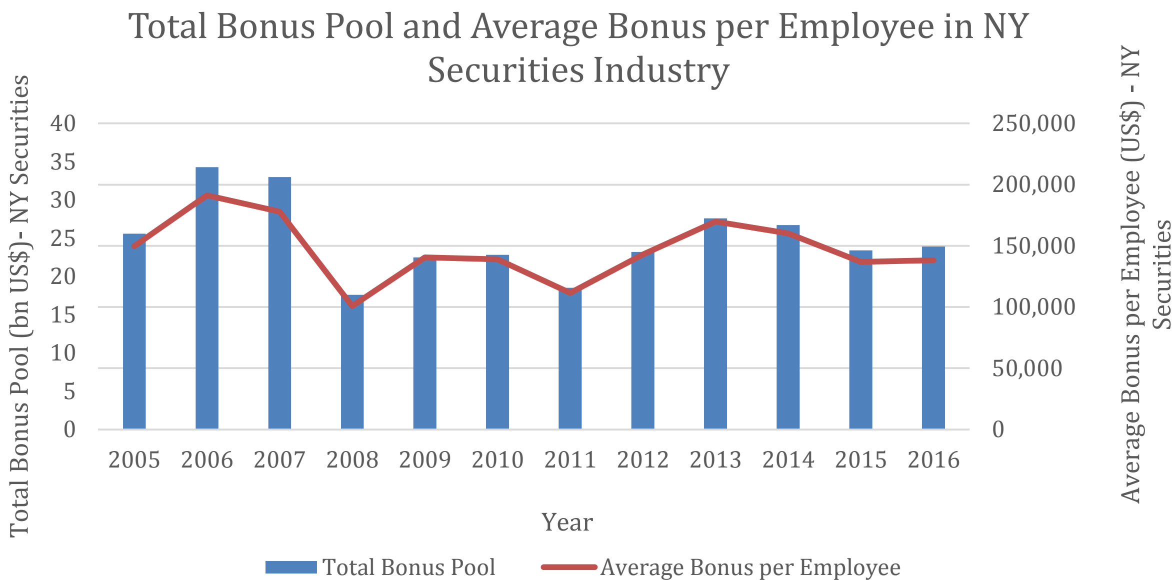

Fig. 3. Total bonus pool and average bonus in the securities industry in New York City
Source: Authors based on data from the Office of the New York State Comptroller, 2017.

Salaries and particularly bonuses are distributed extremely unevenly in the securities industry, which means that average remuneration can be a misleading concept, and we need to pay attention to internal hierarchy within firms. A typical career ladder stretches from an analyst position, through associate and vice-president, to the coveted role of a managing director (MD) and finally a partner. With fierce competition, most people who enter the industry leave before they achieve the position of an MD (Ho, 2009). While $20k may be a big bonus for an analyst, the biggest bonuses in the industry are in tens of millions of USD.

As the crisis hit, job cuts and hire freezes concentrated on the level of analysts, associates and VPs. Firms would be reluctant to lay off MDs, as they represent the core human capital. They lead deals and have direct, often long-term, relationships with clients. These are the people who are supposed to maintain the business, however depressed it may be, and bring back demand for services once the markets rebound. To be sure, MDs, not to mention partners, are the people who decide on layoffs, and after 2008 their reasons to stay put where they were grew stronger, with the value of their nest-eggs (including corporate shares) below what they had expected based on pre-crisis markets, and few attractive employment options in the rest of the financial sector. Instead, the common strategy adopted by securities firms was to reduce the number of junior employees, make the remaining ones work harder, and replace some of them with cheaper back-office employees in US and foreign locations. As a result, what may be behind a stable average pay in real terms, is a remuneration structure in which employees at all levels are paid a bit less, but senior employees constitute a larger share of total employment, driving the average payroll up. Put differently, an average employee of the industry may now be older and more experienced than on the eve of the crisis. Unfortunately, at present we have no hard data to verify this hypothesis.

Considerations for the structure of employment notwithstanding, it seems clear that in their strategies to reduce compensation costs, securities firms prioritized cutting jobs to cutting pay. This is not surprising, perhaps, considering the boom and bust cyclical culture of the industry and expectations of high financial rewards, particularly in the US. Securities industry professionals have for decades been paid more in the US than in Europe. The culture of extraordinarily high compensation in finance came to Europe from the US (McDowell, 1997). Emerging evidence suggests that in the wake of the crisis situation in Europe is only slightly different. On the one hand, a London-focused analysis by New Financial (2016, Taking stock on pay) shows a slight decrease in pay in the industry. On the other, the European Banking Authority report on ‘high earners’ shows that in 2010-2013 the number of bankers in the EU earning EUR1m or more was stable around 3,300. It increased in 2014 to 3,865 and to 5,142 in 2015 (EBA, 2017). 80% of them worked in the UK.

In summary, remuneration in the US securities industry has remained surprisingly, if not shockingly, stable, despite the pressures of low returns, revenues, regulation, technology, and societal expectations. We should not be misled by occasional news of banks slashing bonuses (Pfeuti, 2017). The long-awaited correction of excessive remuneration is at best being postponed. Even consultants close to the securities industry are surprised. As Jon Terry from PwC predicts: “In the next five years there will be a major shift and a significant reduction in compensation, because there has to be (…) There will be more than a 25% reduction in pay – no question at all – and maybe for some investment banks 50%-plus” (Burton, 2017).

The rise of the busy side

The sell-side vs. buy-side distinction is important for understanding the post-crisis change in the securities industry. For the sake of our analysis, we define sell-side as NAICS category 5231 (securities and commodity contracts intermediation and brokerage). Buy-side is defined as the sum of funds, trusts and other financial vehicles (525) and other financial investment activities (5239). The sum of the sell- and buy-side is slightly smaller than the total for the securities industry, because the latter also includes securities and commodity exchanges (5232) which function at the intersection of the sell- and buy-side. Category 5232 however accounts for less than 1% of the total employment and payroll of the securities industry, and its exclusion has no material impact on the results of this section.

Figures 4 and 5 indicate that buy-side may be coming out of the shadow of the sell-side. At the start of 2008 sell-side employed 526k people compared to 474k on the buy-side. 8 years later buy-side employed 477k compared to 448 on the sell-side. Since the crisis, buy-side employment has, possibly for the first time in decades, caught up with and surpassed that in sell-side. The results also imply that sell-side, i.e. investment banks, are responsible for the whole decline in securities industry employment. Put differently, the 7% decrease in securities employment is due to a 15% fall in sell-side employment. What is more, payroll on the buy-side has risen much faster than employment, lifting average annual pay from less than $160k to $193k, narrowing the gap with sell-side from $49k to $25k.

Fig. 4. Employment in the securities industry

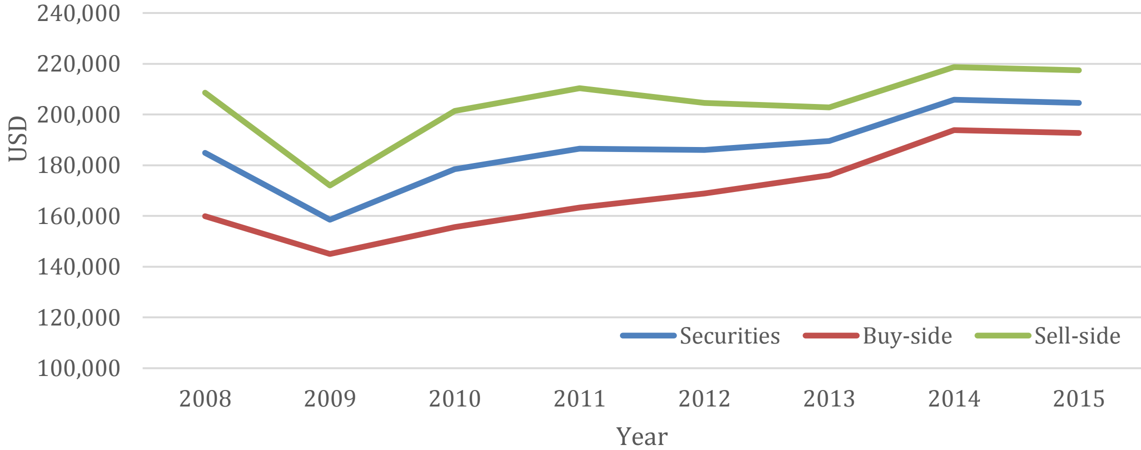

Fig. 5. Average annual payroll per employee

The rise of the buy-side is also reflected at the top of the hierarchy of securities industry centres (table 1). While in early 2008 New York was predominantly an investment banking centre, with buy-side representing only 30% of securities jobs in the city, by 2016 the buy-side share grew to over 40%, with nearly 10k net jobs added, while sell-side was decimated by over 50k of net job losses. In Chicago, Los Angeles, Dallas, Miami and Minneapolis buy-side also grew while sell-side contracted. In Philadelphia and Houston buy-side grew faster than sell-side. The only exceptions to the rise of the buy-side were Boston, were both sides shrank precipitously, and San Francisco, where buy-side fell while sell-side grew. The latter may have to do with the 2009 purchase of Barclays Global Investors (BGI), a world's leading passive investment fund headquartered in San Francisco, by Blackrock, in a deal that helped the latter become the world's largest asset management company. Since then, Blackrock has relocated some of the former BGI activity to its own headquarters in New York. In addition, San Francisco headquartered bank Wells-

Fargo recently expanded its investment banking activity. Wells Fargo did very little investment banking prior to the crisis, which helped it weather the crisis relatively well. Since then, the bank used its relatively strong balance sheet and reputation to enter the market for capital market services (Reuters, 2016b).

Evidence from Europe seems to paint a similar picture. Analysis by New Financial, which focuses on London, shows slight decrease in average pay in investment banks and increase in asset management (Wright, 2016). The European Banking Authority reports show that of all parts of banking, the number of high-earners in the EU rose fastest in asset management divisions, fourfold between 2010 and 2015 (2017).

There is also a lot of anecdotal evidence on the rising power of the buy-side. ‘Sell the sell-side, buy the buy-side’ has become one of the buzzwords of the securities industry in both US and Europe. The authors have seen finance professionals advising Oxford graduates, for many of whom investment banking used to be the dream career, to forget about banks and look for jobs with asset managers. There is almost a degree of stigma associated now with working for investment banks. Asset managers have not suffered such reputational issues. They present themselves as progressive institutions addressing real world problems, e.g. by helping ageing populations save for retirement or developing ideas and practices for long-term sustainable investment. Leaders of the asset management industry, such as Larry Fink, the CEO of Blackrock, can often be seen with politicians and giving keynotes at conferences, such Davos World Economic Forum, while the bosses of investment banks seem to try to keep a low profile. These days, for investment banks, no publicity seems to be good publicity.

On the one hand, the rise of the buy-side may be seen as a welcome sign of rebalancing within the securities industry. Investment banks help invent and sell securities, and as such are very much interested in their quantity, trading volumes, and an active market for corporate control, which generates commissions on mergers & acquisitions advisory services. While asset managers also need a wide array of securities to invest in and liquid financial markets to trade in and out of their portfolios, they tend to make money as a percentage of returns made for the clients, i.e. individual and institutional investors, including pension funds. As such they are more interested in the quality than the quantity of securities, even if this quality is measured from a much more short-term perspective than desirable. The rise of the buy-side may therefore be good news for investors as clients of the securities industry.

On the other hand high pay increases on the buy-side as an already lucrative industry may contribute to income and wealth inequality in the economy as a whole. Moreover, what may at the first sight look like rebalancing between the sell-side and buy-side at the industry level, may be read as a reflection of global macroeconomic imbalance between a glut of savings, reflected in rising wealth of the top 1% and piles of cash in corporate vaults, and low investment in the real economy, with austere public sector budgets and low corporate investment (Pettis, 2013). Growing savings generate growing demand for buy-side, which manages savings, while declining investment reduces demand for investment banking services on the sell-side.

In addition, the division between sell- and buy-side should not be exaggerated. There are complementarities between buy and sell-side and economies of scale in running both operations through the same company. Since 2008, investment banks have worked hard and mostly successfully to develop their asset management divisions. While no investment bank is in the top 5 asset management firms globally, JPMorgan, Goldman Sachs, Deutsche Bank, BNP Paribas, and UBS manage over $1tn each and continue growing (Willis Towers Watson, 2016). Some observers note that development of asset management in companies completely separate from investment banks is more desirable, since it makes it easier to avoid conflicts of interest involved in securities industry conglomerates (Berzins et al., 2013). According to some, however, lean times for investment banks are over and now asset managers may be heading for trouble, as low returns on investments, low revenues, regulation, and robots put increasing pressure on their business models. In general, a major consolidation is expected in asset management. Some predict that it is the very success that asset managers enjoyed recently that will invite more investigation by regulators into the pay practices of the buy-side (Pfeuti, 2017b).

Persistent gender inequality

Gender inequality in the employment structure of financial services industry is well documented, but how has it changed in the securities industry as the elite of the financial sector? In the wake of the 2008 crisis many saw the aggressive and excessively risk-prone behaviour of the industry as a reflection of male-dominated corporate culture, and called for a long overdue reform. As figure 6 shows, on the sell-side, the number of female as percentage of male employees has been remarkably stable at 66%, with women representing 40% of total employment. The number of male and female employees both declined by approximately 15%. On the buy-side women were better represented, but the ratio has actually deteriorated significantly over time, from women accounting for over 95% of men to just above 80%. Between the beginning of 2008 and start of 2016 the number of women employed in asset management fell by 7%, while the number of men increased by 8%, leading to a small overall increase in employment. This replacement of women with men could have been affected by the application of new technologies allowing downsizing and offshoring of back- and mid-office functions, where most women working in asset management have traditionally been employed, and so concentrated in the lower status and lower paid parts of the industry.

With an overwhelming share of women in securities industry employed in more junior, lesser paid and clerical positions, women were more vulnerable to layoffs, with the latter managed predominantly by men. In the wake of the 2008 crisis, numerous lawsuits have been brought against major financial services firms. Morgan Stanley, Wells Fargo, Bank of America, Citigroup and others, all settled gender discrimination lawsuits, related to both pay differences and harassment, by paying tens of $millions each (Trillium, 2016).

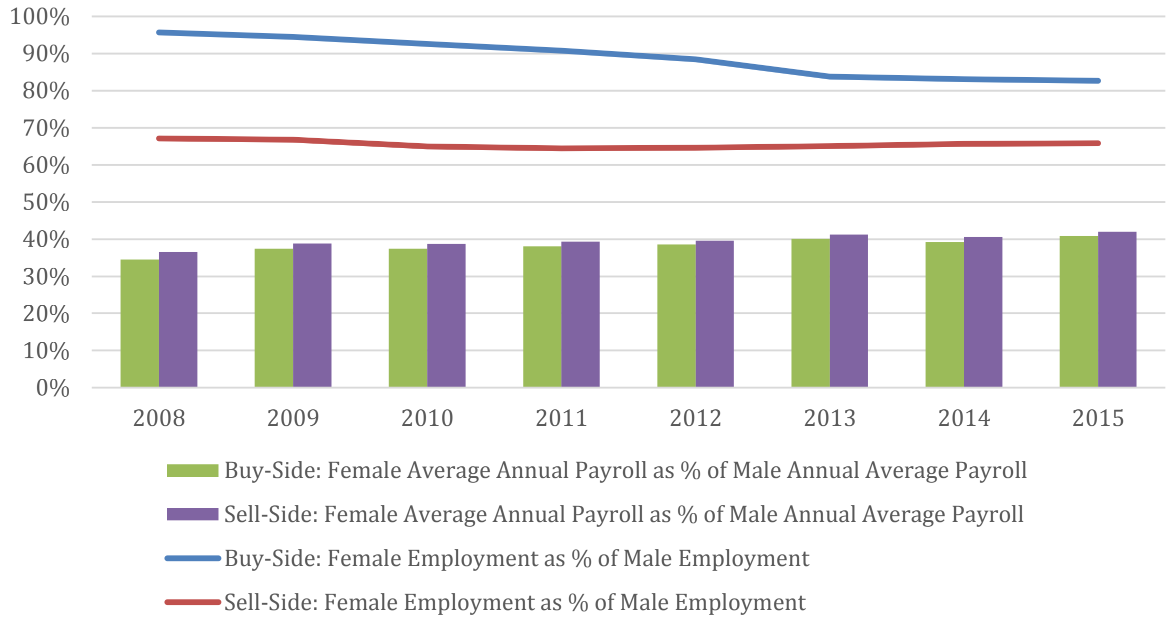

Fig. 6. Relationship between female and male employment and payroll in the securities industry

The preponderance of gender discrimination cases at investment banks suggests that the net percentage decline in the number of men and women employed in sell-side may be comparable not because women were treated equally during layoffs, but because many women have been hired by growing compliance departments, thus offsetting large numbers of women laid off in other divisions.

In terms of payroll, the situation of women in the securities industry has improved only slightly. While in 2008 average annual payroll per female employee represented approximately 35% of male pay, by 2015 it rose to 41%. Throughout the 2008-15 period, women in investment banking were paid marginally less unequally than in asset management. Unfortunately, we do not have data to compare male and female pay at different levels of organizational hierarchy. It is possible that some of the improvement in average female pay, small as it is, is driven by men replacing women in hitherto female dominated back- and mid-office functions, as well as in junior positions, most of which require increasingly technical skills, often seen as a masculine attribute, to take advantage of the new technologies.

To further analyze the position of women in the securities industry, we focused on the five largest investment banks and five largest asset management companies in the US that have publicly available annual reports, and compared the number of women on the boards of directors between 2008 and 2016. It is worth noting that due to the dominance of the US in the securities industry, all the companies in table 2 feature among the ten largest investment banks and asset managers in the world. In 2008 only 11 out of 68 directors of investment banks and 12 out of 66 directors of asset managers were women. The highest percentage of women featured on the board of State Street Global Advisors (33%), while the Blackrock had 1 women director out of 16 in 2008. By 2016 the representation of women improved only slightly, to 16 out of 67 directors on the sell-side, and 15 out of 70 on the buy-side. Citigroup and Bank of America Merrill Lynch had the most gender diverse boards, with 6 out of 17, and 4 out of 14 female members, respectively. Only four out of ten companies in our sample increased the number of female directors, two on the sell-side and two on the buy-side.

Company	**Institution Type**	**2016**	**2008**
Goldman Sachs	Bank	2 out of 11	2 out of 11
Morgan Stanley	Bank	2 out of 13	1 out of 12
JP Morgan	Bank	2 out of 12	2 out of 11
Citigroup	Bank	6 out of 17	2 out of 15
Bank of America Merril Lynch	Bank	4 out of 14	4 out of 19
Blackrock	Asset manager	4 out of 19	1 out of 16
Vanguard Group	Asset manager	2 out of 10	2 out of 9
State Street Global Advisors	Asset manager	3 out of 11	4 out of 12
Prudential Financial	Asset manager	4 out of 16	3 out of 15
Northern Trust Asset Management	Asset manager	2 out of 14	2 out of 14

Table 2: Women on the board of directors of the 5 largest investment banks and asset managers. Source: Authors based on individual company annual reports.

Our evidence of persistent gender inequality in the US securities industry is consistent with that found in other sources. The Oliver Wyman report on Women in Financial Services demonstrates that in the US, only 20% of executive committee members in financial services were women, compared to the global average of 16%. The report concludes its analysis at the global level stating that “Female representation is growing on financial services Boards and Executive Committees, but progress is slow. At current rates of growth, financial services globally will not reach even 30% female Executive Committee representation until 2048” (2016, 6). Based on interviews with 25 large international banks, the Financial Times reported that only 24.4% of senior staff were women (Financial Times, 2017b). On the buy-side, a recent analysis by Morningstar finds that fewer than 10% of all US fund managers are women, and funds managed by women account for less than 2% of total assets under management, compared to 74% of assets in funds managed by men only, and 24% managed by women and men. Symptomatic of gender inequality is also the fact that the compulsory high earners reporting exercise coordinated by the European Banking Authority does not even ask about the gender of high earners. This reflects how low gender equality is on the agenda of the financial industry as well as its regulators.

Gender inequality in the securities industry and its absence from the agenda of most firms reflects a more general lack of diversity in terms of ethnicity, race, and socio-economic class. In the UK, for example, it was shown that finance exhibits the largest class pay gap of all economic sectors, with the largest difference in pay between those who come from upper class families and those from the working class (Friedman et al., 2017). To be sure, there are initiatives to improve the situation.

Women in Finance Charter, a pledge for gender balance across financial services, was launched by HM Treasury in March 2016 in the UK, and in 2017 had 122 signatories (Chinwala, 2017). In May 2016 Bloomberg launched first of its kind Financial Services Gender-Equality Index, based on data on corporate gender statistics, employee policies, gender-conscious product offerings and external community support and engagement. 26 companies submitted information to join the index at its inauguration, including many universal banks and several asset managers, but not a single 'pure' investment bank (Bloomberg, 2016).

Conclusions and implications

On 7 March 2017, the eve of International Women's Day, State Street Global Advisors, the asset management business of State Street Corporation, issued a call to more than 3,500 companies they invest in on behalf of their clients to increase the number of women on corporate boards. At the same time the company installed a bronze statue of a determined-looking young Latina girl in Lower Manhattan, staring down the sculpture of the Charging Bull – a long-standing symbol of Wall Street (Friedman, 2017). The Fearless Girl, as it was called, quickly struck a chord with New Yorkers and tourists alike, and generated $millions worth of free publicity for State Street. It also offers us an evocative background against which to summarise our findings and reflect on their implications.

First of all, the Fearless Girl symbolizes the challenge to the lack of diversity, which has corrupted the financial sector, and particularly high finance. As our results show, since 2008 the share of women in the securities industry employment has fallen, while their remuneration and representation in corporate decision-making have improved only marginally. The economic reality of shrinking markets and job cuts prevailed over calls for more diversity.

The statue paid for by one of the largest asset management firms in the world staring down the icon of Wall Street may also be seen as a symbol of buy-side challenging the sell-side. In this respect, in contrast to the issue of diversity, significant change has already taken place. Buy-side now employs more people than sell-side and is getting close to closing the gap in terms of payroll per person. Although struggling with returns it is able to produce for its beneficiaries, buy-side enjoys a reputation largely untarnished by the global financial crisis, fighting few lawsuits, and basking in the good publicity of an industry performing what it believes to be a clear socially beneficial function. While between 2008 and 2016 New York MSA alone shed over 50k jobs on the sell-side, nearly 10k jobs were created on the buy-side. This re-balancing in the securities industry, as we argued, is much more than a question of arithmetic. On the one hand, it represents positive change, a re-balancing of power, away from the part of the industry obsessed with the quantity, volume and trading of securities to one with more incentives to care about the quality of financial instruments in the interest of its beneficiaries, savers who invest in financial markets to pay for their future consumption, health care, retirement and other needs. On the other, though, it may be a reflection of global economic imbalances between a rising glut of savings and dwindling investment.

Considering the first and the second symbolic aspect of the Fearless Girl together, our results highlight a sad irony. State Street Global Advisors has for a long time had larger representation of women on their board of directors than other leading asset managers, but buy-side as a whole is no better in terms of gender equality than sell-side. In fact, the share of women in total buy-side employment is now significantly lower than before the crisis. Asset management may be staring down investment banking quite successfully in terms of size and power, but there is nothing in this success that brings about any progress in terms of gender equality.

Yet another way of looking at the Fearless Girl is to think of it as a challenge by diverse American youth, America of the future, to the aggressive, reckless, testosterone-packed financialized economy, America of the past. In this context, our results are not encouraging either. On the one hand, the securities industry is now smaller in terms of employment and payroll, and represents a smaller part of the US economy. On the other hand, average pay in the securities industry has hardly declined in real terms, and remains out of touch with the rest of the US economy. Through lobbying against financial reforms, keeping retained profits available to shareholders to a minimum, and through internal restructuring the industry has done what it could to protect the high level of remuneration. Competition for talent from Silicon Valley, and increasing requirements for technical skills have arguably helped to protect exorbitant pay as well. Tens of thousands of lower skilled jobs have been moved abroad. In this sense, the Fearless Girl might then perhaps symbolize an Indian, Polish or most aptly a Filipino girl applying for a job in a call centre.

All of our results suggest that the securities industry has undergone significant restructuring under the joint pressures of recession, regulation and technology, but without a much-needed cultural change from within. Shrinkage, offshoring, nearshoring, and the rise of the buy-side are all very important, but persistent levels of pay and gender inequality show that culture in the industry has not really changed yet. Culture, including its corporate variety, typically takes long to change, but the fact that the industry has changed so little in important respects for nearly a decade since the crisis must be disappointing. Is it possible that the blow of the crisis is still working its way through financial institutions, and we need to give them more time to change or is intervention from outside needed to enforce change? We might still hope for the former, but action on the latter front is necessary. As Oliver Wyman's report stressed, the financial industry needs bolder structural solutions e.g. more flexible working options, but also profound cultural change to ”build an inclusive culture that recognizes and promotes the value of diversity along all dimensions, is free from unconscious bias and therefore supports gender balance” (2016, 6).

One obvious and important direction for further research would be to compare structural and cultural change in the securities industry, or financial sector as a whole, between the US and other countries and regions. Some industry experts claim that European financial institutions have introduced more fundamental reforms than their US counterparts. Andrew Bailey, CEO of Financial Conduct Authority in the

UK, was reported to say that “while European banks were making good progress on culture and particularly on issues such as compensation, US banks were lagging behind” (Wighton, 2016). The French leader of investment banking, Societe Generale, recently appointed a Head for Culture and Conduct, while Barclays have an MD in charge of reputation and citizenship. A quick search on Google seems to find no such positions in US banks. Other initiatives are underway. For example, the UK’s Senior Managers and Certification Regime introduced in 2016 by the Financial Conduct Authority requires information on senior managers’ performance, their credit history, and misconduct for the last 6 years. A Banking Standards Board was created in the UK in 2015 to focus on professional standards and behavior. On the other hand, women account for only 17% of executive committee membership in the UK, compared to 20% in the US (Oliver Wyman, 2016).

Whatever we might have expected in 2008, reform in the securities industry, at the apex of the financial sector, remains an unfinished business. Originally, the Fearless Girl was to be displayed near Wall Street for only a month. In late March 2017 Mayor of New York Bill de Blasio announced that it would remain in place for another year. It will take much longer and much more staring down by everyone, including geographers, before Wall Street, and with it the global financial industry moves anywhere near an acceptable level of reform. In this respect, our results support recent analyses that global financial governance since 2008 has been marked by continuity more than dramatic transformation (Bayoumi, 2017; Helleiner, 2014). Geographers have much to contribute to this debate.

References

Bayoumi, T., 2017. Unfinished Business: The Unexplored Causes of the Financial Crisis and the Lessons Yet to be Learned. Yale University Press, New Haven.

Berzins, J., Liu, C.H. and Trzcinka, C., 2013. Asset management and investment banking. Journal of Financial Economics 110, 215-231.

Bloomberg, 2016. Bloomberg Launches Financial Services Gender-Equality Index. 3 May, https://www.bloomberg.com/company/announcements/bloomberg-launches-financial-services-gender-equality-index/.

Burton, L., 2017. Frozen salaries present new challenge to the City, Financial News, 27 February, p. 6.

Chinwala, Y., 2017. Women in Finance Charter is catching up fast, Financial News, 27 March, p. 26.

Clark, G.L., 2002. London in the European financial services industry: locational advantage and product complementarities. Journal of Economic Geography 2 (4), 433-453.

Clark, G.L., 2000. Pension Fund Capitalism. Oxford University Press, Oxford.

Clark, G.L., Dixon, A. and Monk, A., 2013. Sovereign Wealth Funds: Legitimacy, Governance, and Global Power. Princeton University Press, Princeton.

European Banking Authority, 2017, EBA report on High Earners: Data as of end 2015, 2 February, EBA, London.

Financial Times, 2017a. More than one in 10 staff at US banks work in Asia. 26 February, https://www.ft.com/content/7c99c39a-f73d-11e6-9516-2d969e0d3b65.

Financial Times, 2017b. Equal pay and opportunities for women in finance: why the hold-up?, 4 April, https://www.ft.com/content/198abd62-1471-11e7-80f4-13e067d5072c.

Financial Times, 2015. Poland draws big banks for ‘nearsourcing’. 22 January, https://www.ft.com/content/1df9e49c-a153-11e4-8d19-00144feab7de

Friedman, Z., 2017. This fearless girl may change the face of Wall Street. Forbes, 8 March, https://www.forbes.com/sites/zackfriedman/2017/03/08/state-street-bronze-statue/#7397ab703072.

Friedman, S., Laurison, D. and Macmillan, L., 2017. Social Mobility, the Clas Pay Gap and Intergenerational Worklessness: New Insights from the Labour Force Survey. Social Mobility Commission, London.

Grote, M.H. and Täube, F.A., 2006. Offshoring the financial services industry: implications for the evolution of Indian IT clusters. Environment and Planning A 38, 1287-1305.

Hall, S. and Aplleyard, L., 2012. Financial business education: the remaking of gendered investment banking subjects in the (post-crisis) City of London. Journal of Cultural Economy 5 (4), 457-472.

Helleiner, E., 2014. The Status Quo: Global Financial Governnance After the 2008 Meltdown. Cornell University Press, Ithaca, NY.

Ho, K., 2009. Liquidated: An Ethnography of Wall Street. Duke University Press, Durham NC.

Hoyt, J., 2013. The Committee for Better Banks Report: The state of the bank employee on Wall Street. Available at: http://betterbanks.org/wp-content/uploads/2013/12/Bank-Worker-Campaign-Report-.pdf

Huffington Post, 2011. Goldman Sachs Plans To Hire 1,000 In Singapore While Cutting U.S. Jobs. 27 August, http://www.huffingtonpost.com/2011/06/27/goldman-sachs-outsources-singapore_n_885549.html.

Langley, P. and Leyshon, A., 2017. Capitalizing on the crowd: the monetary and financial ecologies of crowdfunding. Environment and Planning A 49 (5), 1019-1039.

Martin, R. and Pollard, J., 2017. Handbook of the Geographies of Money and Finance. Edward Elgar, London.

Massey, D., 1984. Spatial Divisions of Labour: Social Structures and the Geography of Production. Macmillan, London.

Massini, S. and Miozzo, M., 2012. Outsourcing and offshoring of business services: challenges to theory, management and geography of innovation. Regional Studies 46 (9), 1219-1242.

McDowell, L., 2010. Capital culture revisited: sex, testosterone and the City. International Journal of Urban and Regional Research 34 (3), 652-658.

McDowell, L., 1997. Capital Culture: Gender at Work in the City. Wiley-Blackwell, Oxford.

Morrison, A. and Wilhelm, W., 2007. Investment Banking: Institutions, Politics, and Law. Oxford University Press, Oxford.

Oliver Wyman, 2016. Women in Financial Services. Report.

Pettis, M., 2013. The Great Rebalancing: Trade, Conflict and the Perilous Road ahead for the World. Princeton University Press, Princeton.

Pfeuti, E., 2017. Deutsche Bank slashes bonuses by almost 80%, Financial News, 27 March, p. 4.

Pfeuti, E., 2017b. Asset management to follow banks' remuneration plateau, Financial News, 27 February, p.7.

Philippon, T. and Reshef, A., 2012. Wages and human capital in the US finance industry: 1909-2006. The Quarterly Journal of Economics 127 (4), 1551-1609.

Reuters, 2016a. Macquarie lays off 15 percent of U.S. investment banking group. 14 April, http://www.reuters.com/article/us-macquarie-uslayoffs-idUSKCN0XA2H9.

Reuters, 2016b. Wells Fargo plans quiet assault on Wall Street from glass tower. 31 March, http://uk.reuters.com/article/us-wells-fargo-investmentbanking-idUKKCN0WW0AL.

Schoenberger, E., 1997. The Cultural Crisis of the Firm. Blackwell, Oxford.

Sorkin, A., 2009. Too Big To Fail: The Inside Story of How Wall Street and Washington Fought to Save the Financial System and Themselves. Penguin, New York.

Stewart, H., 2015. Beware the global financial crisis, part III. The Guardian, 18 September, https://www.theguardian.com/business/2015/sep/18/beware-the-global-financial-crisis-part-iii.

Strange, S., 1986. Casino Capitalism. Blackwell, Oxford.

Tett, G., 2009. Fool's Gold: How Unrestrained Greed Corrupted a Dream, Shattered Global Markets and Unleashed a Catastrophe. Abacus, London.

The Economic Times, 2011. Citi, BofA & JPMorgan to outsource $5 bn of IT and back office projects to India, 14 February, http://economictimes.indiatimes.com/articleshow/7490712.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.

The Economist, 2017. The investment-management industry faces a big squeeze. 11 May, http://www.economist.com/news/finance-and-economics/21721905-it-likely-lead-further-consolidation-investment-management-industry.

The Economist, 2016. The final bill. 11 August, http://www.economist.com/news/finance-and-economics/21704815-legal-storm-surrounding-banks-largely-over-final-bill.

The Economist, 2015. To fly, to fall, to fly again. 25 July, http://www.economist.com/news/briefing/21659722-tech-boom-may-get-bumpy-it-will-not-end-repeat-dotcom-crash-fly.

The Economist, 2014. Bankers' pay, 4 January, pp. 55-56.

The New York Times, 2008. Biggest Unit at Morgan Is to Lose 10% of Staff. 12 November, http://www.nytimes.com/2008/11/13/business/13morgan.html.

Trillium Asset Management, 2016. Citigroup – gender pay disparity – 2016. http://www.trilliuminvest.com/shareholder-proposal/citigroup-gender-pay-disparity-2016/.

Wighton, D., 2016. Bankers yearn for 'noble purpose' – largely to serve their own interests, Financial News, 8 February, p. 7.

Wójcik, D., 2012. The end of investment bank capitalism? An economic geography of financial jobs and power. Economic Geography 88 (4), 345-368.

Wójcik, D., 2011. The Global Stock Market: Issuers, Investors and Intermediaries in an Uneven World. Oxford University Press, Oxford.

Wójcik, D., 2011b. Securitization and its footprint: the rise of the US securities industry centres 1998-2007. Journal of Economic Geography 11 (6), 925-947.

Wójcik, D. and MacDonald-Korth, D., 2015. The British and the German financial sectors in the wake of the crisis: size, structure and spatial concentration. Journal of Economic Geography 15 (5), 1033-1054.

Wright, W., 2016. Taking Stock on Pay. Report by New Financial, London.

Wright, W., 2014. New name, same old thinking on pay. Financial News, 3 February, p. 13.