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Urban Air Rights as Market Devices:

Exploring Financialization in Taipei Metropolitan Area

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Department of Geography, Durham University

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Abstract

This thesis is the first geographical study which critically explores the role of urban air rights - the right to build upwards on and above a land tract – in processes of urban financialization. The thesis highlights the economic lives of air rights in the Taipei Metropolitan Area, Taiwan, showing how they are not only a market-based urban policy and planning tool but are also closely involved in economic processes of making markets, assets, and profits. Three types of urban air rights - Bonus Floor Area (BFA), Transferable Development Rights (TDR) and Incremental Floor Area (IFA) – that are prevalent in urban Taipei are explored in detail. The thesis examines the relations between the proliferation of air rights production and urban financialization through an experimental methodology of ‘following urban air rights’ through the socio-technical operations of their assembly and circulation. It argues that air rights are ‘market devices’ and, as such, they are constitutive of the contingent processes of commodification, marketization and capitalization that amount to urban financialization. Through case studies, the thesis shows how airspaces are commodified and, significantly, how they also become an asset class that is marketized and traded and/or capitalized upon and borrowed against (i.e. leveraged). Moreover, by exploring these processes, the thesis shows how air rights ‘overflow’ into popular urban politics: air rights become a site of struggle over rights to the financialized city. More broadly, the thesis contributes to theoretical debates on urban financialization by examining how the urban-finance nexus is teeming with socio-technical practices. By focusing on air rights as market devices, the thesis provides an analytical grammar for studying how urban air rights constitute urban financialization. It also demonstrates how a methodology of ‘following the air rights’ enables exploration of the multifaceted qualities and multiple markets that air rights configure.

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List of Abbreviations

AMCs	Asset Management Companies
BFA	Bonus Floor Area
CEPACs	Certificate of Additional Construction Potential Bonds
DPP	Democratic Progressive Party
FAR	Floor Area Ratio
FSI	Floor Space Index
GFA	Gross Floor Area
IFA	Incremental Floor Area
KMT	Kuomintang, Nationalist Party
LVC	Land-based Value Capture
NTP	New Taipei City
PPP	Polluter Pays Principle
PTI	Public Transit Interchange
SME	Small-to-Medium Enterprises
SSF	Social Studies of Finance
SSM	Social Studies of Market
TAVUR	Taiwan Alliance for Victims of Urban Renewal
TDR	Transferable Development Rights
TIF	Tax-Increment Financing
TOD	Transport-Oriented Development
TP	Taipei City
UN	United Nations
USAID	United States Agency for International Development
VCF	Value Capture Finance
WRA	Water Resource Agency (Taiwan)

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1

Introduction

1.1 The Argument in Brief

Air is an invaluable common resource for life subsistence (Graham 2016a). However, in recent decades, the owning, leasing, selling, and optioning of air have become significant economic practices. These practices of creating and trading rights to the air include aviation rights (Lin, 2016), carbon emission rights (Callon 2009; Knox-Hayes 2013), rights to clean air (Graham 2015a; Gibson-Graham et al. 2016), and weather and climate derivatives (Thornes and Randalls 2007). The air rights that concern this research project are those mobilized in market-based urban public policies and planning practices in order to enable (re)building processes. Urban air rights are property rights that validate the private ownership, development and trading of the vertical space above land parcels (Marcus 1984). They are, put simply, the right to build upwards on and above an urban land tract. What this thesis will argue, however, is that urban air rights not only encourage and enable private development, but also provide a constitutive mechanism through which financial

logics, techniques and practices come to shape urban processes. Urban air rights are property rights in urban property markets, and advancing to perform as assets in financial markets. As such, urban air rights contribute to processes of urban financialization.

This research project examines the advance of urban air rights in urban policy and planning in the Taipei Metropolitan Area, including the cities of Taipei and New Taipei. As the thesis will show, urban air rights are a planning instrument created in the Taipei Metropolitan Area to enrol market intermediaries and developers in private property-based solutions to a host of more-than-economic urban issues. Such issues include housing, transportation, public facilities, and historic conservation. At the same time, however, this thesis will argue that the Taipei Metropolitan Area also demonstrates that urban air rights are an understudied but important entry point for studies that aim to make legible the processes of contemporary urban financialization.

By analysing the workings of urban air rights as devices that operate to make both private property markets and financial markets, the thesis enriches existing research at the intersection between urban and financial geographies. In particular, the conceptualization of urban air rights as market devices develops the broader ambition of this thesis to explore the productive ways in which cultural economy approaches can engage with the studies of urban political economy. The ways that urban air rights instruments created by urban policy-making and planning provisions and actually figure in urban (re)building is far from straightforward. Drawing on a cultural economy approach, the thesis argues that air rights are devices that play a constitutive role across *multiple* processes of economization (Çalışkan

and Callon, 2009, 2010). This includes the production of private property markets for urban (re)development but, as I will argue, it also exceeds this process in highly significant ways. The contingent assembly of urban air rights as market devices certainly facilitates the commodification of the airspace above land parcels, but it also enables processes whereby air rights become an asset class that is marketized and traded and/or capitalized upon and borrowed against (i.e. leveraged).

The thesis takes up this line of argument to show, with reference to the Taipei Metropolitan Area, how urban air rights feature in the process of urban financialization whereby capital invests in, speculates upon, and extracts value from, the built environment. As such, the thesis examines how urban air rights figure strongly in the material, vertical and volumetric transformations underway in urban Taipei's ordinary landscapes that are the physical manifestations of financialization. As urban air rights reformulate urban governance and reconstitute property and financial relations in the city, they refabricate contemporary urban landscapes particularly characterized by vertical sprawl and volumetric densification.

The thesis develops its argument about the constitutive role of air rights as devices that produce processes of commodification, marketization and capitalization via a Deleuzian-inspired methodological approach of 'following the air right' and mapping the urban air rights assemblage. Through this method, the thesis explores both the formal economic life of air rights – i.e. their role in urban financialization – and the moments in which air rights overflow into popular socio-economic life and urban politics. In this way, mapping the air rights assemblage shows how economic forces have always been woven together with the social, environmental and political. In short, the thesis demonstrates how mapping the relational

geographies of urban air rights can serve as a critical lens to probe contemporary processes of urban financialization.

1.2 Object of Study

Air rights (sale or lease) are a form of value capture that involves the establishment of development rights above the previously permitted land-use controls (e.g. increased floor area ratios¹ of buildings), or in some cases below a new transportation facility (e.g. selling rights to build a shopping area below a rail station). These further developments are expected to lead to increases in land value, which can be captured and used to fund infrastructure investment.

Asian Development Bank, 2017, p. 106

The meanings of air rights have shifted in practice. The legal concept of air rights is based on the Latin legal maxim ‘*Cujus est solum, ejus est usque ad caelum*’, meaning ‘for whoever owns the soil, owns the sky’ (Goldschmidt 1964, p.2). Historically, the conception of air rights has derived from English Common Law (Pomeroy 2015); a set of rules laid out through the institutional planning practice of the zoning system - a spatial approach that specifies the type and density of land use of urban zones across a city (Marcus 1984). Set within the relatively rigid planning system of zoning, urban air rights typically detach the right to build upwards from the underlying and designated surface use of the *terra firma*. One of the most notable historic precedents of urban air rights in the North American context was created with the redesign and redevelopment of the Grand Central Terminal in New York, completed in 1913 (Noble et al. 1993). According to Goldschmidt (1964), the urban air rights created in relation to the Grand Central Terminal were detached and subsequently exercised in the building of 18 skyscrapers along Park Avenue through

¹ Floor area ratio (FAR) is a technical parameter in zoning regulations that express the relation between the buildable volume and lot area it pertains to. The calculation is made by dividing total covered area on all floors of all buildings on a land lot (the gross floor area) by the land lot area. For instance, a FAR of 100 per cent permits a developer to build a one-storey building over the entire land lot, and is equivalent to building a four-storey building on one quarter of the land lot.

to 1929. It was not until the post-1945 period, however, that urban air rights began to be extensively constituted as key elements of urban development in the USA.

In the past five decades or so, however, the socio-economic policy and planning practices of air rights have evolved considerably. As the above quote from the Asian Development Bank illustrates, for example, during the current decade air rights have become repackaged into a set of tools for so-called 'value capture finance' (VCF) in an effort to channel windfall gains from the property market into public finance. Consider urban property market across the globe, the case study of urban Taipei offers a significant and emerging pattern whereby urban air rights are increasingly performing as channels that connect real estate financing with infrastructure financing, and enabling communication and flows between them. In the realm of real estate financing, air rights are traded to increase potential yields. The incentive of yield-increase activates the market in transferable development rights, and such markets have been further developed to substitute land compensation for public infrastructure. In this way, market-based urban policy and planning instruments are increasingly incorporated into the package of public finance.

Let us consider this process from an alternative perspective: in the realm of infrastructure financing, a newly integrated strategy of land-based VCF has emerged through active global policy transfer. VCF features the 'capture' of land value increments and views urban air and sky as a resource frontier for public infrastructure investment (Sandroni 2010; Suzuki et al. 2015; Gandhi and Phatak 2016). This has marked a watershed moment in which public infrastructure financing is stitched further to real estate financing, and commissioned to 'lead to increases in land value' as the land appreciation 'can be captured and used to fund

infrastructure investment' (Asian Development Bank 2017, p.106). This shifting framing of air rights has, in practice, certainly clouded the boundaries of public/private and land/sky across urban domains. As such, air rights pose intriguing potentialities for researchers. Through the repetition and difference in patterns of air rights trading, one can observe how the process of asset-making blends with markedly different patterns of economization that simultaneously cash in on the urban sky (Martin 2002; Guironnet et al. 2015; Ouma et al. 2018).

To be explicit about how these market-based policy and planning instruments work, we now turn to look at how urban air rights instruments have gained their 'glocal' tractions (Swyngedouw 2004) and mutated into different urban contexts over the most recent three decades or so. In urban Taipei, there are currently three types of urban air rights that feature as market-based policy instruments: Bonus Floor Area (BFA), Transferable Development Rights (TDR), and sellable building permits.

BFA takes the form of additional floor area on top of the legal FAR/Plot Ratio. BFA is the common name for urban air rights in this 'bonus' form, although outside Taipei they often operate under alternative names (and have slightly different content), such as Bonus Plot Ratio, density bonus, incentive zoning or voluntary inclusionary zoning for public purposes (Benson 1969; Stabrowski 2015). The BFA mechanism encourages developers' voluntary compliance regarding specific design standards, public facility/infrastructure provision and specific policy needs.

TDR are an urban air right which takes the form of a property claim on an unbuilt airspace over a land parcel. TDR can be used as an offset mechanism, where the unused right claim from a sending site is allocated to one (or multiple) receiving

site(s). This rationale has been applied to a wide array of policy needs and institutional contexts, including Landmark Transfer (i.e. the conservation of historic buildings) and Special District Transfer (i.e. the sale of zone-wide air rights).

The third urban air rights instrument presents in urban Taipei is purchasable building permits. Purchasable building permits require developers to pay city councils to acquire air rights, and are a more recent innovation under the emerging trend of value capture finance that sees air rights as a medium of public intervention into capturing the estimated property value increment of private development (Smolka 2013; Suzuki et al. 2015; Mathur 2016). These purchasable permits can be acquired through direct application (and negotiation) with local city councils, and the expected revenue is then redirected into funding the provision of urban infrastructure and services. Different places have developed alternative mechanisms and platforms for the sale of air rights. For instance, in Taiwan, ‘incremental floor area’ [增額容積] is the newly-emerged type of air rights that are acquired through negotiation with the local municipality commission (see Chapter 4). Each instrument mentioned above can create additional rights to build upwards and enact the ‘changes in building rights’ (see Figure 1.1),² These air rights instruments are widely applied elsewhere around the world to support a range of urban policies and they generally share similar traits to the bonuses, offsets and permits in Taipei.

The widespread uptake of air rights instruments has taken place in the context of growing entanglements between real estate finance and value capture finance. The

² A major adaptation of Figure 1.1 is that this version has been rotated upright in order to underscore the vertical/volumetric implication.

former refers to the income-produced from real estate assets and transaction behaviours that involve risk-induced borrowing and lending. The latter, by contrast, appears as a set of practitioner-based knowledge which redirects part of the windfall gains from real estate finance into public infrastructure improvement and investment. These two forms of urban finance become linked through the reconfiguration of components of urban land value (see Figure 1.1). Figure 1.1 shows the changing meaning and practice of urban air rights, borrowing from VCF concepts. The changes in building rights it describes provoke rounds of competition, negotiation and cooperation amongst multiple stakeholders who attempt to capitalize on land value increments (unearned gains).

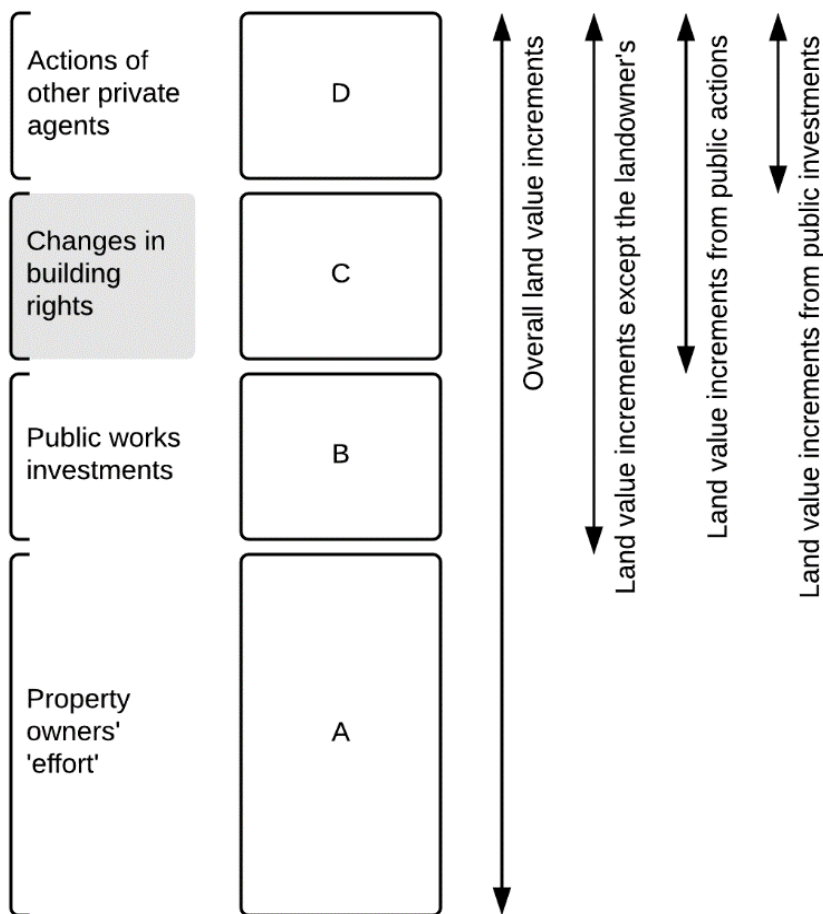


Figure 1.1 Components of Urban Land Value

Source: Adapted from Smolka 2013, p.8

In sum, this brief opening discussion indicates that the object of this dissertation - air rights and their various instruments (including TDR, BFA and IFA) - have long straddled the murky grounds between public/collective goods and private property rights. The emerging practitioner-oriented knowledge of ‘Land-based Value Capture’ (LVC) or ‘Value Capture Finance’ (VCF), however, indicates more organized forces are presently at work in reconfiguring urban air rights - concerning their resource allocation and revenue redistribution. The recent advance of VCF, in comparison to the earlier mentioned policy transfer of individual air rights instruments, exhibits an enhanced version of public intervention. To appropriate Smolka’s words (2013, p.2), urban air rights are both the question and answer to ‘how the costs of providing urban infrastructure and services are socialized, and how their benefits are privatized’. Urban air rights are now part of the LVC/VCF toolkit, and are mobilised to tackle the long-term negligence of socio-economic inequality in contemporary fiscal policies. In this way, urban air rights are pitched as one of the major conduits between urban public finance (e.g. fiscal policy and infrastructure financing) and real estate development, presenting a fiscal alternative to tax increases and/or additional sovereign and municipal borrowings.

Against this backdrop, this research shows how air rights are increasingly framed as value capture instruments, whether voluntarily or forcibly.³ By doing so, this research aims to consider wider air rights trading practices⁴ that give rise to a mode

³ In the Asian Development Bank’s version, these value capture instruments are categorized into *one-time charges on land value gains*, such as the land value tax, betterment tax, development impact fees, joint developments; or *long-term revenue sources*, whereby air rights are juxtaposed with tax increment financing (TIF), land asset management and so forth (Asian Development Bank 2017).

⁴ For instance, the São Paulo stock market (Bovespa) becomes the market platform that sells CEPACs (Certificate of Additional Construction Potential Bonds) as financial bonds by public

of ‘cross-fertilization’ between development-based projects and infrastructure financing. Through this analysis, we can also understand the changing meanings and uses of urban air rights as strategic responses to cope with both the fiscal climate of austerity and electoral cycles. On the one hand, air rights are a territorial resource that falls in the discretionary scope of local authorities. On the other, urban air rights are a ‘spatial cheque’ by which politicians can perform a hands-on response to the trend of fiscal decentralization and build popular support. Systemic efforts are also involved, through the global and regional promotion of the LVC and VCF public management models by various multilateral agencies (e.g. UN-Habitat, the World Bank, Asian Development Bank, Inter-American Development Bank). For instance, air rights instruments are found inconspicuously in the New Urban Agenda, also known as the Quito Declaration (UN-Habitat 2017, p.37):

152. We will promote capacity-development programmes on the use of legal land-based revenue and financing tools, as well as on real estate market functioning for policymakers and local public officials, focusing on the legal and economic foundations of value capture, including the quantification, capturing and distribution of land value increments.

In a similar vein, economists from the Asian Development Bank further exemplify the ongoing evolution in the role of urban air rights by promoting their role in value creation rather than simply land value capture (Farrin 2018). This evolution foregrounds how air rights are currently experiencing the twist and turn that are fuelled primarily by debt-driven infrastructure investment (see also Chapter 4). For instance, land value creation has been described by Farrin (2018) as something that

auctions (Sandroni 2010; Mathur 2016).

can flip ‘a zero-sum game’ between the government and private developers to ‘a win-win situation’. In this case, government-bolstered air rights sales – i.e. urban air rights that take the form of incremental floor area (IFA) in urban Taipei – come to the fore. The IFA is only viable in the context of an urban vision based on new-build high-rises where real estate increases in both volume and price. Such an urban vision is expected to fund current infrastructure development (see also Chapter 4).

This section has demonstrated the shifting framing of urban air rights through the state-market nexus. It has also shown how urban air rights are being redefined by diverse types of institutional and individual stakeholders. This research is motivated by a cultural economy interest in understanding air rights’ operations of ‘quantification, capturing and distribution’ (UN-Habitat, 2017, p. 37) and their political impacts. Based on the premise that the evolution of urban air rights has profound implications for urban Taipei’s socio-economic-cultural transformation, we will now turn to look at how air rights have reworked urban processes in the Taipei Metropolitan Area.

1.3 Air Rights Economy in Urban Taipei

The air rights economy reformulates the real estate economy, blurring the lines between concrete commodities and the holding, trading and capitalization of air rights as financial market assets. This thesis will show that such reformulation is crucial to emerging patterns of financialization at work in the built environment of urban Taipei, especially its volumetric sprawl. In urban Taipei, the early 2000s witnessed something of a regime shift in the real estate market that was largely driven by the proliferating use of air rights in urban policy and planning. How this

shift became manifest in the intensified volumetric sprawl of the Taipei skyline nonetheless requires some further explanation.

The real estate market in urban Taipei entered a specific property cycle of overbuilt and overpriced between 2002 and mid-2010s. Some statistics evidence the phenomenon in question. According to the 2010 decennial census⁵, Taipei City has a housing vacancy rate of 13.4 per cent; whereas New Taipei City stood at an unprecedented 22 per cent of empty housing stock (Directorate-General of Budget, Accounting and Statistics 2010). Meanwhile, the apparent oversupply of housing units does not affect the price: between 2001 and 2014, housing prices in the Greater Taipei have trebled.⁶ Intriguingly, not only did the housing prices soar beyond the affordability of general citizen-consumers; the investors apathy also saw in urban Taipei came down from the global investment lists (e.g. the Savills and Knight Frank reports) due to the inter-urban competition and the uneased Cross-Straits geopolitics (Kwok 2005) in recent years. While a significant flow of Chinese capital had broken through the ban on real estate investment in urban Taipei through forms of offshore companies, it nonetheless remained unclear how the vertical real estate boom continued for over a decade given the anemic interest/affordability issues of property market.

Two possible explanations present themselves, but neither immediately draws

⁵ The national census suggested that, at a national level, vacancy rate of housing stock has risen from 13.09 per cent in the 1970s to an average of 19.3 per cent, equal to 1.56 million housing units.

⁶ The status of being 'overpriced' is often a matter of subjective valuation; I use overpriced here to highlight the general level of unaffordability, the mismatched market supply and demand due to prices. As such, whether the properties are overpriced can be reflected on the price-to-rental ratio – a measure of the relative costs between renting and buying a house. Instead of a 'healthier' ratio around 16 to 25 years, it has stood at 64 years, out-ranking all Asian countries since 2011.

sufficient attention to the transformations of urban Taipei's real estate markets that were wrought by the rise of the air rights economy. The first centers on the state and anchored in the more regional-specific political economy theory— of the East Asian 'development state model' (Hsu 2010). While the developmental state model draws primary focus on the state's capacity in guiding/governing the market (Yeung 2017), it fails to fully grasp the 'untamed' air rights markets which are more of a sign of 'deliberate density' (Shelton et al. 2014). The second explanation centers on the real estate market itself, and especially its capacity to produce an urban landscape that is overbuilt and overpriced. For instance, Rachel Weber (2015) illustrates the Millennium boom in downtown Chicago between 1998 and 2008 and unpacks the property cycles through three aspects: (1) on the financial 'innovation' and regulatory moves that enhance the liquidity of global capital markets; (2) on the networks and practices of market intermediaries that reproduce new demands; and (3) on the urban policies that incentivize the new-built high-rise towers. The second explanation thus begins to elucidate the significance of forces of financialization for booming real estate markets and associated urban processes of volumetric sprawl. However, it does not identify the operations of the air rights economy that – by burgeoning and blending financial logics, techniques and practices into the market for high-rise real estate - would seem to be important to maintaining the momentum of urban Taipei's long-lasting property boom since the early 2000s. In the Taipei Metropolitan Area, as tends to be the case globally, urban air rights feature in urban policy and planning practices for urban (re)development and public infrastructure (see (b) of Figure 1.2). While state institutions take various pro-active approaches in creating and qualifying air rights commodities through urban policy and regulatory frameworks. State urban policy and planning institutions are heavily reliant upon market-based instruments. Secondary marketization of air rights could thus be seen

as a planned, though outlawed, scenario. Moreover, the vibrant development of air rights markets in urban Taipei have also incited the development of an assembling profession (see (a) and (c) of Figure 1.2). These features might be inconspicuous yet have strong impacts on actors in the built environment (see (d) of Figure 1.2). The following sub-sections first introduces brief histories of property booms of urban Taipei (1.3.1). How such backdrop facilitates a unique site for researching the workings of urban air rights in processes of urban financialization is unleashed through urban renewal (1.3.2) and public infrastructure (1.3.3) - two investment frontiers of urban financialization (see (b) in Figure 1.2).

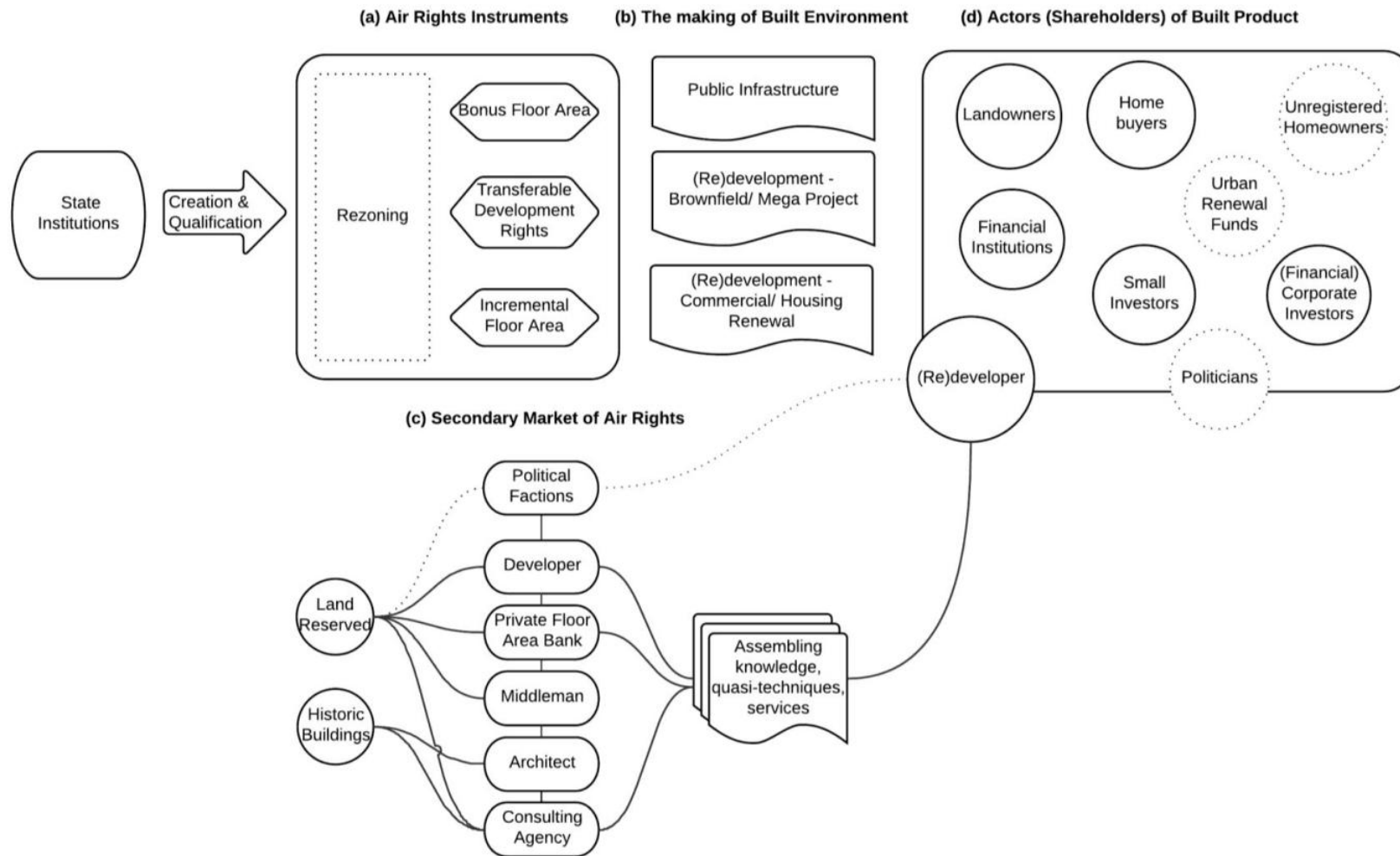


Figure 1.2 The Assemblage of Air Rights in Urban Taipei

Source: the author's compilation and drawing based on field research

1.3.1 Profiling Urban Taipei

The Taipei Metropolitan Area, also known as Greater Taipei (Taipei City and its hinterland New Taipei City), hosts a total of 6.7 million people, nearly one-third of the national population of Northern Taiwan. Taipei City has a highly dense urban footprint - wherein the population of 2.6 million resides in an urban area of 271.8 km². Given Taipei City's basin topology geographically surrounded by mountains and rivers, the horizontal sprawl of Taipei City is essentially confined (see Figure 1.3). New Taipei City, covered sparsely the Northern Taiwan and completely enveloped Taipei City, serves the hinterland to house industrial and property development. While enhancing regional competitiveness has subsequently become the shared vision of 'twin-cities' between Taipei City and New Taipei City, this reflects on, for instance, the integrated metro line project (see also Ch. 4) and closely related dynamics of property cycles. Despite both cities have widely different traits from the structure of governance to trajectories of growth management (density control).



Figure 1.3 The Northern Taiwan

Source: Google Map, 2018.

Historically, Taipei City was once a provisional capital for Republic of China (ROC) for Kuomintang (KMT, Nationalist Party) when KMT was defeated in China and retreated to Taiwan in 1949. Thereafter Taipei has become the special municipality in 1967 and held privileged position in both budget allocation and policy discretion. This also enables more deliberative urban experiments - either in policy or citizens' initiatives - to take place in Taipei City. In air rights economy, this reflects on the miscarried initiative of floor area bank (Ch. 6); and the conservation-driven credit boom of air rights (Ch. 6). In contrast, despite New Taipei City has the largest population (3.7 million) in the census record, only until 2010 had it become a special municipality and thus renamed from what was previously known as Taipei County. New Taipei City is emblematic of the so-called 'black-gold [heijin, 黑金] politics'(Chin 2003; Lo 2008). It refers to the organized crime that have traditionally seen gangster forces infiltrated the urban politics through electoral and

bureaucratic system and played critical roles behind a majority of development projects.

Speculative vertical sprawl and mixed-use zoning system have been salient in the postwar development of urban Taipei. The first two decades of postwar urbanization were propelled by the industrialization. In the 1950s and 1960s, the population influx of political immigrants from China and urban-rural migration (see also 4.4.1) unrolled informal settlements in Taipei City. Given the shortage of public housing supply, housing demands prompted the booms of 4-to-5 storey walk-up apartments since the late 1960s – by then the low-rise apartment without an elevator was a rather affordable option for modern housing. As the 4-to-5 storey apartments displaced a significant amount of bungalows and townhouses (Liu 2011; Cho 2014) such that the vertical lift also fragmented and complexified the property structure.

Modern urban planning systems and techniques were initially commenced under the guidance of the United Nations Advisory Group in the 1960s and 1970s. This process shaped the erstwhile zoning system and featured the introduction of ‘control’ over gross floor areas (see also Ch. 4). In the 1970s, the once fashioned government propaganda of ‘Living Rooms as Factories’ had weaved industrialization into ordinary neighborhoods. In urban Taipei, small-family firms had once mushroomed out of homes, taken subcontracting orders, and shaped satellite factory systems for exported business (Hsiung 1996; Simon 2004). As Scott Simon (2004) revealed through his interviews, many female domestic workers in the 1960s - 70s were eventually transformed into ordinary household investors in heated stock markets and real property markets in the 1980s - 90s. In this regard,

today's mixed-use urban fabrics, both horizontally and vertically, could be seen as the legacy of the unfinished past.

During the mid-1960s and 1980s, the flourishing exported-oriented economy had gone in tandem with four waves of short-term property booms⁷. These property cycles were suffice to comprehend through some political economy factors: the circuits of capital, implications of global political economy, and institutional transitions. First, the four waves of property boom (both in stock and housing markets) share a common feature: these property booms occurred when an annual economic growth rate exceeded 10 per cent and signifies excess capital reinvested in the built environment. Second, the timings of property burst were in the wake of global oil crises in 1973 and 1980; and a domestic credit crunch in the early 1990s and the 1997 Asian financial crisis. Immediate impacts were shown in the price inflation⁸ of building materials and the subsequent 'shake-out' of real estate industry. Third, institutional transitions in building density/volume control have shaped urban forms and building volumes. Taipei City, as earlier mentioned, has secured leading roles in policy reforms by its status of special municipality. As such, Taipei City was the first to implement comprehensive land use ordinance in 1983 and, a decade later, launched its building volume control in 1993. New Taipei City (the erstwhile Taipei County), meanwhile, reflects the trajectory of other

⁷ The previous four property cycles were generally understood as: (a) The first property cycle sustained from spring 1967 to summer 1975 and the second one spanned winter 1975 – summer 1982. The first two cycles featured two major oil crisis which triggered price inflation and hence prompted the housing price spike. (b) The third property cycle was between autumn 1982 and winter 1990; this period saw significant speculation in stock and housing markets that came alongside the credit boom. (c) The fourth property cycle took place between spring 1991 to winter 2001. This period saw the industrial transition that shifted from manufacture to ICT industries.

⁸ On a side note: the historic record of speculation, for instance, showed the price of new-build four-storey apartments spiked up 62.6 per cent between 1967 and 1968 (Cho 2014, p.8).

municipalities in the country, and has gone through at least three major phases: First, the two-dimensional growth management before May 1991; which features the use of building coverage ratio to ensure living quality (e.g. access to sunlight). Second, the interim period (1991-1999) in transition to three-dimensional zoning – to set out floor area ratio for building volume control. This was partially implemented in some of urban areas. While the buildable volume was halved into roughly 180-300 per cent for residential and commercial zones. This reform resulted in developers' rushed construction during the 1990s. An immediate implication is not only seen in the mushrooming of rushed construction; but also the booming of skyscrapers (30 floors onwards) during 1991 and 1996 which constituted over half of the existing skyscrapers across the municipalities in Taiwan (see Cho 2014 p.108). Third, the three-dimensional zoning system was only commenced from June 1999 on due to the pressure of local factions. During the 1990s and 2000s, a specific trendy practice for facilitating the physical landscape of global cities was to create 'special zones' that allows the creation of clusters of landmark buildings and speculative skylines. This reflects specifically the context of the two case studies of Chapter 5 – the making of Xin-Ban Special Zone in New Taipei City (5.5.1); and set Song-Ren Urban Renewal (5.5.2) against the proximity of the Xin-Yi Special Zone, an affluent part of Taipei City.

The remaining two sub-sections will dive further into two primary investment frontiers - urban renewal/redevelopment and public infrastructure. By examining the turbulent relationships between property markets and institutional growth management in the urban Taipei, it facilitates the peculiar historic grounding on how the epidemic of air rights economy has advanced the production of vertical property into spatialized credits and assets.

1.3.2 Urban renewal/redevelopment

Urban renewal is a major policy concern which has developed in the context of Taiwan's high homeownership rate of 85 per cent⁹ (Directorate-General of Budget, Accounting and Statistics 2016). Thus, in Taiwan, existing disputes surrounding urban renewal have primarily occurred in the housing sector. Taiwan's homeownership society is a product of persistent state intervention that subsidizes private homebuyers rather than in the public provision of housing. From the times of former Presidents Lee Teng-hui (KMT, Kuomintang/Nationalist Party) to the reign of Chen Shui-bian (DPP, Democratic Progressive Party), the keynote of economic governance has been Keynesian policies: expanding government expenditure, providing low-interest rate housing loan, and channelling wages and household savings into the investment frontiers of the domestic economy.

The first wave of urban renewal, attuned with the paradigmatic shift towards public-private partnership, followed in the wake of the 1997 Asian financial crisis and the fatal earthquakes of September 21st 1999 in Taiwan. Since 2006, the erstwhile KMT-based President Ma Ying-Jou approved a policy package that increased Bonus Floor Area to revive the policy after an initially disappointing market response. A second wave of urban renewal arrived soon after the 2007- 2008 global financial crisis, and declined around 2012-2013 after this fierce round of urban renewal created havoc across urban neighbourhoods (see also Chapter 3). During this period, various air rights instruments were devolved to municipalities

⁹ In Taiwan, the disputable high ownership rate is defined by the owner-occupied unit whereby anyone or their direct relatives owning the house. Yet, as many have pointed out, the indicator of homeownership rate could be misleading as people who are renters, or technically does not counted as owners or renters, are excluded from the figure of homeownership rate.

amidst the rising fiscal decentralization programme: air rights were adopted by municipality leaders in electoral campaigns, and splintered into a wide array of policy fields. Electoral promises which incentivised air rights (e.g. BFA) were often integrated with transport infrastructure projects underpinned by the compact city policy rationale of transit-oriented development (TOD).

Furthermore, the air rights economy has also been supported by the government's reinvention of urban renewal initiatives with a stronger appeal to the public interest of securing life, and to articulate rebuilding and redevelopment as the only viable solutions to address seismic risk and climate change. While seismic risk justified new incentive packages of urban renewal, this thesis will show how the process of increasing sites for rebuilding and redevelopment has become vital to realizing the anticipated profits of urban air rights. For instance, as Chapter 5 will discuss, the relation between developers and inhabitants made upon freewill contracts has been decisively transformed by changes in professional practice and regulatory intervention. Professional practices that take management control are reoriented to business models that assemble air rights portfolios, increase shareholder value, and redeem service fees through bestowed ownership shares. Throughout these processes, project implementers (particularly developers) have acquired the power to re-stratify existing property owners' ownership according to creditworthiness and, as a result, they are able to convert homeownership into the share of volumetric asset.

1.3.2 Public Infrastructure

Evolving in parallel to urban renewal/redevelopment is the 'frontier' of

infrastructure, and two types of ‘infrastructure financing’ are discussed in the scope of this research project. On one hand, as the preceding section suggests, this research examines how windfall profits from vertical urbanization were shaped by, and provided financing for, the TOD transit infrastructure projects. With its branding as the ‘sustainable city paradigm’, TOD includes a set of planning ideas that use public-oriented transit system to redirect mixed land use pattern and urban redevelopment. For example, in a 2018 public forum called the ‘Strategy Forum for Taipei Transit-Oriented Development’, the Deputy Mayor of Taipei, Charles Lin, announced the selection of 40 metro stations in Taipei where building height and density control would be relaxed to enable new redevelopment associated with metro lines. As Deputy Mayor Lin explained ‘Taipei is relatively reserved [in zoning relaxation] once we compare to Tokyo and Hong Kong whereby TOD policy have relaxed their cities’ FAR to 1,600 to 2,000 per cent’ (Chung 2018).

On the other hand, this research is interested in the flipside of infrastructure financing – i.e. compensation liabilities - so-called ‘wipe-outs’ that are generated because land parcels have been reserved for public infrastructure or development rights are restricted by planning decision (e.g. historical/natural conservation). In Taiwan, compensation payments have contributed to the growth of fiscal indebtedness across central and municipal governments. The contribution of compensation to public debt has grown not only because of planning decisions but also as the consequence of inflated land prices.¹⁰ Against the backdrop of growing compensation liabilities, the TDR mechanism of urban air rights was first

¹⁰ According to Tsai and Peng (2017), the national debt to compensate for landowners of reserved land for public infrastructure increase from NT. 31 billion dollars in 1970 to 1 trillion dollars in 1987. And up until 2011, this number had grown to 6 trillion dollars due to the rising land price.

introduced in the Taipei Metropolitan Area in the late 1990s. TDR are not simply employed as an off-the-shelf planning policy tool in Taipei. Instead, the instrument has been edited and rescaled so that TDR offsets could become a substitute for monetary compensation and tackle a growing ‘money pit’ – the land cost for public infrastructure. The institutional settings and market ecologies in which TDR operate are reconfiguring urban property markets. Consider, for example, how the following extract from media footage from 2016 begins to unfold the nexus of urban air rights economy in Taipei (see (c) in Figure 1.2):

‘You Shi-Yi, the CEO of Kuan-Pin House News [寬頻房訊] is the nationwide giant of the foreclosure business in Taiwan. He is also one of the biggest hoarders of air rights [...], his list of clientele covers almost all developers in the Greater Taipei. Developing the strategy that ‘investing urban air rights during the property bull market’ and ‘investing foreclosure market during the property bear market’, he became one of the briskest realtors in his over decade-long bull position’ (Kuo 2016).

In this news extract, we can see how the protagonist, Mr You, rolled out his business from the realm of foreclosure and into air rights. His statement suggests the hidden roles market intermediaries perform to develop their business models in parallel with the spot property market. Mr You has displayed a business role model that attempted to capitalize on the all-time property cycles: the arbitrage of floor space is conducted amongst the developers’ air rights market, (property) presale market and spot market during the bull period of real estate economy. In the bear period, his operation in foreclosure markets has enabled him to secure profitability. The vision of a ‘successful’ broker-dealer exposes the blind spot of value capture finance because the claimed mission of ‘recovering’ land value increments was, in fact,

more complicated than a one-way journey from the real estate sector to public infrastructure.

What underlies Mr You's story is a wide array of changing professional practices in building and planning that are led by market intermediaries. First of all, the specific legal definition of air rights - the virtual property right to build and develop upwards - suggests an economy that is exclusively an upstream market for developers (e.g. (a)+(c) in Figure 1.2). Second, and relatedly, market intermediaries, as reflected in Mr You's experience, develop expertise in ways that employ the assembled air rights in investment portfolios and make them be borrowed against (i.e. leveraged) as assets. Third, according to my interviews with broker-dealers, they have observed how some developers shifted investment approach from land reserve to *airspace* reserve and have challenged the conventional understanding land resource scarcities. Moreover, fourth, skyrocketing property prices might be unpacked through changing professional practices as such price-making movement which implies that [...] are more than just 'speculative'. The price-making of landed assets often involves multiple trajectories of market ecologies (Pallese 2015) which, in one way or another, constitute part of the air rights economy. Understood holistically, the air rights economy is characterized by multiple markets which reap profits at the expense of vertical/volumetric sprawl. This relational mapping of the air rights economy troubles the boundaries between real estate finance and other types of finance (e.g. infrastructural finance), not least because air rights circulate across private property markets by virtue of the growing volume of air rights that are owned and traded. Considering the evidence above, urban Taipei is poised to become one of the most radical laboratories for speculative air rights trading in Asia and beyond. In short, urban air rights are a rather undervalued empirical world in

both urban and economic geography. As such, Taipei offers a case study *par excellence*.

1.4 Anticipated Contribution

The focus of this thesis on urban air rights chimes with recent geographical research that, frustrated by the ‘flat geography’ derived from a top-down cartographic gaze (Graham 2016b), seeks to study what is variously described as ‘vertical’, ‘volumetric’ and ‘aerial’ urbanism (McNeill 2009; Adey 2013c; Elden 2013; Harris 2015; Marvin 2015; Graham 2016b). More specifically, its focus on urban financialization in the Taipei Metropolitan Area shifts geographic attention towards the global East and South. Through close attention to the dynamic urban-finance nexus and the emergence of an air rights economy in Taipei, the thesis provides the first critical and systematic study of the role of urban air rights in urban financialization. Its principal contribution to the existing geographical literature is to make this connection between urban air rights and processes of urban financialization. By focussing on urban air rights and the relation to urban financialization, the thesis unsettles several conventional debates about the urban–finance nexus.

Research on the relationships between the urban landscape and financial accumulation is a thread running through close to five decades of human geography scholarship (Harvey 1974; Harvey 1978; Haila 1988; Harvey 2007; Haila 2015). However, these relationships have received renewed attention in the wake of 2007-8 global financial meltdown that centred on residential housing and mortgage markets in the United States and Global North (Langley 2008; Aalbers 2012; Aalbers 2016; Christophers 2016). Scholarly works have centred on the so-called ‘secondary circuits of capital’ (Harvey 1978; Lefebvre 2003; Gotham 2009); various forms of the ‘urban-finance nexus’ (e.g. Aalbers, 2012; Buckley and Hanieh, 2014; Turok, 2016); and the incorporation and appropriation of aspects of the built environment (e.g. residential property, commercial property, infrastructure) into circuits of finance capital. However, their accounts explain little about the meteoric growth of vertical sprawl in parallel with the infrastructure investment boom notably amid (ordinary) cities of global South and East (Lin and Yi 2011; Tsui 2011;

Elinoff et al. 2017). Although urban financialization is widely recognized to produce vertical sprawl (Guironnet et al. 2015; Weber 2015; Halbert and Attuyer 2016), the operative dimensions of *how, why, and by what* financialization hits the ground and manifests in vertical sprawl are still underexplored (Mezzadra and Neilson 2015; Ouma 2016). This thesis makes this process explicit as it seeks to reveal the intersections between urban air rights and urban nature, housing and infrastructure which are presently being studied by geographers as the main frontiers of urban financialization processes.

In this respect, the anticipated contributions of the thesis are threefold: empirical, theoretical, and methodological.

Empirically, urban air rights are shown to offer a rich research terrain in their own right for at least four reasons. First, urban air rights offer a way to explore socio-technical operations at the urban-finance nexus. In the thesis, this involves teasing out three socio-technical ‘layers’ to examine how have air rights interwoven between real estate and infrastructure financing: (i) how air rights employ the urban planning and policy initiatives; (ii) the ways markets for urban air rights function; and (iii) the operations that tie together property markets and infrastructure financing. By teasing out these three layers, the thesis aims to deliver what Ash Amin (2006) calls ‘the register of relatedness’ in accounts of economization processes involving urban air rights. This allows the thesis to advance studies of urban financialization by adopting a volumetric perspective that incorporates the urban air and sky.

Secondly, and more broadly, the thesis is empirically significant because it broadens the remit of geographical research into processes of urban financialization beyond the Global North. Public criticism and scholarly debate on urban financialization initially developed through the leading financial centres and focus in particular on Euro-American experiences (Christophers 2012; Knuth 2015; Fields 2017b; Hall

2017). For instance, a wide range of socio-technical arrangements across subprime mortgages, predatory equity, securitization and urban development projects that are drawn out from Euro-American contexts have been identified as the major mechanisms that weave the built environment into financialization processes (Hall 2012; Aalbers 2016; Appleyard et al. 2016; Langley 2018). As such, the thesis' empirically-informed analysis of urban air rights in the Taipei Metropolitan Area serves to enrich the debate through a situated example of urban financialization in East Asian cities.

Third, urban air rights do not fit comfortably within existing empirical fields of urban geography (including urban housing, gentrification and infrastructure financing) but present an unconventional terrain that serves to 'hyphenate' across different cognate empirical fields. Focusing empirically on the socio-technical operations surrounding urban air rights, it allows inconspicuous processes and links to emerge. As such, following air rights is a tool that maps, connects across and blurs existing subfield boundaries, not least between urban geography, economic geography, political geography and social and cultural geography.

Fourth, the empirical terrain of urban air rights relates, as Graham (2015a) has put, to a multi-layered 'life-support' system which, in Graham's account, primarily centres on the urban politics surrounding the 'defencelessness of breathing' (such as toxic urban atmospheres, urban heatwaves and air-conditioned domes). In this thesis, then, the politics of the urban air is extended from the daily act of breathing to include the life-support functions in facilitating the experience of vertical dwelling. By examining the ways that air rights enable this 'atmospheric' experience of vertical dwelling but, at the same time, also travel beyond it, this thesis explores how the economization of air rights weaves together urban air, homeownership and popular urban politics. In doing so, it makes visible how densified urban processes increasingly operate through, and are embodied by, financial rationales.

Theoretically, this research project develops a novel style of urban-financial analysis which explicitly builds upon its empirical contribution – i.e. studying urban financialization beyond the Global North. The theoretical contribution is thus informed by the urban-financial study of ‘elsewhere’, and thereby resonates with what Jennifer Robinson (2017) terms as ‘reading practices’ and ‘thinking with multiple processes’. By doing so, this research demonstrates and informs the need for research that compares and conceptualizes the variegated spatialities of urban financialization.

By reading practices, particularly in relation to the study of on the variegated financialization of urban processes (Aalbers 2017), this thesis contributes to geographical scholarship that is increasingly seeking situated accounts of urban financialization which attest to how the urban-finance nexus is teeming with socio-technical practices and policies (Guironnet et al. 2015; Weber 2015; O’Neill 2016; Langley 2018). Attention to variegated processes is thus teamed with attention to the contingent and uncertain nature of such processes which centre on the assemblage and workings of urban air rights and embracing what is broadly termed a cultural economy approach (Hall 2017). It argues this approach is essential for identifying the precise operations that link volumetric sprawl, housing, infrastructure provision and urban financialization. Researching urban financialization through the lens of air rights raises new theoretical questions for research that include: what relations are there between the emergence of an air rights economy and urban financialization? And, what can be gained by diversifying research sites?

To answer these questions, this research exercises on ‘thinking with multiple processes’. To think with multiple processes, this research project develops its conceptualization of urban air rights as ‘market devices’ (Callon and Muniesa 2005; Muniesa et al. 2007) and helps to reconfigure financialization as the dynamic constitution of multiple economic processes. By mapping how the urban air rights

in question are produced and employed, this thesis will unpack how their workings as market devices constitute processes of urban financialization. In so doing, this thesis develops a productive dialogue between cultural economy and political economy. Essentially, the critical study of urban financialization has long been framed by a political economy approach. To think with multiple processes informs a cultural economy approach which builds on this foundation but, importantly, understands economy and finance not as separate realms from social and cultural relations but as constituted through their multifarious entanglements. I take this view forwards to rethink contemporary urban questions. For instance, in this thesis, an urban epistemology of *multiplicity* is used to facilitate the mapping of the *relational geographies* of urban air rights and the multiple markets they create and coordinate.

This understanding of the multiple, constitutive, and deviceful roles of air rights in urban financialization also offers an analytical grammar for grappling with various localized processes. This allows rich potentials to further theorizing the regional and global relationalities from the fast-growing, materially and socio-culturally fuelling phenomena and their wider implications. This research scenario begins by permitting one to picture the broader assemblage of an air rights economy that includes its entanglements with the so-called real-estate (or construction) economy and the financial economy. This could advance the relational dialogue across various urban areas on inter-related urban processes, such as the dynamics of conservation and development, and infrastructural and housing provision. Whereby the inter-urban relations could be reconfigured through various performances of air rights as they mutate into local legal-politico and social contexts. In this dissertation, then, it examines the unfolding of urban processes in three-dimensions through the flow (and suspension) of urban air(space). By revealing how the commodification of urban nature transforms common pool resources (i.e. airspace) into 'volumetric enclosures' (Marvin 2015; Graham 2016a), the thesis shows how the economization of air rights has steered the financialization of urban processes.

Methodologically, this thesis develops an experimental methodology of ‘following urban air rights’. Following the air rights is distinct from a capital-centred approach. Two aspects explain its methodological prowess, which allows the research to both capture empirically the transformation of property relations, and enable the conceptual advances outlined above.

First, following urban air rights helps one to explore their multifaceted qualities as they are configured and playing a constitutive role in multiple processes of economization and financialization. Focussing methodologically on the itineraries and functions of air rights across different markets enables an epistemological reconstruction of ‘multiple-markets’ (Frankel, 2015; Zelizer, 1999). Second, ‘following the thing’ in the case of something intangible, processual and indefinite, such as air rights, is both a methodological opportunity and a challenge. The opportunity lies in developing a way of following how and where a form of virtual space (i.e. an air right) flows. As the anthropologist Timothy Choy suggests, the materiality of airs and the densities of their entanglements are methodologically the ‘breathers’ – a term of environmental economics which refers to ‘those who accrue the unaccounted-for costs that attend the production and consumption of goods and services’ (Choy 2011, pp.145–146). Airs are the kind of ‘breathers’ which orient us to different ‘means, practices, experiences, weather events, and economic relations’; besides, urban airs and their entanglements potentially suggest ‘a collective condition that is neither particular nor universal’ (ibid.). From this perspective, ‘following the air rights’ as an urban methodology overcomes a conventional bias by emancipating space from its stereotypical association with physical inertia. This gives the researcher a mobile positioning, aligned with the various actors and actants through which flows of space are constituted. At the same time, this also speaks to the methodological challenges of this project. The physical flexibility of air rights extends to diffusive threads of transformation, from the inscribing relations of air rights (as bonus, offsets or permit) and (dis)attaching

linkages (displacement, demolition and cleansing) to processes of becoming (rebuilding and redevelopment). Holding together these dispersed threads of the air rights assemblage is central to adopting such a methodology.

In sum, this thesis empirically demonstrates and theorizes how urban air rights interlink real estate and infrastructure financing. It joins cultural economy approaches with political economy to examine the role of air rights in urban financialization. Its application of a cultural economy approach interrogates market-based planning instruments' propensities to act as 'market devices', and captures the simultaneity of multiple markets, responding to what Frankel (2015) has critiqued as one of the pitfalls of social studies of markets.

1.5 Analytical Findings: The Economic Life of Air Rights and Beyond

This section explores two dimensions of analytical findings. On the one hand, it suggests that urban air rights can be an effective analytical parameter for illuminating the economic process of volumetric sprawl and its relations to processes of financialization. This finding, which captures the agentic features of urban air rights as market devices in process of economization, is discussed in the first half of the section. What follows in the second half extends this point to examine urban air rights' agentic features through their externalities – what Michel Callon (1998) has termed as 'overflowing'. Put differently, while such socio-technical operations indeed provoke changes in material production and property relation and, in turn, create new persons (Hirsch 2010), market operations of air rights also travel beyond real estate–finance relations toward popular socio-economic life and urban politics.

1.5.1 The Economic Life of Urban Air Rights

Examining the economic life of urban air rights is vital to unveiling the financialization of the built environment. The financialization of urban processes,

this thesis argues, blends - and sometimes disguises - multiple economic processes. Urban financialization is triggered when airspace becomes a (quasi-)financial asset, and is instantiated by professional exercises that resemble financial logics, rationales and practices. To make this case, this thesis will discuss how air rights are transformed through three interrelated processes of economization: commodification, marketization and capitalization.

The first is the process of commodification. This thesis argues that the work of municipal institutions (such as legislative institutions, official committee reviews and authorization bodies) are critical to the commodification of urban air. Through institutional action, urban airspace/sky is legally validated as a property right, taking the form of bonuses, offsets or tradable permits. The economic value of urban airspace is created by the workings of these municipal institutions.

Commodification evolves, more often than not, with a second economization process, namely marketization. This is most starkly and simply illustrated by the work of tradable air rights as market devices, including Transferable Development Rights (TDR). The thesis shows how the secondary market in TDR becomes a source of upstream supply for the new-build market. Moreover, urban air rights function as market devices both in their capacity of market-making and in the way they circulate between and connect multiple markets. This thesis thus revisits relations between the value and price of urban air rights. It argues that a relatively disregarded logic of land price valuation – floating value – reveals the ‘derivative’ characteristic of urban air rights. While the economic value of TDR offsets is generated through its active anchoring in underlying urban land parcels, it is the quasi-derivative form of TDR air rights is crucial to their capacity to operate as a device that constitutes marketization and secondary trading. As a consequence, TDR involve an arbitraging strategy that leads to the demolition of obsolete parts of the built environment and their replacement with high-rise blocks, a building boom enabled by TDR that exploits geographical differences in underlying land values.

The economic life of air rights extends beyond marketization to how their circulation can be made to generate a revenue stream. Urban air rights as market devices thus also play a constitutive role in a third process of economization that is most appropriately understood as ‘capitalization’ because it hinges on the way urban air rights can be made to yield a future revenue stream. The thesis describes, then, how the capitalization of air rights extends the conceptualization of ‘land as (quasi-) financial assets’ (Haila 1988; Coakley 1994; Harvey 2007; Christophers 2016). And, in the round, it is through these processes of commodification, marketization and capitalization that the notion of market device comes to synthesize the multiple forms and roles that urban air rights perform in urban financialization. The thesis shows how the economic life of air rights, expressed through these different economic forms and roles, is key to revealing how air rights articulate and restructure urban socio-economic relations. Air rights transmute across, and connect together, different forms of ownership, credit and asset, while they also mobilize the everyday economies of homeownership. Air rights in Taipei function as spatialized credits, coupons, and derivatives. As spatial credits, they allow buildings to increase in height and volume. By pooling these spatial credits through channels of urban renewal, high-rise buildings become a legally and economically preferable type for residential and commercial rebuilding. Transmuted into the form of coupons, air rights also operate as debt/equity registers that document renewed relationships between developers (the acting lender) and the property owners (the borrowers), followed by the augmentation of vertical/volumetric ownership. And, acting as derivatives, air rights weave together public finance and urban policies by unbundling various public debts/subsidies into constituent attributes that can be traded and transferred onto the circulations of homeownership. In these processes, air rights as the object of trading are decoupled from the underlying property, and anchoring urban locations that are rendered indifferent by the mechanism of economic valuations.

1.5.2 The More-than-Economic Life of Air Rights

Urban air rights certainly travel beyond the urban–finance nexus. To demonstrate the more-than-economic relations of air rights, this thesis thickens description of the socio-technical arrangements of air rights markets. This involves exploring their linkages with different spatial projects from transport infrastructural financing (Chapter 4), housing renewal (Chapters 4 and 5) and the development of special zones (Chapter 5), to historical conservation and waterway rehabilitation (Chapter 6).

As the following chapters show, the socio-economic relations that are reconfigured through market arrangements are revealed in mundane urban settings: spanning from electoral promises of bonus air rights, social contestations, to dis/possessions surround redevelopment. Additionally, the material-environmental impacts laid by urban air rights are found in urban phenomena of the formation of vertical communities, and sometimes the externality of overbuilding, densification and traffic congestion. Popular urban politics reflect the workings of air rights are entangled with variegated dimensions of urban social life and implicating beyond their economic careers. In doing so, this thesis offers to enrich ordinary accounts of urban financialization.

Developing its argument through an assemblage ontology, this thesis understands market and society are ‘stitched spheres’ that co-constitute the attributes of air rights. Instead of denouncing the marketization of urban airspace as erosive forces of urban governance, the research carefully develops its grounded argument that urban air rights serve as market devices by learning from the perceptions and practices of market intermediaries. Each transmutation of urban air rights - from ownership to credits to assets - not only amplifies the functions of their original form but also re-writes socio-economic relations. Following air rights itineraries certainly allows us, then, to explain why some air rights travel from urban policy and

planning and into primary and secondary markets and may reach the capital market. But it also permits a form of inquiry that is open to the ways in which air rights can travel yet further and in somewhat different ways into popular socio-economic life and urban politics. In this way, the vertical rollout of air rights into the urban sky opens up novel paths to reconsider the economics and politics of the financialization of urban processes.

1.6 Outline of the Thesis

To explore and analyse the constitutive role of urban air rights in urban financialization in Taipei Metropolitan Area, the thesis begins with three overarching chapters that establish the theoretical framework (Chapter 2) and research methodology (Chapter 3), and introduce air rights instruments in urban Taipei (Chapter 4). This then leads to a deeper exploration of different air rights instruments in the subsequent two chapters that separately follow and examine BFA (Chapter 5) and TDR (Chapter 6) in the Taipei Metropolitan Area. Since the IFA form of air rights is still in its embryonic phase and that its development is primarily affected by its dynamic relationships with the BFA and TDR forms of urban air rights; this thesis does not include a chapter dedicated to following and examining IFA. Chapter 4 includes a case study of IFA as part of its account of the development of air rights in urban Taipei.

In Chapter 2, I review relevant studies of the financialization of urban processes. The chapter begins with questions of how various bodies of theory, from political economy to cultural economy, could be theoretical resources for framing the financialization of the built environment. In particular, drawing on a Deleuzian sense of ‘place of becoming’, Chapter 2 develops a conceptual framework for urban financialization by examining how urban air rights could unleash ‘multiple processes of becoming’. With pluralist, non-linear, and co-constitutive ontologies, this chapter understands urban financialization as a ‘rhizomatic’ process in which

financial logics, rationales and practices substitute ‘the principles of connections and heterogeneity’ across different dimensions and registers (Deleuze and Guattari 1987, p.8) in the urban built environment. Advancing the claim concerning urban air rights’ agentic features, I adopt a cultural economy approach to engage in the enduring urban question of land value. This involves exploring how different theoretical approaches, including property rights theory, land rent theory, and valuation studies allow us to understand the value and valuation of virtual airspace. Moreover, to understand various types of urban air rights and their processes of value appreciation, this chapter develops a nuanced approach via the conceptual application of ‘market devices’, derived from the social studies of markets. The chapter then turns to examine how well this understanding of urban air rights can accommodate contemporary urban struggles. This final part of the chapter observes that ‘market society’ is a theoretical blind-spot within discourses of rights to the city, and it weaves into this literature an understanding of urban and economic geographies in order to probe the contemporary property-based activisms and the urban politics between practices of enclosures and urban commoning. To this end, Chapter 2 outlines a conceptual framework for understanding the financial politics of volumetric sprawl.

Chapter 3 explains the methodological concerns of this research project. Echoing the calls for thinking urban-financial geographies through elsewhere (e.g. Fernandez and Aalbers, 2016; Fields, 2017; Robinson, 2016), this chapter starts by contextualising the study of urban Taipei in light of calls for comparative urbanism and a desire to understand changing patterns and processes of urban financialization. Drawing on an autobiographical account that informs the specific challenges of doing comparative studies of financialization in the settings of ordinary cities, this chapter argues that the value of researching places outside global financial centres lies in geographically diversified patterns of vertical/volumetric sprawl and their relation with the finance sector. Through a focus on urban Taipei, in other words, it is possible to ‘re-describe’ (Simone and Pieterse 2017) questions

about how market and financial rationales and socio-material relationalities are employed, and to examine how they are different outside of world financial centres. Moreover, proposing the methodological approach of ‘following the air rights’, this chapter explains how the thesis contributes to shifting attention from the conventional focus on capital flows and/or capital switching towards understanding the assembly and circulation of urban air rights.

Chapters 4 – 6 introduce how various types of air rights act, react and develop their itineraries and careers in the Taipei Metropolitan Area. Chapter 4 navigates across the three different types of urban air rights that have gained major prominence in urban Taipei since the late 1990s: Bonus Floor Area (BFA), Transferable Development Rights (TDR) and Incremental Floor Area (IFA). Building on the notion of urban air rights as market devices, Chapter 4 specifically expound the workings of air rights as market devices into two dimensions: their economic mechanisms and forms. On the one hand, the mechanisms of urban air rights trigger socio-technical workings that involve the economization of urban air rights, comprising processes of commodification and marketization that might fold into the capitalization process. On the other hand, urban air rights in forms of bonus, offset and permits are demonstrated not only as things which make profits and create assets but also engage in more-than economic, socio-cultural transformation. Furthermore, to demonstrate the kind of spatial assets air rights have created, I use metaphors of spatial credit, coupon and derivatives to illustrate the synergies of urban air rights with financial products. To demonstrate the assembly of different types of urban air rights, this chapter includes two examples. The first is a case of housing renewal which demonstrates how specific types of urban air rights - the BFA and TDR – are assembled to lever syndicated loans without additional collateral to fund a housing renewal project in a low-to-middle income settlement. The second case introduces the use of IFA as a value capture tool for financing transport infrastructure. Chapters 5 and 6 examine two popular air rights instruments - BFA and TDR, respectively - alongside their market ecologies in

urban Taipei. In parallel, Chapters 4 to 6 are tasked with illustrating various dimensions of ‘overflowing’ within the air rights economy. Chapter 4 first begins by introducing some visible and tangible material manifestations in the urban landscapes across East Asian cities. Chapters 5 and 6 then guide us into subtler and inconspicuous ways of relational overflowing that are exemplified through a series of socio-cultural and environmental contestations.

Chapter 5 introduces the Bonus Floor Area (BFA), its operations and implications in urban Taipei. This chapter explores how BFA, as a type of one-off, non-transferable spatial credit, develops its popularity amongst politicians and property owners. Through their rapidly expanded applications in various political campaigns and policy causes, urban air is held as both a virtual asset for developers and investors and as ambiguous assets – the spatial credits/ coupons - for property owners. The societal overflowing, as illuminated in this chapter, resides inconspicuously in urban neighbourhoods under redevelopment agenda. This chapter will discuss how such neighbourhoods are converted into the spatial version of a coupon pool (Froud et al. 2002; Erturk et al. 2008). Such process reveals the emergence of place-based joint ventures that make residential status or property possession as coupons that converts urban neighbourhoods into a volumetric asset pool. As such, the assembling of expert-led technical operations bring forth a subtle change in power relations between property owners and market intermediaries. In brief, this chapter will demonstrate how BFA functions as a market device which transforms socio-technical workings; and a kind of spatial credit/coupon which triggers socio-cultural transitions. Such socio-cultural transition is further elaborated through two different examples that employ the conception of coupon pool urbanism. The first case focusses upon a project site of housing renewal, in order to examine how BFA has been a contested asset pool between the ‘agency’ developer and ‘shareholders’. The second instance zooms out and looks at the agglomerative effect of BFA in stimulating the boom of a special district in New Taipei City.

Chapter 6 explores Transferable Development Rights (TDR), market ecologies and its relational geography. As a kind of air rights characterised by enhanced mobility and detachability, TDR in Taiwan develops territorially-operated secondary markets. The TDR markets in urban Taipei have gained influence over the production of air rights stock by their context-specific encounters with urban fiscal and taxation policies. As such, the TDR market provides an entry point to illustrate how urban air rights enable the organic assemblage of multiple markets. Furthermore, this chapter exhibits how urban air rights are manifested as spatial derivatives that allows developers and investors alike to hedge, arbitrage and speculate on the risk-reward investment in high-rise buildings. The geographies of arbitrage are demonstrated by two examples that address different types of TDR and the processes by which they enact the arbitraging practice across urban sites. The first case study depicts the dynamic relations of air rights between different sites through the socio-environmental overflowing. By exploring the agglomerative effect, the chapter depicts how an historic conservation project in the Dadaocheng area prompts a high-rise construction boom elsewhere newly-developed areas in Taipei City. The second example focuses on how a new policy initiative extends the TDR instrument to the policy realm of waterway rehabilitation, stirring up contested market reactions.

Reflecting upon the ongoing proliferations of urban air rights, Chapter 7 recaps the key arguments of the dissertation. Meanwhile, it highlights how, by developing the lens of urban air rights, this thesis contributes to an epistemic project of re-describing urban financialization, understanding the profound socio-cultural and environmental implications of air rights economy and directing future potentialities of research.

2

Literature Review

How does actualization occur in things themselves? Why is differentiation at once both composition and determination of qualities, organization and determination of species? Why is differentiation differentiated along these two complementary paths? Beneath the actual qualities and extensities, species and parts, there are spatio-temporal dynamisms. These are the actualizing, differentiating agencies. They must be surveyed in every domain, even though they are ordinarily hidden by the constituted qualities and extensities.

Deleuze, Difference and Repetition, 1994, p. 163

2.1 Introduction

How can the various types of urban air rights, their specific compositions and ways of organizing be understood? And why does the study of urban air rights matter for geographers and social scientists? This project takes a Deleuzian-inspired approach. It deciphers the processes of actualization and differentiation through which urban air rights are assembled. In doing so, this project also aims to contribute to a renewed understanding of what geographers variously configure as the ‘urban–finance nexus’ (Aalbers 2012; Buckley and Hanieh 2014; Turok 2016). As such, this thesis is underpinned and informed by ‘assemblage thinking’ which understands processual change to be characterized by emergence, contingency, indeterminacy, multiplicities and potentialities (Anderson and McFarlane 2011; Baker and

McGuirk 2017).

Assemblage thinking provides the vantage point from which this chapter reviews a range of existing literature that is relevant for understanding not only the processes that constitute urban air rights, but also how urban air rights figure in broader operations that financialize the urban landscape. The chapter begins by reviewing the extant financialization literature. Section 2.2 centres on the relationships between these processes and the urban built environment. This section explores existing research on the financialization of urban processes by visiting two main approaches: political economy and cultural economy. Although the field of urban geography has developed a long lineage of critical analysis through the political economy approach, this thesis attempts to develop a cultural economy account of urban financialization. Grounded in assemblage thinking, the cultural economy account developed here seeks to understand financialization as the contingent combination of various economization processes that typically comprise commodification, secondary marketization and capitalization.

The second section of the chapter (2.3) is concerned with understanding the incorporation of urban air rights into the urban-finance nexus. It begins with a discussion of the making of urban air rights as a form of virtual property rights, next moving to rent theory. By drawing on an understanding of the capitalist logic of M-C-M^l offered by recent contributions to rent theory, it attempts to explain *why* urban air rights can feature as value-in-motion across the multiple processes of financialization (i.e. as commodities, objects of secondary market trading, and as assets in hedged portfolios).

The third section of the chapter (2.4) focuses more narrowly on the contingent socio-technical operations that assemble urban air rights, processes that are essential for the urban air to be incorporated into urban financialization processes. It turns to the cultural economy literature on valuation and market devices, as both

provide resources for understanding *how* urban air rights depend on modalities of valuation and operate to make economization processes possible. As will be detailed in section 2.4, the theoretical approaches of valuation offer an alternative to apprehend the value and valuation of urban air rights, which primarily reflect the production of air rights as ‘market devices’ (Muniesa et al., 2007). Such a theoretical framework enables an analysis that foregrounds how the financialization of the urban rests upon the emergence and consolidation of socio-technical practices of commodification, marketization and capitalization of urban air rights.

The fourth (2.5) and final (2.6) sections of the chapter concern the implications of urban air rights for the politics of urban financialization. In particular, given that urban air rights ‘overflow’ (Callon 1998) the economizing and financializing processes that they frame and thereby give rise to matters of social concern in popular urban politics, these sections ask how this can be understood with reference to the existing literature on the contestation of urban financialization. Section 2.5 juxtaposes Callon’s conceptual pairing of the framing and overflowing of economization processes with the critical urban debates on the rights to the city. It proposes a new frame to reconfigure the contested urban sites by addressing changing techno-social conditions and urban-financial subjects. To reconfigure contemporary urban contestations that are premised upon ‘market society’, this section discusses how a ‘stitched-spheres’ worldview allows us to re-approach variegated rights claims that are at the conjunction of the financialized urban politics. Section 2.6 summarizes the chapter.

2.2 The Financialization of Urban Processes

Over the last two decades or so, the financialization of socio-economic life in multiple realms and across the globe has drawn renewed scholarly attention. The concept of ‘financialization’, as French, Leyshon and Wainwright (2011) suggest, broadly describes the socio-economic transformation whereby the financial sector

and financial markets rise to a dominant or semi-dominant position in economic output. Macroeconomic and regulationist approaches have identified, for example, the emergence of the financial-led accumulation regime (e.g. Boyer, 2000; Krippner, 2005; Lapavitsas and Powell, 2013). More specifically, however, financialization is a descriptor of ‘the processes and effects of the growing power of financial values and technologies on corporations, individuals and households’ (French et al. 2011, p.799). Here financialization is considered to be ‘more a qualitative than quantitative shift’ (French et al., 2011, p. 807).

As such, and as van der Zwan (2014) summarizes, it is possible to identify two strands of literature. On one side, studies on the financialization of corporate behaviour concerned with the ways in which the maximization of shareholder value has surpassed other constituents of a corporation; on the other, studies of financialization of everyday life tend to focus on the implications for individuals and households. This latter strand also includes more work that adopts cultural economy approaches. This tendency of academic development is underpinned by the theoretical resources of post-structuralism and the advent of the social studies of markets and finance. While cultural economy approaches characterize the object of study as always reconfiguring and reconstituting through dynamic and mutative relations (du Gay and Pryke 2002; Pryke and Gay 2007; Amin and Thrift 2008; Cochoy et al. 2010; Langley and Leyshon 2012); they also recognize the importance of socio-technical operations and the production of financial subjectivities to the stitching of different spheres of life into financialization processes. As Haiven (2014, pp. 4–5) puts it, financialization is not a ‘caustic and unscrupulous top-down imposition of power and ideology on the innocent and passive field of everyday life and lived cultural practice’, but is instead the work of ‘rhizomatic manifestations throughout social and culture life’. As such, research has explored a wide range of objects and subjects, from the public purchase of consumers’ credits, housing mortgages, financial literacy, financial investment and risk strategies, to the nexus of credit-debt relations and the reformation of virtue and social value (Lai

Forthcoming; de Goede 2005; Langley 2008; Allon 2010; Hall 2012; Lazzarato 2012; Appleyard et al. 2016; García-Lamarca and Kaika 2016).

Theoretical developments within the study of the financialization – especially but not exclusively, as they centre on the financialization of everyday life – contrast with the Harveyian-inspired political economy approach that has predominantly shaped the study of the financialization of urban processes in human geography. Within a Harveyian-inspired analytical framework, ‘urban processes’ often equate to the broader urban dynamics driven by capitalist socio-economic activities and the workings of the financial circuit of capital in particular. For instance, in David Harvey’s seminal work ‘The Urban Process under Capitalism: A Framework for Analysis’, the urban process is ‘the creation of a material physical infrastructure for production, circulation, exchange and consumption’ (1978, p.116). In particular, concerns with the relations between circuits of capital underpinning capital accumulation have framed this Marxian version of urban processes, such that built environments function as pools (part of the secondary circuit of capital) of capital input which derive from the excess surplus capital of industrial production (the primary circuit of capital). And ‘capital switching’ is the term that has been adopted to phrase such financial capital input into the secondary circuit of investment, inputs that increase when the crisis tendencies of under-consumption and the falling rate of profit emerge in the primary circuit of capital (Harvey 1985; Aalbers and Christophers 2014).

The understanding of the financialization of urban processes that follows from Harveyian political economy serves to position the built environment as the strategic object of investment for the contemporary financial-led accumulation regime (Bayliss 2014; Fernandez and Aalbers 2016). Investment returns as rent are extracted from urban sites, and this reshapes class and property relations in the city (Harvey 1974; Haila 2015; Fields and Uffer 2016; López-Morales 2016). At the same time, urban sites are earmarked as new opportunities for the fiscal resource for

physical infrastructures and ploughed back into growth coalitions (Castree and Christophers 2015; Ashton et al. 2016; Pacewicz 2016). And, ultimately, all urban sites are potentially points for the regime of financialized accumulation and the extraction of rent that papers over the contradictions of the periodic crisis of over-accumulation (Arrighi 1994; Aalbers 2008; Brenner et al. 2011).

The limits of the Marxist political economy approach to the financialization of urban processes that was pioneered by Harvey come sharply into view when it is juxtaposed with the theoretical developments found within the broader financialization literature. As Gary Dymski reminds us, Harveyian political economy provides a ‘relatively orthodox, top-down conception to urban accumulation’ (2009, p.434). It is as if urban processes are always and already determined by the dynamics of capital accumulation. The challenge taken up by this thesis, then, is to crack open the oftentimes top-down and structural reading of the financialization of urban processes provided by Marxist political economy by emphasizing the co-constitutive relationship of the dual processes - ‘financialization’ and ‘urban processes’ (Hall 2011; Hall 2012). For example, Halbert and Attuyer (2016, p.1350) depict this co-constitutive relationship through the interdependencies between capital markets and built environments that ‘are the outcome of a socially and technically mediated process involving multiple financial and non-financial actors’.

Under an assemblage approach, understandings of the financialization of the urban process move away from a Heideggerian sense of ‘place as stabilised being’ and towards a Deleuzian sense of ‘places of becoming’ (Dovey 2010, p.13). An assemblage approach to study the financialization of urban process is also not limited to institutional changes in corporate behaviour, strategies and values, but extends to situating the urban sites and lives at the conjuncture of the social-cultural transformation (Martin 2002; Langley 2008; French and Kneale 2009; Haiven 2014; Pellandini-Simányi et al. 2015). A further benefit of an assemblage approach

to the co-constitution of urban financialization is thus that it begins to address one of the core problems of financialization research, i.e. there is a danger that the ‘totalizing tendencies’ of putting ‘financialization’ at the centre of empirical worlds (Christophers 2015) result in geographically anaemic analyses built largely upon a relatively limited and actually quite specific set of Anglo-American experiences (Christophers 2012; Fields 2017b).

Moreover, when viewed from the vantage point of cultural economy research into financialization, a Harveyian analysis of the incorporation of urban processes into financialization often ‘misses the operative dimensions of circulation’, especially ‘the formative stages, the processes and practices that shape and generate the flows and circulation’ of capital (Pryke 2006, p.63, quoted from Ouma 2016, 89). A structurally rigid analytical framework may risk overlooking how market practices surrounding money and finance are actually constituted through ‘often far-flung connections that enroll and reformat organizations, economic relations, labor and nature itself at different sites in often surprising configurations’ (Ouma 2016, p. 89). A cultural economy framework, then, understands economic practices as variegated, shaped through different customs, regulations, social norms and political dynamics and thus approaches the object of study through examining their day-to-day operations and operative imaginaries (Cooper and Konings 2015; Hall 2017). Likewise, latent political economic studies such as Mezzadra and Neilson (2013, p.15) deepen the notion of ‘operations of capital’ by identifying operations as ‘a set of links or relations between things’ that fabricate the world and ‘produce the connections, chains and networks that materially envelop the planet enabling and framing the labour and action of subjects well beyond those directly involved in the execution of the operation itself’. As such, ‘operations of capital’ could be seen as the common ground between political and cultural economy approaches that consider the analysis of financialization to require careful examination of how ‘the material interfaces and multifarious devices make finance “hit the ground”’ (Mezzadra and Neilson 2015, p.2). Highlighting the importance of material

interfaces and multifarious devices that create the ‘encounters’ between finance and urban, it is thus important to examine the ways in which ‘highly sophisticated techniques and technologies of knowledge and calibration impinge upon the social relation of capital that continues to dominate contemporary forms of life and cooperation, notwithstanding its multiple mutations and fractures’ (Mezzadra and Neilson 2015, p.2). Market operations surrounding air rights instruments, then, postulate an investigation into the aspect of air rights as *intangible* property and their possible pathways to commodification, valorization and materialization.

Viewing the operations of air rights as a significant jigsaw puzzle of urban finance, this thesis suggests that an assemblage approach to the co-constitution of urban financialization would benefit from unpacking urban financialization into its multiple and more-or-less discrete economization processes and their relations. By the notion of ‘economization’, Çalışkan and Callon (2009, p.369) argue it contains the ‘assembly and qualification of actions, devices and analytical/practical descriptions’ that are ‘economic’ for both social scientists and market actors. This project, then, frames the financialization of urban processes as multiple and multiplied economization – i.e. commodification, marketization and capitalization (see also Ouma, 2016, 2014; Visser, 2017). In so doing, it is capable of enunciating urban financialization in those unlikely places with precise manner. For instance, how urban goods, facilities and services are made into assets by the operations of markets, agencies, encounters, pricing relations and the maintenance of a market that inherently manifests financial practice, logic and rationale. This version of financialization of urban process neither develops in self-contained financial channels (e.g. financial markets) nor excludes other spheres. In other words, empirical investigation can reveal how moments of (de)financialization inhabit the juncture between the *multiplicity* of social, cultural and environmental spheres (Christophers 2017).

To further illustrate the benefits of a cultural economy account and incorporating

concerns with the operations of capital into the analysis of urban financialization, consider one of the key issues that occupies political economy accounts and is also central to this thesis; namely, how enhanced *spatial liquidity* emerges from spatial fixity.

Broadly speaking, the treatment of ‘liquidity’ has different renditions in a Harveyian-inspired political economy and cultural economy. In the conventional Marxian reading, ‘liquidity’ could be understood as a way to resolve the inherited contradiction of capitalism (Harvey 1985; Jessop 2006), namely the tendencies of overproduction of commodities and the over-accumulation of capital and labour force. In this sense, creating ‘liquidity out of spatial fixity’, according to Gotham (2009), is a serial struggle through the endeavours of ‘annihilat[ing] space through time’. A cultural economy approach, however, interrogates the creation of mobility/liquidity by unfolding the contingent operations and hybrid agencements (Hall 2011; Langley 2014). The binary of spatial mobility/liquidity, in this sense, has been challenged by the actual operations through which airspace as intangible property/asset has shifted between increasing numbers of buyers and sellers with multiple platforms of trading. We can identify at least three strategies to enhance spatial mobility/liquidity: the spatial liquidity created from materials (e.g. demolition and rebuilding); ownership transfers (e.g. real estate trades and securitization of housing loan); and external incentives (e.g. the tax policies). More concrete empirical studies have examined the existing institutional practices associated with spatial liquidity: (1) the increasing trading of property titles (Corpataux et al. 2009); (2) the securitization of real estate (Gotham 2009); (3) the incentives of tax policies (Weber 2002; 2010); and (4) the creation of portfolios constituted by non-performing loans (NPL) that are backed by real estate (Byrne 2015; 2016). Building upon these existing studies, this project seeks to shed light on the conventional practices that manifest spatial liquidity *during the formative stage* of real estate ‘assets’, a part of the process largely overlooked in existing studies. A study of air rights instruments focusing on the three strategies of injecting spatial

liquidity – material, ownership and external incentives – can reveal how spatial mobility/liquidity comes into play in processes of urban financialization.

To a certain extent, what urban air rights profoundly transform in the urban-finance nexus here is by launching operations that hinge upon valorization and materialization at once; tying together multiple ‘processes of becoming’. Some of the stylized operations of urban air rights, as will be shown, including the portfolio management of air rights, make possible the process of asset-making. The emerging shareholderism prompts land and homeownership transmuting into shares, broadening the risk-return horizons and weaving household and individual wealth into creditor-debtor relations. And the spatial mobility/liquidity, primarily in forms of ownership transfers and incentives, relays public debt financing by the marketization of air rights credits.

2.3 Virtual Space as Value-in-Motion

This section examines how urban air rights are incorporated and employed in the urban-finance nexus. Specifically, by focussing on why urban air rights are accredited and appreciated, namely the spatial process of Marx’s M-C-M¹ formula, the following sub-sections seek to understand the reasons underpinning urban air rights’ value-in-motion. In contrast to Marx’s idea of capital flow as value-in-motion¹¹, this dissertation experimentally shifts the focus from capital to virtual space. In so doing, it makes visible polyvalent airspace and its inherent value contestations. Moreover, by replacing ‘capital’ by ‘virtual space’ as the object of value-in-motion, it is an analytical attempt to be closer to the complex urban

¹¹ This takes cues from Marxian geographer David Harvey (2017), whose recent work clarifies capital as value-in-motion by reference to four fundamental processes within its process of circulation. For Harvey, capital’s value-in-motion involves complex processes of *valorization, realization, distribution, and capturing*, whereby the production of capital lies in the forms of surplus value upon commodities, being redistributed amongst various claimants and then converting back into money capital.

empirics where frictions, suspensions and disruptions occur over the process of value-in-motion. Below, two strands of urban political economy literature – theories of property rights (2.3.1) and theories of urban land rent (2.3.2) – serve to help understand what propels urban air rights toward the M-C-M¹ process and features in the multiple processes of financialization.

2.3.1 Theories of Property Rights

Property rights theory is significantly implicated in the patterns of institutional development and policy applications around urban air rights. Concerns to extend property rights to new domains tended to be grounded in an awareness that the early neoclassical economists neglected the role of ownership arrangements in addressing market externalities and facilitating the control and allocation of common resources. During the 1920s, the economist Arthur Pigou was the first to suggest that externalities could and should be included within market pricing mechanisms. To be clear, the Pigouvian approach highlights the importance of state interventions aimed at internalizing the costs onto those who should be responsible for the negative externalities. By highlighting the Polluter Pays Principle (PPP), for example, the Pigouvian implication has widely shown in the environmental policy instruments such as subsidies and taxes, such as eco-taxation (O’Riordan 2014).

The Chicago school economist Ronald Coase (1960) proposed a contrasting ‘property rights theory’ from the late 1950s onwards. Coase criticized Pigou’s theorem as it neglected how the causality of overflow could be ‘reciprocal’ – i.e. that ‘externality’ is often an issue of incompatible allocations of resources (Cerin and Karlson 2002). In the Coasian view, property rights could be the incentives motivating players to reduce externalities. Besides, since both property rights and liabilities are clearly identified, in theory, these facilitate an efficient process of contractual bargaining (Lai 2011). Put differently, specification of property rights could enact the corrective forces of the market mechanism.

In the practical realm, property rights are prevalent as both governance tools and market devices that transform values into the market exchange. However, what is missing here is that the voluntary mechanism proposed by Coase and his followers requires that property right boundaries are clearly drawn and validated. Such steps require intensive state functionaries, for example, public authority that utilizes government regulations and protocols to assure their use values, and that validates the (eminent) property ownership and transfer (see Felli, 2014). In short, all of these ultimately demand state intervention in ways that passively scrutinize and actively protect transactions.

Theories of property rights are exemplified by the excessive yet shadowy production of urban air rights in the forms of bonuses, offsets and permits. Urban air rights, as rights to property, developed during the regulatory shift from ‘command and control’ frameworks to ‘cap-and-trade’ systems. Key to this process is the imposition by government of a ceiling on development, creating a gap between what is already present and the statutory limit that can be turned into market potential. In the case of environmental or resource conservation, this gap allows pollution or resource consumption to take place up to a certain level or within a set quota. In short, state intervention to set a limit propels the commodification of development (pollution) rights and resource allocation. Different forms of urban air rights reflect a balance of both Pigouvian and Coasian ideas – two distinct and opposite theorems in contemporary environmental governance. While bonus credits entail the Pigouvian proposal of ‘subsidizing’ environmental adaptation measures, they also reflect the Coasian idea of market incentives. By contrast, offset credits and tradable permits clearly show heightened degrees of the Coasian idea.

In brief, this summary of property rights theories highlights how airspace is validated as ‘an economic category embodied in price’, although, at the same time, airspace also embodies ‘values as idiosyncratic social and moral opinions’ (Bollier

2017, p.7). However, the solutions proposed by the property rights theorists have a major flaw, which is that they equate value to price and thus simplify value production to object production (Karatani 2003). This simplistic presumption, for Callon (1998), only works on occasions where the negotiation and drawing up of contracts are 'cold situations' (i.e. when actions and contents for negotiation are minor, controllable and negligible). However, when controversies dominate the situation, the ideal Coasian theorem that attempts to measure object matters that are unmeasurable would seem to be reckless. This is because the pricing mechanism might either exclude various complex values cohabiting with the object matter or over-magnifying the power of commensuration.

2.3.2 Theories of Urban Land Rent

The previous section reviewed economists' perspectives proposing that solutions to conflictual resource allocation lie in employing the economic values of 'property rights'. Relatedly, this section reviews a fundamental tenet of the urban political economy approach: urban land rent theory. Acting, in effect, to critique and politicize the property rights-based approach, urban land rent theory focuses on the politics of profit-making and resource redistribution (Haila 2015; Ward and Aalbers 2016).

To critically examine the profit-making of spatial commodities, urban land rent theory and 'rent-gap theory' (Smith 1996; Haila 2015; López-Morales 2016) have been the major theoretical portals. Broadly elaborated through the Marxian theory of rent, theorists have taken up the problematics of property rights from a starting point of value complexity. In urban land rent theory, value complexity is expressed through contrasting the heterogeneity of values (in concrete form) against the homogeneous value of exchange (in abstract form). Considerable conceptual work on (class) monopoly rent and absolute rent (Harvey 1974; Harvey 2007; Ramirez 2009; Ward and Aalbers 2016) has offered incisive insights into the dialectical

politics of value and values.

The whole point of using the concept 'rent', claims Harvey (1974, p.240), is as 'a kind of rationing device' which, in the view of neoclassical economists, allocates a scarce factor of production. As such, rent can be seen as 'a necessary coordinating device for the efficient production of value' that has created a perception that it is 'a payment to a scarce "factor" (which is a "thing" concept) rather than as an actual payment to people' (ibid.). While Marxian rent theorists use the same analytical metric 'rent', their critical purchase on the concept is to make the 'rent collectors/rentiers' visible, along with the ways they claim rent.

To this end, we can see the limitation of rent theory. While urban land rent theory takes us further from examining the function of price and closer towards understanding inherent conflicts of values, it is a useful means of gauging how profit-making and wealth redistribution underlie the commodification of urban air. However, urban rent theory does not recognize the complexities and contingencies of *relational* valuations. By relational valuations, I mean the need to consider the complexities and contingencies within the valuations of the urban airs. Such complexities and contingencies could be unveiled more clearly by studying the operations of air rights. Examining the understudied moves of urban air rights, the invisible layer of spatial liquidity emerges against the norm of capital mobility versus spatial fixity. To do this, we need to consider the techno-social conditions that enable vertical sprawl as assemblage-in-action (Jacobs et al. 2007; de Kam and Lubach 2007; McNeill 2009; Jacobs and Cairns 2012; Graham 2016a) in the register of the M-C-M¹/ M-M¹ process.

Urban land rent theory, then, appears insufficient for two reasons. First, the treatment offered by urban land rent theory has vacated the spatial characteristics with which 'rent' affiliates. Rather, it stresses the 'rent gap' that is generated between potential and capitalized land rents. A second, more profound reason has

to do with the theoretical skeleton of urban land rent theory – Marxian labour theory of value (LTV). This theory distinguishes how the mode of profit-seeking changed from the use of coercive power embedded in the feudal serfdom system to being based on the nature of land fertility, which differs place by place. LTV considers that the price of land lies in its ‘productivity’, which comes from the needed time of labour input, known as ‘socially-necessary labour time’. The source of ‘productivity’ is either defined by the *inherent* nature of soil (such as fertility), which has been conceptualized as differential rent I, or improved through investment (such as the classic example of improving the fertility of the soil), known as differential rent II. Alternative strands of Marxist theory understand this specific improvement differently. Some insist that the notion of human-labour is instrumental in distinguishing the (genuine) commodity from (speculative) rent – the very urban political of speculation (see Felli, 2014). ‘Commodity’ involves the labour process, which is a contributing factor to value creation, whereas ‘rent’ is fundamental a process of $M-M^1$ and is therefore not value creation but value extraction. However, such a statement is ungainly as the implicit moralizing of labour actually omits or negates the critical work of market intermediaries and bureaucracies in this process. Moreover, with this approach, the changing techno-social conditions remain black-boxed and thus could prevent us from recognizing the emerging politics of the contemporary urban-finance nexus.

To address the operations of capital as becoming rent and their attendant techno-social changes, the philosopher Robert Meister (2016) offers an innovative lens. He takes the global technologies of financial production into consideration, accounting for the material registers of the resource extraction and commodity production. As Meister articulates, ‘how technology can be used to both create and measure a spread that can be arbitrated by investing in an asset that serves as a vehicle to preserve and hence accumulates value’ exactly reflects Marx’s account of ‘relative surplus value’ (Meister 2016, p. 156). In short, from a rent theorist perspective, this is to recognize differential rent II – the rent arising from increases in productivity

because of investment on the land – in such a way as to include the socio-technical input (Ward and Aalbers 2016). Meister further marshals his claim, reimagining the general formula $M-C-M^1$ by replacing the ‘commodity’ with a ‘hedged portfolio’. This hedged portfolio, as he describes, has attuned the ‘producers’ goods’ as part of a portfolio. It is an ensemble of debt and equity that can be priced as capital, a vehicle of accumulation.

Furthermore, such a hedged portfolio, Meister (*ibid.*, p. 161) argues, encompasses three ways of purchasing capital assets: ‘(1) as an arbitrage opportunity; (2) as a play on the spread between two ways of valuing labour under the assumption that the wage can be neither invested nor collateralized; and (3) as a fully hedged portfolio based on the formula for put-call parity’. In a similar vein, Randy Martin (2016) in the same collection illustrates the idea of understanding financialization through a transition of $M-C-M^1$ to a process of $M-D-M^1$, D standing for derivatives.

A minor difference of the two propositions between Meister and Martin looms large in this thesis’s case study of the air rights economy. While the trading of derivatives features its exemption from the delivery of actual goods, the trading of urban air rights often comes with the promise of delivering physical spaces, especially when it comes to urban redevelopment. As such, considering the case study of air rights trading, Meister’s rendition is more appropriate to capture the techno-social changes and its subsequent tractions. It enables us to relate urban air rights to financialization processes not merely as property claims and commodities, but also as featuring in hedged portfolios. This ensemble of a hedged portfolio is composed of dynamic market processes that set prices of urban air rights on puts and calls; trading in secondary markets; generating equity types of urban air rights with nearly-zero cost and so on. By proposing this reframing of financialized spatial production, this thesis suggests that urban air rights are not only present in high-rise buildings and the technical assembling of concrete, steel and glass; but also the techno-social assembling of a ‘fully hedged portfolio’, comprising debt and equity,

valuing land and urban skies.

2.4 Theories of Valuation and the Work of Devices

Earlier we discussed the heuristic framework that thinks of high-rises as a hedged portfolio that replaces ‘commodity’ in the M-C-M¹ process. From there, this section charts established discourses and conceptual tools in cultural economy approaches, the theories of valuation and the concept of ‘market devices’. Extending the understandings of ‘operations’, both threads of literature address an unconventional labour form in Marx’s time: that is the contingent socio-technical operations that make intangible airspace tradable and appreciable. To understand *how* urban air rights have operated the economization processes, the theories of valuation offer a novel way to understand the vital role of air rights in making profit and asset through modalities of valuation. Besides, the work of devices unveils how air rights are involved in complex social-technical arrangements of market-making.

Theories of valuation have emerged within social studies of markets. This strand of work adopts a pragmatist approach, directing attention to the socio-technical practices through which valuation is achieved – i.e. it provides a perspective capable of exploring how value is ascribed to urban airs. In this way, it avoids falling into the problem of judging whether virtual things have value or not. This pragmatic lens, in advance, leads us to the conceptual work of ‘market devices’. The concept of ‘market devices’ allows us to unpack how urban air rights work in the urban-finance nexus. From this perspective, high-rises are no longer just an end product of architects and civil engineers. Rather, they are the result of operating air rights as market devices. In other words, high-rises embody techno-social shifts from architectural authorship to the assembling profession. And, in particular, it makes visible the shifting weight between different professions – namely the operations of market intermediaries in the M-C-M¹ formula.

2.4.1 Valuation Theories: Probing the Values of Urban Air Rights

Studies of valuation have emerged as a relatively new domain at the convergence of research interests in humanities and social studies of market/finance (Kjellberg et al. 2013). To avoid falling into the traditional political economy conundrum surrounding an object and its representation, we may look at valuation as ‘an operation that is real as soon as it takes place, an operation that produces reality as soon as it has effects’ (Muniesa et al. 2017, p.15). Understanding valuation as a kind of operation, it helps to unpack the ‘intertwining of heterogeneous modes of extraction with the seemingly metaphysical qualities of contemporary abstraction’ (Mezzadra and Neilson 2015, p.6) and make economic and financial imperatives hit the urban ground.

Grounded in an empiricist methodology and pluralistic ontologies, work on the politics of valuation has developed through a surging research interest in the techno-politics in contemporary societies. As Helgesson, Krause and Muniesa (2017, p.3) explain, regulations, systems, instruments, devices and infrastructures are now often mediums that shape and deliver various types of valuation, and are therefore key to the political control of things, such as pricing, appraisal, accounting, assessing, rating, ranking and so on. Valuation studies understand the value of exchange as deriving from a *process* of how people consider something and act as the *result* of its own material condition (Haywood et al. 2014). In advancing this view, the transient materiality of air rights further complicates the account of asset-making in real property because it further unpacks the black-boxed mechanisms of economization of air rights.

Valuation studies concern the ways that things develop their own careers and values are attributed in situations of exchange. Taking this anthropological heuristics forwards, Çalışkan and Callon propose that the pragmatist approach of ‘modalities of valuation’ could deliver stronger precision than the structuralist idea of ‘regimes

of value'. While 'regimes of value' present a worldview that agents are bound to be restrained by the structures and that values are relegated to the repercussive effects, the pragmatist approach appreciates the complexity between things, agents and their contexts by shifting attention from structure and effect to the processes that constitute the production of values. To borrow from Çalışkan and Callon's thought-provoking question (2009, p.386):

'If goods do not possess a value a priori, if they can suddenly experience a change of status and if the boundaries between spheres of circulation can be transgressed by some goods, then why not abandon the idea of spheres, regimes and pre-framed statuses?'

This question suggests that 'modalities of valuation' could enable a processual reading of the sequences of transformation (2009, p.386). The processual reading enacted by valuation could shape an empirical ground for observing transforming forms of socio-political control. In contrast to valuation practices that function to domesticate plural values into singularized forms, the theoretical approach of valuation works from the opposite logic – it seeks to understand the relations and assemblages through which valuation occurs. This relational approach to valuation is tasked with cracking open and sustaining the plurality of values; such that the spill-over, ill-defined relations, entanglements and possibilities of the 'object' of valuation could be comprehensible (Hennion 2017). This is identified through the dissonance of different value systems within and beyond an individual, institution, group, society and so on (Antal et al. 2015; Simone and Pieterse 2017). In this realm, valuation studies understand themselves as the opposition to the technologies of valuation by invoking moments of contestation, of 'disruption, conflict, dissent and controversy' (Helgesson et al. 2017, p.3).

What this thesis takes from research into valuation is the analytical lens of relational valuation. In the case of the air rights economy, the malleability of urban air rights opens up an enquiry that unfolds tall buildings from a 'single item' into multiple

threads of air rights and their respective valuations. The value associated with the dynamic assemblage of urban air rights can be traced through how different market actors perceive, trade and represent in economic forms. In this way, it significantly maps across spheres of circulation (i.e. property markets, secondary trading markets and capital markets). Put differently, the valuation of air rights can be perceived as the decomposed ‘parts’ of the physical assembly of tall buildings. This new urban epistemology prompts us to recognize there are more ‘active parts and processes’ to take into account within processes of value creation and contestation. Such a relational reading of the sprawl of vertical assemblies enables us to recognize the value complexity (Zelizer 2010; Alexius and Hallström 2014) and thus shifts the focus from value to valuation (Muniesa, 2011; Muniesa et al., 2017).

2.4.2 Air Rights as Market Devices for Financialization

To chart the economic careers of the miscellaneous ‘parts’ air rights can take, this section explores the notion of ‘market devices’. Market devices are a cultural economy conceptual tool that expands economic ‘operations’ in detail. While market devices refer to ‘a wide array of objects’, either material or discursive (Callon and Muniesa 2005; Muniesa et al. 2007), they intervene in ‘the construction of markets’ and are ‘objects with agency’ in the processes of economization (Muniesa et al. 2007, p.2); they ‘act or they make others act’ (ibid.). The concept of market devices emerged from both the performative and material turn in the social studies of markets. In response to cultural economists’ concerns with the socio-technical tools and techniques mobilized in processes of market-making, ‘market devices’ are an analytical tool that unpacks the complex process of shaping, performing, and reconfiguring the market economy. (Callon 2007; Pryke and Gay 2007; Hébert 2014). It is also a conceptual tool that apprehends the operations of capital through the ways that ‘market devices, market structures and forms of capitalism are connected and interwoven’ (see Cohen, 2017, p. 9).

The conceptual deployment of ‘market devices’ is often associated with the development of two types of research concerns. First, it foregrounds the acts and impacts that mediate and valorize the mundane operation of calculative acts (Ferreira 2017). Second, it is sometimes combined with the Foucauldian notion of ‘dispositif’ and the Deleuzian reading of ‘agencement’ to embody ‘constellations of distributed agency’ within the economic process (Berndt and Boeckler 2011, p.560). Here the emphasis on ‘distributed agency’ suggests the object of study itself be reconsidered, as ‘the very result of these compounded agencements’ so that, for example, ‘subjectivity is enacted in a device’ (Muniesa et al. 2007). Existing empirical studies of market devices highlight how they exist in everyday artefacts, agents, ideas, techniques, machines, models and procedures, and are employed in various processes of economization. In relation to the air rights economy for instance, market devices can be found pervasively in zoning codes, policies and regulations, as well as in project reports, portfolio sheets, architecture models, contracts, media coverages, and valuation equations that carry out the calculative imperatives.

Nonetheless, recent work considers the limits of the ‘market device’ concept and is critical of its conceptual potency. Liz McFall (2009) has remarked how research on market devices tends to produce accounts characterised by apolitical banality. However, it was exactly the thick description ‘market devices’ could provide that has enabled critical understanding about ‘how the different priorities and purposes of different market devices format the dispositions and skills of the people who encounter them’ (Mcfall 2009, p.279). A second line of criticism, developed mainly in resource and environmental geography, highlights the concept’s inherent anthropocentric framing and its necessary limits for embracing the differential capacities of both non-human and more-than-human worlds (Kama 2015). The third criticism might broadly reflect on the cultural economy approach’s dissonance with mainstream financial economics. As Hardin and Rottinghaus (2015, p.547) argue, the cultural economy of finance has given major attention to the aspect that

technologies are mediating the changes of market behaviour and ‘promote standardisation and coordination’, meanwhile dismissing the other dimension of technologies as market devices, that of their capacity to enable profit-making practices. A fourth line of concern emerges within the realm of social studies of markets. While embracing notions of multiplicity, existing studies of market devices tend to focus on one single market, yet ignore the simultaneity of multiple markets. This tendency has resulted in the employment of market devices in a singular and common-sense notions of market that ignore ‘the existence of multiple, distinct, simultaneous markets’ (Frankel 2015, p.544).

While recognizing critical observations about the notion of market devices, I deploy the concept in this thesis in order to hold together a variety of market-based policy instruments that share this common parameter: urban air rights. A following question would be: what exactly is the difference between a concept of ‘market-based instruments’ and ‘market devices’? At first glance, the ‘instrument’ appears fairly similar to that of ‘device’. However, ‘market-based instruments’ are often seen as politically neutral and ontologically mobile. In traditional policy transfer literature, they are perceived as mobile instruments that can relocate the object of governance from something else into being ‘market-based’ where they are then handled by a market agent to accomplish a certain purpose or end. To an extent, we may say that the market-based instruments are an organ that has a special function within the body. In contrast, the latter, borrowing from Deleuze’s reading of Foucault’s notion of device, the idea of a device is close to the notion of agencement, which highlights ‘the distribution of agency and with which materiality comes to the forefront’, and as ‘a tangle, a multi-linear ensemble’ (Muniesa et al. 2007, p.3). For this thesis, a key difference thus lies in the agentic feature of ‘market devices’.

To explore the agentic feature of ‘market devices’ and the ways in which they function to fabricating the topographies of urban financialization, three possible avenues are proposed. First, we can employ the notion of ‘market devices’ to

substantiate Randy Martin's (2002, p.9) argument that 'financialization must refer to many different processes at once'. In this conceptual articulation, urban air rights as market devices enable an analytical scope of open-ended, dynamic relations of financialization and urban process. While the notion of market devices indicates how a wide range of objects can trigger 'complex operations of qualification, of framing and reframing, of attachment and detachment (Muniesa et al. 2007, p.5), Chapter 4 will further unpack two aspects of air rights – their economic mechanisms (their socio-technical workings that enact process economization) and economic forms (their market agencements that evoke socio-cultural workings) – as market devices. Thereby urban air rights mediate and consolidate the calculative practices, in the making of commodities, markets, credits and assets, in the meantime evolving with the socio-political, ecological and cultural.

Second, advancing the notion of air rights as market devices, the notion has made visible the manifestation of the economic life of urban air rights and their specific business model in capitalizing upon the volumetric growth. The rising business model highlights the assembling techniques of urban air rights. Viewing the making of volumetric structure through hedged portfolios, this offers us an understanding of how such socio-technical practices are key to making high-rise ensembles reproducible and deliverable. In this way, calculative practices of airspace are the ecology-spanning conjunctures across legal institutions, environmental planning, spatial design and various markets. Real-world evidence is found in the making of high-rises which is shifting from crafted enclosures toward reproducible products (Easterling 2016). The making of high-rise buildings, in essence, has revealed a shifting weight from architectural authorship to the assembling profession. What this phenomenon indicates is the tendency of making high-rise/tower complexes reproducible. As such, air rights as market devices chart an underexplored terrain that cultures high-rises as an investment vehicle on its own merits.

Third, drawing on the epistemology of multiple markets (Zelizer 1999; Frankel

2015), the conceptual tool of market devices in this project makes it possible to see how the malleability of air rights is key to their economic lives. That is to say, to follow various types of air rights and their economic lives enables an exploration of the relationship between high-rise ensembles and their heterogeneous ‘active parts and processes’ that are fabricated by the workings of multiple markets.

2.5 Contestations in Financialized Urban Processes

This section explores how the frictions, tensions and contestations that indicate the ‘overflowing’ of air rights economy could generate constructive dialogue with discourses on rights to the city. To understand the ways in which changing techno-social conditions enact the hybrid conjuncture of contemporary urban contestations, the first of this section’s three parts adopts Michel Callon’s conceptual pairing of ‘framing’ and ‘overflows’. Second, it looks at the relevant literature that views market society as sites of contestation as this is critical to see how market devices are necessarily political, for re-evaluating/configuring actions towards the overflows mentioned above. Third, understanding the limitation of current RTTC discourses, it juxtaposes the emerging property-based activism with the resurging interests in debates of urban common(ing). It synthesizes the above two co-existing threads while attending a more-than-human perspective in the contestation of rights claims.

2.5.1 Overflows of the Air Rights Economy

Overflows is the term used by economic sociologist Michel Callon (1998) to re-describe what economists would refer to as the ‘externalities’ of urban air rights. In section 2.3.1 we discussed how economists seek solutions to externalities in the form of subsidies, taxes, and the corrective forces of market mechanisms. In the view of Callon, however, externalities – whether positive or negative – arise from how we ‘frame’ interactions: in short, ‘overflows’ are a consequence of how interactions are

framed and, when contested and politicized, overflows reveal how the ‘costly framing process is necessarily incomplete’ (Callon 1998, p.255).

As Callon has suggested, conventional understanding in economic theory tends to assume that ‘framing is the norm and overflows are exception’. The limits of Coasian property rights theorem is one such case. Thereby problems of resource distribution or property transfer are supposed to be regulated through the negotiation of prices or contracts. This idealistic solution could fail in controversial situations, especially when stakeholders find there is no universal acceptance towards the objectified facts.

Concerns over air rights in popular urban politics are often manifested through the ‘externalities’. Externalities often fall outside of the market frame and yield a critical stake in the sustainment of the circulation of air rights economy and thus constitute as parts of the air rights assemblage. The physical forms of skylines bring direct impacts in creating the symbolic function for the urban landscape (King 1990; Jacobs 2006; Jacobs and Cairns 2012; Graham 2015b) and on access to sunlight from the close proximity of tall buildings. Other physical experiences may include geological mass flows, such as natural resource extraction for construction material, waste movement, ground subsidence and landslides to human-induced seismicity (Elinoff et al. 2017; Foulger et al. 2018). A similar list could also be unfolded by their intangible and less visible interactions. For instance, the linkage with the production of greenhouse gas and the infringed rights to clean air, or more socio-economic dimensions, such as uneven resource allocation, displacement and dispossession.

However, to what extent do the overflows of air rights economy relate to the contestations of urban financialization? Before answering this question, we could briefly take reference from scholarly works on contestations of urban financialization. As many research works have shown, increased dissent towards urban financialization often manifests in ways that the production of space is

charged with frictions against the increasing interdependence between financial capital and urban processes (Martin 2002; Langley 2008; French and Kneale 2009; Pike and Pollard 2010; French et al. 2011; Fields and Uffer 2016; Kaika and Ruggiero 2016; Fields 2017a; Fields 2017b). These works clearly evidence the rising roles of predatory banking services and financial landlords in the wake of the 2008 global housing-financial crisis. Precedents are found in the community organizations and their struggles against predatory equity fund investments (Saegert et al. 2009; Fields and Uffer 2016; Fields 2017b); movements against foreclosure crises enacted by the subprime mortgage chains (Christophers and Niedt 2016; García-Lamarca and Kaika 2016; Sabaté 2016); and more broadly connected, the resistance to financial speculation, such as the movements of Occupy Wall Street (Haiven 2013).

Departing from existing studies, then, this project searches for the inconspicuous impacts of urban financialization that see the volumetric practices not merely as evoking the collective extraction of urban commons resources but also overflowed financialized attempts, logics, rationales and operations in the urban bureaucratic systems, planner and architects' offices and urban neighbourhoods. Indeed, what marks a fundamental challenge to studying contemporary spatial fix is the increasingly complex and multiplied hybridity of overflows. Instead of discerning the changes within the overflows of the conventional spatial fix and urban financialization, this project seeks to make visible the continual layering work of financialization upon the ordinary practice of volumetric densification. To interpret using Callon's words, this involves how the framing of interactions takes into account the overflows.

Changing property relations are indeed a part of the overflows of urban financialization. As such, this research project appropriates the conceptual frame of coupon pool capitalism¹², proposed by Erturk, Froud, Johal, Leaver and Williams

¹² Using the term coupon pool capitalism, these authors frame distinct moments since the late 1980s onwards when corporates and households started enrolling in coupon ownership, forming the

(2008); and readapt it to describing the spatial momentums of coupon pool urbanism. By this notion, coupon pool urbanism depicts the households, the urban majority across class and ethnicity, as being oscillated through the vertical enclosure, being accredited as the fortune virtual owners, and either shaping into or being dumped from the ‘distributional coalition’. Staging urban air and sky as the common resource for coupon pooling, the actualization and differentiation of air into market devices under property rights regimes subsequently leads to diversified rights claims and future scenarios – becoming assets and turning into debts, shrinking and upgrading properties.

As multiple authors have noted, the economies are not external to the ecological livelihoods (Gibson-Graham and Miller 2015); new connections and associations are forged through processes of more-than-human commoning (Bresnihan 2015; Gibson-Graham et al. 2016). Such processes are often made known through a body politics by what Bruno Latour terms ‘learning to be affected’ (Latour 2004; Cameron et al. 2011). In this correlational dynamics, urban air rights assemblage also develops its other rhizomes, such as the common pool resources and linkages. Such a commoning process is potentially inhabited in bodily experiences, ranging from the exclusive access to open space, altitude and landscape; the quality of air; the accessibility of sunlight; the velocity of wind fields; and the affordability of housing and so on, running risks of overbuilding and overcapacities.

2.5.2 Market Society as Sites of Contestation

While critical Marxian discourses on Rights To The City (RTTC) have argued that contemporary class struggles go in tandem with transformation in the political-economic climate (Weinstein and Ren 2009; Harvey 2013; Shin 2013). This suggests a tactical turn in the production of discourses and knowledge that it should be aware

‘fortune 40 per cent’, channelling their savings into a coupon pool constituted of various funds and channels that further generate feedstock and traded coupons.

of socio-economic transformations. For instance, how can RTTC address the rising inequalities and variegated patterns of dispossession and displacement? On the one hand, asset-based welfare has become a dominant pattern in urban living that reveals through the growth of homeowners' societies. On the other, there is mounting evidence in contestations over dispossession within societies under the property rights regime (see Aalbers, 2012; Fields, 2017b; Forrest and Hirayama, 2015; Harvey, 2007; Rolnik, 2013).

This thesis proposes a tactical turn of discourse/knowledge production by shifting ways of framing, contesting the modes of 'separate spheres' and 'hostile worlds'¹³ (Zelizer 2010; Konings 2015). For instance, when it comes to urban contestations and struggles with financialization, financial speculation and local resistance are often framed as separate and mutually-hostile spheres. Often, such clear demarcation is both strategically and essentially necessary, especially since it enables straightforward, undisputable action agenda. Nevertheless, the limits lie in the nature of their 'imposition' which may block off researchers from considering the complex constituents and other co-inhabiting typologies of contestations. More profoundly, as John Law (2004) reminds us, the power of methods does not terminate in describing social realities but also extends to create them. This is especially relevant in the prevalent and ambiguous circumstances in which disputable contestations transpire in daily scenes so that the financial *dispositifs* are stitched closely into everyday urban life through non-financiers' daily engagement with finance, in the form of savings, investments, credits, debts, mortgages and so on (Langley 2008; Haiven 2014). An analytical limit is revealed here in that it risks leaving out a significant population of the 'urban majority', a term Simone (2014) defines as 'an assemblage of people of different backgrounds, operating in close proximity to each other' (p.73). Besides, the composition of the urban majority does

¹³ Labelled by the economic sociologist Viviana Zelizer (2010), these terms originally described the differentialized realms of social life – intimacy and economy, rational calculation and sentimental solidarity. Separate spheres underlie a distinct ethos, and the hostile-worlds model predicts the mutual-penetration of the separate spheres contaminating each other.

not have ‘consistent recourse to class, ethnicity, or political affiliation through which to cohere a wide range of professions and histories’ (p. 116). Next, before we address the urban majority’s contestation of financialization, we will look at the alternative to the ‘hostile-worlds model’ in works of economic sociology and geography.

Recent work in economic sociology and geography is particularly helpful in making reflexive moves to apprehend the heterogeneous economic lives of the urban majority. If one subscribes to a view of ‘relational/stitched spheres’, then market and finance appear not as corrosive entities that are external to society and community. Instead, market societies are sites of ‘coordinated actions’ (Collard 2014) and sites of socio-spatial struggles and contestations (Barry 2002; Berndt and Boeckler 2011; Cohen 2017). As Barry (2002) argues, measurement and calculation can have a powerful disruptive effect on political arrangements. Besides, of high relevance to this project, it is through regulative, technical and calculative devices that co-opetition is enabled amongst actors within, across and beyond the markets (Berndt and Boeckler 2011; Christophers 2014). In research praxis, this epistemic reconstruction reflects the earlier mentioned notion of ‘operations’ that necessitates the study of urban air rights. Next, we will juxtapose various types of urban processes that elucidate the relations between air rights economy and rights to the city discourses.

2.5.3 At the Conjunction: Enclosures, Property-based Activism and Commoning

The RTTC discourse has heralded a progressive urban agenda that seeks socio-economic and cultural equality of all urban inhabitants (Marcuse, 2009). What the viewpoints of stitched spheres could contribute, then, is to broaden and deepen the action scope (Weinstein and Ren 2009; Shin 2013; Glass et al. 2014). To juxtapose frictions surrounding the formation of vertical enclosures with RTTC discourses,

urban enclosure and commoning are often portrayed as a double-movement for both capitalist expansion and resistance (e.g. Hardt and Negri, 2009; Sevilla-Buitrago, 2015). Nonetheless, as will be shown in the following chapters, the two disparate forces are identified in the hybrid composition of property-based contestation and activism.

Advancing this view, this research project sees the encounter and battle between conventional RTTC praxes at sites of what STS scholars Callon et al. called the 'hybrid forums'. Hybrid forums are broadly 'describing the dynamics of these confused situations' (Callon 1998, p.263), or more narrowly defining them as 'organized collectives of heterogeneous actors engaged in solving a socio-technical controversy that generate new facts, values and matters of concerns' (Lis and Stasik 2017, p.30). In air rights economy, such 'hybrid forums' emerged at the conjuncture of multiple conflict-ridden forces, such as proponents of enclosure movements; assorted property-based activisms; and actions of commoning. In this view, then, property-based contestation and activism would be the critical ground for understanding contemporary urban financialization (Zhang 2004; Shin 2013). This is informed by the instrumental roles of measurement and calculation – despite its limitations to pronounce systemic risks – as a strategic tool for the urban majority to intervene/disturb the (techno-)politics within the set market frame (Callon 1998).

Enclosure, situated at one end of the spectrum, is often rendered interchangeably as the spatial process of privatization, commodification, marketization, and a sense of territorial-making and exclusion, in the form of institutional property rights (Mansfield 2009; Blomley 2016b). A political ecology reading of enclosure highlights that it is 'a more general process of limiting access to resources' (Mansfield 2009, p. 1). That is to say, enclosures are critical moves that territorialize nature into resource frontiers, for example carbon enclosures (Bridge 2011) and large-scale agrarian land deals (White et al. 2012).

At the other end of the spectrum, the formation of ‘commons’ and the conditions for ‘commoning’ – collective and ‘coherent alternatives caring for economic, social and ethical concerns – have resurged in various threads of literature (Noterman, 2016, p. 434; cited from Bollier, 2007, p. 29). One of the most widely known concepts in this work is the proposition on Common Pool Resource (CPR) systems, an institutional approach advocated by Elinor Ostrom, the 2009 Nobel Laureate in economics. Emphasizing community-based, self-organized governance systems, CPR appears to be a remedy for Garret Hardin (1968)’s initial assumption that, to prevent the ‘tragedy of commons,’ natural resources ultimately require either state control or individual management. What underpins both strands is that of the institutionalized common property regime (Ostrom 2008) as the solution to sustain common resources and prevent the domination of private or state ownership (Mansfield 2007; Bresnihan 2015; Bresnihan and Byrne 2015). Apart from the above strategies, Patrick Bresnihan (2015, p.95) offers a perspective on the ‘more-than-human commons’, learning that commons ‘was never just a “resource” or a social institution for managing resources. The commons is not land or knowledge. It is the way these, and more, are combined, used and cared for by and through a collective that is not only human but also non-human’. Weaving assemblage thinking into an analysis of commoning, Cameron et al. (2011) use the bodily learning experience associated with the breathability of atmospheres to discuss how non-humans are considered as part of the community-commoning assemblage.

While the legal construction of ‘property owners’ has long connoted a socio-economic tenure status that is socially-privileged in power relations and economically-secure in access to rent, property-based activism has long been a disturbing theme for study and critical urban praxis (Hsing 2010; Shin 2013; Li 2014). As shown clearly, this tenure status ultimately conflicts with the Lefebvrian version of progressive rights to the city that is envisaging the political struggles to open up the bordered access to the urban, for all urban inhabitants to participate without discrimination (Purcell 2002; Lefebvre 2003). Thus, to address property-

based activism, whether it be the owner-occupants facing foreclosure crisis in Spain and the US or homeowners who resist to land taking orders, resistance to processes of precarization is often questioned by how progressive these property owners can be, as this specific socio-economic status requires societal scrutiny as the precursor for evaluating solidarity ties across urban inhabitants of diverse tenure status, also known as cross-class alliances (see Shin 2013).

Nevertheless, the bias resides in cross-class alliances can sometimes lead to a growing pessimism and cynicism. This is because the ethics, whether in research or activism, is established upon validating the urban subjects, rather than viewing the mutual liberation as, indeed, bound together. The intellectual task here returns to Callon's concepts of framing and overflowing. That is, as LiPuma (2017, p.353) suggests, to alter 'the ideological coordinates of public understanding', in other words to assess whether property-based activism as opportunities or traps for radical urban politics. AbdouMaliq Simone's proposition on the need for 'exploring ways in which the conditions people aspire to and struggle for are already evident, already operative in what it is they do' (2014, p.116) is thus crucial to rethink of the contemporary urban politics.

From enclosures, property-based activism to commoning, the three types of urban processes help to elucidate the multiplicities of markets and urban contestations that often intersect with each other. Overviewing the potentials and limits in each thread of contestations, this helps to elucidate the enlarged conundrum that the urban majority often confronts – that is, the coexistence of two ultimately conflicting agendas, between the struggle to prevent falling and the grips of the opportunistic fortunes'. In this sense, the lives and futures of urban majorities are deeply affected by and reshaped through these conflict-ridden urban processes. Many urban majorities straddled and strived in the ambiguous sense of unwillingness and discontent (Shao 2013; Shin 2013; Blomley 2016a; Fields 2017a; Roy 2017). While these urban majorities are developed into the financial subjects,

their decision-makings could be seen as a result of the financial recombinants. Understanding these nuances is critical to re-politicizing the changing techno-social conditions, converting the seemingly ‘technological realms’ to the very ‘sites of contestation’, and unleashing new forms of financialized urban politics.

2.6 Conclusion

Recognizing the operations of air rights as a significant jigsaw puzzle in the study of urban financialization, this chapter has undertaken two tasks. First, it has reviewed relevant theoretical approaches to urban financialization offered by political economy and cultural economy. Second, it has proposed a theoretical framework that takes and follows from an assemblage approach to exploring urban financialization. Developing this premise, this chapter has developed an understanding of the ‘operations of air rights’ in order that the dimensions of air rights as market devices can be made visible, and to deepen understanding of present-day socio-cultural transformation and environmental-economic contestations.

Firstly, section 2.2 revisited the epistemology of the twin processes – financialization and urban processes. While existing geographical literature on the twin processes has primarily been established upon the Harveyian-inspired political economy approach, this chapter further elaborated how the ‘operational’ perspective has developed into shared concerns between latent political economy and cultural economy approaches. Furthermore, it has suggested a novel approach to re-visiting the twin processes. Advancing the ‘operative’ dimension, this section suggested that the relationship between the twin processes is woven through the multiple processes of ‘economization’ (Çalışkan and Callon 2009; Çalışkan and Callon 2010) as they relate to urban airspace. Put another way, the conceptual use of economization approaches the relation between urban air rights and financialization by unfolding contingent and hybrid processes of commodification,

marketization and capitalization of air rights. Expounding the ‘multiple processes’ of air rights’ economization invites the next question: why are urban air rights accredited and appreciated value?

Second, to answer this question, section 2.3 turned to the underpinning causes prompting the remarkable growth of urban air rights. Looking into the underlying causes of institutional design and practice, which legitimates a monetary value ascribed to air rights, it first introduced theories of property rights to provide reasons for the production, circulation and consumption of urban airspace. It then proceeded to various interventions emerging from theories of urban land rent. The chapter pointed out that the existing theorems of urban land rent neglect techno-social conditions of possibility. To supplement this limitation, it proposed reconfiguring the vertical sprawl as assemblage-in-action as a way of politicising the property rights regime. To put such epistemology into perspective, the chapter took inspiration from Rob Meister (2016) who suggests the ‘commodity’ in the M-C-M¹ formula should be replaced by the ‘hedged portfolio’ of urban air rights. With this view in mind, we then proceeded to the next steps that supplement the issue mentioned above.

Third, to unpack how the ‘operations’ of urban air rights play a constitutive role in processes of urban financialization, section 2.4 introduced two threads of literature – the theories of valuation and the concept of ‘market devices’. With the critical proposition of valuation theories, it has suggested that a relational approach of valuation will not only help to decompose the price-making of urban air rights into the stacking-up of various process of valuation but also map out the relations across multiple markets. Meanwhile, to specify the working of air rights in economization, the notion of ‘market devices’ was introduced to exhibit the capacities of urban air rights spanning across the spectrum of their transient materiality. A major contribution brought by the conceptual use of ‘market devices’ lies in its revealing the agentic feature of urban air rights that has been veiled under the politically-

neutral ‘market-based instruments’. This feature will be unpacked in more detail through the mechanisms and forms of urban air rights in Chapter 4.

Fourth, section 2.5 ventured into urban contestations that emerge from processes of valuation during the course of urban vertical sprawl. To incorporate property-based activism into the current Rights to the City (RTTC) discourse, this section extended the debates of externalities in 2.3.1 (and its ‘solution’ underpinned by property rights regime) to Michel Callon’s concept of ‘overflows’. The concept of overflows and the associated discussions on framing and hybrid forums helped to clarify how the hybrid subjectivization of urban actors and actants are shaped, encompassing urban processes of enclosures, property-based activism and commoning. Such a reconfiguration of socio-economic disputes also serves to supplement the awkward position of property-related contestations in the RTTC debate. In sum, through four theoretical building blocks, this chapter has developed an understanding of what the urban majority has experienced in the financial politics of volumetric sprawl.

3

Methodology

3.1 Follow the Air Rights

‘Aside from signifying a loss of grounding, air is as taken for granted in theory as it is in most of our daily breaths ... Air is left to drift ...neither theorized nor examined, taken simply as solidity’s lack. There seems at first to be no reason not to let it.’

Timothy Choy (2011, p.143)

Air has long been treated purely as ‘solidity’s lack’, as Choy puts it. However, air’s nature – of being ‘left to drift’ - also means it has considerable potential as a device for following and constructing relational geographies. Reflecting these possibilities of air, this project aims to open up different ways of studying the urban–finance nexus by examining how air is transformed into air rights and the role these rights play in urban financialization. Airspace presents a nexus that figures variously through different types of valuation. Urban air rights can provide a way to unveil this tangled nexus, and examine how different types of valuation either enable or disable the actualization of the airspace. To investigate a variety of valuations that

enact/reject the conversion of air to air rights is to trace how air becomes inserted into the urban-finance nexus and the processes of urban financialization.

The idea of ‘following the []’ has been instrumental across a range of human geography research. Researchers have filled the bracketed space in the previous sentence with commodities as things (Cook 2004), flows of money and credit (Christophers 2011; Gilbert 2011), and ‘policy mobilities’ (McCann 2011; McCann and Ward 2012; Peck and Theodore 2012), and people, metaphors, plots, stories, lives, biographies and conflicts (Marcus 1995), and have examined the itineraries or careers they can take (Appadurai 1986; Çalışkan and Callon 2009; Hahn and Weis 2013). For instance, ‘follow the commodity’ is an intervention underpinned by a desire for more ethical forms of consumption and a geographical mapping of the ‘assembling of a pre-figured point of sale commodity and/or commodities’ (Gregson et al. 2010, p.847). Also, ‘follow the policy’ reconfigures the policy mobility through an alternative epistemic ground that sees policy designs, technologies, and frames as always (re)made in multiple local ‘milieux’ rather than in a rational-actor network (Peck and Theodore 2012). Combined with an empirical commitment to conducting multi-sited ethnography, the methodology of following is thus highly conducive to the (new) comparative urbanism (McFarlane and Robinson 2012; Robinson 2016; Waley 2016). Amongst these case studies, two aspects that concern ways of unfolding the ‘relational geographies’ are subjected to debate. On the one hand, it is a question of what are the object-matters to be followed; and on the other, how to follow the object matter

Urban air rights are a specific object-matter to be followed. Because their malleability poses the challenge of ‘how’ one can follow the shape-changing object matter. This project advances to understand the act of ‘following’ through Deleuze and Guattari’s elaboration in *A Thousand Plateaus*. Deleuze and Guattari contend that the ways of ‘following’ need to ‘make a map, not a tracing’ (1987, p.4). Underpinning the statement, they reason that, ‘tracings are like the leaves of a

tree'(1987, p.2) as they demonstrate a logic of making things reproducible. The acts of tracing are embedded in, articulated by, and made hierarchical through the representative model of 'trees'. In contrast, a rhizome is about forming a map. A rhizome can be understood as a map that is 'open and connectable in all of its dimensions' such that it is reversible and constantly modifiable and would do better work to keep the multiplicities of a rhizome alive. As such, the episteme of a rhizome is 'an experimentation in contact with the real' (1987, p.2). It not only allows multiple entryways but also fosters open-ended connections that can then proliferate. To be sure, the ethics of following by ways of mapping acknowledge that what one 'sees' and 'meets' in a particular moment can never fully 'represent' the complex web or becoming a central axis. Recognizing this limit, the first layer of 'following' starts with an act of tracing. It first traces from responses that are 'givable', and indicates the 'probable and possible' (Deleuze 1994). This must immediately follow the second and third acts of 'plug[ging] the tracings back into the map, connect[ing] the roots or trees back up with a rhizome' (Deleuze and Guattari 1987, p.14).

Two examples are illustrative in this respect. Brett Christopher's (2011) agenda to *Follow the Thing: Money* indicates the existing methodological constraints to capturing moments of production, consumption, and the *indefinite* circulation of money. His goal of de-fetishizing was somewhat unfulfilled as the more-than-commodity aspects of 'money' were not followed (see Gilbert, 2011). In the second example, Peck and Theodore's 'follow the policy' indicates ways of following policy assemblage which constitutes of full-fledged mobility of globalizing policy models. These models 'are understood not simply as fast-traveling, silver-bullet solutions, or as unidirectional 'vectors' of global policy rationality but the networks both connect, and establish relations between, distant policy-making sites in complex webs of experimentation-emulation-evolution, subsequently exhibiting distinctively dialogic and nonlinear dynamics' (Peck and Theodore 2012, p.22).

Reflecting on these examples, this thesis approaches urban air rights in a similar way – that is, as more than only a property right, or a form of commodity, or a channel for extracting rent. The research design recognises the malleability and multiplicity of urban air rights, and seeks to harness the analytical potential of this ‘drifting’ quality - focusing, for example, on the way air rights stitch together multiple processes of economization, and upon the further travelling and overflowing of air rights into popular urban politics. In particular, the research is designed to examine the role of air rights in making assets, markets, and profits. At the same time, the thesis’ examination of urban air rights acknowledges a backdrop of globally mobile policy where the rationales and operational logics associated with urban air rights are mutated in and adapted to different socio-political-economic contexts. In this way the research is designed to simultaneously capture the sharing and differentiation of urban air rights practices (and vertical sprawl) across urban areas.

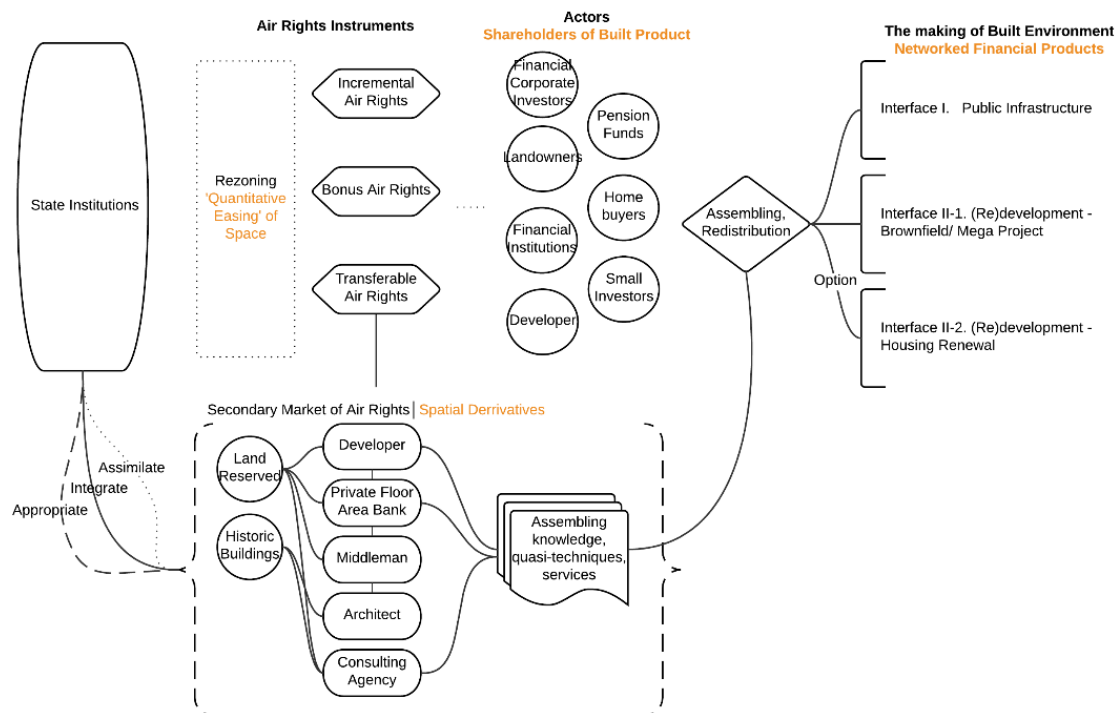


Figure 3.1 An interim map, from fieldwork, outlining relation in to the air rights assemblage (Final version see Figure 1.2)

Recognizing the constraints mentioned above, ‘following the air rights’ thus redefines ‘field study’ as the layering out and piecing together of multiple maps across the virtual and the actual (see Figure 3.1). To be specific, the fieldwork design commits to investigate the acts, devices and intermediaries that their respective engagement explains how and why the processes of volumetric growth could (not) become an investment vehicle. Underpinned by the assemblage ontology, ‘following the air rights’ is a method that premised upon acknowledging urban financialization is complex processes that are contingent and uncertain. To the end, this moves the research terrain of financialization of the urban away from a Heideggerian sense of ‘place as stabilised being’ towards a Deleuzian sense of ‘places of becoming’ (Dovey 2010, p.13). To put it differently, urban air rights weave an urban epistemology based on financial encounters and uncovering multiple ‘processes of becoming’: on sites that ‘generate’ urban air rights, such as infrastructure, waterway and historic sites; on sites of redevelopment where assembled urban air rights are received; and on cross-sites measurements and calculations (such as three-dimensional cartographic landscapes; renewal project report; tax income; and infrastructural funds).

The remainder of this chapter explains the methodological concerns and research design regarding a research project that involves following the oftentimes opaque constitutive workings of urban air rights (see Figure 3.1). Section 3.2 further specifies my epistemic and methodological considerations. Here I turn to explain how and why urban air rights are instrumental for studying urban financialization in variegated geographical settings. I use an autobiographical account to underpin my choices and reflections on methodological and theoretical concerns. The personal account shows how a researcher’s life experience shapes their positionality and, in particular, the important ‘puzzle’ of the urban contestation and struggles surrounding air rights in Taipei. In sections 3.3 and 3.4, I explain research design and data collection with the aim of tackling the challenges of conducting the fieldwork where trades are unobservable, trajectories of circulation are

unaccounted for and, more often than not, the connections between places are disguised through private trading. This leads to section 3.5, where I reflect on ethical and practical concerns that emerged over the course of doing fieldwork in relation to controversy, corruption and illicit economies.

3.2 Thinking financialization through elsewhere

Inspired by the (new) comparative urbanism, through which postcolonial urban studies attempt to revive cultures of theorization (Mcfarlane 2010; Nijman 2015; Robinson 2016), this project begins with the problem of the phenomenon of vertical sprawl and its entanglement with urban finance. It retains a commitment to primarily develop analysis of financialization processes with references of cities in the so-called ‘Global East’ (Shin et al. 2016; Waley 2016). By gauging the role of air rights in the processes of urban financialization, this project casts doubt on the conceptual purchase of financialization insofar as this concept has primarily built upon Euro-American empirics with a non-productionist orientation (Krippner 2005; Lazzarato 2012). In particular, what does ‘financialization’ mean in the context of ‘ordinary’ cities that are nonetheless subject to speculative development?

3.2.1 Case Study: Urban Taipei as Method

To study financialization and its relations to ordinary urban settings, I use the case study of urban Taipei to unsettle the theoretical-empirical framings of financialization. The value of case studies as a method for comparative urbanism is illustrated by the historian and social scientist Charles Tilly (1984, p.82) who argues that:

‘Comparisons are general to the extent that their users are attempting to make all cases in a category conform to the same principle. Comparisons are multiple to the extent that their users are trying to establish that the cases in a category take multiple forms.’

Following Tilly, Kevin Ward (2010) further explains, an ‘individuating’ case study is useful for comparative urbanism. In light of this, the case study of urban Taipei reconsiders financialization as a category that entails multiple forms. Urban Taipei connotes both Taipei City and New Taipei City (Figure 3.2) and is used interchangeably with the Greater Taipei or Taipei Metropolitan Area in the thesis.

The phrase ‘Urban Taipei’ suggests a dialectic urban process of relationality and territoriality (Li et al. 2016). New Taipei City has been a hinterland for the influxes from Taipei City, and has been upgraded as a special municipality neighbouring the latter since 2011. The speculative urbanization of these twin cities has made them ‘activist states’, particularly with regard to their vocal presence in urban air rights politics. Below I suggest two entry points for comparison: (1) mobile policy instruments for a comparative reading of urban process; (2) economic development to probe financialization.

Urban Taipei is an intriguing location for a comparative study of mobile policy and urban process. It can be characterised as a city of ‘displacement’ (Allen 2012) in which there is a constant movement of grounding and displacing across colonial legacies, regime changes, geopolitical anxieties amid the city’s constant pursuit and frustrations for international recognition. These conditions comprise the ‘mongrel’ condition (Sandercock and Lyssiotis 2003) of urban Taipei. A capitalist archipelago and a garrison state (Arrighi 1994), urban Taipei strategically positions itself as an ‘open’ and ‘democratic’ testbed for mobile urban policies. This sets up the first entry of comparison – the process of speculative urbanization that has taken place in tandem with mobile policy instruments of air rights. As such, air rights instruments and their widespread applications are thus the thrust against the hybrid and historical development of urban Taipei.

Emerging scholarship on the financialization in Taiwan has focused on quantitative

measurement of profit-making in the financial sector vs. the non-financial sector. According to Hsia (2015), profits in the financial sector were around 20 per cent of the profits in the non-financial sector during the 1980s. However, this number increased to nearly 50 per cent during the mid-1990s and then fell to around 40 per cent in the 2000s. Compared to the case of the U.S economy, as illustrated by Krippner (2011), the significance of the financial sector in Taiwan is relatively high. Following this quantitative criteria, scholars suggested that financialization has occurred in the Taiwanese economy as the financial sector has been a significant driver of capital accumulation (Wu et al. 2017). Yet, the existing appropriation of the established theoretical framing has some missing puzzles. For instance, in comparison with Froud et al.'s (2000) theorem on financialization through the rise of shareholderism, Hsia has pointed out that the stock market has been relatively peripheral to corporate finance¹⁴. As such, he concluded that 'shareholder value' might not be the main driver for financialization in the case of Taipei.

Nevertheless, Taiwan's stock market has long been a feature of for everyday investment¹⁵. That is to say, the way a financial logic has been mediated by ordinary inhabitants/investors more broadly in the (re)production of speculative urban landscapes remains to be explored. Thus, a potential contribution of the case study of urban Taipei lies in its theoretical expansion and empirical reorientation regarding the process of financialization. While urban Taipei is widely known as an 'interface city' in regard to high-technology industries and worldwide business network (Hsu 2005), this study situates Taipei as an interface city in relation to globally travelled policy instruments and urban financialization.

¹⁴ According to Hsia, the existing statistics revealed that banking stands at 80 per cent of the financing channels for corporates in Taiwan, whereas the stock market only stands for 20 per cent.

¹⁵ Characterised by its small-to-medium enterprises-led economic development in the 1970s to 1990s, the urban landscape of SME economy can be seen in the once proliferated stock market as a part of daily landscape. During the late 2000s, individual investors account for over 90 per cent of the total trading volume in the Taiwan stock market with a hyperactive annual turnover rate between 300 per cent to 600 per cent (Barber et al. 2009); while the percentage of individual investors decrease to 54.2 per cent in 2017; this still reveals a generational investment culture of 'everyday investors' in stock market.



Figure 3.2 An Aerial Map of the Taipei Metropolitan Area

Source: Google Map 2018

3.2.2 Mapping Myself in the Air Rights Assemblage

This autobiographical account explains my positionality in the air rights assemblage of urban Taipei. In so doing, it also reflects the potential insights (and limitations) of the fieldwork I have undertaken. Hopefully, this account offers a bottom-up perspective about under-studied processes of financialization in ordinary cities outside of the ‘heartlands’ of Euro-American urban financialization. Between 2005 and 2010, I took part in various social campaigns related to urban redevelopment through which I came across the multiplicity and complexity of the air rights economy. The first was during my study in graduate school around 2005, when I took part in a historic conservation project centred on an old brothel in Taipei, Taiwan, once a critical site for sex workers’ movement. The brothel site was threatened by an urban renewal project, in which an investor acquired ownership of the privately-owned historic building and established liaisons with local community associations. I saw how urban air rights had brought hope to various interested

parties about the site's potential growth in value as an asset, and how this heightened the difficulties of persuading local inhabitants to agree to historic conservation. Participating in such a process informed my initial encounter with the mysterious character of the urban air rights market. Later, for my master thesis I conducted a year-long fieldwork on how the ethnic enclave 'Little Indonesia', located in central Taipei, was gripped by multiple initiatives of urban renewal. While the subject of resistance changed from sex workers to migrant workers and immigrants, I continued to focus on how people with a mixture of (in)formal citizenships and property ownerships could possibly negotiate multiple forces of redevelopment, often while sustaining their businesses and livelihoods for decades. When I landed my first job in Seoul, South Korea, I encountered a notorious eviction case called Yong-San Incident, in which a Special Weapons And Tactics (SWAT) police force operated a suppression on the first day of the residents' sit-in strike and incited a fire that took over 6 victims' lives in January 2009 (Lee 2017). While the Yong-San Incident was just one of the many urban struggles which continue their fights until today, the intensities of protests against urban redevelopment in Seoul and Taipei piqued my curiosity. In retrospect, these experiences I had taken part in reflected a familiar type of Rights to the City struggle, where the voices of people without a paper certificate of ownership were usually underrepresented in property-based redevelopments.

In the autumn of 2010, I returned to Taipei and started working closely with a grassroots organization called the Taiwan Alliance for Victims of Urban Renewal (TAVUR). The Alliance, by then, was mainly formed by residents across lines of tenure status. Everyone may have had different motivations, yet they shared a common agenda - to stop and rectify 'problematic' urban renewal projects (Taiwan Alliance for Victims of Urban Renewal 2013). Yet, I quickly realised I had walked into a field which was distinctly different from previous movements I had taken part in. Urban renewal is 'problematic' because it involves not only an existential question of the right to stay put but, more ambivalently, it is also tangled with

questions of redistributive justice associated with private property. Specifically, I saw how ‘property owners’ with various tenure statuses are hybrid subjects who can either become beneficiary or a victim of displacement, depending upon their own choice. As such, encounters between urban inhabitants and processes of vertical urban redevelopment are essentially perplexing and contingent, whereby the rules of redistribution differ from case to case, and are constantly reconfigured by the mastery of socio-techniques and legal conditions that can either put redistribution in motion or stop it. These key factors both mediate and disrupt ‘capital flow’ but, importantly, receive less attention in capital-centric versions of the financialization of urban process. So, rather than the conventional take of following the capital flows, there are deep and personal motivations underpinning my methodology of ‘following the air rights’.

One of the sensational acts of recent protest in Taipei City was the campaign against the Wenlin Yuan renewal project in the Shilin District that took place in late March 2012. On the night before the project’s planned evictions, the site summoned thousands of police to evict two recalcitrant households and around 400 protestors. The heavy police deployment cleared the ground for the private developer, Le-Young Construction. Yet, the livestreamed eviction went viral. Marches, sit-ins and guerrilla protests, outdoor forums, classes, theatres, concerts, and community kitchens and so on, became interludes and ways of commoning encompassing a militant setting. Muddling through the over the two-year long process that followed – including the 716-day-long ‘homesteading occupation’ of the construction site - required, as Ananya Roy describes, ‘a constellation of long-term strategies that enable shelter and inhabitation’ (2017, p.A3). As a core member of the coordinating team, this was indeed a very visceral experience for me. Together with the two households, we experienced an internet witch hunt, stalking, wiretapping, and constant harassment across our workplaces, family homes, and at the university where I was studying. In contrast to my previous participation, the difficulty and

complexity this hybrid property-based activism touches upon were not easy to describe, let alone clearly analyse.

To unpack the hybrid and contested calculative propositions that tie together air rights and urban redevelopment, I briefly here describe my personal account of an impasse that the 2012-4 occupation campaign had hit on. It started when negotiations over alternative spatial designs were all in vain. I quickly realized that this was an impasse for all those involved and that to reduce the floor space which each owner *potentially could* own was a naïve proposal. Such an impasse also transpired at the city-wide scale. During those desperate days of occupation, people from various places would come all the way to visit and support us for upholding the campaign. At that time, we came to realize that upholding a single-site campaign could simultaneously sustain and resonate the resistance against profit-oriented urban renewal elsewhere. This landmark case later extended to two constitutional interpretations in 2013 and 2016 and led to pressure on the legislature to amend the Urban Renewal Act¹⁶. Until today, however, the legislation debate is still largely unsettled and the campaign was accused of putting the brakes on 900 more urban renewal cases in the pipeline (Yang et al. 2013). Although the ‘brakes’ temporally suspended the projects, the perplexing calculation-based contestations over spatial design and floor area were unable to generate alternative solutions that could break through a stagnated societal debate or, needless to mention, increase public support for the campaign. The ‘inability’ to create a breakthrough in social debate reflected how public discourse was insensitive about the transformation of techno-social conditions under urban financialization.

To complicate the accounts further, the nearly two-year occupation struggle against Wenlin Yuan renewal project drew to a dramatic end in March 2014. It brought the developer to the verge of liquidation, and subsequently drew on the developers’

¹⁶ Judicial Yuan Interpretations No. 709 and No.741.

solidarity with their financing supporters. To describe the drama in a nutshell, the movement ended as one of the landowners secretly signed a lucrative deal with the developer. Ironically, this deal was made right after a public crowdfunding campaign successfully collected a huge sum NTD. 17.56 million (appr. GBP 434,595) for the two households in order to terminate the provisional seizure from the court action. This turning point not only disheartened popular support but also left negative implications for the subsequent anti-renewal struggles. After the failure of the anti-renewal campaign, more controversial projects carried out evictions and were justified for the sake of seismic resilience and public safety.

Reflecting upon the above personal account, this research project is committed to filling the gap in t understanding about urban contestations in a market society that centre on financialized volumetric sprawl. On the question of ‘how far does the financialization concept stretch’, the case study of urban Taipei serves as an empirical base for a wider conceptual comparison.

3.2.3 Methodological Concerns

Aside from sharing an autobiographical account to explain the genesis of this project, I borrow Donna Haraway’s reminder to explain how autobiography influences methodological concerns from research design, research method to data analysis. These concerns can be summarised as four points (see Table 3.1): ‘mobile positioning’, ‘passionate detachment’, ‘limited location’, and ‘situated knowledge’ (see Haraway, 1988, pp. 584–5):

“A commitment to *mobile positioning* and to *passionate detachment* [emphasis added] is dependent on the impossibility of entertaining innocent ‘identity’ politics and epistemologies as strategies for seeing from the standpoints of the subjugated in order to see well. One cannot ‘be’ either a cell or molecule - or a woman, colonized person, labourer, and so on - if one intends to see and see from these positions critically. ‘Being’ is much more problematic

and contingent. Also, one cannot relocate in any possible vantage point without being accountable for that movement. Vision is always a question of the power to see - and perhaps of the violence implicit in our visualizing practices”.

Mobile positioning and passionate detachment. Reflecting on Haraway’s words, *mobile positioning* refers to how ‘vision is always a question of the power to see’. This furthers the quest for an innovative methodology such that the researcher can place oneself in the position of the objects of study. Meanwhile, *passionate detachment* implies a self-critical attitude to knowledge production – thereby always associated with subjective objectivity (Haraway 1988). By adopting these principles, this project suggests a meaningful exploration of the black-boxed urban-financial nexus by enlivening the multiplicity of human and non-human agency in the urban process. Focussing on ‘urban air rights’ allows us to set aside the ready-made theoretical templates of capital-centric accounts of urban financialization, and to enact an assemblage ontology (Baker and McGuirk 2017) for exploring the unknowns.

Moreover, recalling the autobiographical account mentioned earlier, the public debate has shown a conundrum as the public critics favoured an essentialist ground of ‘identity politics’, which urges everyone to ‘stay in the place/position’ one assumes to belong to and to act alike. Contrariwise, to depart from making critical knowledge claims based on identity politics, Haraway’s conceptions of ‘mobile positioning’ and ‘passionate detachment’ remind researchers of the importance of methodological flexibility - to be honest meanwhile to cope with what is (temporarily) known and remains unknown. In a similar vein, Latour’s conception of ‘networking from the middle’ is instrumental to re-approaching controversies without ‘begin[ning] with a pronouncement of the sort’, and instead, ‘render[ing] the social connections traceable’ (2005, p.30). Thus, applying the notion of *passionate detachment* in my case is to recognize my *initial* position in the urban-finance nexus and to allow myself to move out from the previous activist’s comfort

zone and into the complexities and contingencies of urban air rights. To enable mobile positioning in the air rights assemblage, before and during the fieldwork I have tried to weigh down the role of my auto-ethnographical account. In the meantime, designing the research with the idea of ‘networking from the middle’, I have adopted semi-structured interviews and collected materials that the intermediaries work with in order to map out the connections, potential bonds and threats. This process helps to unsettle the privileged ways of grouping, and recognizing other ways of seeing.

Limited Location and Situated Knowledge. ‘Feminist objectivity is about limited location and situated knowledge’ (1988, p.583). Appropriating from Haraway’s notion, this research acknowledges *limited location* and *situated knowledge* as the ground rules of knowledge production (see also Robinson 2016). Theoretically, this can be evidenced by the theoretical foci on the ‘processual’ understanding of urban financialization and its techno-social conditions of existence. Concerning the former, I am aware that the urban empirics I encountered were not sitting well within the existing political economy descriptions of financialization. A major reason, as mentioned in Chapter 2, is that the tendency of structuralist economism largely played out the processes in a single, linear and incremental manner.

Empirically speaking, and in light of a comparative approach to theory building (Robinson 2016), I realized that I could develop located insights into my empirical findings that occasionally puzzled me. At the beginning of the project, I could barely push through the fragments of global financial investments in the local air rights assemblages with any form of theoretical advancement other than ‘speculative investment’. Even until the final phase of writing-up, I have contemplated on-and-off whether I should remove the key term ‘financialization’ from the entire project and, if I did, what it would then look like. This uncertainty and indeterminacy haunting the project have shown me how influential is the structuralist economic yardstick of financialization. It is as if financial systems, mechanisms and operations

were *actually existing*, yet lost replicable clues and theoretical building-blocks once detached from the Euro-American economies described from the established tropes in the literature.

My once self-doubting mind-set about the appropriateness and fit of my empirical setting to a conventional financialization research framework, however, was later transformed into the desire to develop a form of situated knowledge. To enable research that is inclusive of these contingent and undecided moments (Hall 2011a; Hall 2012), my project has largely benefited from an alternative reading of processuality which is ‘an attempt to describe relationalities of composition and that of an interest ‘in emergence and process, i.e. in multiple temporalities and possibilities’ (McFarlane 2011, p.206).

The case study method lends itself to the idiosyncratic locatedness of knowledge building, although in this research I have adopted rounds of interviews to triangulate across the spatial and financial sectors and the inhabitants. In particular, this process informs my question design which centred for the most part on working methods, operating procedures and examples in semi-structured interviews with spatial professionals.

Furthermore, the empirical accounts I began to build through my research also attracted my attention to the changing techno-social conditions. While existing scholarship on various air rights instruments either centres on the operation of one specific policy instruments or the aggregate socio-environmental effect, the valuation processes and the devices for market-making are largely ignored in the existing studies. This calls for a methodological concern of being sensitive to capture techno-social conditions. As such, Chapters 4 to 6 are places where I develop located insights through being attentive to the techno-social practices that I encountered. This enables me to push forth the theoretical claim that financialization is a form of economization that rests upon contingent socio-technical practices of

commodification, marketization and capitalization (see Chapter 4). As will show in the following chapters, the post-2008 investment climate in Taiwan swifts toward a volumetric preference which has resonated with many case studies in East Asian urban landscape (Hirayama 2017) and could bring a substantial contribution to an understanding of financialization of infrastructure and housing (see also Moreno, 2014).

To sum up, re-description is needed to enable an assemblage ontology. Broadly speaking, such a methodological concern is characterised by (1) maintaining a methodological sensitivity to questioning ‘uncomfortable fits’ between some generalized theoretical claims and urban empirics; in addition, (2) it builds upon an ontology that perceives heterogeneous elements and parts as ever-changing, makeshift ‘constellations’, where power flows morph in plural forms and constantly contest one another, and where different elements and parts are held in connection and mutually impact on each other. It not only acknowledges the importance of the urban majority as the urgent task for contemporary urban-financial geographies, but also seeks perspectives of the underexplored, unknown, and unfamiliar.

Table 3.1 Summary of research aim, theoretical focus, epistemology, methodological concerns, and research methods

Research Aim	Theoretical Focus	Epistemology	Methodological Concerns	Research Methods: Follow the air rights
To unpack the black-boxed urban-finance nexus via a focus on urban air rights	Urban air rights as assemblages that are incorporated in wider and multiple urban-market assemblages	Multiplicity of (non-)human subjects and actors, including specialist intermediaries	Mobile positioning and passionate detachment: Setting ready-made theoretical templates aside and enacting an assemblage ontology (Baker and McGuirk 2017) for the exploration of the unknowns.	(1) Using semi-structured interviews and collected documents to map out the topology of air rights assemblage; (2) Utilizing <i>auto-ethnography</i> meanwhile weighing down its roles in the project to enable mobile positioning in the air rights assemblage.
	Financialization rests upon contingent socio-technical practices of commodification, marketization and capitalization	Non-linear process with ambivalence, contingency and uncertainty	Limited location and situated knowledge: (1) Mindful the uncomfortable fits between generalized theoretical claims and urban empirics (2) Be sensitive to capture various	Case study method and triangulation through the interviews across the spatial and financial sectors and the inhabitants. To be specific, it includes:
	Bringing in volumetric lens to re-describe urban land rent speculation and deprivation	Changing techno-social conditions	and changing techno-social conditions	(1) Design questions on working methods, operating procedures and examples in semi-structured interviews with spatial professionals. (2) Using empirical accounts to develop located insights and renovate theoretical findings.

3.3 Research Design and Data Collection

The research design sets out to explore how urban air rights are (1) drawn into spatial and financial practices; (2) perceived, evaluated and employed by various stakeholders (e.g. government officials, market intermediaries, homeowners, politicians, and more broadly, media and the public); and (3) exercising and extending their functions in the financialization of built environments. In other words, the inquiry focuses on the relations between air rights and distinct processes of economization - namely commodification, marketization and capitalization - that contingently shape urban financialization.

The 'sites' of the processes are dispersed and often 'opaque, occluded or rendered inoperative' (Simone and Pieterse 2017, p.11). For example, in the sites of the private market of development rights (TDR market), the broker-dealers generally refused any interview although they nevertheless allowed participant observation. A key reason is that tax inspectors have long targeted this kind of private trading and, as a consequence, the industry is vigilant to any contact which seems suspicious of their business. Also, an issue that constantly emerged when studying the sites of urban renewal was that the site of study had already disappeared or changed. Similarly, when Zhao (2017) immediately arrived at the field site for his study of greenbelt construction in Beijing, he recognized that the field site is neither a lively settlement nor a constructed greenbelt, but relics and dust. Studying objects in transition that dangle between different states, such as the place between early changes (such as subtraction) and late realization of urban imaginaries, is frequently a challenge for studying 'sites' involve rapid urbanization processes. Thus, a method that enables the researcher to follow the spatial-temporal intermediaries is needed so that a form

of situated knowledge could emerge.

3.3.1 Fieldwork Design

The subject of study - urban air rights – continually transform once they are created. This had several practical considerations for sites selection, access to informants and rapport building. Together with some investigative challenges, I summarized these issues via the following three points: (1) trades of air rights that are private, ‘over-the-counter’ and unobservable; (2) circulations of trade that are unaccounted for in official records; and (3) trajectories of connection (between places) that are decoupled after market transactions. Thus, in what follows I will outline the research.

Aiming to explore the urban-finance nexus through following the assemblage and work of urban air rights, the research design of this project has leant towards exploring the roles of spatial professionals, such as planners, architects, real estate appraisers and urban development officials, rather than bankers and financiers. The primary reason is that this is a project set to explore how financial logics, rationales and practices have inflected spatial governance and, more broadly, urban lives. As such, a general outline to the fieldwork design was initially set to be completed in two spells. The first trip took place between September 2015 and January 2016; and the second was between July and August 2016. A third field trip was added between mid-December to mid-January 2017. This field trip mainly focused on the financial sector and follow-up receiving sites of urban air rights.

The nature of this project requires an understanding of what the spatial

professionals think, how they acquire the know-how of urban air rights and put into work. Therefore, while I prepared semi-structured questionnaires for various types of market actors, these questions often involved the informants' detailed narrations on scenes and workflows in which they have participated. On some occasions, I also double checked with interviewees regarding my understanding. Occasionally, I sought their views on how should the questions could be more accurately re-phrased.

3.3.2 Obtaining Access and Building Rapport with Informants

Informant accessibility and rapport building are critical to the investigative tasks. Researchers conducting fieldwork in a similar way often identify their work in the genre of elite and expert research (Fainstein 2001; Weber 2002; Weber 2015; Halbert and Attuyer 2016). Reflecting on the spectrum that has been covered in existing studies, this project highlights a more diversified account of market intermediaries who 'network in the middle'. The composition of this group includes not only spatial and financial professionals, but also government officers, petite-to-middle property owners and citizen groups.

Methodologically, this research involves the critical issue of conducting research with informants who are 'neither friends nor foes' and is thus necessary to envisage the field site as a 'potentially hostile terrain' (Han 2010; Thiem and Robertson 2010). I was uncertain about whether the spatial professionals would accept my interviews. Thus, before coming to the PhD program, I had considered my engagement in the anti-eviction campaigns should be mainly backstage work in order to reduce my public presence. Nevertheless, even doing so, I was still concerned with whether my once provocative presence in the anti-eviction campaigns would hamper me from

conducting interviews with decision makers and other informants. However, these worries gradually dispersed when I started my interviews and had some unexpected encounters. I found that my previous school training and social engagement turned out to be a strength in establishing initial contacts in the government and real estate sectors across architects, planners and real estate appraisers. Some of them helped me to reach out to potential informants tactically without mentioning my name. Also, when I started the field work in 2015, it was a year of turbulence for the air rights economy as the Taipei City Government vowed to end the urban air rights market. It was also a time when air rights broker-dealer sought to dispose of air rights assets cheaply, and broker-dealers sought to leave their job. These became critical reasons that enabled me to access the broker-dealers who had just left their job or who were now adapting their service content to develop into investment portfolio analysis.

In the first two spells of fieldwork, I focused not only on market actors but also broadly public officers and decision-makers in the public sector. I wrote emails and registered enquires to public authorities as they were obligated to reply citizen's enquiries within a certain timeframe. While some government offices were willing to assign public employees for me to conduct interviews, a few of my requests for further statistics and government-commissioned reports were received positively by the lower-level officers but did not get approval by the higher-level department officials. Meanwhile, I also contacted some former officials for their experiences of services and cross-checking for the same issues from different work positions. As a result, I had tried coding the transcripts and cross-referencing interview sources that are now seen in the empirical chapters.

My access to property owners who involved in property-based activism was widely different and resulted in varied responses. We may categorize them by their property locations – one is located in the sending sites, such that their ownership can potentially be sold and converted. The other is located in receiving sites, where such owners were also local inhabitants of urban renewal projects. Concerning the landowners from the sending sites, I tried to contact the landowners' self-help associations which organized a protest against Taipei city government's floor area bank. But there was no response from them. Some informants explained that this is because the 'landowners' were primarily organized by, and constituted of the broker-dealer. In other words, these broker-dealers' network tried to fight the battle under the disguise of their other hats - 'landowners'. To approach the latter category of property owners, it was relatively hassle-free. I made contacts through previous engagement and the introduction of acquaintances. On the one hand, I did focus group interviews with the neighbourhoods that I once worked with during my time in TAVUR. The focus group was facilitated as a collective discussion and evaluation. We discussed how the developer decided to retract the project and left the neighbourhood. Such accounts of residents' valorisation and consequent resistance are examples that show a broad non-linear process co-constituted not only by capital flows but also by contested moments of valuation; the moments which alter the dictum that land and building markets order urban space (Logan and Molotch 2007). On the other hand, through introductions by acquaintances, I was able to connect with a group of female inhabitants who were once living in a community which is now demolished for urban renewal. I met them at the first and third spells of fieldwork and conducted focus group discussion for tracking changes.

In regard to contacting the financial sector, this task was arranged in the final spell

of fieldwork in order to triangulate my arguments. Despite no positive reply from any Public Relations sections of the banks, I took the route of interviewing a researcher whose doctoral research relates to the financial sector. Through his help, I was able to access the national trade unions of banks and further disseminate my research invitation. While I assumed this would help me to collect positive response, interestingly, the potential interviewees expressed their difficulties. The reason for their hesitation was because they could not understand the lexicons I stated in the questionnaire nor could they answer most of the questions; as my questions covered too many departments in the bank structure. This somewhat reflected what Latour once warned (2005, p.33), that researchers' 'birds' eye view' and the sheer irrelevancy of questions raised by the analyst about some actors' serious concerns'. Nevertheless, getting feedback on my unsuccessful questionnaire design was a valuable lesson. This is because the cognitive gap turned out to be instructive on understanding how bank employees understand the terms in their routine work. It also reflected the nature of the banking sector which is a highly specialized, separated, locally-ingrained field.

3.3.3 Online Archive Search and Document Collection

While it is difficult to observe trades on site, the material embodiments of the trades are nonetheless vital for this thesis to configure the market practices and nexus. In this case, I have searched information about air rights policy and trading through their appearance on the newspaper, online forums, government websites, historic news archive, the archive of judicial records, and gazettes of city council and government. Some such critical documents were obtained through informants' generosity. These include anonymized templates of contract; textbooks and handouts of training sessions; portfolio analyses of assembled urban air rights;

customized worksheets for developers' internal use of evaluating investments and so on. These data exhibit various adjoining planes of urban air rights. They help unfolding relatively recent historiography of urban air rights policies and the nexus of multiple sub-markets they situated. As such, archival search and document collection have been critical to demystify the trades.

Policy Reports and Renewal Project Reports. In an initial stage, several government-commissioned policy reports were useful for me to illustrate the diverse patterns of trades, to map out the market peaks and troughs, and to gauge the potential volumes of urban air rights being circulated, pending, or in circulation. In one of the few publicly accessible research reports titled *The System of Transferring Floor Area - A Study on the Operational Feasibility of the Floor Area Bank*, its appendix offers a collection of interview transcripts with market actors published by Taipei City Government (Institute for Physical Planning and Information 2010). This appendix has been particularly instrumental for me to prepare before formally conducting my interviews and compare with my interviews.

Websites/Online Forums. The waxing and waning of the real estate market profoundly affect the demand for urban air rights. There were websites managed by broker-dealers, which partially disclosed trading items that attract potential customers to join their online membership system. There were also some online forums, such as Mobile01, Yahoo, Facebook and so on, where people shared information and the leaflets they received about recruiting 'private ownership of roads' (see Figure 3.3). Surfing through these online forums helped me to develop the sense of ordinary operations to the seemingly fragmented trading of urban air rights.

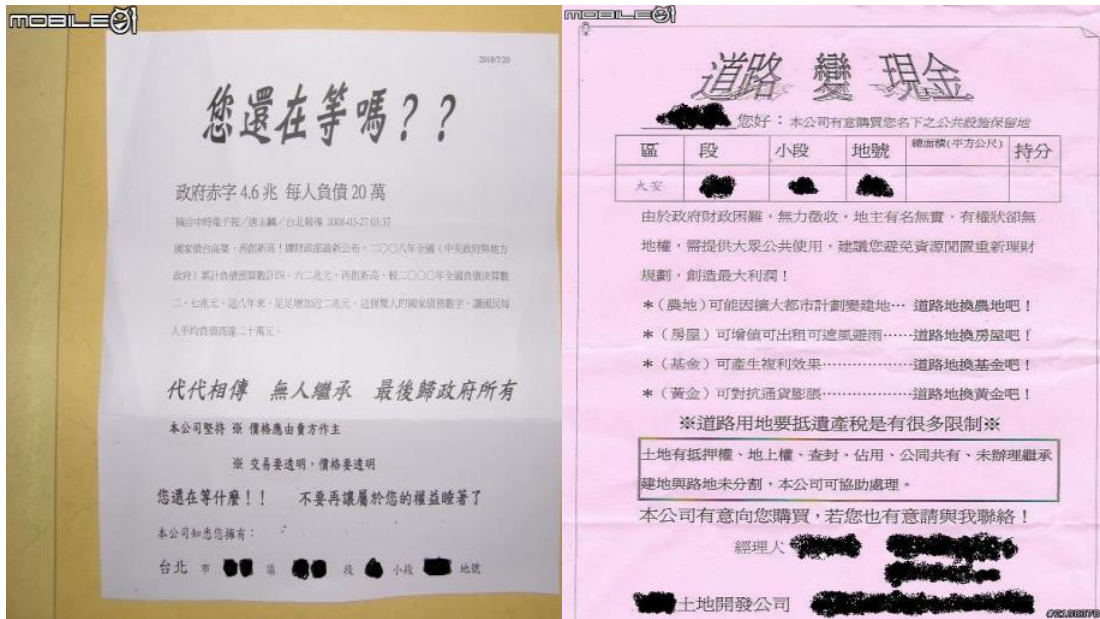


Figure 3.3 Anonymous netizens shared Brokers' leaflets for road ownerships acquisition

Source: online forum <https://www.mobile01.com/>.

Textbook/ Handouts/Portfolio Reports/Worksheets. These materials are of critical importance for me to explore the mystified air rights market trading and puzzle out the possible picture of air rights economy. Through the generous help and guidance from the former and existing brokers and planning intermediaries, I was able to collect the education materials for the occupational training. I was also lucky to bump into some interviewees who kindly shared me copies of their reports or allowed me to take snapshots from the worksheets and portfolio analysis reports while various developers and consultation companies develop their strategic forms for calculating and assessing an investment (example see Figure 3.4). In addition, although not appearing consistently throughout the thesis, visual materials - such as the architecture scenarios printed in urban renewal project reports, online and offline advertisement, the fenced sites of demolished settlements, and the

constructed buildings and their surroundings - have offered a way for me to gain a sense of the transformations underway in the urban landscape.

二、都發局初審修正折繳代金價格(都發局估價初審修正104年8月31日)								
接受基地基本資料								
地段	地號	使用分區	面積	103年公告現值	103年公告現值總值	104年公告現值	104年公告現值總值	容積率
正段	44	第三之一種住宅區	11.00	527,000	5,797,000	590,000	6,490,000	300%
小段	合計23筆		1229.00	459,609.08	564,859,561	513,683.06	631,316,486	293.02
原預計代金價格與公告現值比率：(103年11月自行委任之估價成果)								
公告現值成數 (目前預地為80%)	=	應繳代金金額	/	移入容積面積(m ²)	/	103年平均公告現值 (元/m ²)	x	平均容積率
156.81%	=	354,299,192	/	1440.47	/	459,609.08	x	293.02%
189.23%	=	427,538,375	/	1440.47	/	459,609.08	x	293.02%
159.44%	=	360,245,130	/	1440.47	/	459,609.08	x	293.02%
折繳代金估價計算(都發局104年5月27日委託三家估價師)								
注：價格日期為都審計								
依土地開發分新法試算容積前後價差(土地開發分新法V=[S/(1+R)/(1+i)-(C+M)] 紅字為數值增加，綠字為數值減少，藍色黃色為加減)								
項目	遠見			中信		敏達		
	容移後(20F/B5)	容移前(16F/B4)		容移後(20F/B5)	容移前(16F/B4)	容移後(20F/B5)		
1. 基準容積(都更36%+容移40%)	6338.07 m ²	4897.60 m ²		6338.07 m ²	4897.60 m ²	6338.07 m ²		
2. 銷售坪數	3084.82 坪	2386.99 坪		3026.62 坪	2343.64 坪	3044.80 坪		
3. 建築興建面積	3856.65 坪	3316.06 坪		3927.79 坪	3086.54 坪	3809.28 坪		
4. 舖坪(銷售坪數/基準容積)	1.61	1.61		1.58	1.58	1.59		
5. 移入前後平均銷售單價	1,333,613 元/坪	1,298,979 元/坪		1,523,000 元/坪	1,490,143 元/坪	1,317,744 元/坪		
6. 價差	34,634 元/坪			32,857 元/坪		57,488 元/坪		
7. 全棟可銷售單位	81 個	62 個		81 個	62 個	81 個		
8. 單位平均銷售單價	3,255,556 元/坪	3,306,452 元/坪		2,850,000 元/坪	2,924,419 元/坪	2,786,543 元/坪		
9. 移入前後總銷售金額(含單位)	4,377,651,192 元	3,305,647,556 元		4,840,622,408 元	3,673,672,950 元	4,237,976,628 元		3
10. 開發年數(容移+都審加1.5)	3.50 年	3.00 年		4.20 年	3.20 年	3.50 年		
11. 營造成本(依全聯會四號公報)	230,500 元/坪	188,200 元/坪		230,000 元/坪	196,000 元/坪	190,338 元/坪		
12. 設計費用(2-3%)	2.30 %	2.30 %		2.50 %	2.50 %	3.00 %		
13. 廣告銷售費用(3-7%)	5.00 %	5.00 %		5.00 %	5.00 %	4.00 %		
14. 管理費用(含公共基金4-5%)	5.00 %	5.00 %		4.50 %	4.50 %	3.50 %		
15. 稅捐費用(0.5-1.2%)	1.00 %	1.00 %		0.80 %	0.80 %	1.00 %		
S: 開發或建築後預期總銷售金額	4,377,651,192 元	3,305,647,556 元		4,840,622,408 元	3,673,672,950 元	4,237,976,628 元		
R: 適當之利潤率	17.00 %	16.00 %		19.00 %	17.00 %	17.00 %		
I: 開發或建築所需之資本利息分期利率	5.89 %	5.10 %		7.63 %	5.63 %	6.53 %		
C: 開發或建築所需之直接成本(含地下室)	888,956,974 元	624,081,762 元		903,391,286 元	604,961,574 元	725,050,785 元		
M: 開發或建築所需之間接成本	501,087,642 元	377,975,113 元		521,168,890 元	393,512,378 元	381,979,537 元		
V: 土地開發分新價格	2,142,516,726 元	1,709,357,177 元		2,354,685,180 元	1,973,934,276 元	元		1
基地價格評估總價(與比較法加權)	2,394,989,500 元	1,855,144,775 元		2,513,925,645 元	2,121,333,885 元	2,401,650,950 元		1
差額地價(容積代金價格)	449,844,725 元			392,591,760 元		457,280,175 元		
代金公式說明：容積代金=(容積移轉後2樓以上平均銷售價格 x 管銷比 - 平均造價) x 銷坪與容積坪比 x 移入容積面積坪								
係數	說明	數值			備註			
		遠見	中信	敏達				
容積代金價格	應繳納代金總價格	449,844,725 元	392,591,760 元	457,280,175 元				
移入後單價	移入容積後平均銷售單價	1,333,613 元/坪	1,523,000 元/坪	1,317,744 元/坪	依土地開發			
管銷比	開發所需成本與總銷比	63.85% %	52.54% %	64.53% %	財審會			
移入後造價	營造施工費用	230,500 元/坪	230,000 元/坪	190,338 元/坪	依全國聯合會			
銷坪	實際銷售坪數比	1.61	1.58	1.59	依提供圖			
移入容積面積	移入面積坪數合計	435.74 坪	435.74 坪	435.74 坪	依審議範圍			
公告價格與公告現值比率試算(公告現值成數=代金金額/移入容積面積/平均公告現值x平均容積率)								
公告現值成數 (目前預地為73%)	=	應繳代金金額	/	移入容積面積(m ²)	/	104年平均公告現值 (元/m ²)	x	平均容積率
178.14%	=	449,844,725	/	1440.47	/	513,683.06	x	293.02%
155.47%	=	392,591,760	/	1440.47	/	513,683.06	x	293.02%
181.08%	=	457,280,175	/	1440.47	/	513,683.06	x	293.02%

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Figure 3.4 A sample page of portfolio analysis of assembled air rights

Source: An interviewee from a consultation agency based in Taipei City

3.3.4 Semi-structured Interviews and Focus Groups

The trading platforms for urban air rights are varied and follow different types of air rights. Despite the fact that bonus floor area (BFA) is decided upon the urban renewal review committees, other types of urban air rights trading are either involved in illicit, private business settings (i.e. Transferable Development Rights, TDR); or only enclosed between the buyers (developers) and government (i.e. Incremental Floor Area, IFA). I did not have a chance to take part in directly observing how the trades work. I opted for a research strategy that sought to map through material and verbal statements offered by various types of spatial-financial intermediaries.

As my fieldwork progressed, I developed clearer ideas about the linkages and operations in different sectors of urban development. At the same time, as my project builds upon a theoretical assumption that highlights urban air rights as a critical matter for the urban-finance nexus, a sense of uncertainty grew over the possibility of confirmation bias. This urged me to conduct a third round of semi-structured interview. This time it centred on the task of triangulation for verifying and rebalancing accounts. In total, I did 21 semi-structured interviews and three sets of focus groups with a total of 38 persons (Table 3.2). For interviews with government officials, I built up the contacts mainly through official channels. To conduct elite and expert research, one of the challenges is regarding settings which located in restaurants and coffee shops. There is often an unspoken rule for interviewees (especially experts/professionals) to expect the interviewer to cover the expense by the funding of research project. Besides, there were occasions where some interviewees specified the location to meet up at high-end coffee shops and

restaurants. My principle is to cover the cost of the coffee/meal myself, if affordable and reasonable. However, during my third field trip, there was one supplement interview with a former dealer. A liaison person chose a luxury restaurant which I was expected to pay £300 for three persons in total. Despite the awkwardness, I expressed that I could not afford this because I did not have specific project funding. Nevertheless, the liaison person insisted it would be the right place for meeting up and later covered all the expense. Shifting between sites with diverse consumption levels, the uneven and dynamic socio-spatiality of air rights assemblage was also entrenched in the fieldwork process.

On a side note, following unobservable trades were one of the riskiest tasks for me. Learning through my interview records, different types of broker-dealers shared with me a variety of strategies at the firm scale that affects the ways that they proceed with deals. In the relatively opaque operations of this industry, it was not the case that one rule works for all. Therefore, to conduct triangulation before writing about how the private TDR market functions, I tried carefully sorting out how business techniques/strategies are employed in different trading stages; and double-checking with interviewees through follow-up skype interviews.

As a result, I visited government offices, met architects, planners and appraisers in their reception lounges and coffee shops, and met former broker-dealers in restaurants they assigned across cities in Taipei, New Taipei and Taichung. Also, for meeting inhabitants (once) living in those receiving sites of urban air rights, I visited their homes, self-employed food stands in the traditional market and McDonalds for focus-group interviews in both Taipei and New Taipei cities. Since the 'sites' of trade are either ephemeral and original settlements that might be demolished and

displaced, these interim places for interviews become critical alternatives to follow.

Table 3.2 List of Informants (Interviews and Focus Groups)

No.	Info about the Interviewees	Dates of Interviews	Place of Interview
Interview (1-2 person)			
A	Developer, 8 years	September 30 th 2015	Coffee shop
B	Appraiser, 15+ years	October 9 th 2015	Coffee shop
C	Planner (Consultation Company)	October 15 th 2015	Restaurant
D	Planner (Consultation Company)	October 21 st 2015; September 20 th 2017	Restaurants
E	Architect/Redeveloper	October 23 rd 2015; October 27 th 2016	Restaurant; Phone interview
F	Planner/ Commissioner of Local Government (Urban Redevelopment Bureau)	October 28 th 2015	City Government
G	Former Broker-dealer (once worked in the biggest air rights bank)	November 2 nd 2015; September 20 th 2017	Restaurants
H, I	Public Officers/ Local City Government	November 9 th 2015	City Government
J	Professor/ Former Commissioner of Local Government (Urban Development Department)	November 13 th 2015	University Faculty's Office
K	Planner/ Lawyer/ Broker	November 20 th 2015	Company
L	Planning Officer/ Local City Government	November 26 th 2015	City Government
M	High-level Public Employee/ the Water Resources Agency, Ministry of Economics	December 1 st 2015	Government office
N	Planning Officer/ Construction and Development Agency, Ministry of Interior	December 2 nd 2015	Phone Interview
O, P	Student Activists	August 10 th 2016	Coffee shop
Q	Activist Researcher	August 11 th 2016	Coffee shop
R	Activist Researcher	December 27 th 2016	Coffee shop
S, T	Senior Banking Officers	December 30 th 2016	Bank Trade Union Office
U	Redeveloper of Da-Chen Community	January 4 th 2017	Company Office
V	Executive Board Member of	January 4 th 2017	Office

	Taiwan Academy of Banking and Finance (TABF)		
W	Professor/Architecture and Disaster Prevention	January 7 th 2017	University Faculty's Office
X	Bank Officer/Project Finance	January 9 th 2017	Restaurant
Focus Group			
FG1	Six participants, inhabitants of Da-Chen Community	(1) November 7 th , 2015; (2) January 7 th , 2017	Inhabitants' home; McDonalds
FG2	Five participants, Brokers and Developers	January 4 th 2016	Developers' Association
FG3	Three participants, inhabitants of a cancelled redevelopment project Xin-Zhuang, Zhong-Fu Section	December 28 th 2016	Inhabitant's food stall in the market

3.4 Data Analysis

Data analysis is a process that collages urban fragments. During organizing and analysing the materials for thesis writing, two major challenges surfaced in my writing-up process. On the one hand, the abundance of materials appears to be sufficient to generate multiple lines of narration, and yet I was clearly aware that these portraits are meant to be incomplete. To be able to settle with a coherent theoretical concept for each chapter was a painstaking task, as fragments and ideas that can boil out multiple analysis kept on at me until the very last. On the other, the dearth of materials, whether in terms of resembling the kind of development of the urban - financial nexus in existing (mainly Western) urban empirics, or the systematic statistics and detailed linkages between local and global investments, had troubled me during the writing-up process. Counterpoised to the perceptible and similar patterns that have been developed in existing research, I start to compare the collected data with existing research as a way to resolve the uncertainties haunted

alongside the writing process.

All of this resonated with Walter Benjamin's project *The Arcades Project* (1999), in which he claims the methodological objective is to annihilate the very bourgeois thinking of linearity and progress and to shed lights on moments of actualization. The actualization of the unruly and boisterous densities of the landscape in Taipei are themselves clues to be read in parallel with the collected documents. In such a process, policy and auditing reports, master theses written by experienced broker-dealers, together with my informants' records, all helped to unveil the piecemeal and rigorous operations of air rights markets in the urban processes. These materials helped me to understand the creation, valuation, valorization and contestation amongst various air rights products.

The first analytical task for me was to map out the market structure and understand the market dynamics of urban air rights. To establish an urban epistemic of 'assemblage' that could follow air rights and thread through various urban policymaking instruments and economization processes; it required a massive data-mining of historical data across various lines of urban policy. In contrast to usual analytical trope which focuses on one individual policy instrument at a time, this 'following the air rights' methodology appears to be extraordinarily daunting for its flooding information. Some online mind-map tools were helpful in this case. I used Prezi, LucidChart and Coggle to draw up various drafts of mind-maps and flowcharts, featuring their far-fetched complexity (i.e. Figures 3.1 and 3.5). Before the fieldwork and during the initial supervisory meetings, I also drafted a preliminary research report. These draft materials have been useful for me to prepare for my semi-structured interviews and focus groups as an initial mapping to

be challenged, revised, and updated. This practice was particularly useful in terms of identifying the continuum of urban air rights markets, searching the linkages between sub-markets.

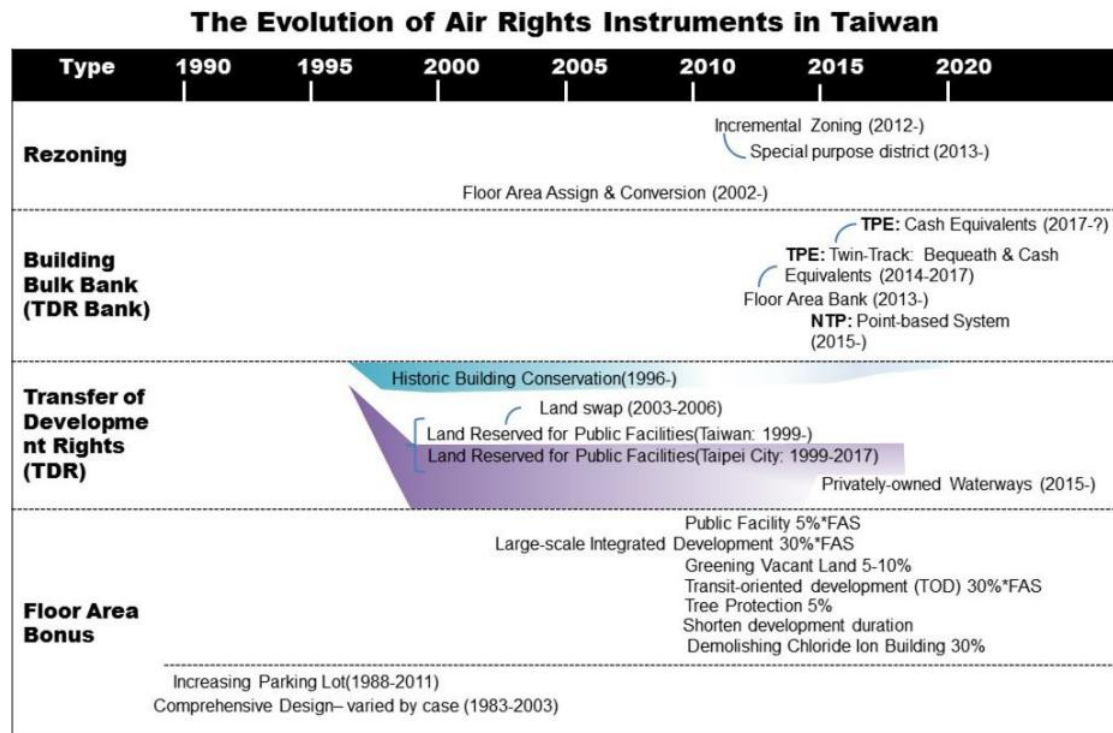


Figure 3.5 An initial illustration of the evolution of air rights instruments

The second analytical task is relatively demanding on a researcher’s capacity for adequate knowledge. Knowing a thing or two about finance poses a substantial threshold to undertake data analysis. In the initial two years, I often became frustrated with my lack of precision in data analysis. Through the supervisory meetings, I realized there is a need to study the basics from a relatively systematic and strategic reading of finance textbooks. This transitional step was critical for me to continually compare and undertake the analysis. It prepared me to be able to figure out the synergies between urban and finance sectors, and the financial logic

in spatial practices. Equipping my background knowledge of the finance sector became a pressing task for undertaking the analysis.

3.5 Ethical Concerns

Researching controversial, corrupt and illicit economies often brings ethical and practical challenge (Browne and Milgram 2008; Brooks 2014). The ethical concerns addressed in this section revolve around two aspects. The first is the interview-based research ethics. The second is the role/identity switching in regard to disclosing research data in the research process.

First, in regards to the interview-based research ethics, I submitted a field work plan that includes interview designs and was reviewed by the departmental ethics committee. I set up these interviews by sending invitations over emails and attached my semi-structured questionnaire for their information. On-site, regardless of numbers of interviewees, I would provide the participants with two sheets. One being the project information sheet, containing my contact number and email address, which the research participants kept. The other is a consent form which I kept. At the beginning of each interview, I explained to every interviewee and focus group participant the purpose of this project and their right to retract their consent at any rate without reason. I informed them how I am going to store and use the interview recordings and data they had shared. In other words, all of the consent forms were collected before the interview taking place.

In the process of data collection, some informants generously shared their business tactics. Some of them brought contract examples and excel sheets of investment

assessment for me to take snapshots. Some reiterated it was okay to make public use of the portfolio analysis (such as Figure 3.5) as they hoped to de-stigmatize the broker-dealers' business against allegations that it was 'opaque'. However, my principle was to write my analysis without the appearance of these forms. I considered this part of the research ethics to protect my informants' confidentiality against any possible scenarios.

During my fieldwork, the lack of transparency was less of a problem of the market sector and more a pressing issue of governance. The up-to-date statistics were either missing or undisclosed, the trajectories of urban air rights were concealed and untraceable through the online GIS system, and the related policy research reports were made difficult to acquire. Therefore, the authorized amounts of urban air rights, the pending volumes to be allocated, and the unknown picture of total volume control and so on, these both quantitative and qualitatively mattered information were made unfamiliar to the public. An obviously effective route is to send an enquiry through city councillors, even though the city councillors' office would censor the 'sensitivity' and potential use of the data and decide whether to provide it or not. Though this is not something new for any capitalist democracy system, in what circumstance and for what purpose should one disclose the data becomes an ethical burden for a researcher. On a side note, for instance, Andrew Barry (2013) in *Material Politics* has extensive discussion on the implication of the production of information. In my case, I regard the disclosing of information is pertinent to the public interest and can bring a positive impact at the right occasions. Yet, one thing concerned me is the possible impact that might bring to my informants.

When I was collecting fragments of official statistics during my fieldwork, I considered how these statistics - which signify the material moments when air rights shift between virtual and concrete - were essential to combat the artificial construction of 'logic of scarcity'. Thus, I occasionally shared these data during the occasions of attending local society of river rehabilitation, and the invited talks in public. I regarded it proper to disclose relevant statistics of floor area that aggravated the living density of the residents' neighbourhood during these events. In the same manner, during my second spell of fieldwork in August 2016, I was invited to attend a live-streamed public consultation host by Lin Chuan, the erstwhile Premier of Executive Yuan. This was the moment at which I was troubled by the tension between an activist's imperative and researcher's ethics. That is, the appropriate timing and occasion to speak out and write about issues related to my research.

Amongst the invited NGO workers and activists from various areas, everyone shared their observation regarding pressing issues at hand and prospective solutions. Contemplating that this was an important opportunity to underscore the issue, I shared my view and orally cited the statistic offered by an informant who is a government employee. As soon as I spoke out, I felt something uncomfortable. Though this could be similarly regarded as a piece of information that supposed to disclose for the public interest, it potentially exploited the rapport I had built with my informant. Since my unconscious action could potentially hamper the government employee's work relation, to be responsible to my action, I phoned the informant the next day, to explain to her what happened and to apologize for bringing her any inconvenience. I also reminded her that she retained the right to retract a part or whole of her interview.

3.6 Conclusion

Studying financialization in settings of ordinary cities brings many challenges. The process of conducting the research is always immediately followed by the essential question of ‘Is it worth coining a new term to describe the latest variant of something old?’ raised respectively by Christophers (2015) and Fairbairn (2015). Moreover, what is at stake as a methodological concern when studying financialization is: When shifting empiric locus to relatively ordinary cities, how can we allow a re-description that is not quite the same kind of rationales and relationalities employed at the vicinity of world financial centres? Amidst the mounting interests on researching financialization, this project seems counter-intuitive as it studies financialization at the periphery. Yet it is also a conscious and cognitive move that shifts the object-matter of urban-finance nexus from following capital flows to following the air rights. In this way, urban air rights as a contested terrain of diverse value systems becomes visible, such that one can draw financial operations from urban processes.

This research is primarily motivated and informed by my engagement in urban activism. My self-reflection between previous experience and current dissertation project has helped me to identify my research orientation towards ‘networking from the middle’ of the air rights assemblage. Strategically, the thesis’ focus on the techno-social conditions of manufacturing urban air rights enables it to build upon and go beyond the canonical narrative of financialization. My autobiographical account suggests both the potential and threshold limits of the research design. It outlined some of the challenges of following urban air rights, including the fact that the trades of air rights are unobservable, actual circulations lose the precision both

quantitatively and qualitatively and, besides, the connections (between places) are decoupled from institutional operations.

Moreover, as mentioned, the assemblage thinking employed in the thesis underpins my methodological considerations. ‘Mobile positioning’ and ‘passionate detachment’ have informed my plotting of interview arrangement and coordinated between the main research questions and the theoretical framework. Meanwhile, this research acknowledges the whole research process is built upon an understanding of ‘limited location’ and ‘situated knowledge’. As such, this research responds to the question of how the theoretical and empirical production recognizes its limits, and turns such limits into critique/contribution to understand the variegated financialization of the urban processes. In the following chapter, we will start looking at the market-based instruments of ‘urban air rights’. This will give us an idea of how urban air rights work.

4

Air Rights in Urban Taipei

4.1 Introduction

Since the early 2000s, urban Taipei has witnessed a distinct wave of high-rise construction. This contemporary wave of high-rise construction can be distinguished from previous building frenzies in the 1970s and 1990s because of the growing role of urban air rights. Such observations have been made by architects who, at the frontline of real estate industry, reflect upon the remarkable changes in their professional practice. On January 26th 2013, for example, architects and planners based in Taipei Metropolitan Area gathered in a symposium. Specifically themed to discuss the public policies of various urban air rights instruments such as bonus floor area and transfer of development rights, the symposium adopted a wary tone by posing the first question on the agenda as follows: ‘Should Bonus Floor Area be the *only* solution to improve urban environment’? Indeed, architects have expressed their concern that urban air rights have been catapulted from a regulatory parameter, designed to bring unruly urban development under control, to a market-based urban solution for reviving urban renewal and managing growing debt

associated with delivering public infrastructure.

The above vignette is merely the tip of the iceberg of a proliferating air rights economy in urban Taipei. In 2015 the World Bank published a research report *East Asia's Changing Urban Landscape: Measuring a Decade of Spatial Growth* (2015), which listed Taiwan as having the second highest proportion of urban land (5.3%) just behind the city-state of Singapore. Regarding the pace of new urban construction, Taiwan is again listed as the second highest new urban construction per capita (260 sq. m²) which only fell behind Laos (280 sq. m²) during 2000–2010. While these statistics may not precisely reflect the expansion of urban airspace in urban Taipei, Figure 4.1 further uses building usage license data to show that the proportion of high-rise buildings above 30 meters within total new buildings have significantly increased since 2002.

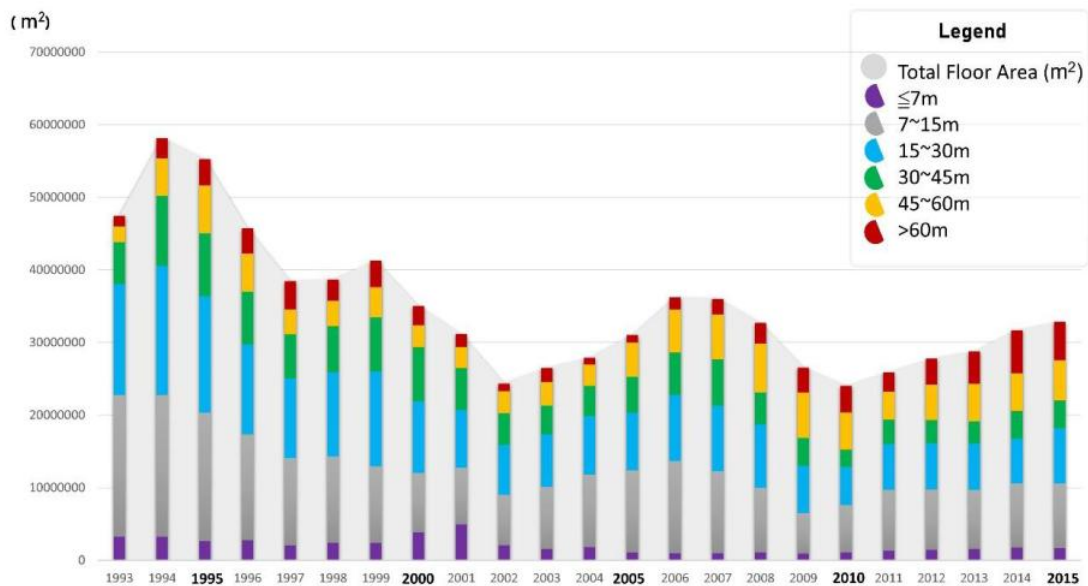


Figure 4.1 Nation-wide Building Usage License by Height (1993-2015)

Source: Personal Collection from Ministry of Interior and National Statistics, R.O.C. (Taiwan) (2015)

To set the stage for the analysis of the proliferating air rights economy in urban Taipei, this chapter will identify and examine three types of urban air rights found in the Taipei metropolitan area: Bonus Floor Area (BFA), Transferable Development Rights (TDR), and Incremental Floor Area (IFA). Each of these mechanisms arises in the context of urban zoning systems, and takes the form of a relaxation (re-zoning) or overriding of the regulatory parameter (known as the Floor Area Ratio, FAR) which designates the buildable volumes of street blocks. The chapter outlines the ever-expanding assemblage of urban air rights in Taipei, and reveals how air rights have shifted weight from regulatory parameters in urban policy and planning into market devices.

Merging the conceptual and empirical terrains, this chapter maps the contested typology and evolution of air rights. It shows the increasingly tight relations between real estate and infrastructure financing, and exposes the deepened and murkier entanglements between urban air rights as public/collective goods and exclusive property rights. What is of particular interest, then, is not merely the quantity and volume of air rights created and traded in Taipei Metropolitan Area over the past three decades. Indeed, in these ‘opaque markets’ (Clark and Wójcik 2007), the precise scale of the volume of urban air rights that have been created, either idle or presently in circulation, is difficult to gauge precisely. Instead, Section 4.2 begins with an introduction of how multiple applications of urban air rights are developed in the form of three policy instruments: Bonus Floor Area (BFA), Transferable Development Rights (TDR), and Incremental Floor Area (IFA). This section will track through the urban air rights that have been mobilized in relatively specific socio-technical market practices and urban policy initiatives in the

Taiwanese context. Section 4.3 untangles the three policy instruments into their economic mechanisms and forms to explain how they manifest as market devices. From BFA to TDR to IFA, each is considered a set of mechanisms in that their socio-technical workings involve processes of economization. Meanwhile, the forms these mechanisms co-produced, such as bonus, offset and permit, also mobilize their socio-economic agencements over the course of their production, exchange and consumption.

In section 4.4, I will use two examples to reveal the diverse and relatively discrete forms that air rights can take through the prism of the ‘market device’. In both cases, air rights develop subtly different forms across financialized processes of urban renewal and infrastructure provision. Urban Taipei arguably exemplifies the global tendencies presently underpinning cities, wherein financialized urban operations are manifest in high-rise building booms and largely decoupled from local demands for affordable housing and infrastructure. Large-scale and fast-paced high-rise building construction has incited a series of environmental¹⁷ and societal concerns¹⁸. Drawing on the specific socio-technical market practices and urban policy initiatives that have emerged in Taipei City and New Taipei City from the 1990s to the present, what begins to be revealed here are the diverse and relatively discrete forms that air rights can take. This underscores wider calls for geographical analyses of financialization to be sensitive to spatial variegations as it moves beyond Anglo-

¹⁷ Environmental issues raised by building upwards include changes in micro-metrology, rights to light, ventilation and urban wind field; geological issues of land subsidence (such as Shanghai and Jakarta) and landslides (e.g. Shenzhen and Phnom Penh); urban hydrology and seismic resilience; and density and soil-carrying capacity.

¹⁸ The range of ‘societal concerns’ alongside the production of high-rise buildings, particularly in Taiwan, includes the so-called ‘black - gold politics’ (Chin 2003) – the complex nexus among gangsters, politicians and government officials that penetrates deeply into the air rights economy.

American heartlands (Christophers, 2012). Section 4.5 then summarizes the chapter by analyzing how air rights working as market devices incorporate urban air into neoliberal urban policies and made their market operations conducive to financialization.

4.2 Air Rights in Urban Taipei

As noted in Chapter 1, urban air rights first began to be extensively created as part of urban planning and development in the USA during the post-1945 period. It was also during this period that urban air rights first began to appear in cities across the globe, often travelling from the USA as part of technical advice in urban planning programmes. Indeed, it was through this policy transfer process that urban air rights found their way into the modern urban planning system in Taiwan. Under the regime of the Kuomintang (KMT, Nationalist Party), local Taiwanese bureaucrats collaborated with technical advisory groups from the UN and USAID to adopt the North American zoning techniques into the Taiwanese urban planning system. This updated the grids originally drawn up during Japanese colonial rule. Urban air rights in Taiwan are rooted, then, in wider experimental processes that have applied Western planning ideas (Fu 2014).

Once separated from their underlying land parcel, urban air rights are widely recognized by urban planners to take the forms of bonus air rights, offsets and permits (see Table 4.1). Each has applications in different market contexts, but may also be combined with specific urban policy initiatives and applied to particular locations. In a nutshell, air rights appear as commodified property rights, but they function as spatial credits in various secondary markets and are capitalized into

spatial equity. In Taiwan, all three forms of urban air rights emerged after the 1964 Urban Planning Act, a watershed piece of legislation that shifted the vision for urban planning from a two-dimensional building coverage ratio to a three-dimensional volumetric measure¹⁹.

¹⁹ Technically speaking, despite the category of 'legal floor area', the emergence of high-rise building also prompts an increase of 'exempted floor area' affixed to each high-rise building. It refers to spatial elements such as the balcony, stairs, electronic and firefighting facilities, evacuation route and legally-stipulated space for parking in a high-rise tower. This 'exempted floor area' may vary following the volume of buildings. While high-rises are generally associated with a higher level of 'exempted floor area', this exempted volume in general contributes to 1.2-1.4 times the legal floor area. Since the 'exempted floor area' is the by-product of commodified building design and relatively different from other tradable air rights, this thesis will not discuss it in length.

Table 4.1 Typologies of Urban Air Rights

Mechanisms	Properties	Forms	Purposes for Planning	Findings
Bonus Floor Area (BFA)	<ul style="list-style-type: none"> - Area-based, one-off, non-transferable air right; - Transaction only occurs in the package of project ownerships (namely shifting hands of developers) 	Bonus credits	<ul style="list-style-type: none"> - Fungible for Urban Policies (e.g. building qualities and socially-oriented service/amenity provisions) - Rebuilding Subsidy 	<ul style="list-style-type: none"> - The expansion of BFA credits/coupons is reinforced by its stretched items of exchange and the relaxed zoning caps. - BFA enables the spatialization of coupon pooling practices (see details in Chapter 5)
Transferable Development Rights (TDR)	<ul style="list-style-type: none"> - Directly tradable, mobile and divisible air rights; - Transferable by contracts and TDR permits 	Offset permits	Offset credits for compensating property rights restrained by (1) historic preservation; (2) natural conservation; and (3) urban public infrastructure projects	<ul style="list-style-type: none"> - The expansion of TDR credits is evolved with, and emerges through, the increasing reliance on market-based instruments for debt relay. - TDR and their derivative features allow hedging, arbitraging and speculating investments by developers/investors (see Chapter 6)
Incremental Floor Area (IFA)	<ul style="list-style-type: none"> - Area-based, non-transferable air rights; - Earmarked to infrastructure projects 	Permits	Public debt instrument	<ul style="list-style-type: none"> - The inception of IFA credits mimics the rationale of BFA and TDR as a value capturing instrument for infrastructural financing (this chapter)

The evolution of air rights instruments in Taiwan was initiated through the planning instrument of rezoning (see Figure 4.2). Primarily set in motion through periodical reviews or individual rezoning with specific conditions²⁰, these air rights instruments took the form of floor area adjustment [容積調派], which enables the exchange of building volumes between two publicly owned land lots. It amounts to an administrative process of rezoning as the air rights instruments were not commodified; as one planning scholar expresses, it is 'giving out floor area for free'²¹. In addition, rezoning as an administrative action is also tied in with other instruments, such as the rezoning for special districts that is assorted with Bonus Floor Area (BFA), or incremental zoning that can match the needs of Incremental Floor Area (IFA).

Bonus air rights in Taiwan take the form of a Bonus Floor Area (BFA), a planning instrument known elsewhere as Floor Area Ratio (FAR) Bonus (in the USA and Japan); as Bonus Plot Ratio (in the United Kingdom, Australia and Hong Kong); and as incentive Floor Space Index (FSI) (in India). Offset urban air rights in Taiwan are chiefly known as Transferable Development Rights (TDR), which is the same elsewhere in the world. Finally, urban air rights in the permit form are mainly Incremental Floor Area (IFA) in Taiwan, a newly established policy instrument since the early 2010s which is also emerging in urban planning policy in Brazil and Indonesia.

²⁰ Relative regulation for immediate rezoning of individual plot is seen in Article 27-4 of the Urban Planning Act. Conditions are limited to causes such as: to cope with critical disasters, national defence or economic development.

²¹ Confidential interviews, planning professor and former commissioner of local government, November 13th, 2015.

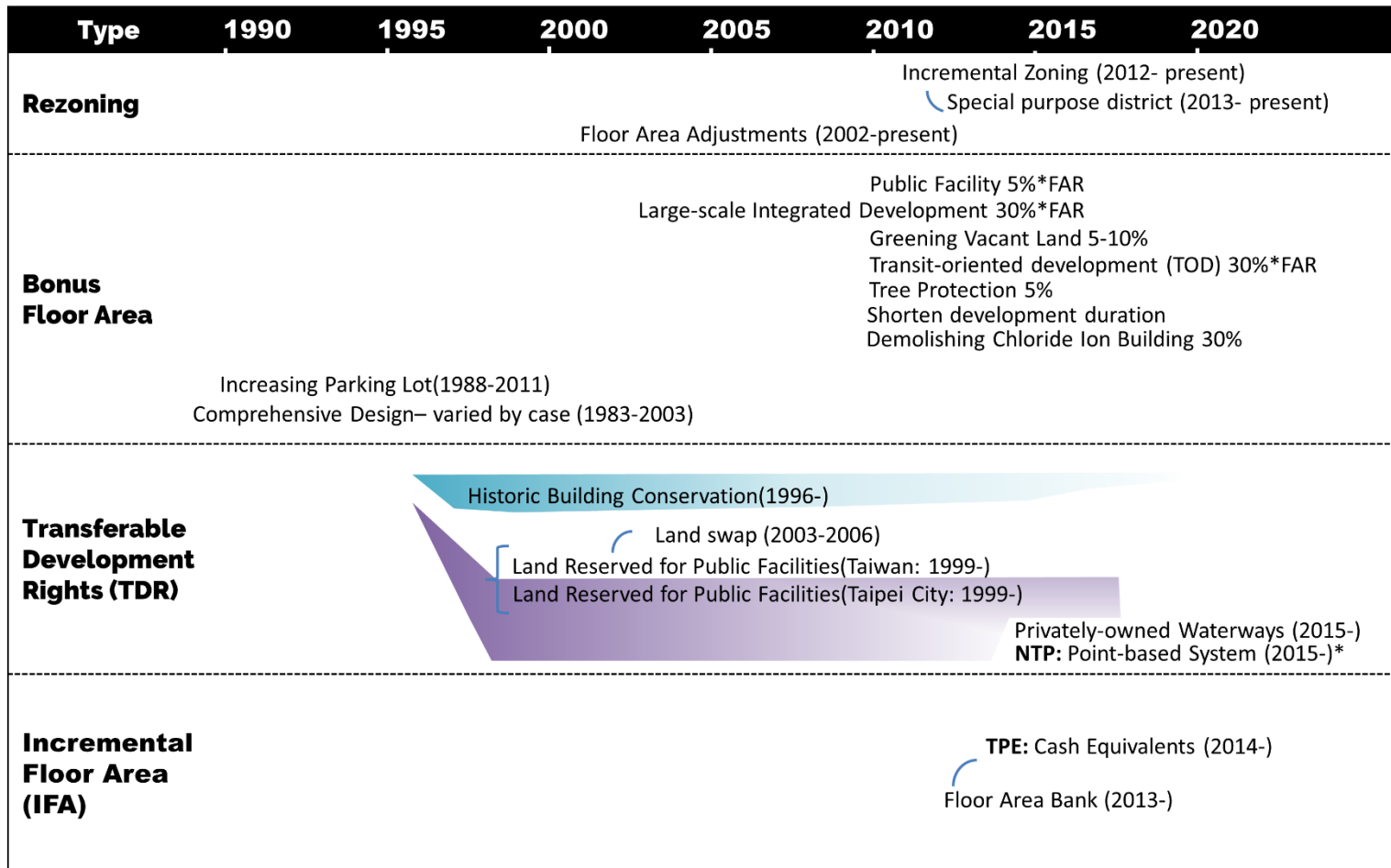


Figure 4.2 The Evolution of Air Rights Instruments in Taiwan

* The points-based system was a governmental initiative proposed by New Taipei City Government yet was halted by the City Council.

Source: Personal Collection

4.2.1 Bonus Floor Area

BFA is a market-based incentive mechanism that rewards developers who either comply with a design standard or who provide public facilities. It is a non-transferable air right that developers apply through development projects, which is issued by the local authorities at the discretion of relevant committees. While associated with the underlying site, BFA entitles the developer to build additional floor area on the same site (Németh 2009) and is only made transferable in the package of project ownerships – namely shifting hands between project implementers. In Taiwan, BFA became incorporated into comprehensive planning after 1983 and was typically used as part of the planning and construction of parking lots between 1988 and 2011 (see Figure 4.2). In the wake of the global financial crisis, however, BFA has been more widely used as an incentive that made virtual air rights fungible with a variety of policy causes. Covering a wide array of policy causes, they include the enhancement of building and environmental designs and the private provision of socially-oriented services and amenities. BFA has been strategically used in both accelerating urban redevelopment programmes and providing rebuilding subsidy for property owners in Taiwan. Across these various and multiple applications, as the examples in Figure 4.2, the quantity of BFA may range between 10 percent and 50 percent of the legal floor area of the underlying land parcel. In short, the prolific application of BFA is now often legitimated on the grounds that it assists planners and policymakers to address various social and environmental needs throughout the urban landscape (see also Chapter 5).²²

²² Confidential interviews, three officials from New Taipei city government, November 9th and 13th, 2015.

4.2.2 Transferable Development Rights

TDR are a market-based offset mechanism that allows the urban air rights created in relation to one site to be moved and exercised at another site. TDR involve mitigation between two sites – curbing the development at one site in exchange for praising development at the other. As such, the production of TDR is enacted through purposes of historic and environmental conservation. In practice, the creation of TDR credits depends on the workings of intermediary institutions and land brokers who identify potential land parcels that, according to local regulations, meet the requisite conditions. Moreover, prior to being redeemed as officially authorized permits, TDR are first traded as offset credits through various secondary market arrangements that can include public auctions (Vejchodská 2016), stock exchanges (Sandroni 2010) and private markets (Shih et al. 2017). That is to say, ownership of such unused airspace is vested in the person and detached from the land prior to its anchoring to a land parcel for development. This feature thus endows TDR a speculative character that is not present in other urban air rights, or at least their orientations presented in theories of urban planning. The initial adoption of TDR sought to mitigate trade-offs between development and conservation, spreading worldwide from the 1980s (Renard 2007; Janssen-Jansen 2008; Linkous 2016). Indeed, TDR were first introduced into Taiwan in 1996 as part of cultural heritage programmes. Thereafter, TDR were integrated much more broadly into local government attempts to build and renew urban infrastructures. In Taipei Metropolitan Area, for example, the local governments tend to compensate landowners who are subject to zoning and acquisition restrictions on their right to development with the spatial credits that take form in TDR. With the vibrant and speculative production of TDR, TDR markets in Taiwan are characterised by their

market operations of arbitrage. Pricing develops through anchoring at the prospective development that is imbued with a derivative logic (see Chapter 6). Therein prices are typically arrived at in relation to the prices of other similar assets rather than the investable object itself, and trading often takes form in futures or option contracts without the actual delivery of the underlying assets (Bryan and Rafferty 2006; Millo 2007).

4.2.3 Incremental Floor Area

The third emerging type of urban air rights is a purchasable building permit, named Incremental Floor Area (IFA) in Taiwan. Such permits convey an urban air right that is non-transferable and affixed to the designated underlying site. This kind of purchasable permit is issued by local municipalities and sold to developers to build additional floor area on the same site, typically in the immediate surrounding area of a public infrastructure project. Permits are the most recent form of urban air rights, only beginning to emerge sporadically worldwide after the global financial crisis. While various types of purchasable building permits have respectively been invented in São Paulo (e.g. CEPAC), Hong Kong, Shenzhen and Jakarta, this form of air right does not have a common name, but reflects the emerging doctrine of ‘value capture finance (VCF)’ across the globe (Sandroni 2010; Smolka 2013; Suzuki et al. 2015). IFA was developed by both the central and local governments in Taiwan as a way to enhance the self-financing ratio of public infrastructure projects as the earmarked fiscal reserves. In Taipei Metropolitan Area, IFA has been particularly adopted as a competing product against TDR in order to restore some control to the urban air rights markets which predominantly feature the circulation of TDR, and has already been seen as constitutive of rapidly increasing land prices.

The market-based instruments mentioned above are characterised by their ‘cap-for-trade’ framing. In practice, the ‘cap’ is frequently challenged by technical relaxations. Take Figure 4.3 for example: this figure produced by a 2015 policy report released by New Taipei City Government (2016) explains the assembling effect of multiple types of urban air rights. The cap-and-trade system of urban air rights is distinctive by comparison with its counterpart example of carbon emission trading with regard to how the ‘cap’ is defined. In the carbon emission market, the ‘cap’ takes the form of a total quantity of emission allowances at the scales of regional or nationwide. By contrast, the cap associated with urban air rights is set above the zoning regulation that pertains to the part of the urban zone in which the building is located (namely the ‘legal FAR’). The loose-fitting central regulation of the *Urban Renewal Act* and contingent policies stipulated a maximum percentage of legal FAR for different zoning areas. This sets the quantities of air rights that can be voluntarily assembled by developers. In this way, a research report released by the New Taipei city government exemplifies this individual-based ‘cap-and-trade’ system through allocating existing urban areas into three categories: a low-intensity development zone, allowing the cap to be 1.2 times legal FAR; an adequate-intensity development zone, which sets 1.5 times legal FAR; and a controversial breakthrough of 2.5 times legal FAR was proposed in the zones designated for priority development. Within these cap limits calculated for individual sites, various types of air rights can be assembled indifferently. Overall, we can see how ‘caps’ are a fragile threshold that can be adjusted and surmounted. A proliferative policy, together with the ill-defined ‘cap-and-trade’ system have contributed to the substantial expansion of spatial credits.

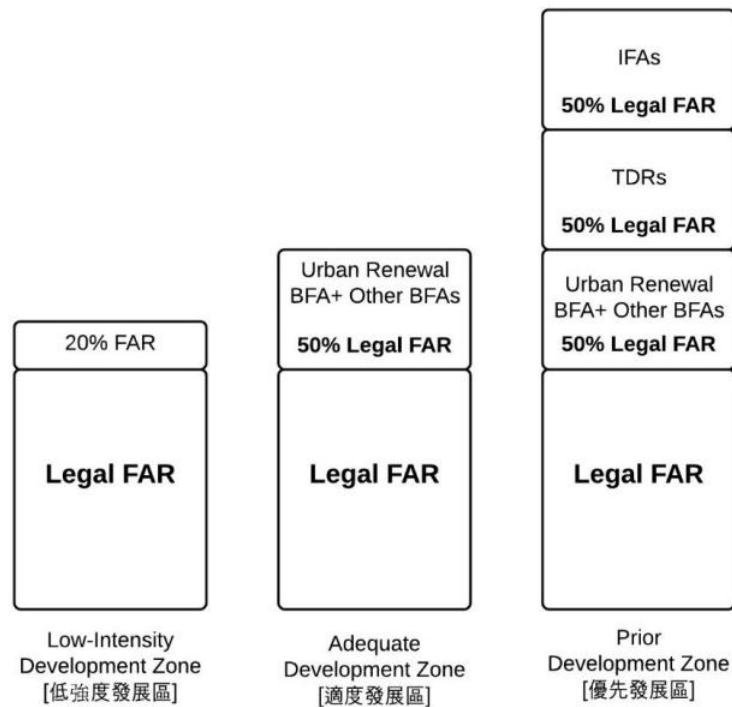


Figure 4.3 The Cap-and-trade System of Floor Area Volume in New Taipei City

Source: Amended from New Taipei City Government (2016)

4.3 Air Rights as Market Devices: Mechanisms and Forms

To understand how the three market-based policy instruments play out in urban financialization, this section will unpack how these policy instruments and the air rights they produced function as market devices. As discussed in Chapter 2, market devices in the Deleuzian understanding are a ‘multi-linear ensemble’. According to Muniesa et al. (2007), not only do market devices enact processes of economization, but market subjectivities are also enacted in such devices. In this thesis, I unpack urban air rights as market devices in two aspects. Air rights-based policy instruments and their socio-technical operations are *mechanisms* that evoke processes of economization, on the one hand. On the other, I use the material ‘forms’ to denote various types of air rights which are produced as spatial ownership in different phases of materialization. The forms of air rights help to highlight the

other dimension of market devices – that their economic agencements serve as spatial-financial registers and could further evoke socio-cultural workings. For instance, air rights in the forms of bonus, offset and permit perform their mediation differently, yet overall they consolidate calculative behaviours and shape an economic sense of possession.

4.3.1 Economic Mechanisms of Air Rights

One major aspect of air rights working as market devices is that air rights engage in what Muniesa et al. (2017, p.4) term ‘the construction and transfer of property rights’. While urban air rights are created through the co-facilitation process of market-based policy instruments and their relative market practices, here I call such co-facilitation the *mechanisms* for analytical convenience.

In this thesis, I argue the construction and transfer of property rights is made possible by the mechanisms of air rights. These mechanisms entail a series of socio-technical workings that are abstractly understood as ‘qualification, framing and reframing, attachment and detachment’ (Muniesa et al. 2007, p.5). Moreover, it is through these socio-technical workings that multi-linear processes of economization are enacted. To unpack this argument, I will articulate how different air rights mechanisms are bound up with three related processes of economization that can be understood as both analytically and empirically distinct: commodification, marketization, and capitalization.

Urban air rights feature in commodification and centre on the virtual and volumetric ownership structure. The commodification of urban air rights frames

urban air as a territorial resource for accruing volumetric property claims, and for validating the right to build, access, obtain and control the airspace in both intangible and tangible forms. The commodification of urban nature, in this case, enables property ownerships to be consumed and exchanged, and thus incorporated into marketization. In the case study of urban air rights in Taipei Metropolitan Area, such three-dimensional development of property ownership unsettles the established structure of claims. It collapses abstract and physical urban spaces into a malleable frontier for diversified and complex sets of ownership claims.

In particular settings, urban air rights as market devices also constitute marketization processes, that is, arrangements wherein ownership claims on the urban sky are bought and sold as assets through a series of secondary market arrangements, such as the TDR markets. Once assembled as assets in investment portfolios, moreover, urban air rights can be included within wider processes of leveraged debt creation that capitalize upon them for the purposes of urban redevelopment and expansion. Constituted through urban air rights, the processes of commodification, marketization and capitalization do not simply supersede one another. They are often contingently folded and entangled in order that the built environment becomes coordinated by financial forces (Knox-Hayes 2013; Ouma 2016; Visser 2017) or employs financial logic in running the 'old tires' (Fairbairn 2014; Fairbairn 2015).

Developing the analysis with a pragmatist lens, as the market practices in urban Taipei will show, different sorts of urban air rights were not merely stockpiled onto particular development sites; they are also assembled and hedged as investment portfolios. These investment portfolios become the investment strategies of urban

developers and become the operative knowledge for builders and shareholders seeking to take up the risks and rewards offered by the market. In this way, the assembled volumetric portfolios function to feature their motions into ‘capitalization’. Capitalization has been identified as a distinct transformation of an investable object into an asset which, yielding a discounted revenue stream from the future, can be borrowed against in the present (Leyshon and Thrift 2007; Birch 2017; Muniesa et al. 2017; Visser 2017). In this way, the secondary trading of ownership claims on the urban sky (e.g. TDR offsets) and its related land parcels become the trading of an asset class.

4.3.2 Economic Forms of Air Rights

The notion of market devices has the other critical aspect of working that is identified as their market agencements (Muniesa et al. 2007). Market agencement is a kind of economic agencement that depicts how the mediation of market devices could ‘detach things from other things and attach them to other things’ and advance to redistribute agencies. While market agencement is typically elicited during the courses of circulation, pricing and exchange (Muniesa et al. 2007, p.4), such a process is understood as an ‘ongoing, mutual adjustment between human agents and the things that they imagine, produce and purchase’ (Mcfall 2009, p.271). In the case study of urban air rights, then, it considers market/economic agencements are manifested through the economic forms of air rights. To frame market devices’ operations from their socio-technical workings to socio-cultural workings, I argue that different mechanisms involve the production of different economic forms of air rights and create their socio-economic propensities. It is such socio-economic propensities that make air rights deliver and provoke socio-cultural workings.

Borrowing from Çaliskan and Callon's (2009, p.386) argument that 'things have careers', air rights are the spatial 'things' that change status by circulating and thus have 'different modes of valuation'. Moreover, as Callon and Muniesa (2005, p.1234) argue, a critical dimension of market devices' operation lies in that their properties not only adjusted to the consumer's world but also transforming that world (see also Mcfall, 2009).

While urban air rights as commodities may take economic forms in bonus, offset, and permit, these forms have exhibited that spatial 'things' have market agencements which circulate in various empirical settings. Their calculative agencies lead those to different careers at multiple 'sites of command', such as developers and investors' offices, urban renewal and design reviews and at the development sites where their concretization only arrives after displacements and subtractions.

While urban air rights take commodity forms in bonus, offset and permit, they work as spatial-financial registers, which I call spatial credits/coupons that expand alongside their increased applications²³ in urban governance (see Chapters 5 and 6). Prior to construction, air rights as spatial credits could develop into two kinds of contract-based register. First, they record the potential increase of floor area which is understood as prospective asset worth on the building statements. Second, they act as the contractual debt registers that document the financial relations between borrowers and lenders.²⁴ That is to say, while valuations of the built environment

²³ Such applications are the junctures that create the fungibility of air rights, namely the exchange across air rights, socio-environmental goods/services and money (see also Chapters 5 and 6) which act as the premise to legitimate the volumetric ownership claims.

²⁴ 'Spatial coupon' signifies the layers of social relations through which urban air rights employ a

are both anchored in land market prospects and present property market prices, the act of ‘flipping’ an urban location into the growth of volumetric assets is simultaneously accompanied by a nexus of creditor-debtor relations. Thereby shareholders holding claims of ownership or control are eligible to collect increased property assets as an interest payment. In this sense, spatial credits can also be understood as coupons through which the debt obligations of government are converted into debt-ridden assets. Because the rates of return of these coupons are now anchored to the land parcels, such floating-anchoring processes also shuffle off the repayment duty in forms of mortgage loans, promising the annual interest-bearing payments. In a nutshell, the volumetric growth of ownership claims by urban developers may, for example, simultaneously be appropriated by households and financial investors and thus transformed into an asset class (van Loon and Aalbers 2017; Muniesa et al. 2017). In this way, following urban air rights unfolds ways to trace the bundled micro-processes of debt/equity swaps.

Moreover, air rights could also be considered extensively as spatial derivatives. Air rights act as spatial derivatives in their secondary markets as their mediation workings, namely the transfer of ownership, are transacted in derivative contracts. What is associated with such contracts is not only the prices and market risks but also their articulations across various spheres of urban risks and multiple markets.

debt/equity swap. Starting with the first layer, the government-issued spatial coupons that write different rates at its ‘maturity’ (after construction) as a substitute to direct money subsidy or compensation. In the second layer, the shareholders are expected to hand in their ‘stocks’ (ownerships) in order that the assembled coupons of urban air rights can accrue the expected yields. Such expected yields are accrued under the premise that shareholders-cum-owners receive a predetermined amount of debt. To be specific, the debt is brought by the enlarged risks of development on the selected urban site. Within the selected urban site, banks are the creditors who may invest in forms of syndicated loans, building and land loans and housing mortgages. And that project implementer’s double-play as an agent of debtors to the bank, on the one hand, and an acting creditor to the petite property owners, on the other.

For instance, multiple sources of fiscal default, seismic and climate risk were diced and mingled unrecognized into the portfolios of urban air rights. In this sense, rebuilding activity that has been justified as the physical adaptation strategy has shown the qualitative shift by derivatizing the risks to buyers who are willing to carry on the momentum (see Chapters 5, 6 and 7), disclosing the clues to the socio-spatial changes with the emerging derivative logic of urban governance.

To sum up, while existing scholarship on the financialization of the urban often attributes the cause of housing financialization to the expansion of mortgage credits (Aalbers 2008; Langley 2008; Winterburn 2018), this research supplements a crucial dimension - the expansion of spatial credits - that runs in parallel. Through the notion of the market device, this thesis further expounds the relations between densification and financialization through highlighting the mechanisms and forms that air rights can take. Understanding the contingent constitution of volumetric property rights is critical not only because nowadays high-rise buildings are visually manifested in urban landscape but because a mixed property regime in transition could now be animated.

Next, two examples are used to demonstrate the mixed property regime in transition that provoked by various types of urban air rights.

4.4 Capitalizing on the Urban Skies

Urban air rights as market devices are presently mobilized in numerous and context-specific ways across cities experiencing rapid urbanization and vertical sprawl in the Middle East and Asia. In this section of the chapter, I follow the air rights through their mobilizations in relatively specific socio-technical market practices and urban policy initiatives in the Taipei Metropolitan Area. Two concrete and ongoing instances are specifically focused on the period of 2010 onwards (see Figure 4.2), demonstrating the diverse and relatively discrete forms that air rights can take. Our first extended example analyses how urban air rights as market devices take the form of bonus (BFA) and offsets (TDR) and are deployed by the assembling techniques. While these air rights respectively are crucial to constituting the commodification of volumetric enclosures, in this instance they are bundled together and work to facilitate private capitalization processes and the financialization of the built environment. The second example meanwhile exhibits a policy initiative that centres on a transport infrastructure project, and our second example is a residential housing renewal project. In the former example, urban air rights as market devices primarily take the form of permits (IFAs) and are critical to constituting the commodification and public capitalization processes underpinning the construction and operation of the Greater Taipei subway system.

4.4.1 Residential renewal for Da-Chen Community

Da-Chen Righteous Compatriot Community²⁵ (below shorthanded as Da-Chen), adjacent to the Xin-Dian River in New Taipei City, is an immigrant neighbourhood that has grown since the mid-1950s. The local government has cast it as a 'blight' settlement in the northern Yonghe District of New Taipei City. Amidst the highly populated Yonghe District, which has an average of 40,000 inhabitants per km², Da-Chen is home to 1,500 households in an 8.2-hectare site in which 75 per cent of the households live in tenement housing replete with makeshift alterations (Figure 4.3). The material conditions also suggest the fact that many inhabitants could hardly use their property to acquire mortgage loans.

While urban housing has been a critical venue for ample interests of property investment, homeownership has not only been a proof of identity on the property ladder but also a key element to be tied to the nexus of financialization, i.e. securitized mortgage market (Weber 2002; Langley 2008; Savini and Aalbers 2016). However, in the wake of the 2008 global financial crisis, many cities increasingly sought socio-technical and policy strategies of densification as a financial solution to urban housing problems (McFarlane 2016). Reflecting on Newman and Wyly's (2005) who question about how low-income residents struggle to stay put in gentrifying neighbourhoods, the residential renewal of Da-Chen Community

²⁵ Back in 1955, the Chinese political refugees who retreated from Da-Chen Islands, Zhejiang Province in China were resettled in Taiwan under the leadership of KMT with the assistance of the United States Navy Seventh Fleet. These political refugees were labelled the 'Da-Chen Yi-Bao' (Da-Chen Righteous Compatriots), and received the title of 'anti-communist martyrs' by the Nationalist Party during the cold-war period. In contrast to other residents who invest their wages in their houses, many of these Chinese immigrants did not think of buying land as they once believed they would resettle in China.

exemplifies this question neither through public intervention of rent control nor via living in poorer qualities, but by the collective choice of densification.



Figure 4.4 A birds-eye view of the Da-Chen Righteous Compatriot Community

Source: Urban Redevelopment Office, New Taipei City Government

<http://www.uro.ntpc.gov.tw/> Accessed: August 1st 2017

Though the New Taipei City Government has prioritized Da-Chen on its renewal agenda for many years, achieving a redevelopment that would transition the housing tenure of the population in the area from informal settlers to owner-occupiers had proven problematic. Developers were discouraged by the financial circumstances of the majority of inhabitants, socio-economic minorities who were typically unable to access mortgage finance. On several occasions, government tenders for the urban renewal of Da-Chen failed to attract any interest. In response, the City Government set up a staged development plan for Da-Chen that dividing it into seven sub-zones and relaxed zoning restrictions on the potential building volume. Zone 2 – discussed

in detail below – was prioritized as an exemplary case that would attempt to utilize air rights to prompt a more positive response from would-be project implementers.

A local developer, Kei-Shen Construction, bid for the tender to renew housing in Zone 2, an area of 180 households mainly living in housing of between two and four-floors. Between 2011 and 2016, Kei-Shen Construction transformed Zone 2 in Da-Chen which came to comprise 703 housing units across three 29-floor residential towers, 724 car parking lots and 708 motorcycle parking lots. At first glance, this remarkable volumetric growth and densification – not to mention the facilitation of automobility – would seem to have been a result of the discretion of local planning administrators: the statutory cap of 300 per cent buildable volume that applied to Zone 2 was raised to a total of 663.29 per cent. However, such planning provisions also significantly expanded the scope of the urban air rights that could be mobilized in the course of the redevelopment project. On the underlying land of Zone 2, Kei-Shen Construction was able to assemble a blended portfolio of volumetric assets that included urban air rights in both their BFA and TDR forms. In addition, the volumetric growth is skilfully set at an accurate 29 floors high – since building height that exceeds 30 floors high will be subject to the approval of the environmental impact assessment.

Kei-Shen Construction made applications for BFA across a number of planning provisions and categories, accruing bonuses as a result of the application of particular design standards (e.g. environmental standards) and in return for constructing pedestrian footpaths and other public facilities and infrastructures and for making provision for the resettlement of informal settlers. This application was officially approved, with the effect of a bonus of 50 per cent legal FAR being added

to the already raised statutory cap. Moreover, the redeveloper purchased offsets from the secondary TDR market. This enabled a transfer of 10,751.87 sq. m² from other districts onto the underlying site, equivalent to a further 39 per cent of the legal FAR. In such processes of redevelopment in Zone 2, then, the constitutive role of urban air rights as mechanisms for the commodification and secondary marketization of the urban sky was crucial.

However, Kei-Shen Construction were also able to utilize the portfolio of air rights they assembled on Zone 2 as spatial credits in two main ways. First, and typical of the mobilization of urban air rights as spatial credits in Taipei, the residents' properties will be equally converted into the renewed condominium unit which is 5.1 times the size of their original legal possession. The project manager of Kei-Shen Construction explained: 'while residential towers are rather costly and generally inaccessible for residents who are social-economic minorities, a majority of the residents choose to increase their usable space by adding makeshift alterations without official approval'²⁶. Instead, the mobilization of urban air rights is an exceptional offer for these middle- and low-income household because the volumetric growth could transcend their existing asset thresholds, reorienting the rights to rehousing towards future benefits and/or financial inclusion. Second, in a twist on the typical mobilization of urban air rights as spatial credits, urban air rights were crucial to raising the syndicated loan from seven banks to Kei-Shen Construction that financed the redevelopment of Zone 2, without further need for additional collateral.²⁷ In this case, the portfolio of air rights further hinges the

²⁶ See Footnote 5.

²⁷ Semi-structured interview with the redeveloper of Da-Chen Community, January 4th, 2017. On a side note, according to usual practices, the underwriting process would still require certain amount of collaterals from the lender.

marketization of the urban sky onto the process of capitalization, making air rights into capitalized assets.

More broadly, air rights as market devices were employed in the redistribution scheme and became the cause that diversified residents' positions and judgements. For instance, the local tenants who have no residual claim were left uncounted. This is because tenantry is assessed to be unqualified to attend the project under the regime of air rights. Nonetheless, having a proprietary ownership does not always privilege the right to rehousing or the access to the residual claims of the development-based joint venture. In this case, there were 23 property owners whose property values were too small to be converted into a basic unit after renewal and were thus categorized as *incapable* of proceeding residual claims. For these owners, the alternatives are either to combine several people's property shares to exchange a unit or to receive the cash compensation from the redeveloper upon the appraisal of the existing estate value.

Moreover, a radical change introduced by the air rights regime is that of BFA for resettlement. Despite the property ownership being equivalent to the right to rehousing, the redeveloper could resettle a number of informal settlers upon his/her deliberative choice. For selected informal settler whose status was qualified to exchange such spatial credits (i.e. long-term residential record), he/she will be resettled on-site and permitted 'right-to-buy' on offer of the construction cost. In this way, air rights as market devices have reformulated the rights to rehousing via injecting the logic of creditworthiness. Last, property owners who secure their rights to rehousing and residual claims are obligated to share the expense, which accounts for 54.45 per cent of the cost of redevelopment project. Instead of

requiring residents to pay off the lump-sum project expense by cash, the eligible shareholders are expected to repay by giving out this percentage of their land ownership to the redeveloper. To this end, the assembled portfolio of air rights are not merely the cheaper alternatives for developing private urban land parcels, but a pseudo-debt claim that works the other way around as the means for the redeveloper to acquire a significant share of land ownership of the project site.²⁸

4.4.2 The Greater Taipei subway system

Plans to extend the Greater Taipei subway system to incorporate the newly established administrative area of New Taipei City – a new municipal city of four million inhabitants – were first unveiled in 2010 as part of Mayor Chu Li-Lun’s election campaign. The planned extension – often shorthanded as an additional ‘three rings and three lines’ – sought to add 174 new metro stations to the Greater Taipei subway system and increase the total track length by 209.81 km (Figure 4.5).

²⁸ Interviews from focus group, six local residents from the Da-Chen Community, November 7th, 2015. Also, it is worth mentioning that the economic benefits staged by the air rights regime were not at all complementary to reaching the residents’ agreements. During the spring of 2015, there were a remaining 10 to 20 households who refused to agree to the redistribution scheme. It was a series of crackdowns and demolition of unapproved buildings initially launched by Taipei City Government that made the recalcitrant owners either opt out or agree to join, complemented by an illusion of a hundred per cent agreement.



Figure 4.5 The ‘three rings and three lines’ of the Greater Taipei Subway System

Source: Department of Rapid Transit System, New Taipei City Government (2018)

Public transit systems are well known to be capital intensive and marked by long-term investment and low revenue yields. They are, in short, an unwieldy object of financing (O’Neill 2013; Ashton et al. 2016). However, funding the construction and operation of the planned expansion of the Greater Taipei subway system posed a particular set of problems for the New Taipei City Government which, amidst conditions of fiscal crisis, was also required by central government to operate within tightened public funding parameters. The public debt of New Taipei City Government doubled during the five year period from 2011 (New Taipei City Government 2017). At the same time, central government public spending parameters, figured by the ‘Cross-fields Value-adding Public Infrastructure Financial Planning’ legislation of 2012, set the minimum local public finance ratio at 30 per cent. This policy agenda encouraged local municipalities to embrace new financial instruments to raise capital, most notably Tax Increment Financing (TIF)

mechanisms and various land-based instruments discussed in detail below.²⁹ Moreover, to access any public investment by central government in the subway system extension, the New Taipei City Government were required to make a bid to a competitive process under the terms of the 'Frontier Infrastructure Plan' of 2017, a bid that proved unsuccessful.

Confronted by local fiscal crisis and new central government requirements, in 2011 the New Taipei City Government established a dedicated fund (New Taipei City Track Construction Development Fund) in 2011 for the planned Greater Taipei subway system extension. While this fund received some city government cash in the form of revenues redirected from other and similar funds, the principal purpose of the fund was to explore a range of funding solutions. As expressed by the City Government's Auditing Office, this was to be a transition from an 'operation fund' to a 'capital plan' (Lee 2015). On the one hand, such a shift is a common feature of the financialization of urban infrastructure which entails a subtle change from funding to financing. As explained by O'Brien and Pike (2017, p.224), 'funding sources for infrastructure [...] tend to be derived from taxation, user fees or other charges', while 'financing refers to the financial models that organise how the revenue (or funding) sources are turned into capital' (see also Langley, 2018a). On the other hand, however, what is especially notable about the planned extension to the Greater Taipei subway system is that the shift to finance and a 'capital plan' came to involve the mobilization of urban air rights as market devices.

²⁹ Despite the fact that the 'Cross-fields Value-adding Public Infrastructure Financial Planning' of 2012 has officially terminated in January 2017, various land-based financial instruments are still put into work for municipal fiscal scheme.

The urban air rights in question were part of the planning paradigm of Transport-Oriented Development (TOD) that, in textbooks, provides a model for green transport projects. Intriguingly, in the case of the Greater Taipei subway system extension, TOD was used as a rhetorical tool through which a host of urban air rights was created on land parcels that were adjoining and in the vicinity of the planned public transit facilities. In the first instance, for areas identified as 'potential sites of redevelopment', developers can exercise the existing option of bonus and offset forms of urban air rights that, as BFA and TDR, have been relatively extensively developed across the Taipei Metropolitan Area since the mid-1990s. In the instance, potential sites of new development were identified nearby to the public infrastructure. Here changes to zoning codes elevated the buildable volumes on each site, such that urban air rights could be created by local government and sold in the form of IFA permits as a market device of commodification that enabled volumetric ownership by developers.

The application of TOD in the Greater Taipei subway system extension has been accompanied by local government efforts to re-channel developers to buy urban air rights in their permit form via IFA. Nonetheless, various spatial credits elicit different qualities and agencies: as a type of spatial credits, IFAs remain a relatively unattractive option for developers as they once could assemble air rights through other cheaper resources (e.g. BFA, TDR) for the site development. The market demand of IFAs, then, is forcibly created through the monopoly channel of the municipal government; such that the regulatory change ensures government-sold IFA can stand at least 50 per cent quota of air rights per building project. Whereas BFA and TDR are forms of air rights that, as spatial credits, are either free under local government regulations or relatively cheap to buy from specialist

intermediaries.³⁰

Reconfiguring urban air rights as economic metrics, its market-oriented disposition plays a constitutive role in the capitalization of the Greater Taipei subway system extension. This can be seen in that New Taipei City Government has created a staged development plan that designates the sale of IFAs as a revenue stream for each of the multiple zones adjoining the subway system. It is these prospective revenue streams that the New Taipei City Track Construction Development Fund primarily utilises for the sake of leveraging debt to fund investment in the subway system extension. In short, the local government sells spatial-temporal coupons of air rights in the form of permits to developers and capitalizes on the ensuing income streams. In the terms of the government's report on the feasibility of IFAs as an instrument of urban policy (New Taipei City Government 2014), the revenue streams captured from selling IFAs are calculated through dividing the annuities of the zones released in earlier stages by the total buildable zones which will be released in the planned timeline. The report then predicts a total income stream of NT. 6.9 billion dollars to be generated solely by selling IFAs, a number that exceeds NT. 4 billion dollars, the annual budget of the fund in 2014. As such, the spatial conception of the staged development plan shows that a spatial-based financial scenario has been drawn out in the feasibility report. It indicates a cash inflow from selling IFAs can be enacted even 'before the building commences construction' (ibid. p. 9), showing how the spatialization of annuities is made possible.

Despite concerns for environmental degradation being raised by the planning

³⁰ Confidential interviews of focus group, five participants constituted of developers and assembling experts, January 4th, 2016.

department (New Taipei City Government 2015), urban air rights were still mobilized in response to austere fiscal conditions alongside the heightening demand for infrastructure financing. Being imagined as a secondary but immediate effective market device, urban air rights have been conscripted as an active infrastructure funding vehicle. By making densification ‘a value-capture tool for metro infrastructure’ (New Taipei City Government 2014), fiscal relations between the central and local states in the following years were reshaped. Thereby the local states are expected to survive in the wake of a renewed neoliberal ethics of ‘self-sufficiency’ with the emerging paradigm of ‘anticipatory fiscal plan’(Lai and Su 2013).

As the spatial feature of urban air rights has figured as instrumental to altering the logic of governance from funding to financing, the distinction between funding and financing started to emerge in government-led discursive practices in recent years (see Langley, 2018a). In the words of O’Brien and Pike (2017, p.224), ‘the funding sources for infrastructure [...] tend to be derived from taxation, user fees or other charges. Financing refers to the financial models that organise how the revenue (or funding) sources are turned into capital.’ This extensively shifts the potential sites of urban densification into the (discounted) income stream. In this way, the fiscal plan for the Greater Taipei subway system extension demonstrates a transition from funding to financing through capitalizing on the skies of urban Taipei.

4.5 Conclusion

This chapter has introduced a typology of urban air rights and mapped their evolution in Taiwan. In doing so, it also underscores wider calls for geographical

analyses of financialization to be sensitive to spatial variegations as it moves beyond Anglo-American heartlands (Christophers, 2012; Doucette and Seo, 2011; Pike and Pollard, 2010)

Following various forms and processes of urban air rights, section 4.2 investigated the assemblage of urban air rights by reconfiguring their careers both as market-making mechanisms and the forms of air rights they produced. Each market-based policy instrument of urban air rights – BFA, TDR and IFA – evolves with particular processes of commodification, marketization and capitalization that elicit particular financial rationales, logics and practices with contingent financialization of urban processes. In the case study of Taipei Metropolitan Area, various urban air rights present us with an ever-expanding assemblage that each of them has individual yet cross-linking market ecology and overflow. Thereby the making and circulation of air rights have been speculated upon as a panacea for taming urban problems.

The nexus between urban built environment and finance has been further elucidated through two examples in Section 4.4. In both examples, air rights were charted as a value-capture tool, plotted as the critical part of future income streams; inhibited with legitimated linkages to banking credit loans; and thus come to both redefine fiscal planning and reframe the rights to rehousing. Moreover, both examples also began to open up a number of future directions for researching urban air rights. Especially, the provoked inquiries on how cashing in on the urban sky not only enter into and animate urban planning and policy but also urban politics. By focusing on the relatively specific socio-technical market practices and urban policy initiatives of urban air rights in the Taipei Metropolitan Area, this chapter unveils the concealed air rights portfolio, composed of BFA and TDR in the Da-Chen

residential housing renewal project. Moving to the second example, it has exhibited the deployment of IFAs in the Greater Taipei subway system project. In both the extended examples, air rights were charted as a value-capture tool and plotted as a critical part of future income streams. They were also conduits that enable legitimated linkages for property owners and developers to access banking credit loans and, as a consequence, they redefined fiscal planning and reframed rights to rehousing. Moreover, both examples prompt us to further explore different market agencements when we single out each air rights instrument that co-constitute the complex market ecologies of cashing in on the urban sky.

By approaching urban air rights as market devices, this chapter has shown how neoliberal, market-based urban policies and planning tools of cashing in on the urban skies abstract urban airspace into ‘formal, calculative space’ (Callon and Muniesa, 2005), and the extent to which these spaces then become embryonic and conducive to financialization. In both cases, urban air rights are transmuted from regulatory parameters instrumental in spatial policymaking and into market devices that act extensively and are associated with specific financial rationales, logic and practices. In this way, urban air rights have morphed from a sort of ownership claim that ostensibly enables urban (re)development into an asset that both levers debt finance and eschews the distinction between funding and financing in practice. Nevertheless, to make urban skies trustable sources of financing, these projects unequivocally wager that the value of landed properties will continue to grow.

Overall, this chapter has argued that the importance of viewing urban financialization through the lens of urban air rights is precisely because the urban-financial geographies of Asia cannot be understood sufficiently by the expansion of

credits, and a capital-centred flow of urban process. Highlighting the material markets of urban air rights, this chapter has explored various types of urban air right through the expansion of spatial credits that resonates and co-constitutes the financialization of the built environment. Conceptually, urban air rights as a market device are unpacked through their economic mechanisms and forms that allow us to explore their socio-technical workings and socio-cultural transformations. Methodologically, following urban air rights enables us to trace a renewed urban epistemology that understands virtual airspace has itineraries and careers and is distinct from the conventional approach of 'following the capital flow'.

In the next two chapters, we will look into two key air rights instruments – Bonus Floor Area (BFA) and Transferable Development Rights (TDR). By singling out BFA and TDR's socio-technical and socio-cultural operations, the following chapters will guide through their respective economic lives.

5

Following Bonus Floor Area

5.1 Introduction

In the run up to the Taiwan Metropolitan Elections of 2010, the erstwhile Taipei City Mayor Hao, Lung-Pin released a policy package - ‘Old Apartment Renewal Scheme’ - ahead of his re-election. This five-year scheme features the slogan ‘1 *ping* swaps 1 *ping*’.³¹ Targeting people who live in apartment buildings of 4-5 storeys, this slogan is a social promise that after renewal the residents will be able to acquire the same sized interior space as before. Even though building upward reduces the coverage area of the building³², this political promise was planned to be achieved by lifting the total Floor Area Ratio (FAR) from 1.5 times up to 2 times of its legal FAR (Hsu and Hsu 2013). This was neither the first nor the last time that Bonus Floor Area (BFA) has been utilized in an election campaign to muster popular support³³;

³¹ As mentioned in Chapter 4, ping is a spatial unit of area that equates 3.31 m² (35.58 ft²).

³² Assuming the whole buildable volume (Floor Area Ratio) retains at the same level, under the formula – the Total FAR = Building Height * Building Coverage Area, the taller the building would correspond to reduce the building coverage area.

³³ In the meantime, the ‘Old Market Renewal Scheme’ released in parallel. It set a three-year scheme targeted at the 16 traditional markets citywide by doubling their legal FAR (Taipei City Government

however, this announcement applied the potential of the air rights economy to ‘tackle’ the rebuilding of 490,000 households whose buildings were erected before 1980s – approximately 38.07 percent of the citywide buildings (Urban Regeneration Office 2010).

The official scheme gives us an idea of the potential scale of households that will be affected by the BFA mechanism. Thus, it is important for this chapter to follow and investigate the operations and implications of BFA mechanism in urban Taipei. By exploring how the proliferation of bonus air rights has grown to dominate the pattern of contemporary urban redevelopment, it first advances an understanding of how BFA operates as a market device. It starts with some basic questions: What is the BFA mechanism? Also, how does it work? This chapter will show how air rights function as market devices in their socio-technical operations and bring forth their socio-cultural implications that have stitched the financial disposition of the asset-making process into everyday urban life.

This chapter proceeds in four sub-sections as follows. Section 5.2 reviews the existing literature specifically surrounding the BFA. It develops the conceptual frame of ‘coupon pool’, as initially set out in Chapter 2. Here the concept is shown, in particular, to aid understanding of the growing shareholderism around BFA in urban neighborhoods under redevelopment. In section 5.3, I unpack the policy assemblage of BFA as a socio-technical process that spatial coupons are expanded to boost property volume. Section 5.4 argues that the market operations of BFA,

2009). The urban electoral politics in Taiwan has been dominated by a bipolar political party system between the Nationalist Party (also known as Kuomintang, KMT) and the Democratic Progressive Party (DPP). To expediting urban renewal by incentives such as increased bonus floor area and lifted legal cap of building volume has been the primary electoral beef for both parties since 2000s onward.

including layers of market intermediaries and urban neighborhoods, have enabled the expansion of spatial coupon ownership and prompted the collective speculation of coupon clipping practices. To this end, section 5.5 illustrates two different scales of case study in the Taipei Metropolitan Area. Both decipher how coupon pool urbanism manifests through the spatial credit boom. By examining the coupon pooling practices within an urban zone and a neighborhood, this chapter contributes to understanding how property ownership is transformed into shares in a spatial asset; how volumetric growth shakes up spatial relations of debt and equity; and how the financial logic of shareholderism has given rise to new subjectivities.

5.2 BFA as Market Devices and Spatial Coupons

This section first teases out the economic propensities of BFA as it will help us to understand how urban air rights act as market devices and, in particular, a kind of spatial coupons – the form that its economic agencement enacts socio-cultural workings. By applying an operational approach with cultural economy frame, it apprehends BFA as market devices that enable socio-technical processes of commodification, marketization and capitalization. Meanwhile, BFA also works in more-than-economic and socio-cultural terms in urban neighborhoods under renewal projects to produce an entrepreneurial neighborhood and to normalize the financial logic of shareholderism.

Existing scholarship on BFA has primarily focused on its implications for the urban environment and, specifically, how, as a market-based planning instrument, it blurs the boundary between the public and private (Schmidt et al. 2011; Dimmer 2013). For instance, the material production of this technique has been examined under

the documentation of privately-owned public spaces (POPS) in New York, and a rich collection of international case studies (Kayden 2000; Dimmer 2013). The BFA also appears in urban planning and geographical scholarship on topics such as the production of high-rises (Jou and Lin 2008), luxury apartments (Hirayama 2017) and the spike of housing prices (Tang and Yiu 2010; Liu et al. 2016). In the terms of this thesis, then, there is a need to go beyond accounts of the work of BFA that emphasize the blurring of public and private, and to stress how BFA operate as a market device that constitutes particular economizing processes; and produces spatial coupons that summon shareholderism in the urban neighborhoods.

Moreover, in the existing literature on BFA, there is an indication that the operations of BFA need to be considered in socio-cultural terms, in addition to the work they perform as market devices. This follows from how airspaces are inscribed with the function of near-money in a ‘cap-and-trade’ system when BFA are created, such that more and more municipalities seek to overcome fiscal constraints by ‘mint[ing] money through zoning codes’ (Kayden 1991, p.3). By arguing BFA is a mechanism that ‘mints money’, Kayden amongst planning academics alike see Bonus Floor Area as a special type of money and volumetric accounting as a dynamic register of credit and debt relations (Ingham 2004; Gilbert 2011).

Such change could initially be seen in how the BFA mechanism renders the Urban Renewal Committee Review of the municipal government into an ordinary marketplace³⁴ – a quasi-market which attracts redevelopers, landowners and

³⁴ The official review committee can be dated from Urban Renewal Act inaugurated in Taiwan since the 1998. Thus the scene illustrated here has no attempt to demarcating the historic tractions. Rather, it hopes to draw on the nuanced relations between the production of bonus floor area and the shareholders as coupon clippers.

investors to bargain for the accreditation of BFA. The quasi-market of BFA is characterized by ‘trading’ in the meeting room of the Urban Renewal Committee Review. The ‘bargaining’ between the government and project applicants is based on the submitted application of project proposals, and resembles a Dutch auction as it works in a price-descending manner. The Committee begins the review process with presentations from project managers (normally from the planning consultancy and redeveloper). Committee members may question the professional agents about the proposal content and give their advice for further revision.

Citizens’ participation has been vital for the bargaining process as it shapes the moral conviction surrounding expert discretion. The ‘citizens’ entitled to speak here are confined to stakeholders - either property owners or those who live in the vicinity of the project site. Voices for or against the project often center on, and bargain for, the ‘bonus volume’ in question. The discretion of bonus volume – namely ‘shareholders’ value’ – are justified through inhabitants’ accounts. Mostly, these accounts address how vital (or harmful) the BFA would do for their living quality and livelihood. Here, the notion of ‘majority rules’ prescribed by the Urban Renewal Act is revealing during the Committee Review procedure. The more the people voice out for the necessity of bonus (or objection to the project implementer), the stronger the moral conviction is likely to be pitched within the ‘marketplace’. The outcome is thus a co-opted product between shareholder inhabitant and the expert committee. To achieve the political promise of ‘1 ping swaps 1 ping’ requires such bargaining process reaches an ideal result of 200 per cent legal FAR³⁵. This

³⁵ Contrasting to homeowners of lower-rises, the apartments of 4-5 storeys usually indicate a bigger ‘denominator’ – more potential shareholders – who hold residual claims to the buildable volume after renewal. Moreover, tall buildings not only have relatively small building coverage ratio but also often come to term with higher percentage for public/community facilities, a rule of thumb for

‘ideal’ result, in essence, challenges the legal standard on height, volume and profit. It is thus a tough decision for committee members. BFA ‘trading’ processes therefore routinely produce a contentious atmosphere: people cramped outside the review room, feeding speakers with cheers and their clamoring, making each statement gains amplified traction. Minority dissidents often need to be separated by the police to avoid physical clashes.

These ordinary scenes depict how the emotional intensity is critical to the collective asset-making process. However, the above scene only reveals a part of the wider socio-cultural process that air rights as market devices lead to urban financialization. As I elaborate in the following sections, the BFA mechanism and its credit form enact a *reciprocal* process that are changing collective ethos and perspectives: it sees direct property ownership as a share, in the sense of a bet on prospective stock growth at particular urban locations. While the spatial credits generated by the Bonus Floor Area scheme (and other instruments) are not the typical bond and share coupons we may recognize, the way BFA functions as spatial credits/coupons is profoundly shaped by the underpinning development projects where the real property ownership is akin to a basket of bonds and shares. In this way various types of air rights and the percentage of bonus act as coupons with different rates of return. Such air rights are pooled and affixed to the project site to enable multifold growth of volumetric assets. In this sense, property owners act as ‘coupon clippers’ as they hold the share and so are eligible to collect increased property assets. Considering real property ownership as bonds and shares also indicates how property owners become conscripted debtors once the project is officially approved;

spatial professionals to achieve the result of ‘1 ping swaps 1 ping’ has thus been made equivalent to achieve the highest goal of doubled legal FAR.

and that the project implementer becomes an acting creditor of the whole project cost. This reflects how the present-day urban renewal practices resonate with Froud et al. (2002)'s conceptual work of 'coupon pooling capitalism'.

'Coupon pooling' is a prevalent practice in the financial market that allows 'different kinds of financial paper (bonds and shares) [to be] traded in the capital market' (Froud et al. 2002, p.120). Initially, Froud et al. (2002) developed the conception of 'coupon pool capitalism' in order to argue that flows of household savings into the stock market and shareholders value have re-oriented modern-day corporate governance. In this way, coupon pooling practices are emphatic to contemporary financialization. Whereas firms are inclined to pursue profitability at the expense of investment; in the meantime, the acts of coupon pooling articulate the relations between both the investing firms and household savers. The point to highlight here is the process of conversion: individual household savings are pooled and converted into shares in order to reap from the financial markets. Considering present-day urban renewal practices, the coupon pool concept is a useful heuristic because it highlights a physical/vertical process of urban financialization i.e. how household savings (in propertied forms) are mobilized by converting them into shares that envision a return from new-build property markets.

By borrowing the coupon pool concept, this chapter accounts for the more-than-economic, socio-cultural work of BFA. As shown in the following sections, BFA renders urban neighborhoods an expression of, and means for, the growing entrepreneurial ethos. In social conditions where housing is a major form of household wealth and savings, the incentives brought by BFA construct their homestead (and/or property) into the share/stake of a temporal, quasi-firm. Besides,

the subjective summoning of shareholders' value also inevitably leads to the spatial renewal project develops the preference of high-rises. This presents an underexplored facet of BFA regarding it as the market device for entrepreneurial urbanism that articulates household investments and financial activities through redevelopment process.

While existing scholarly work has theorized the entrepreneurial modes of urban governance under the term 'entrepreneurial urbanism' (Ward 2003; McFarlane 2012; Peck 2014), this chapter utilizes the spatialization of coupon pooling practices to understand how the entrepreneurial mode could take place from urban neighborhoods under renewal projects; specifically, it reflects an urban process in which the 'shareholder society' shapes both individuals and neighborhoods. By considering how ordinary spaces can offer 'a rethinking of the techniques and scope of contemporary urban entrepreneurialism' (McFarlane 2012, p.2796), this chapter shows how BFA has not only been a planning tool imposed top-down by the state and private developers and a market device that is constitutive of economization processes; it has also been an active catalyst to transform urban neighborhoods into frontiers of urban entrepreneurialism.

The speculation on BFA in the quasi-marketplace reflects its historic references through stock trading – a popular investment activity amongst households in Taiwan. The concept of 'coupon pool capitalism' developed by Erturk *et al.* (2008) is useful to reconsider the ingrained stock investment culture in Taiwan, whereby the societally habituated small investors (also known as *sanhu*) in Taiwan (Chen and Roscoe 2017) may experience the quasi-stock trading in other channels of investment. In this case, it is the renewal enclosures become temporal firms that

pursue for the growth of shareholders' value through the maximization of BFA credits.

To elaborate this claim, the next section starts with a task to unfold the production of spatial coupons which is driven by diverse statutes, regulations and policy schemes that resulted in a highly overlapping regulatory market that the spatial coupons produced can be assembled onto a single site.

5.3 The Regulatory and Policy Assemblage of BFA

As a mobile policy instrument that travels worldwide, BFA is instrumental for enacting lawful exponential densification in many metropolitan cities. The global endemic of BFA can be found in various technical terms and institutional contexts that include the zoning bonus scheme of New York City and the density bonus program in San Francisco and Los Angeles since the late 1970s (Benson 1969); the Bonus Plot Ratio policy in Australian cities, initiated about the same time with the US cities in the 1970s; the Bonus Gross Floor Area (GFA) scheme in Hong Kong, Singapore, in tandem with the UK cities in the 1990s; and the Incentive Floor Space Index (FSI) in Indian cities in the 1990s. An operational logic shared across different terms is that the government can accredit bonus air rights created at the underlying site where the (re)development projects are designed and will be built.

In the institutional context of Taiwan, the evolution of BFA spans across statute law, regulation, ordinance, and policy scheme (see Figure 5.1). The laws and regulations set the relatively stable, long-term rhythm, whereas policy schemes are intervening to cope with strategic occasions, such as rechanneling domestic investment;

economic stimulation; mega events; and electoral purposes. In so doing, air rights as market devices are employed by the government to earmark private-led urban renewal with a variety of purposes, such as the provision of public amenities. In terms of laws and regulations, the application of Bonus Floor Area can be seen in four types of development: (1) Comprehensive Design Bonus (1983-2003); (2) Parking Lots Bonus (1988-2012); (3) Joint Venture Bonus; and (4) Urban Renewal Bonus (1999–present).

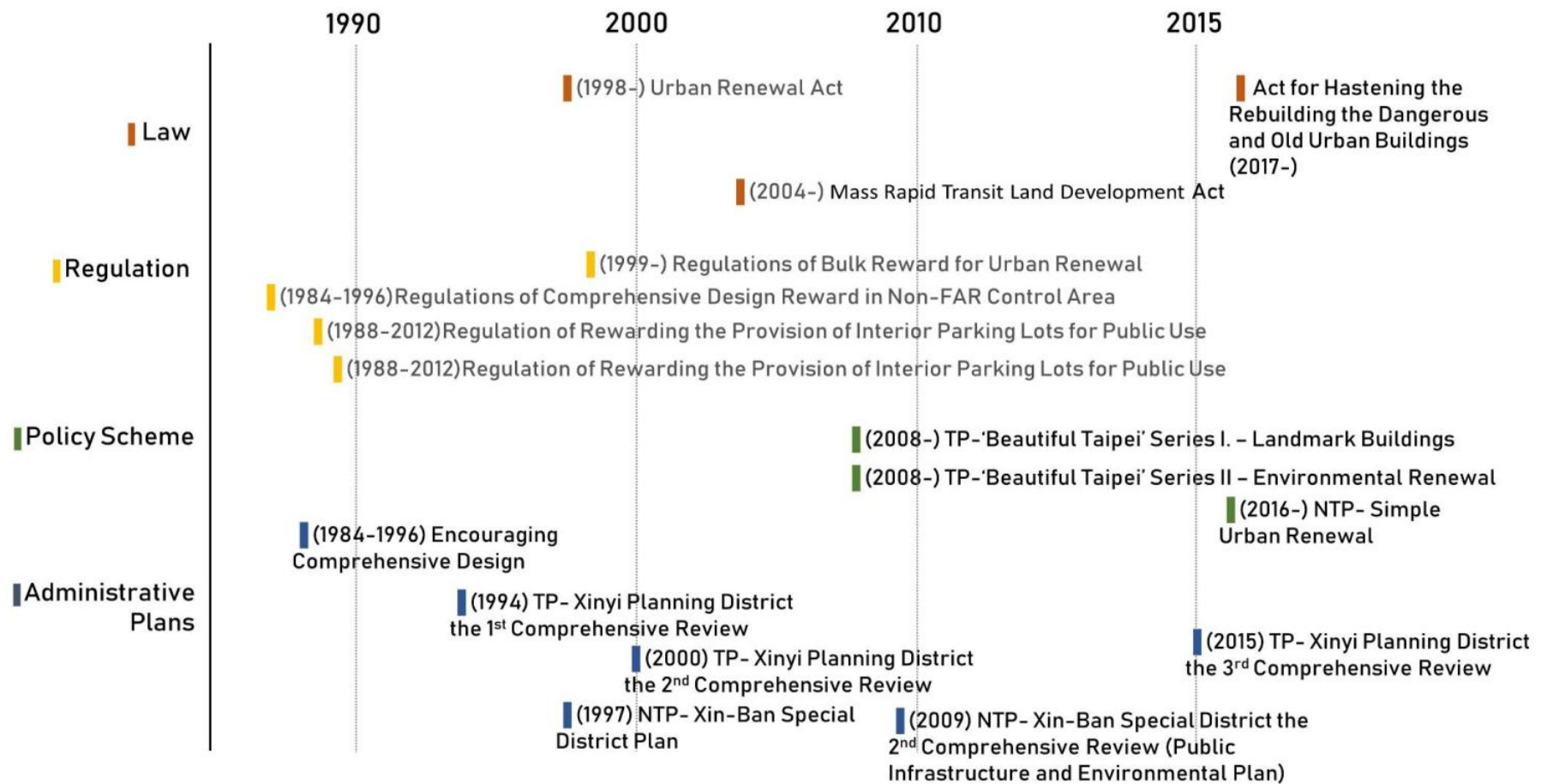


Figure 5.1 The Regulatory and Policy Assemblage of BFA

Source: Personal collection

BFA scheme in Taiwan emerged in 1982. By then the urban population surpassed 70 percent of total population. Against the backdrop of growing consumption in private vehicles and densified condominiums, comprehensive design bonus takes its reference from Japan's urban planning system to attract developers to mitigate the externalities brought by the urban process of densification (Council for Economic Planning and Development 1980). Two decades later, BFA had proliferated widely in Taiwan and the comprehensive design bonus was replaced by the urban renewal bonus. Also, the other type of density bonus - the parking lots bonus, derived from the Building Technique Regulation, came in for public criticism, as the off-street public parking lots provided through this technique were often located within luxury condominiums that had limited public access. In other words, the 'openness' that was once promised through processes that conjoined air rights with public infrastructures was jeopardized by the way it worked in practice. Corrective measures were proposed by the Control Yuan in 2009 and came into force in 2012.

The third of the four versions of Bonus Floor Area - Joint Venture Bonus – was broadly utilized in the context of attracting private investment into Public Transit Interchange (PTI). Such bonus FAR was utilized to top up on the underlying site of PTI. Joint Venture Bonus has been adopted as an alternative to traditional way of expropriation in order to acquire land for transport infrastructure. Through the Joint Venture Bonus mechanism, landowners in the designated area will not be expropriated; instead, they are encouraged to provide their land parcel that will be perceived as their stake; and investors (developers) are expected to design and construct the transport infrastructure. In this way, it allows landowners to be

compensated by the spatial credits which will then be deducted from the shared cost of rebuilding/renewal.

Finally, the Urban Renewal Bonus is a relatively chunky and contingent category that offers options for redevelopers assembling an application to the Urban Renewal Committee. The items written in the local and central regulations were eventually developed into a list of sub-items, categorized from $\Delta F1$ to $\Delta F6$ ³⁶. Multiple and sometimes overlapping reasons for allowing BFA can be found across various central and local regulations and policies, complicating the management of building volume control. Although individual items have limits of up to 10 percent or 20 percent of the legal FAR, there were actually no restrictions or controls on the total volume. It was only in July 2015 that an actual ‘cap’ of building volume control was partially enacted, as follows: (1) for areas designated for urban renewal, the ceiling was lifted up to 150 percent of legal FAR; (2) for areas outside of the designated zones, the cap is 120 percent of legal FAR; and (3) for areas which have defective premises, such as the so-called ‘sea-sand houses’ and ‘radiation houses’ in Taiwan, the cap can be lifted to 130 percent of legal FAR. This central regulation was only be able to inaugurate after rounds of political wrestling.³⁷

³⁶ To list a few, $\Delta F1$ offsets the existing buildings which built before the floor area control and that exceeds the legal FAR. $\Delta F2$ accredits bonus FAR for limited housing commodity supply in those area with already congested living quality. $\Delta F3$ encourages the implementer to shorten the duration of urban renewal project. $\Delta F4$ includes the subcategory of conservation for buildings with historic, monumental and artistic values; and the provision of large-scale open spaces, pedestrian and arcades. $\Delta F5$ entails all sub-categories of comprehensive design, such as free-access environmental design, risk prevention, green architecture, urban ecological conservation to smart building. $\Delta F6$ functions to encourage the project implementer to resettle the existing inhabitant who lives in informal settlement.

³⁷ Despite the constant protests from citizen groups concerning urban environment, the Control Yuan released two investigation reports in 2010 and 2012; and also proposed several corrective measures against Ministry of Interior and Ministry of Transportation and Communication in 2010. The total volume control was enacted through the article 34-3 and 42 in the *Taiwan Province’s Enforcement Rules of Urban Planning Act*.

In addition to regulations that lay out the operational principle of densification, BFA is also involved in policy schemes that address other strategic issues. Examples can be found in the changing modes of urban operation. The first type is to relax the volume and height limit at the specially designated zone. For this type, the Xin-Yi Planning District [信義計畫區] in Taipei City and Xin-Ban Special Zone [新板特區] in New Taipei City illustrate different modes of urban operation that we will elaborate further in the following case studies (see 5.5.3). The second type is packaged in policies in light of mega-event, such as the 2010 Taipei Flora Expo. Ahead of the Flora Expo, the erstwhile Taipei City Mayor Hao, Lung-Bin announced the ‘Beautiful Taipei’ series of landscape transformations. Amidst the policy package composed by eight action plans, Series I (Landmark Buildings) and Series II (Environmental Renewal) were two action plans that particularly utilized BFA instruments.

As a result, BFA has bolstered a few market segments in the real estate market and occupied a major portion of air rights economy (Construction and Planning Agency 2010). While the boundary between domestic economic revival and real estate speculation were unclearly drawn, as a ‘market device’ which enabling the operations of market (Muniesa et al. 2007), BFA has been staged as the major incentive to accelerate the life-cycle of urban (re)development through the commodification of the air. In the mixture of intended and unintended consequences, BFA has stimulated the turnover rate and price movement in the second-hand housing market (Yang and Cho 2011; Cho 2014); the new and conversion condominium markets; office rental market; and the subcontracting

industries in subtraction, construction materials; estate consignment; interior design and so on (Construction and Planning Agency 2010).

5.4 The Operations of Bonus Floor Area

The operations of Bonus Floor Area as a market device are primarily at work through the distributed and relational agency amongst air rights, market intermediaries and shareholders that are present in urban redevelopment projects. While the previous section has centred on the planning regulations and policy assemblages that produce BFA, this section examines the workings of BFA, particularly through the practices of market intermediation that make urban airspace become measurable, valuable and circulable. Through three sub-themes below, I discuss how the distributed agency has revealed through the exponential growth of BFA and underpinned by market operations. The finding suggests that BFA-based market intermediation contributes to processes of economization and financialization.

5.4.1 The workings of market intermediaries

To territorialize three-dimensional space in the form of a commodified property right at a specific location, the BFA mechanism depends not only on the discretionary power of nation-state (Blomley, 2016) but also requires a mixture of collaboration and competition amongst competitive market intermediaries. Market intermediaries can be understood as the network surrounding the role of project implementer, and having a key role in networking between public officials, local inhabitants, spatial professionals, construction sectors, banking sectors, and

occasionally local political factions. In practice, a potential project implementer can either be a planning consultation agency, a (re)developer, or a legal person that is willing to integrate and coordinate the voices of the ‘shareholders’. Therefore, and as an alternative to many existing studies that often resort to elite architects and the construction industry (Farías 2015; Weber 2015), this research understands ‘market intermediaries’ as key actors who enable the expansion of both air rights and their coupon ownerships. This includes, therefore, a range of speculative investors that encompass ‘judicial scriveners’³⁸, gangsters (albeit they are officially subjected to crackdown) and the recently institutionalized category ‘asset management companies (AMCs)’.

For air rights to operate as a market device for the commodification of the air into a property form, air rights generated through the premise of regulation and policy have to be actualized through project-based applications. That is to say, to become a volumetric asset, a BFA is only activated as a potential property right once it is attached to a site destined to demolition and reconstruction. Once officially approved, the added volume will come with custom-made economic and environmental terms and conditions. The accredited BFA remains virtual, but unlike a TDR it cannot be traded in a way that is detached from the underlying project and land parcel. As (potential) planning permission has market value, however, BFA is often added to the underlying land parcel. Thus the commodified BFA is traded not in the motion of transferring from one site to another, but by

³⁸ ‘Judicial scrivener’ is a term which refers to a specific type of legal professions across Taiwan, Japan and South Korea [Taiwan:代書/Japan:行政書士、司法書士/Korea:法務士]. Judicial scriveners are certificated roles that combine real estate agents and escrow, providing services such as conducting registration procedures for commercial and real estate sales and preparing documents for cases of litigation. At the frontline of addressing land registration issues, many of them have engaged in launching urban renewal business.

packaging it with the ‘ownership’ of project, and changing hands between project implementers.

The work of the project implementer therefore has at least three dimensions. First, the project implementer assembles the bonus items deliberately within the maximum limit of FAR. Generally, the project implementer submits the project proposal to governmental commissions, which will review the urban design, development, and disputes of Urban Renewal respectively and advise the project implementer to make revision accordingly. Second, the project implementer charts the project design and redistribution and holds the discretionary power to integrate or dismiss the concerns of the stakeholders. And, more critically, in liaison with three appraisal firms which will determine the size of share of each stakeholder. Thirdly, the project implementer arranges the financing options. While general urban majority with diverse socio-economic conditions has structural disadvantage to access to home improvement loans, the role of market intermediaries is critical to acquire project loans as corporates are preferred applicants in creditor’s underwriting process. In practice, the work of ‘integrating’ shareholders for market intermediaries is more than presenting a decent proposal for acquiring a project loan. More often than not, it is also a process of pooling shareholders’ assets, and transforming them (majorly the tracts of land on the project site) into the collateral for general land and construction loans, regardless of housing/commercial renewal or infrastructure projects.

In brief, this subsection outlines a network between potential project implementers who are motivated by and actively involving in the coupon-pooling practices. Yet, what makes it different from Froud et al.’s conception of coupon pooling capitalism

is that the coupon-pooling described here has a spatial anchor. In addition, the realization of coupon value is based on the ‘lived spatiality’ of demolition and reconstruction. Behind this ‘lived spatiality’, then, sits the underrepresented networking of market intermediaries, who either commissioned project design or outsourced the ‘integration’ work to one another. Market intermediaries who ‘network from the middle’ (Latour 2005) are distinguished by their capacity to stitch together financial investment with the expansion of air rights, and articulate the expansion of air rights with household investment.

5.4.2 The Creation and Allocation of Value

Urban land is conventionally perceived to be a good that is in scarce supply. In this context, bonus air rights are a shortcut to multiply the layers of floor space (spatial property) at a particular urban location. The valuation of BFA, as one of my interviewees (the appraiser, B) explains, is inseparable from an urban renewal project, just as the stock price could not be detached from the firm³⁹. In other words, there is no valuation solely for individual items of bonus floor area. Hence, to discuss the valuation of BFA, we inevitably have to step into a rather knotty set of scenarios regarding the valuation of urban (re)development project.

Both value creation and allocation come from the same mechanism, which pronounces the value of the properties before and after renewal. This specific valuation process is called ‘Rights Conversion’ [權利變換] (Figure 5.2). ‘Right conversion’ is a critical mechanism which evaluates what the original landowners can acquire after renewal and what they should pay. Its inception in Taiwan was

³⁹ Confidential interview with a senior appraiser B, October 9th 2015.

promoted by government and Urban Regeneration R&D Foundation as the trustable mobile policy instrument modified from a Japanese institutional framework. Distinguishing itself from the conventional ‘non-scientific’ bargaining in making the deal between the developer and landowner, ‘Rights Conversion’ institutionally replaces traditional negotiation during construction by calculative propositions that are conducted by the project implementer and commissioned appraisal firms. It is worth noting that who pays the service fee for the real estate appraisal by and large determines the power dynamics underlying the appraisal report.

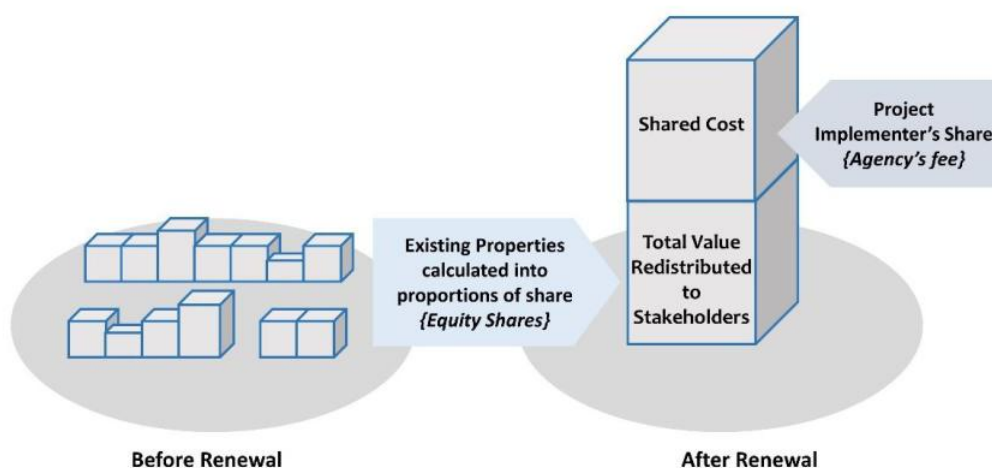


Figure 5.2 The Mechanism of Rights Transfer

Source: Personal collection

What happens in the underlying site is that the cluster of the existing physical buildings will be valued *individually* through appraisal factors, such as the physical conditions, the shape of the land parcel, its geographical location, zoning code, legal land use, and the floor this property locates. Besides, it will also be considered *comparatively* with scenarios of vacant land and newly-build. To establish

professional credibility, each appraisal report has to conduct at least two property-based appraisal approaches, such as comparative method and cost of development approach. This lays the basis of allocating volumetric ownership and in a manner that is aligned with the profession of land economics. The values being calculated are termed as ‘rights value’[權利價值]. Its appraisal is conducted upon the assumption of the same baseline date. The point is to calculate relational value amongst a group of properties, but this is often dissociated from the market price at the time the stakeholders bought in, and it does not reflect the exterior/interior improvements in which the stakeholder has invested. Thus this ‘scientific-based’ calculative disposition often brings forth contested understandings of property value and becomes a first hidden cause of dispossession.

In the appraisal process, ‘volumetric pricing’ is one key dimension that shows how BFA is put into effect. The main factors accounting for the general real estate appraisals include building structure, ages, building materials, adequacy of area per unit, ventilation, landscape, public amenities, estate management, business potential, traffic conditions to the vicinity with market, park, and parking lots and so on. By valuing in a block-wise perspective, BFA leads to volumetric imaginary of which projects deliver higher investment returns (which is academically understood as ‘rent gap’): for example, block-wise valuation means that a 1-2 storey building has higher potential yields than a 4-5 stories apartment. Thus, lower storey buildings in a high legal FAR zone (such as commercial zones) are regarded as the most valuable stake.

Yet, the vertical locations and their conditions of view, ventilation, and access to sunlight also channel the price performance into a U-shape gradient. For example,

the ground floor and top floors can secure the premium prices compared to the other floors (Hirayama 2017). This is especially substantial in buildings without lifts (Liu et al. 2016; Ahlfeldt and McMillen 2017). With the volumetric expansion of spatial coupons, property owners who are eligible for re-allocation will experience relocation between their existing and future properties on the same site. As a landowner, he/she may first be consulted to register their preference, and attend a public lottery session which is termed as ‘selection and allocation’ [選配]. As the total quantity is limited, to avoid any conflictual infringement due to allocation, each shareholder is supposed to limit their extensive selection within certain percentage of their share. If the stakeholder is eligible for the redistribution scheme yet refuses to take part, the agency will act on their behalf.

In terms of project design and management, the service fee for the agency (mainly project implementer) is combined with a long list of costs that include planning, demolition and construction fees; appraisal fees; loan and interests; taxation; sales management; the risk management fees; urban renewal trust management; the purchase of additional air rights; fees of zoning change application are all elements that comprise the ‘shared cost’ [共同負擔]. Basically, what the landowners can claim is the total value after deducting the shared cost of project implementation. Their existing properties will be compared and converted into the proportion share.

The fee structure between agency and property owners is thus configured similarly - yet differently - from the general fee-earning capital market intermediaries. First, this fee structure feeds back to what Folkman et al. (2007) called ‘purposive management calculation and action’ which is normally situated in a firm-based setting. Second, the logic of maximizing total volume becomes equivalent to

maximizing the shareholders' value; this leaves an ambiguous space between the cost presented in the paperwork and the actual cost in the management fee and carried interest. The stakeholders also experienced a huge cultural change in terms of powers of price negotiation. Rights Conversion signifies an intense shift from a *bilateral negotiation* in traditional joint construction. While the fee structure between a project implementer and property owner in traditional joint construction generally falls around 3-7 or 4-6. It has now become a *unilateral disposition* determined by the project implementer; where there the fee structure presents huge discrepancy from 2-8, 3-7, 4-6 to 5-5. The changing fee structure not only declares that market intermediaries are key activists in the distributional coalition (Folkman et al., 2007) but also suggests how the property owners can feel their withdrawn from controlling their own property as they are subjected to the redistributive scheme the 'agency' charged and may officially be sanctioned as an administrative plan.

5.4.3 Urban Neighbourhoods as Joint Ventures?

In the previous section, I have discussed how the operations of BFA as market device in intermediation practices leads to processes of commodification that are dominated by the valuation method of 'Rights Conversion' in the calculative practices of rebuilding. Hereafter, I would like to push this argument forward by arguing how shareholder value take roots in the urban neighborhoods. Put another way, I want to shift analytical attention from the socio-technical and economizing work of BFA as market devices to their more-than-economic and socio-cultural operations. Core to the socio-cultural work of BFA is the way in which, as

spatialized coupons, they serve to effectively frame urban neighborhoods as virtual joint ventures between the developers and the property owners, reinforcing tropes of general homeownership with the indispensable tractions of economic citizenship (Krippner 2017).

While BFA has been proclaimed as an infrastructure-funding vehicle, the role of air rights as market devices also rests upon the socio-cultural operations of ‘credits’ in the urban neighborhoods. This kind of credit is, in Krippner’s words (2017, p.2), ‘becoming a substitute for wage income and a prerequisite for full inclusion in the marketplace’ for shareholders to offset the shared cost of renewal project, enabling a possibility to rehouse without actually paying. Such calculative metrics underpin its neighborhood operations in at least two ways. First, BFA is both the cause and effect for the conversion of existing property into shares within a redevelopment site. Second, BFA reveals its socio-technical agencement in the way it enables property to become an ‘equity holding’. Through BFA a neighborhood within the project site becomes imagined as a temporal ‘joint venture’ with property flipped into an asset with multifold growth in volume and price.

Such a perceptual modification has subtly infused into processes of persuasion, coercion, negotiation and contestation. To illustrate the reciprocal and cross-fertilizing social process between market intermediaries and property owners – and between the socio-technical and socio-cultural work of BFA - we will turn to examine the acculturation of the everyday ‘coupon clipper’ under the lure of BFA credits, and the expansion of ‘coupon ownerships’.

Reciprocal Construction of Everyday Coupon Clippers

In Taiwan, 'real property' has been a significant form of household savings. According to the *National Wealth Statistics Report* (Directorate-General of Budget, Accounting and Statistics 2015), the categories of land (57.54 per cent) and building (15.33 per cent) together make up 72.87 per cent of household assets. Paradoxically, the apparent growth of total asset value per household was brought by the increasing unaffordability of land price. These land-based properties have become key element in the essential doctrine of a homeowner society with weak housing welfare system. Becoming the life substance and a form of saving for many, the real properties are now given a chance to become potential 'asset' – that it not only allows one to take out loans, to harvest future income stream, but also presently a means to realize the multifold growth in land price and floor space.

The subtle shift from the 'homeowner society' to 'shareholder society' has been made possible through the creation of BFA coupons. The socio-spatial engineering of BFA to render property ownerships into spatialized stock ownerships, in practice, involves a series of intervention on the economic objects. As Muniesa and Callon (2007, p.163) put it, the function of a market device is 'to seize them [economic object], to modify and then stabilize them, to produce them in some specific manner'. Take two instances for example. First, the 'coupon pooling' involves the community performance in the quasi-market place of the Urban Renewal Review Committees. Picking up the threads from Sections 5.1 and 5.3, the coupon pooling practice, especially in cases which involve limited offer within certain timeframe, is made possible with a high degree of consensus from the popular support. Second, the institutional design of the 'Right Conversion' process allows project

implementers to evaluate whether the property owners' stake can be converted into a spatial unit after renewal. With this process, urban inhabitants in the project site are allocated into three categories. First there are those who are *capable and willing* to join, and the converted share of this group will serve to access the severable contracts of the renewed property. Second there are those who are *capable but unwilling* to join. Unwilling homeowners are channeled to officially-hosted negotiation meetings. This kind of negotiation meeting has its political limit in terms of the extent to which it can hardly overthrow or change a part of the project design. I have learned from previous on-site observations that such negotiation meetings only allow the discretionary power with regards to a favorable economic value.⁴⁰ Third, there is a minority of property owners whose share is too meager and financially *incapable* to make up the deficiency for a unit, and property owners in this group will be obliged to sell their shares to the project implementer. In a rare case, they may request the project implementer offer fair compensation once their individual struggles were recognized as a threat to processing the project. A similar phenomenon can be found in the dynamics of *squeeze-out* and *sell-out rights* in stock trading.

While rights to housing have been reframed into shareholders' rights, the accompanied displacement and dispossession are then justified with the rhetoric of individualized responsibility. The current Minister without Portfolio Chang Jing-Sen, a leading proponent of air rights-related urban policy, gave remarks which featured the logic of shareholding enterprise: "I never know there are any victims because of urban renewal [...] what I can see is just people, those who

40 Chen, W.-L. (2011). 'Negotiation Meeting in the Urban Regeneration Office is a Mere Formality, Inhabitants: We are Treated as Living Dead', Coolloud News, 29 October [Online]. Available at: <http://www.coolloud.org.tw/node/64709> (Accessed: 28 March 2018)

are ‘beneficiaries’, ‘beneficiaries who feel it is not enough’, and ‘beneficiaries with less returns’”⁴¹. By denying the existence of victims of dispossession, Chang reinterpreted dispossession with a language of stratified ‘beneficiaries’ which entails the belief that market intermediaries will certainly enhance economic values. Thus, it is the obligation for the homeowner-cum-shareholder to comply with the majority decision.

The reciprocal construction of everyday coupon clippers thus can be seen as the reflection of the socio-technical agencement of BFA. It not only shows the growth of a shareholding mentality but also highlights a perspective mutation between the inhabitants’ and market intermediaries. In this case, the new economic citizenship of inhabitant has reshaped through a variety of context-dependent factors. Not only could property ownership define the right to claim volumetric ownership; in some circumstances, even the local patronage that assists project implementer along the process might be rewarded. For inhabitants, either to make their voices heard and adequately addressed or to protect themselves from business scams, many start to join those private training programmes of urban renewal. Such phenomena reflect that, even in scenes of conflicted interests, it almost becomes a prerequisite to speak the language that technocrats and the market intermediaries communicate in order to counter-balancing the power relation.

The expansion of coupon ownership

The key to the expansion of coupon ownership is the integration process that

⁴¹ Chong, H.-L. (2018). ‘Chang, Jing-Sen: There is No Victim but Beneficiary in Urban Renewal’, Liberty Times, February 12 [Online]. Available at: <http://news.ltn.com.tw/news/politics/breakngnews/2340481> (Accessed: 28 March 2018).

requires the formation of ‘supermajority consent’. To decipher the formation of ‘supermajority consent’, at least two to three types of scenarios are illustrated here as the purposive craft of shareholding enterprise are not always welcomed by local inhabitants. First, the management efforts of market intermediaries, whether decent or illicit, often led to controversies as their arrivals and strategies were either *uninvited* or unappreciated. To overcome the predetermined lack of rapport, market intermediaries may either bribe city councilor or local neighborhood leaders or set coupon ownership as a strategic entry en route to secure the ‘majority vote’ – a prerequisite for the official approval at different phases of application. Practically, this is managed through the initial acquisition of a tract of land on the project site. The project implementer will then recruit or mobilize investors (including their relatives, staffs, and partner contractors) to either purchase more stakes or subdivide land tract into numerous tiny shares and temporally transfer the ownership. In other words, the fragmentation of existing ownerships becomes a controversial strategy to win over ‘supermajority consent’ under the disguise of ownership to secure control before renewal. In short, while shareholder-ism is co-constituted of the dialectic relation between ownership and control, it is often witnessed that the ownership and control are not two separate, counter-balanced forces; but two sorts of entry for market intermediaries to transform urban neighbourhoods into a joint venture.

Secondly, a widely shared scenario is to bolster the incentives - the volumetric growth of floor space - to mobilize the targeted population. Considering the increase of building height will require the reduced building coverage area in order to secure the environmental quality. Notwithstanding that the volumetric growth triggered by assembling BFA also increases the ratio of public amenities. This shapes

a common character amongst the new-build condominiums – that each has higher ratio of public amenities, reduced privately usable space, and increased estate management fees. To satisfy the shareholders, an offer of renewal shall secure the renewed floor space at least be equivalent to that of before renewal. In this way, the volumetric growth of floor space becomes a major source to mobilize the targeted population. As the targeted population, many property owners nonetheless also learned a thing or two regarding the appraisal rules, and adapted to the practical knowledge that frames land as far more valuable asset than buildings. As such, the practical knowledge that employed by redevelopers could often turn into the thrust for redeveloper. Since property owners learn to be cautious that the increased floor space with the decreased land share could be a deceptive bait-and-switch scheme. To push through the inherently zero-sum game, a practical tendency in the spatial design turned out to be bolstering the BFA credits full-up in each project, despite these spatial credits are, in fact, one-off, non-reusable chance.

5.5 Everyday Spaces of Coupon Pooling

In this section, two examples are discussed to demonstrate the practices of coupon pooling that occur in urban built environment. The first example looks at the ballooning process of a cluster of high-rise towers in Xin-Ban Special Zone, New Taipei City. Analyzing data from the interview records and government auditing reports, this example highlights how BFA, as an infrastructure-funding vehicle, has prompted a vertical landscape for urban financialization. Shifting the focus from a zone to a single site, the second example will use a housing renewal project ‘Song-Ren Road Urban Renewal’ in Taipei City to demonstrate BFA’s agentic features. Thereby BFA has not only enabled the conversion of direct property ownership into

shares within an asset but also triggered contestations between redeveloper and homeowner-cum-shareholder. These struggles appear in the court case records, project proposals, public hearing records and media coverages.

5.5.1 Xin-Ban Special Zone

This example is set to show how BFA is applied to bolster the high-rise tower boom in a designated zone (as described in Section 5.3). The operations of coupon-pooling in the Xin-Ban Special Zone [新板特區] in New Taipei City can be tracked back to its long-term collaboration and competition with the urban governance of Taipei City. Since the onset of Xin-Yi Planning District in the mid-1990s, this mode of cluster-based volumetric growth was widely regarded as the architectural form for building up the physical capital to compete for the ‘international finance centre’ and the national project of ‘Asia-Pacific Regional Operations Centre’ in the early 2000s (Jou and Lin 2008; Hsu 2010; Jou et al. 2016). Following this sky-rush epidemic, it was around the inauguration of the landmark building Taipei 101⁴² in Xin-Yi Planning District in 2004 that the erstwhile DPP Taipei County Commissioner Su Tseng-Chang announced the tailor-made land use statutory scheme for the Xin-Ban Special Zone in the midst of SARS outbreak⁴³. Three years later, despite Taipei County having changed its regime under KMT, this 48.2 hectare-wide special zone

⁴² Assemblage is both productive and disruptive that takes shape in constant negotiation. According to Chen, Shih & Chen (2006), the initial design of Taipei 101 (1997 version) was a street block composed of two 14-floor high-rises at the front that set against the 66-story high-rise as the main building in order to comply with the building height control. Yet because the key investors expressed their concerns in the context of pursuing an outstanding entrepreneurial image and refused to set foot in the lower-high-rises, the building codes and designs were, accordingly, lifted up to 508 meter-high; despite the potential conflicts with aviation safety raised by the Civil Aeronautics Administration (see also Jou and Lin 2008).

⁴³ Also known as New Banciao Special Zone.

was geared up with the enactment of an infrastructural plan ‘Super HOPSCA’. Following the planning paradigm of Transport-Oriented Development (TOD), this infrastructural plan features a special zone compacted by hotels, high-density transportation system, offices, parks, shopping malls, skywalks, super dome, convention centres, high-end apartment and administrative centres with an estimated NTD. 9.5 billion investment (Ho 2007).

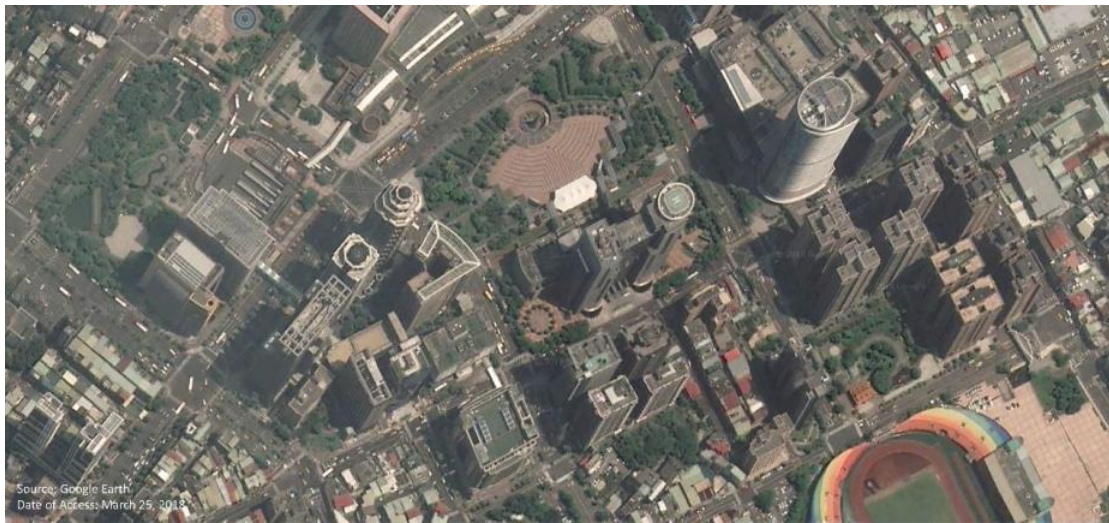


Figure 5.3 The Three-dimensional Aerial Map of Xin-Ban Special Zone

Source: “New Taipei City.” 25°01’23”N and 121°46’54”E. Google Earth V 9.2.55.2., Accessed: March 28th 2018

The Xin-Ban Special Zone (Figure 5.3) was enacted with a set of bespoke BFA schemes. The then New Taipei City Government sought to utilize BFA as a governmental device to create a 2.5 km-long sky bridge system within the 48.2 hectare-wide special zone. The employment of BFA as an infrastructure-funding vehicle has been questioned by the general public, attracted media backlash, and further prompted the National Auditing Office’s investigation concerning the unequal *quid pro quo*.

To start with some basic facts, we should explain how the special zone was laid out. The special zone has been divided into subzones with different land use intensity, where land use intensity was expressed through the floor area ratio ranging across 210 per cent, 300 per cent and 450 per cent, with a building coverage ratio between 50-60 per cent. Meanwhile, it utilized four types of BFA with the aim of facilitating a fast-build special zone within a 5-year time frame from 2004 onwards: (1) Public Amenities Bonus: by constructing inter-building pedestrian sky-bridge or underpass, the applicant can acquire 30 percent legal FAR; (2) Public Open Space Bonus – any public open space being provided within the project site will accredit the applicant 25-30 per cent legal FAR; (3) Site-Scale Bonus: for the area of the development site which exceeds 1500, 2000, or 3000 m² will be granted 10 per cent, 20 per cent, or 30 per cent legal FAR respectively; and (4) Duration Bonus: to accelerate the project completion within 1, 3, and 5 years will be accredited with 10 per cent, 5 per cent, and 3 per cent respectively. To this end, according to the National Audit Office (2017), up until August 2012, there were a total of 19 high-rise projects within the special zone voluntarily applied to construct a part of the sky-bridge system. The 19 high-rise projects were generally built around 20 to 37 floors. Each housing unit set the dwelling space starting with 80 *pings* (approximately 265 square metres).⁴⁴ While housing prices are sorted differently by the vertical pecking order (Hirayama 2017), the registered trading records were varied from the lowest of NTD 539,400 per ping (approximately £4,086 per square metre)⁴⁵ to NTD 922,000 per ping (around £6,964 per square metre).⁴⁶ Equipped with privately-

44 As a reference, the 2016 statistics released by the Directorate-General of Budget, Accounting and Statistics indicates the average living space per person in New Taipei City is 10.4 ping (34.42 m²).

45 To provide a rough sense about the speculative level of housing price, according to the Office for National Statistics (ONS) in the UK, the average cost of property sold in England and Wales was £2,395 per square metre in 2016.

46 In spite of these residential towers were built around 2009 and 2012, the transaction prices

accessed swimming pool, conference room, SPA, gym, movie theatre, karaoke, dancing and yoga rooms, library and so on – this is the epitome of the standardized production of ‘luxury building’ in Taiwan – a way of living which the monthly estate management fee accounts for half of the 2017 legal minimum wage (NT\$21,008, around £525) in Taiwan.

Nonetheless, while BFA as a market device has contributed to shaping the market for luxury condominiums, there are consequentially more far-fetched socio-economic overflows to a process I coin as ‘coupon pool urbanism’. Beyond what the government regarded as an infrastructure funding vehicle, BFA as a market device inevitably modified the property relations of the provision of public amenities and open spaces. Following Muniesa and Callon (2007), public facilities and open spaces which are once not necessarily economic have not only rendered the non-economic objects measurable and calculative; but also replace the language and act of contestation by different systems of valuation. For instance, each (re)developers in Xin-Ban Special Zone have committed to provide the public amenities and publicly-owned open space. What facilitates these voluntary offers are the floor area ratio that bloating exceeds the legal limit of 450 per cent FAR and doubled to 700-870 per cent FAR. Nonetheless, the government in turn endowed the private-built public amenities and open space that are spatially incorporated as parts of these luxury estates.

As such, we may reconsider the protocol and mechanism of exchange that are

presented are assembled mostly around 2016-17 in order to create a relatively comparable timeframe. Source: New Taipei City Government Real Estate Transaction Database [新北市政府不動產交易建置查詢系統] Available at: <http://e-land.landntpc.gov.tw>.

instilled with the economic agencement of BFA. The outcome that public and private spaces cannot be detached from one another is indicative of how such economic agencement produces either ‘public-owned private space’ or ‘privately-owned public space’. Whereby public properties claimed to be endowed to the government are built within ‘fortress-like’ luxury condominiums. What the citizens react to this undesirable result is a series of counter-actions took place within the clusters of vertical towers, such as the Xin-Ban Special Zone and Xin-Yi Planning District. These autonomous interventions were rolled out in different ways. Online actions include participatory mapping; Facebook discussion page and virtual-reality game design⁴⁷; offline actions develop into netizens’ gatherings that stroll, cycle and picnic at the lobby of luxury condominiums. Meanwhile, these public-owned open spaces that are located within private estates were reported as ‘illegal construction’ due to their ambiguous position between public and private communal area. Such ambiguous space as hybrid ‘material overflows’ has incited a series of government-led demolitions of the lobbies of luxury condominiums (Lee 2013). As the activist Q recalled, ‘in fact the lobby and open spaces were abandoned. Such spaces become the pool of all kind of dissents. [...] If I do not have any special motivation, I will not walk into others’ lobbies. First, I have no clue about how to locate myself in others’ private lobbies; secondly, even if I want to stay around it just makes me look like a freak. [...] Because, we do not see much possibility to develop publicness within such spaces’⁴⁸. To restore the ‘security’ of these gated communities, rounds of community meetings, negotiations, and court cases have prolonged for years. The socio-technical agencement of BFA elicits itself as a formal

47 For instance, a Facebook page ‘Use Your Own Floor Area by Yourself [自己容積自己用]’ was found in 2014 and went viral for a while that provoked the following investigation of the auditing offices from both local and central government.

48 Interview with the activist researcher Chen, Chih-Hsuan, August 11th 2016.

and calculative space. Proposals emerged through these negotiations were the acknowledgement that these BFA-funded public spaces are not only about social but also economic. To retaining its openness means the security and the price/power of exclusivity will be jeopardised. Therefore, the most plausible solution was for the community management committees to pool their savings and buy back these ambiguously open spaces from the hand of the New Taipei City Government. In short, to secure the coupon values, the shareholders were mobilized to purchase the remaining 'shares' that is ambiguously owned by the 'public'. To some degree, this reflects Franck Cochoy (2008, p.39)'s proposition that the market device 'apparently intervenes alongside or after choice has been made may paradoxically subsequently shape the same choices'. In this example, BFA as a market device has demonstrated how its 'market' dimension could overflow and even override its original purposes and settings.

5.5.2 Song-Ren Road Urban Renewal

This example shifts focus from a cluster of projects to a single renewal site. It demonstrates the other facet of coupon pool urbanism, whereby a cultivated calculative mentality can become a weapon, reversing the progress of urban redevelopment.

Enjoying a strategic location, the Song-Ren Road Urban Renewal Project (Figure 5.4) is only 500 meters away from the special zone 'Xin-Yi Planning District' - where the landmark building Taipei 101 stands and obtains highest land price transaction records. This project site postulates itself a stark contrast to the clusters of skyscrapers in Xin-Yi Planning District. The site whereby 168 households once

resided is at the foot of Xiangshan [象山, literally means Elephant Mountain]. The streetscape was once made up of tenement communities, alleyways linking to traditional markets, and a military base. It is now undergoing radical vertical enclosure movement via the post-2008 state-bolstered credit expansion of Bonus Floor Area. Against this backdrop, the Song-Ren Road project is emblematic of the micro-processes that see market intermediaries attempt to pool the property savings of the urban majority and activate the anticipated revenue stream underpinned by the uncertain returns of BFA credits. The project implementer Lead-Jade Construction stepped into the neighbourhood in 2008. At that time, this fairly new enterprise launched seven residential housing renewal projects, each ranging between 15-45 floors. While none of the projects in its portfolio has been pushed through yet, Lead-Jade's business credibility was subject to doubt by the local neighbourhood. Later in April 2016, the unwilling landowners won a lawsuit at the Taipei High Administrative Court. The Court decided that the defendant Taipei City Government should retract the administrative approval of the urban renewal project.⁴⁹

⁴⁹ Since each of such private development project is endorsed by the Taipei City Government, when stakeholders sought to resolve the disputes by legal lawsuits, it is the Taipei City Government who will be staged as the defendant against either the redevelopers or residents. Under intense pressure, the Urban Regeneration Office in the City Government thus became the target of backlash. In 2012, the turnover rate of personnel reached 35per cent. Moreover, between 2007 and 2018, the judicial records in the Taipei High Administrative Court have accumulated to 198 cases.



Figure 5.4 The Location of the Song-Ren Road Urban Renewal Project

Source: “Taipei City.” 25°01’27”N and 121°33’48”E. Google Earth V 9.2.55.2.,
Accessed: March 28th 2018

The Song-Ren Road Urban Renewal was initiated against the backdrop of the rapid changing BFA policy schemes. Commenced in 2008, this project aimed to pool the land ownership into claiming the BFA credits equivalent to 68.2 per cent of the site’s legal FAR. The proposal was developed to justify a constitution of Urban Renewal Bonus 48.2 per cent and Parking Lots Bonus 20 per cent. Not long after this initial application was submitted, the project design went through a major revision in order to shift its track to apply for the ‘Beautiful Taipei Series I – Landmark Buildings’ in December 2008. To fulfil the requests from the landowners, the redrafted 2nd application lifted up to 71.55 per cent of the legal FAR. To note, this was assembled by (1) Urban Renewal Bonus 38.38 per cent; (2) Parking Lots Bonus 13.36 per cent; and (3) Beautiful Taipei Bonus 19.81 per cent - a limited offer which

urges redevelopers to commence the construction work before the 2010 Taipei Flora Expo. Even though this number of credits had once approved by the city government, this offer became invalid as the project implementer failed to launch the construction work before September 30th 2010 - the deadline set by the policy scheme. However, this setback did not pull the redeveloper and shareholders off from the redevelopment dream. One year after, the project implementer seized the chance of 'Old Apartment Scheme' and submitted the 3rd round application. This version, being approved in February 2014, has assembled 100 per cent legal FAR, namely doubled the amount of legally buildable volume⁵⁰ – (1) Urban Renewal Bonus 50 per cent; (2) Parking Lots Bonus 11.41 per cent; and (3) Old Apartment Scheme 46.78 per cent. This allows the area of three-storey apartment lifts up to a twenty-five-story residential tower with sublevel five floors (see Figure 5.5). Hitherto, the three times application showed the ascendancy of shareholder's value which is justified by the quid pro quo of improving spatial quality: the 3rd version has 'planned the collection and recycling facility of rainwater, the golden-level green architecture, adequate housing units, community-based public space and so on'⁵¹. As the intervention by Lead-Jade Construction stated in the Taipei High Administrative Court: 'the re-applications were launched in order to fulfil some landowners, including some of the plaintiffs' request [...] therefore shifting tracks to other policy scheme cannot be interpreted as a violation to these owners' rights as each of the plaintiff will receive higher floor area and values in the latest plan'.⁵² Now let us take a pause here: the project implementer seems to have had a difficult time as their endeavours to 'flip' the old neighbourhood into a valuable asset were

50 This is an example demonstrated that while each policy scheme has respective limit, their assembled total was not under control.

51 Taipei High Administrative Court Record: 103,Su[訴],1746, p. 4.

52 Taipei High Administrative Court Record: 103,Su[訴],1746, p. 21.

not being appreciated. But what caused the plaintiff inhabitants to dissent? And, one may ask, what does it tell us about the role of BFA as a market device in reconfiguring such a dispute?



Figure 5.5 The Streetscape of Song-Ren Road Urban Renewal Site – Before (Left) and After (Right)

Source: (Left) Google Earth (ibid.); (Right) The simulation screenshot from the website of Lead-Jade Construction. Available at: http://www.leadjade.com.tw/hot_case_03renewplan.asp?HID=5&XID=10 [Accessed: March 28th 2018]

To answer these questions, we now turn to examine the plaintiffs' claims. An overarching claim being raised was that the project was endorsed by the government under conditions which violate the owners' rights to 'informed consent'. When the project shifted its application tracks, the subsequent changes related to fee structure were not fully disclosed nor was compliance of the due procedure. On the surface, the fee structure has been reduced from 50.1 per cent of the total value in the 2nd application to 42.37 per cent in the latest version. In other words, the project implementer Lead Jade alongside the its collaborated market intermediaries will share 42.37 per cent of the total land and building assets. At the first glance, the major changes of the project being listed are all technical items: the adoption of the costly top-down construction method and special geoen지니어ing; the agency fees

for project management and future property sales; the duration to servicing loan and interest; and risk management fees. What has underlain these technical issues, however, is ultimately political as it determines the fee structure after renewal.

This confrontational calculative encounter reveals how unwilling subjects were able to ‘switch off’ the compulsorily-drawn ‘joint venture’ of urban neighbourhood redevelopment and its internal sorting of market transactions backed by administrative order. According to the plaintiffs, ‘the increasing floor area might look beneficial for existing land and homeowners, in fact, as the numbers of land and homeowners are many, the actual scenario for land and homeowners were that they can only receive money compensation (the before-renewal value decided by the project implementer). This will lead to the compulsory acquisition of land shares executed by the redeveloper’.⁵³ For them, this lucrative deal appears nothing short of a bait-and-switch scheme that relies on managerial discretion and manipulation. What the episodes of contested calculation demonstrate here is that confrontational calculative practices from different positions occurred in the moments of suturing domestic finance into the wider finance structure. While each of these technical items may scale up the total shared cost, this could introduce the micro-mechanisms that filtering a potential shareholder out of the game, or increase the loans they need to service in the future. In short, from spatial design to the rights conversion scheme, from social ties to neighbourhood relations, each step can be decisive for one to turn into beneficiary or defaulter.

In this case, the relative novelty of BFA as a market device is how it enables the socio-

⁵³ Taipei High Administrative Court Record: 103,Su[訴],1746, p. 6. Available at: <http://jirs.judicial.gov.tw/FJUD/>

cultural transition with the logic of coupon pooling urbanism and thus bolsters what I call volumetric financialization. Firstly, the practices of BFA coupon pooling has manifested themselves as a pragmatic necessity of rehousing finance. That is to say, as a market device, BFA has been constructed as the desirable mean to achieve a scenario of vertical living and that, in turn, blurred the collective cognition between needs and desires. As Deleuze and Guattari (1972, p.27) explains: ‘Desire is not bolstered by needs, but rather the contrary; needs are derived from desire: they are counter-products within the real that desire produces.’ Such perceptual modification has been reciprocal and cross-fertilizing between market intermediaries and property owners.

Secondly, echoing the earlier argument in 5.4.1, what makes such volumetric practice distinct from Froud et al.’s (2002) description of ‘coupon pooling’ is that BFA is essentially bound to its spatial register. While potentially being both an investor and homeowner, many of the urban majority’s household savings being pooled into the renewal causes are the sort of ‘wealth’ that people attach to and live upon. As fleshed out through this example, the confrontational calculative encounter reveals that some people’s homesteads are pooled into the temporal joint venture and converted into shares. That their budgetary constraints are then mediated through market intermediaries, selling to creditors in forms of volumetric investment. In spite of the fact that various socio-economic statuses equip the urban majority widely uneven resilience to afford to the enlarged investment risk.

5.6 Conclusion

BFA is a place-specific, non-circulable spatial credit that displays, in different ways,

how the existing legal statutory limits of FAR are unbounded in urban Taipei. As a market-based policy and planning tool, BFA works not only in socio-technical terms as a market device of highly intermediated commodification that makes possible volumetric property claims, but also in socio-cultural terms by acclimatizing shareholderism in neighborhoods under redevelopment. This chapter has discussed how the regulatory and policy moves centred on BFA (5.3) and their socio-technical operations in practices of market intermediation (5.4) have worked to reframe and commensurate non-market objects as commodities. It has also stressed that the proliferation of BFA as spatial coupons has been a significant force which is more-than-economic, summoning bottom-up mobilizations across urban populations for the collective pursuit of coupon ownerships. During the course of territorializing and commodifying urban airspace, contingent arrangements shaped by forces of regulatory and local political faction have injected contingency into the socio-technical arrangement and unsettled property relations. In this way, this chapter contributes to developing a volumetric perspective into the spatial and property restructuring process.

This chapter has drawn on the relations between BFA and urban financialization, augmenting concerns with the economization work of market devices with the coupon pool frame (Froud et al. 2002). By developing and elaborating on the conception of coupon pool (5.2), the chapter has illustrated the spatialization of coupon pooling practices through the valuation of BFA that not only attempts to convert urban neighborhoods into joint ventures but also gives rise to a shareholders mentality. This has been further shown in two examples of coupon pooling practices (see section 5.5) – one is the Song-Ren Urban Renewal Project in Taipei City; the other is the Xin-Ban Special Zone in New Taipei City. These examples

have shown the contingent process of valuation around BFA makes each property (share) swing between asset and debt; and the socio-environmental aftermath of rendering property ownerships into equity shares. These contested enclosure movements exhibit how the urban financialization has been underpinned by the place-based coupon pool practices.

The chapter thus moves the thesis on from preceding chapters where I have argued that air rights created in urban policy and planning initiatives have an economic life and operate as market devices of urban financialization. The case study of BFA has shown how air rights can have a more-than-economic life, working to re-fabricate public perceptions such that the production of virtual space enables land not only as commodities but also assets. In this respect, BFA has essentially been utilized to cultivate, consolidate and placate the investors and shareholders' confidence. Nonetheless, the cultivation of a shareholder's mentality may entice homeowners into the collective deals of rehousing. But the growth of calculative subjects is a double-edged sword as it may also lead to contestation, and reversely impede the anticipated progress.

As previously noted, the examples I have presented of coupon pool urbanism employ two scales – one is a cluster of high-rise towers, showing the deployment of BFA and its agglomerative effect. The other is a single urban renewal project site, exhibiting the micro-mechanisms of BFA. Both examples are brought into alignment by a shared issue of intensified unevenness of wealth redistribution. Going beyond the economic and more-than-economic lives of air rights, the two examples also show how contestation can burst out in different sets of relations alongside the asset-making process.

This chapter concludes that, whilst operating as a market device of commodification, BFA has also operated as a spatial coupon. As coupons, BFA summons urban inhabitants to collectively bestow their homestead and property so as to ‘flip’ low-rise urban neighborhoods into sites of luxury condominiums. In this way, regulatory and policy arrangements in Taipei surrounding air rights reveal how the Pandora’s box of BFA has been cracked open by politicians, bureaucrats, technocrats and market intermediaries alike. It is through their unwittingly collective efforts that urban airspace has become incorporated into economic value-based environmental management and has evolved with urban financialization. This chapter has elaborated how air rights’ socio-technical operations also generate the socio-cultural transitions. By following the bonus floor area, the chapter has emphasized the ways that air rights in bonus form trigger the transformation of urban neighborhoods into joint ventures. In addition, this process is reinforced by the transformation of a homeowner society into a shareholder society.

6

Following Transferable Development Rights

6.1 Introduction

‘Although Floor Area Bank seems to be a question of urban finance, it is actually a matter of urban development. In the past five years, the profits generated from Transferable Development Rights have reached 100 billion (NTD) dollars. However, the revenue was mostly ended in the pockets of the developers and broker-dealers. Conversely, now that the government hosts the bank, all of the revenue will be collected by the government’.

Tai-Ming Ben, Commissioner of Department of Urban Development, Taipei City Government, 4 August 2014, Source: Lin 2014

In a 2014 interview, the erstwhile Urban Development Commissioner of Taipei City Government, Dr Tai-Ming Ben, stressed that the so-called Floor Area Bank has been elemental to present-day urban development. In the interview, he asserted that ‘the Floor Area Bank can’t earn if the real estate market is in its downturn’, articulating the close relations between the air rights market and real property

market. Taking a proactive role in facilitating the ‘Floor Area Bank’, the Taipei City Government under the then KMT mayor Hao, Lung-Bin was one of the most active municipal governments that promoted this idea for years. Finally, the local ordinance passed in July 2014, allowing developers to purchase development rights straight from the Taipei city government. This policy has been regarded as a flanking move in the battle against market intermediaries’ piggybacking on the air rights economy. A number of local states have thereby followed the trend of setting up their respective floor area banks (Sung and Wu 2014). However, Taipei City Government would be one of the most ‘iron-fisted’ local states as they proclaimed developers should ensure all the floor area be purchased from government-issued air rights - IFA (see Chapter 4). In other words, this policy reform sets a bold aim of terminating the secondary market for TDR. While the secondary market has been the primary channel, sustaining the circulation of transferable air rights, this measure plans to replace it with a government-led, primary market platform which sells IFA – the area-based, non-transferable air rights. Begun in 2014 with a three-year timeframe, this measure allowed developers to buy 50 per cent of the stock of air rights from the secondary market. As one would expect, this has provoked anger and anxiety among market participants. By attempting to switch off channels for buying TDR from market intermediaries, this government initiative has been regarded as a significant raid on the TDR market in Taipei City.

However, policy reform did not end the private market for air rights. When the three-year sunset provision approached in July 2017, it coincided with the moment when the local political regime changed to the surgeon-turned-mayor Ko Wen-Je. Being independent of the two major political forces (KMT and DPP), Mayor Ko later led the Taipei City Government to ramp up a series of public forums in an attempt

to recruit popular support and combat the voice of market participants. Shedding light on this hidden market, Ko vowed to ‘reclaim back the stolen cheese of the people’ (Ko 2017). Nonetheless, his vow came to a grinding halt in summer 2017 when the Taipei City Council showed overwhelming objection to his plan. Since then, bold reforms have been frustrated and, instead, the air rights market retains its operation by supplying a maximum of 50 per cent of the stock of air rights issued to developer buyers.

The above disputes evolve around the specific air rights instrument -Transferable Development Rights (TDR). As a mechanism, TDR are a typical urban planning practice and has been used to address the tension between conservation and development by, for example, curbing development at one place by granting development rights elsewhere (Chomitz 2004; Loehr 2012; Nelson et al. 2013). This is because TDR allow air rights to be transferred from a sending site to a receiving site via a secondary market which trades ownership claims. The enhanced mobility of TDR derives from the ability to detach urban air rights from their underlying land parcels. Institutionally, the TDR mechanism generates a TDR offset credit through either the public-owned non-profit air rights banks (e.g. CEPAC system in São Paulo and Rio de Janeiro) (Sandroni 2010) or private markets (e.g. Mumbai and Taipei) (Gandhi and Phatak 2016; Shih et al. 2017). In short, TDR have been circulated either in primary markets where government institutions issue air rights, or the secondary markets where market participants can trade in air rights and speculate upon them.

Set to unpack the ecologies of multiple markets relating to the TDR mechanism in urban Taipei, this chapter examines the TDR mechanism’s underpinning

operations – arbitraging and derivatizing - that co-constitute the particular terrain of urban financialization. To unpack this condensed argument, the sections below will show that the deployment of TDR as market devices are revealed in both the enactment of multiple markets and the creation of arbitraging practices. In so doing, these market operations have derivatized public indebtedness – the original cause for the creation of TDR credits - across multiple markets. And thus, it will demonstrate how and why urban financialization is understood as the complex interplay of commodification, secondary marketization and capitalization. For instance, in light of the state-market contestation over ownership of TDR as identified above, whereby the TDR market is widely considered a notorious market for speculation, it remains, intriguingly, a favourite option of infrastructure financing for government institutions. This prompts us to ask, how do air rights function as market devices and redistribute agency between different market actors and actants? Also, to what extent have the TDR markets involved in urban financialization? This chapter explores these questions through various facets of TDR mechanism and their market operations in urban Taipei, include TDR’s market formation, qualification, valuation, circulation and implication.

The chapter reveals how TDR as a market device has overridden its initial orientation as an urban policy and planning instrument for the commodification of the air that is designed as an offset. Specifically, it explores how TDR offset credits are arguably the crucial devices of marketization and capitalization and, in the context of urban Taipei, they have become spatial derivatives. The term ‘spatial derivatives’ is used here to refer to two dimensions of air rights trading in TDR markets. First, the TDR trading practices are made possible through extracting tradable ownership claims from the underlying sending sites towards transferable

and calculable air rights that can be exchanged indifferent to, and disentangled from, the original underlying land parcels.⁵⁴ This mirrors the ways in which derivatives are characterized by ‘their capacity to dismantle or unbundle any asset into constituent attributes and trade those attributes without trading the asset itself’ (Bryan and Rafferty 2006, p.44). Second, as the quasi-derivative form of air rights, TDR also reconstitute property relations when coming together with other types of air rights. TDR have the capacity to operate as a device that constitutes marketization and capitalization such that they are exercised as an asset class to create income streams, to save land cost, and to hedge investment risk in (re)development projects. Such tradable air rights for investment purpose runs the gamut from being a tax shelter for high-bracket taxpayers to a refuge of private insurance funds. Moreover, the trading could ensure air rights to be detached from the anticipated delivery of asset and its underlying value. Tracing this context-specific urban fiscal and taxation structure, this chapter will argue that the dynamics of urban fiscal and tax politics help to clarify the state-facilitated arbitraging opportunities across multiple markets evolving with TDRs. In this manner, the chapter contributes to unfolding the black-box of urban financialization.

Characterised by specific techno-cultures of valuation, the practices of the TDR market have been evaluated through the notion of ‘floating value’ (Alterman 2012; Moore and Purdue 2012) as will be explained in the next section. This analytical optic enables us to understand how profit-making practices of arbitrage are manipulated across multiple markets, capitalizing on the price spreads that arise out of their inherently geographical features. The remainder of the chapter proceeds as

⁵⁴ The inspiration is derived from viewing similar tendency in security practice that has been captured by Louise (Amoore 2011)’s work on data derivatives.

follows. Section 6.2 reviews three strands of relevant literature on the topics of speculative urbanism, TDR, and arbitrage respectively. Section 6.3 examines the regulatory and policy assemblages of TDR in Taiwan in two parts: one of these is the TDR-based regulations that pump the production of TDR credits; the other is the urban fiscal and land tax policies in Taiwan. This section provides a necessary backdrop for understanding how the spreads between different land price indexes are generated and translated into arbitraging opportunities for broker-dealers, developers, and lay investors. Section 6.4 turns to the operation of the TDR market in Taipei Metropolitan Area. It explains how the logic of arbitrage in market practice has sustained the trading of spatial derivatives. Section 6.5 visits two examples that explain how distressed and defaulted public debts are transformed into the contested production of spatialized credits, and examines their socio-environmental overflows.

6.2 Speculative Urbanism, TDR, and the logic of arbitrage

‘Speculative urbanism’ has been treated as a common descriptor of urban processes, particularly associated with cities in the Global South and East (Goldman 2011; Simone 2014; Sheppard et al. 2015; Jou et al. 2016; Shin and Kim 2016; Nam 2017; Simone and Pieterse 2017; Leitner and Sheppard 2018). This umbrella term also expresses a core financial logic of capital accumulation in the Global North (Knuth 2015; Fernandez and Aalbers 2016; Fields and Uffer 2016; Leszczynski 2016). The urban political economy treatment to speculative urbanism has been devoted to two particular lines of concern. The first strand features the Harveyian notion of ‘spatial-temporal fix’. This notion captures the motions of capital flow that are often recklessly profit-driven; ceaseless in conquering new sites; and serve to fix

periodic crises of over-accumulation (Zukin 2006; Gotham 2009; Castree and Christophers 2015). In the second strand, ‘speculative urbanism’ also serves to expose inherent contradictions in the capitalist regime and, in this regard, it is sometimes accompanied by the concept ‘accumulation by dispossession’ (Harvey 2004; Levien 2011; Hall 2013a). Both strands demonstrated a peculiar world of speculative urbanism that is structured around a stark contrast between capital, understood dominant, mobile and active, and place and people who, by contrast, are understood as inferior, relatively immobile, and with traits of physical vulnerability and passivity.

Nevertheless, a focus on the market-making practices of TDR as devices suggests mainstream accounts of the urban process are far from exhaustive. Most research on TDR has focused on practitioner-oriented issues, ranging from institutional design of TDR (McConnell and Walls 2009; Nelson et al. 2013; Vejchodská 2016); the efficacies of TDR as a growth management tool (Renard 2007; Kaplowitz et al. 2008; Sandroni 2010); and reasons for TDR program’s success or underperformance (McConnell et al. 2006; Renard 2007; Karanja and Rama 2011; Linkous and Chapin 2014; Linkous 2017; Shahab et al. 2018). By contrast, the socio-technical processes of valuation within TDR - that have long shaped urban morphology – are largely omitted from accounts in urban geography.

Socio-technical processes of valuation could be understood as the combined factors of regulations, systems, devices and infrastructures that enable processes whereby people evaluate the values of things in particular ways and patterns. In the case of politicizing the valuation of urban air rights, this chapter examines how the market device of TDR enables the translation of urban airspace into market evaluations. Put

another way, in this chapter, we are particularly concerned with the marketization work of TDR as market devices. In particular, the valuation of TDR is based upon the rationale that the future is exploitable. It indeed tells more than an indefinite ‘development rent’ (Haila 2015). The valuation of TDR is built upon the underlying logic - ‘floating value’ – by which it speculates the potential value may incur not least in one land parcel, but ‘the prospect floats over’ different land parcels (Moore and Purdue 2012, s.v.1.12)⁵⁵.

The historic roots of ‘floating value’ which underpins TDR can be dated back to the 1942 *Uthwatt Report*⁵⁶, issued under the British Labour Government. This report laid out the conceptual prototype of ‘development rights’⁵⁷ in seeking to solve the knotty issues of compensation and betterment⁵⁸ in the post-war context of urban

⁵⁵ Proposing the notion of ‘floating value’ here is not just a way of distinguishing between processes of commodification and secondary marketization. If we referring back to the earlier discussion on urban land rent theory (see 2.3.2), we can see that this extensively substantiates the argument that how ‘capitalized ground rent’ is insufficient to recognize the increased building volume as a bundled ensemble of different parts of commodity claims and pricing relations.

⁵⁶ The British Expert Committee on Compensation and Betterment (also known as Uthwatt Committee, Cmd 6386) issued the said report in 1942 as an initial guideline to address post-war reconstruction. While its scale of redevelopment in many aspects resonates with present-day urban issues, for example the large-scale redevelopment incurs hefty sum liability issue of government, the Uthwatt Report defines the ‘floating land value’, which touches upon the fundamental debate of property rights. For Alterman (2012, p.761), this assumes ‘landowners are entitled to compensation for reduction in development rights was thus shaken, while the justification for capturing the added value was reinforced’.

⁵⁷ In the Lord Attendance Dataset, the then Minister of Works and Planning, Lord Portal, expounded the proposed solution by the Uthwatt Committee on the idea of ‘floating value’ and suggested how such valuation is inclined to resulting in exceeding the actual loss of land owners that supposed to be compensated. See HL Deb 18 November 1942 vol 125 cc87-141 [Online]. Available at: https://api.parliament.uk/historic-hansard/lords/1942/nov/18/planning-and-reconstruction#column_91 (Accessed: April 6th 2018)

⁵⁸ In a more recent-day version, the dichotomised view has extended to address the so-called ‘windfalls and wipe-outs’ frame (Hagman and Misczynski 1978; Alterman 2012). Windfalls – namely the ‘unearned gains’ incurred by planning decisions and public works – have raised the question on whether the government has the rights to capture the betterment value. On the contrary, wipe-outs connote the property depreciation due to planning regulations or public works, have invoked the question that should the government obliged to compensate the depreciated value due to planning control (Alterman 2012; Moore and Purdue 2012).

reconstruction. Its key conceptual move was to view the exchange value of land as deriving not only from resource scarcity, land quality (e.g. fertility, location) or investment in the land (as previously theorised) but as also deriving from acts of speculating on prospective development. As such, it is a concept that fairly speaks to present-day urban questions. Epistemologically, this concept at that time presented an alternative to, while coexisting with, the idea of land rent from neoclassic Ricardian and conventional Marxist views. Nowadays, the large scale application of TDRs takes place in very different contexts, yet TDR continue to express the compensation-betterment problem under different logics and practices of market valuation.

To explore how various market valuations of TDR involve in processes of economization, this thesis suggests to shift the object in focus from capital flow towards the spatial flow of development rights. That is to examine such mobile moments of 'virtual space' that are enlivening through different forms of property claims. In advance, this opens up enquires towards the various ways that the (air) space is valued in various market cultures, and why the notion of arbitrage matters to understand the urban process wherein air rights become market devices of secondary marketization.

Once operating as market devices that facilitate the constitution of secondary markets for the urban air, TDR themselves become an object for arbitrage by investors and speculators that impacts the pricing of urban air and the urban locations they associate. Arbitrage is the act of seeking to exploit the difference between two mispriced things (Miyazaki 2013). Arbitrage is commonly seen in all sorts of market trades. Yet, discussions about arbitraging practice have long been

neglected in urban economic geography. Despite – or indeed because of - its prevalence in real property markets which operate through the constant exploitation of spatial-temporal differences and unevenness. Nonetheless, in the Social Studies of Market and Finance (SSM and SSF), arbitrage has received increasing attention for its sociological value. For market and finance sociologists, arbitrage offers empirical exposure. It grounds financial theory by comparing it with market practices, testifies what Callon called the ‘performativity’ thesis (Hardie and MacKenzie 2007; MacKenzie 2009; Miyazaki 2013). In a variety of analytical framing, what ‘arbitrage’ could work for the case of TDR market is dispersed across the following stances. First, arbitrage has been identified as ‘an art of association’ that, for example, constructs ‘comparability across different assets’ (see, for example, Buena and Stark (2005, p.369)’s study of Wall Street trading room). We can extend this understanding to sites that are brought into relation with one another through TDR. Doing so reveals how heterogeneous sites build relations not only through the physical transfer of air rights, but also through developing associations that justify the production of air rights. Second, and extending again, the curious value creation of virtual things is ‘mak[ing] something the measure of something else’, as explained by Buena and Stark. This pattern is clearly observed in financial derivative trading, and it also reflects what we have discussed about the ‘floating value’ of development rights. Third, according to financial anthropologist Hirokazu Miyazaki (2013), arbitrage has been made distinct from risk-taking speculation for its ‘risk-free’ characteristic (to use the textbook language of financial economics). From his empirical study on the Japanese securities arbitrageurs, Miyazaki explains this epistemological stance which offers an ‘ethical commitment to ambiguity’, necessitates the faith for the arbitrageurs to continue their routine practices. In the following stance, we will see how such ‘ethical

commitment to ambiguity' is also instrumental to underpin the market intermediaries' routine operations in TDR markets. Fourth and the last, 'arbitrage' also speaks to the core argument of the thesis that air rights act as market devices. Arbitrage as a trading technique, is essentially not just the 'tools of coordination' – what Hardin and Rottinghaus summarized the existing treatment of techniques and technologies in SSF literature. Rather, arbitrage in the TDR market is what Hardin and Rottinghaus describe as 'the harbingers of power and profit' (2015, p.548). As such, studying TDR market ecologies aligns with their call to examine the roles of market devices in mediating differential and unequal temporal–spatial relationships, and how these mediations enable the profiteering from arbitrage opportunities.

To sum up, this chapter explains how the market device of TDR and its secondary marketization are involved in processes of urban financialization. To be specific, the active engagement of the TDR mechanism in the making of multiple markets brings forth arbitraging practices. The ordinary market rationale of arbitrage, in this case, has shown its active arrangement in multiple economization processes. Whereby TDR anchored their future values upon mobile locations and resulted in the emergence of a derivatives logic. They could mobilize either in miscellaneous processes that unbundle airspace from the original urban locations; or act as investable assets in the portfolio of urban air rights for urban (re)development projects. In section 6.3, it displays how TDR as market devices creates forms of 'association' that root arbitrage opportunities. Furthermore, the following analysis in section 6.4 has primarily comprised of two analytical optics - 'tools of coordination' and 'profit-making' - in cultural economy approach. The case studies in section 6.5 will show how both these optics are not necessarily conflicting with

each other. The former renews our understanding of how TDR as market devices enable the urban operations of financial logics - arbitraging and derivatizing - and constitute part of the broader process of urban financialization. Meanwhile, the latter sheds light on the far-reaching implications behind operations of arbitraging and derivatizing urban air rights.

6.3 The Regulatory and Policy Assemblage of TDR

This section is made up of two parts. In the first part, I will discuss how TDR has been applied as an offset mechanism in various regulatory and policy causes in urban Taipei, and how this has invoked the expansion of volumetric property claims from the 2000s onward. Meanwhile, the second part will examine the relevant urban fiscal and land tax policies in Taiwan which shape the regulatory and policy assemblages. Combining two parts, the key purpose of this section is to understand the dynamic historical process that not only cultivates the expansion of TDR credits but also the peculiar planning mechanism that operates to economize the urban airspace and validate its mobility between urban sites.

6.3.1 The expansion of TDR credits

The inception of the TDR mechanism in Taiwan took place in the early 1990s (Shih et al. 2017). To cope with the then growing citizen's movement around historic preservation, building and planning, academics in National Taiwan University introduced the urban designer Patrick Too (who works for New York City Department of City Planning) to transfer U.S.-based TDR experience and tailor its application in Taiwan. Soon afterwards, legislation introduced TDR for historic

preservation via the ‘Cultural Heritage Preservation Act’ (article 36-1) at the end of 1996, with relevant ordinances enabling air rights trading in mid-1997. One of the most notable cases is the Dadaocheng area in Taipei City (see also 6.5.1).

One year after the enactment of TDR, government officials sought to extend TDR to address a longstanding government liability arising from the urbanization process. What troubled the cash-strapped government was the hefty bill for compensation to urban landowners whose land was identified for redevelopment in plans for public infrastructure, but which had yet to be expropriated. Ranging from roads, parks, schools, libraries, and other public facilities like bus stations, airports and so on, the grids laid onto private land tracts for these facilities are assigned low legal floor area ratios or none at all. By the end of 1996, such economically ‘worthless’ land tracts which were awaiting appropriation by municipal governments in Taiwan exceeded 12,000 hectares - nearly half the size of the Taipei City.⁵⁹ On top of this, the land tracts that had been reserved for road use but which were awaiting compensation amounted to 4,600 hectares. By then, the estimated amount to compensate these land tracts exceeded the annual National GDP of 1996. Facing this exorbitant fiscal burden, TDR were proposed by the central government as an offset mechanism for those land tracts with no buildable area. This application significantly expanded TDR's remit from the original rationale of historic conservation to public infrastructure. Despite strong criticisms from scholars and preservation activists, TDR for the reserved land of public infrastructure (below shorthanded as TDR for public infrastructure) was put into practice in 1999. Since

⁵⁹ This number continues to grow as urbanization increases. According to the Ministry of Interior (2017), by 2010 the total area of land for public infrastructure exceeded 72,000 hectares, thereby the land tracts to be compensated (namely the potential sending site) was doubled to more than 25,000 hectares.

then, landowners can trade their qualified property ownership claims in the market and through this process they receive monetary compensation.

Thus far, I have introduced at least two major categories of TDR – ‘TDR for historic preservation’ and ‘TDR for public infrastructure’. Each category involves different qualification processes that combine assorted obligations, administrative procedures and administrative institutions. For example, within the category of TDR for historic preservation, TDR of Dadaocheng Area needs to fulfil the basic compliance of historical management/reuse plan and pass review by the Urban Design Review Committee. Thus it takes a longer time (roughly 8-12 months) than does general historical TDR (approximately 8-10 months). TDR for public infrastructure has set restrictions about, for example, how the un-expropriated road should be possessed at least five years before its transfer; or about how such road should be at least 15 meters wide. Procedurally speaking, to convert this type of TDR from offset claims to permits takes 2-3 months (Cheng and Wang 2016). Obviously, the technical barriers and time cost are all factored into the ranking of market popularity of these spatial credits.

6.3.2 TDR and the Urban Fiscal and Land Tax Policy

Arbitraging opportunities emerge when one thing has more than one price. In Taiwan, each land tract has three prices: government-declared land value⁶⁰ [公告地

⁶⁰ The historic genealogy of ‘land value’ derives from the proposal of ‘single tax’ system. Inspired by Henry George’s land and tax reform, the founding father of Republican Kuomintang, Dr. Sun Yat-Sen, developed his proposal of direct taxation and socialized distribution under the principle of livelihood [民生]. ‘Land value’ was designed to encourage landowners spontaneously register their land value as the tax base. It expects that landowners hope to reduce their tax yet afraid of being expropriated with undervalued compensation, henceforth the

價] (below as ‘land value’), government-declared current value [公告現值] (hereafter as ‘current value’), and market price [市價]. The ‘land value’ price index serves as the tax base for the annual ‘land value tax’, namely a kind of possession tax. Since it is only adjusted every three years, the value it reflects is roughly around 10 to 20 per cent of the market price, i.e. far detached from the reality. The ‘current value’ price index, on the other hand, has been adopted as the tax base for betterment levy during proprietary transfers and is the compensation base for eminent domain. It is thus particularly important for the economic valuation of TDR. As the ‘current value’ price index adjusts annually, it reflects around 40 to 60 per cent of market value.

Regarding the compensation procedure, the government sets the standard of auction price as 15 per cent of the ‘current value’. This standard turns out to become the floor price of the land reserved for public infrastructure. That is to say, any bid price higher than 15 per cent of the current value could be a more attractive option for the seller (landowners). Consequently, the ‘current value’ price index has been appropriated by the TDR market as the basis between brokerage and developers to negotiate the price. TDR as a market device has shown here as it enables a conversion of an indirect policy-based valuation system (e.g. current value price index) into a property valuation system for the market transaction. Principally speaking, the two government-declared price indices do not to function as the basis for market transactions. That being said, the techno-social agencement of TDR is revealed by positioning itself as a route connecting multiple price systems and

validity of land value will be mitigated by compensation and betterment. Yet, under the backlash from landowners over decades, the ‘land value’ was restrained in the ‘land value tax’. The *law of one price* is thus broken.

creating arbitraging opportunities across multiple markets.

The peak expansion of TDR markets between 1999 and 2006 illustrates how arbitraging practice has been exercised, and how it has sparked a mania of land donation. During this period, TDR market was not only a market for developers but also a special market for tax saving – either tax deduction or exemption. The reason being that ‘land donation’ has been an option that juxtaposed alongside TDR in an array of measures to address the urban fiscal quandaries of ‘land reserved for public infrastructure’ (Cheng and Wang 2016). In principle, to encourage landowners to voluntarily donate land reserved for public infrastructure, the government allows the donor of reserved public infrastructure to deduct tax by its registered ‘current value’.

However, in practice, various pricing indices can confuse landowners. So market brokerages can purchase such land tracts for an extremely low price by taking the ‘land value’ price index as the disguised standard of transaction. For instance, a land tract being registered as one million NT dollars by the ‘current value’ price index, might initially be purchased by A at the price of 0.3 million NT dollars. When donating these qualified land tracts for the tax deduction (such as income tax), A can immediately save the spread of 0.7 million NT dollars. In this way, the TDR market functions across and connects multiple markets. It is a land market with restrained property rights, an upstream market for developers, an element of the market for new condominiums, and a commodity market which attracts corporate investors and affluent tax dodgers.⁶¹

⁶¹ The speculative frenzy of investing in air rights for tax avoidance was documented reaching its peak during 2000-2003. The way in which investors arbitrage is to purchase land parcels used for

6.4 The Operations of Transferable Development Rights

In the previous section I discussed how TDR offset credits amplified sources of production alongside local regulatory changes. I showed how TDR's entanglement with urban fiscal and tax policy has created arbitraging opportunities for market intermediaries. In this section, I further explore TDR's market operations, namely their market formation, qualification, valuation and circulation by examining the extent to which TDR has evolved from an urban planning tool to a market device.

6.4.1 The Workings of Market Intermediaries

The booms of TDR markets are impossible without the active market intermediaries. At the outset, TDR markets were the expansion of business terrain for the brokerage who initially operated in foreclosure markets – a market largely constituted through arbitraging practice. The workings of market intermediaries consist of four inter-connected qualification processes (see Figure 6.1). They are (a) identifying potential stocks; (b) contracting; (c) compliance and application; and (d) lobbying. Processes (a) to (c) exhibit general trade facilitation services while (d) reflects the ecology of the TDR market and, particularly, the way it is highly sensitive to regulations and codes. Regulatory changes are as important as real estate market prospects in determining supply and demand in the TDR market.

road infrastructure cheap (less than 10 per cent of the government-declared current value), and to sell it to high-income customers for 20 per cent of the government-declared current value. Despite there being no accurate account of the total profit extracted from the air rights-based tax fraud, this legal loophole had driven a spike in the annual statistics from NTD. 13 million in 2000 to NTD. 125 billion donated to road infrastructure in 2003. Source: Cheng, C.-F. (2004) 'Ministry of Finance Blocks the Legal Loophole, Land Donations for Tax Saving Plummet', *Liberty Times*, 9th November [Online]. Available at: <http://old.ltn.com.tw/2004/new/nov/9/today-e4.htm> (Accessed: 9 April 2018).

(1) *Identifying Potential Stocks*

The market brokerage mainly discovers air rights stocks. Amidst those mostly perceived as valueless, unwanted land parcels, broker-dealers discover potential stocks by some 'grounded' methods, such as passing out flyers, door-to-door letters and home visits. These are the initial steps to discover a valueless land that has potential to be flipped into a speculative asset.

A broker with 4 years of experience in one of the biggest private trading platforms (Interviewee G) recalled her training experience⁶² and how brokers are trained to be able to read and search cadastral maps, transcripts of land registration, GIS system, and digital database of real estates. This allows them to identify privately-owned land parcels that are 'reserved for public infrastructures'.

⁶² Broker-dealers and investors can get training in TDR via private colleges and academies. These programmes are often framed into modules such as 'Real Combat Class Series for Land Development', with modifications from 'Unpacking the TDR Niches' to 'Transferable Development Rights and the Latest Regulation of Floor Area Bonus'. Course providers include real estate vocational training centres and adult continuing education within the universities.

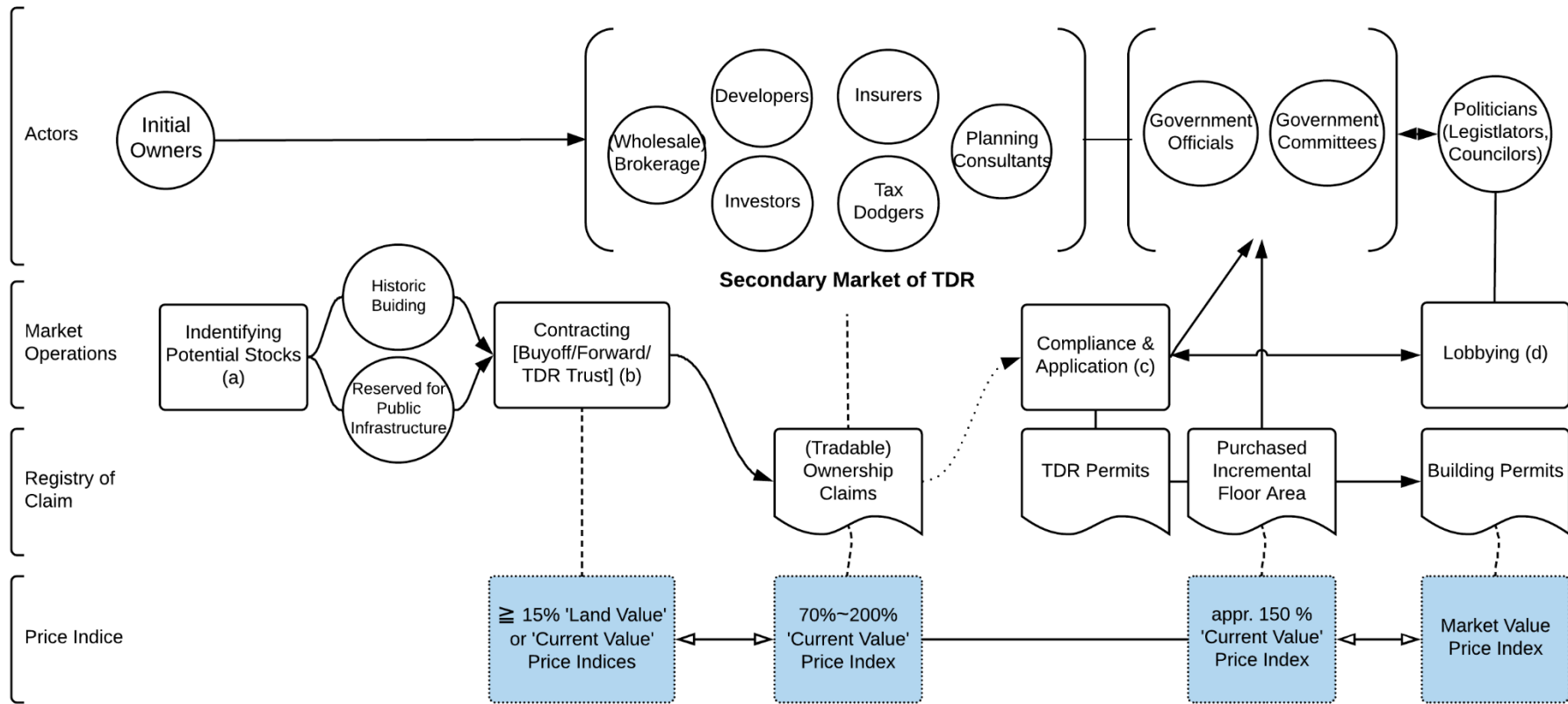


Figure 6.1 The Operation of TDR Market

Source: Personal collection

(2) Contracting

TDR contracting involves two sides of arbitrage practice. On the one hand, it is between the 'initial' owner and the broker; on the other, it involves the broker and developer/investor. During the contracting process, sellers (landowners) and buyers (broker-dealers) may strike a deal with either buy-off or forward contracts. The TDR trust service then secures such contracts. For the brokerage industry, the difference to choose between buy-off contracts and forwards mainly depends on the pocket of brokerage.

The buy-off contract is for brokers who have a deeper pocket for stockpiling air rights. This kind of contracts often strikes with extremely low price by the tricks that brokerage may buy in with the standard of minimum 15 per cent of 'land value' price index (as shown in Figure 6.1). As mentioned earlier, land value price index presents roughly 10 - 20 per cent of the market price. With a simple calculation, we can know the strike price at this stage falls around 1.5 per cent of the market price. Up until now, we can see how the arbitraging opportunities emerged at the manipulation of two government-declared price indices.

Regarding the forward (futures/options) contracts, this form serves mainly for buyers to create risk-free arbitrage. This form of contract has been a common strategy for the small to medium brokerage to operate without cash reserves. In part, it can also be seen as a response to the governmental re-regulation. To prevent speculative transactions, the transaction of the un-expropriated road has been locked up for at least five-year-long possession. This prompted a market response by transforming the contracts into futures and call-options contracts. While the requirement of prolonged possession has substantially delayed the settlement date,

the dealers may pay a small amount of deposit at the negotiation, and complete the payment upon open-ended or specified future date. Thus, coincidentally, the vibrant air rights markets stimulate the emergence of trust industry.

Moreover, G also describes that most of the air rights transactions do not require both parties - landowner and potential buyers - to meet each other, nor to see the trading object. Transactions have proceeded akin to Over-The-Counter (OTC) derivatives.

'Mostly, if someone needs to purchase the TDR credits, they would ring us and ask for the (commodity) stocks. Because we hold a lot of [contracts of] sellers at hands, we mediate their prices, and earn the service fee by percentage.'

The prerequisite for operating a trading platform requires one equipped with enough air rights stocks. The biggest air rights trading platform which G once worked for generally completed a transaction within three days to a week. As G describes:

'During the 2008 (global) financial crisis, the real estate market in Taipei was struck by it. Without plummeting, it conversely rose rapidly. Everyone starts shifting to participating in rebuilding and urban renewal so that the demand for air rights was huge, really huge. Therefore, by then our transactions were at the peak time and fast.'

The strike price at this side generally falls around 80 per cent of 'current value' price index. But this rate varies drastically between 70 to 200 per cent in relation to the dynamics of real property market.

(3) *Compliance and application*

Compliance and application are a step that converts TDR offsets from private contracts into legally authorized TDR permits, appreciating the exchange value of TDR offsets in the process. Deliverability has long been at stake in the academic discussion of the derivatives contracts (Millo 2007). While a majority of air rights stocks at the hands of developers is seeking (re)development sites to anchor; to complete the delivery, it involves the land registry and review process of the city governments.

Deliverability is structured upon the compliance of legal obligations. Different regulatory sources define the terms to deliver the air rights in various ways. For instance, in historic preservation, such legal obligation comes to term with the applicant's responsibility to manage and maintain the historic building. And the management plan should be approved by the municipal-based Cultural Heritage Review. This demonstrates the *quid pro quo* of air rights that swaps commodified virtual space with the preservation of the historical and cultural values.

In the case of land reserved for public infrastructure, delivery also signifies the eradication of difference. That is to say, regardless of the previous condition of sending sites, the legal compliance requires the applicant to 'cleansing' the superficies of the sending site. In this type of work, they not only arbitrage the price discrepancy between buyers and sellers with an extraction of 10 per cent to 20 per cent service fee. Charges vary upon the complexity of the case.

To be explicit, the acts of 'cleansing' are processes of disentanglement which work

upon the logic of indifference. On the one hand, under the neutral terminology of ‘negotiation’, threat, harassment, and eviction may take place in the sending site. Such processes were often obscure under the disguise of market transactions. This is essential in cases of TDR for public infrastructures. Put differently, TDR as a market device has made the ethical charges of eviction indistinguishable and reflected its ‘ethical commitment to ambiguity’. On the other, some common and tricky cases show disturbing accounts that there are squatters backed by local faction and run the profit-making business (e.g. rental parking space). Only by market-level compensation could make them leave voluntarily. Indeed, what the real world has displayed us, are not the logic of indifference, but various exchanges that their relations are only made examinable by looking into the arbitrating practice of TDR.

One thing worthy of notice here is that as there is a hefty amount of air rights that are not yet anchored to any receiving site (see 6.4.3). In short, the process of (a) to (c) reveals itself to be a non-linear process. Put the other way, TDR stocks may become an asset by circulating in or staying at the secondary market without going through compliance and application. In this case, liquidity is developed in a sense that is detached from land parcels. Legally, this is made possible because the transaction of ‘floor area’ has been adjudicated by the Ministry of Finance as trade without the transfer of land ownership, thus there is no charge of a betterment levy. Hence the work of abstraction here is that TDR trading is enabled without the actual delivery of the object (underlying asset) itself.

(4) Lobbying and legal actions

Political lobbying and legal actions are two major battlefields that underpin the TDR

market. The contents of lobbying range from land donation and tax saving, technical details of the spatial codes, to the very recent battle against the government-owned floor area bank. Each of these battlefields suggests that the marketization of air rights is a relentless push-and-pull process in the contingent formation of regulatory and market nexus.

Furthermore, TDR as a market device also shows its redistribution of calculative agencies across the market intermediaries, the government officials, the spatial codes and their material effects in spatial patterns and production of urban infrastructures. For instance, concerning the qualification of receiving sites, the minimum area of the receiving site should be equal to or bigger than 1,000 m². Also, it is regulated that such a site should locate at within a radius of 500 metres around the exit of the metro. Since June 2014, however, under the pressure of lobbying, justified through the Transit-Oriented Development (TOD) principle, this radius limit has been pushed further to a radius of 800 metres from the metro station. While the distance between two of any metro stations may range from 500 meters (in downtown) to 2 km (at the urban fringe); this simple adjustment has been criticized for rendering the strategic densification receiving sites become indifferent across the city (see Figure 6.2).

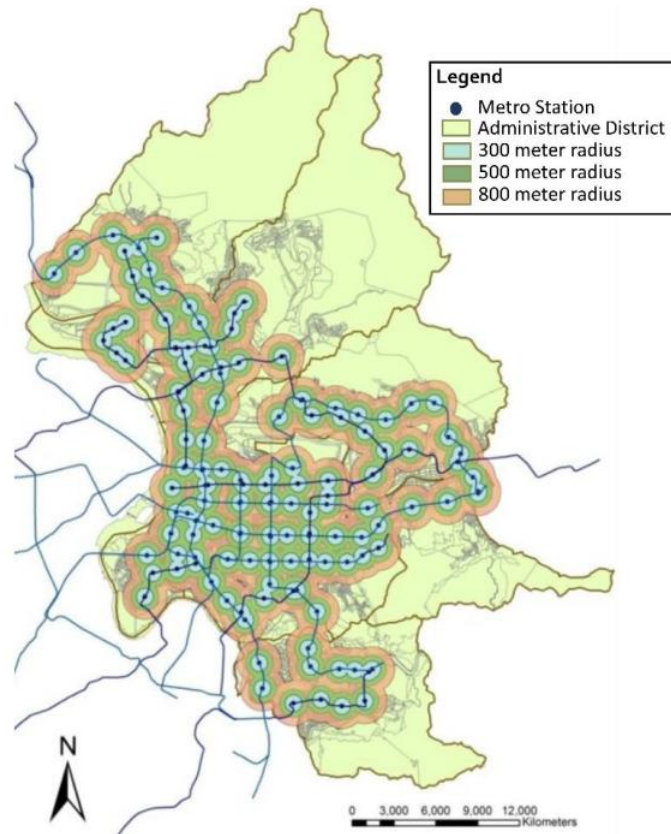


Figure 6.2 The Visual Modulation of the Expansion of Receiving Site into 800 metres radius of Metro Station in Taipei City

Source: Amended from Department of Urban Planning, Taipei City Government

In the process above, both steps (b) and (c) are critical as they render TDR trading as spatial derivatives. Understood as a kind of spatial derivative, TDR trading is significantly more than a simple process of arbitrage. It can disentangle from delivery of its underlying assets and actively anchor other underlying values at other locations.

6.4.2 The Creation and Allocation of Value

This section examines the economic valuation of TDR. It asks what mechanisms and rationales underpin the diverse pricing practices? To answer the question, we

will examine the commensuration frameworks that guide how certain things to be valued in some particular ways (Chiapello 2015; Muniesa et al. 2017).

Prices, as Caliskan (2007) argues, constitute markets. As such, it would be futile to identify the ‘intrinsic value’ of TDR. Since the creation of value – via the pricing process - neither derives from the valuation of the virtual airspace itself nor represents the labour value of broker-dealers or developers. The economic valuation of air rights in the private market, as the senior appraiser B describes, is ‘in fact, something contingent, floating, and depends on the location it anchors’⁶³. Moreover, as discussed in 6.4.1, the registry of property claims converts from private contract to TDR permit. And from the TDR permit, it converts again, being diced and reassembled into a part of the building permit. In this process, land price indices have been performed as the price generator.

The price movement of TDR has shown its fluctuation by anchoring with the dynamics of multiple markets⁶⁴. Different actors have various methods of economic valuation. For instance, the market brokerage sets a price for a basket of TDR contracts following the general pricing movement of the current value price index. Meanwhile, spatial practitioners who would like to convert TDR offsets into building permits have to take into consideration the valuation methods of TDR.

The two main sources of transferable development rights – historic preservation and public infrastructure - follow different regulations, and so the ways they calculate are also different. The calculative knowledge of arbitrage, in the TDR

⁶³ Interview with the appraiser B, October 9th 2015.

⁶⁴ Focus group discussion with the FG2, January 4th 2016.

market, derives mainly from the equations written in the regulations. I call two of such subtle patterns as ‘arbitraging by price’ and ‘arbitraging by volume’.

Pattern 1: Arbitraging by Volume

In the case of TDR for historic preservation, an original rationale underpinned the equation (see Equation 6.1) is to compensate the ‘unbuilt’ floor area. Therefore, in the ‘Regulations of Urban Building Capacity Transfer’, it states that the receivable floor area can be calculated by using the *percentage* of the unbuilt legal floor area on the sending site to multiply the area of receiving site.

With this original design, the relation between sending site and receiving site is being articulated by the ‘percentage of the unbuilt virtual space’. Accordingly, market intermediaries have developed the arbitraging technique by maximizing the economic utility per spatial unit – namely to seek speculative moves to inner-urban locations with higher prices.

$$\text{Receivable Air Rights} = \left(1 - \frac{\text{Already built Floor Area of Sending Site}}{\text{Basic Floor Area of Sending Site}} \right) \times \text{area of receiving site}$$

Equation 6.1 Receivable historic TDR under the regulations of urban building capacity transfer

Source: Personal Translation

Nonetheless, comparing this calculation method against its rival product ‘TDR for public infrastructure’ – the cheap, low cost and speculative type of air rights – we can see that TDR for historic preservation literally has no market niche. Thus, Taipei City Government reinvented an equation that largely resembles the TDR for

public infrastructure. As such, the historic buildings in Taipei City are redirected to the Equation 6.2 (see also empirical stance in 6.5.1). Next, I will explain how this creates the pattern which I call as ‘arbitraging by price’.

Pattern 2: Arbitraging by Price

Now let us consider the slightly more challenging valuation – TDR for public infrastructure – by which a majority of the sending sites originally has no floor area to transfer. That is to say, this is an economic valuation on the object with no physical reference of an underlying asset (see also 6.5.2 for empirical example).

Following the ‘Regulations of Urban Building Capacity Transfer’, the equation runs as followed: the receivable air rights can be calculated through the *price ratio* between sending and receiving sites by referencing to the current value price index. Then, this price ratio will multiply the area of sending sites and then multiply the legal floor area ratio of receiving sites. The original rationale is simple and clear: it hopes to develop fair exchanges upon the *principal of equivalent value*. Therefore, the conversion ratio between the two sites takes reference from the government-declared current value price index. Nonetheless, while the land tracts of sending sites may have no economic value due to its land use, it can take reference from the adjacent locations.

$$\text{Receivable Air Rights} = \frac{\text{Govt-declared Current Value of sending site}}{\text{Govt-declared Current Value of receiving site}} \times \text{Area of Sending Site}$$

Equation 6.2 Receivable TDR for historic preservation (Taipei City Version)

Source: Personal Translation

$$\text{Receivable Air Rights} = \frac{\text{Govt-declared Current Value of sending site}}{\text{Govt-declared Current Value of receiving site}} \times \text{Area of Sending Site} \times \text{Floor Area Ratio of Receiving Site}$$

Equation 6.3 Receivable infrastructural TDR under the regulations of urban building capacity transfer

Source: Personal Translation

The formulas of Equations 6.2 and 6.3 seem slightly more complicated. In both of them, the relational price ratio and the area of sending site are two primary factors relating to the profitability of TDR. We can see that a difference that privileges TDR for historic buildings in Taipei is that Equation 6.2 cancelled the discounted coefficient ‘FAR of receiving site’. In this circumstance, some quick-witted broker-dealers and developers would eye up receiving sites which have been marked with a lower government-declared current value, yet are expecting substantial growth in the market price, such as those newly-developed areas under reclamation.

In this process, air rights sourced from road infrastructure earn market preference due to its low barrier and low cost compared with TDR for historic buildings. According to the internal statistics from Taipei City Government, the road-based air right ranks at the top of air rights applications. An average rate of conversion is that for every square metre land tract for road infrastructure, the government has endorsed sending out 3.2 square metres of buildable floor area. An Interviewee L, who is a planning official of Taipei City Government, reveals how such measurement and commensuration are inherently political. ‘This is why we [launch the floor area bank] ... it is a mechanism which is extremely inefficient. In the past seven years, we receive one hectare per year, meanwhile sending out triple more

volumes to the development projects', L lamented.⁶⁵ In this way, arbitraging by price is being carried out by shifting space from lower to higher priced units. This, in practice, explains the partial reason for the booming of redevelopment projects in areas which already have extravagant housing prices.

6.4.3 The Geographies of Arbitrage

So far I have introduced various practices of arbitrage scattered within the TDR market and intra-property markets. In 6.4.1, I have elaborated on how multiple-pricing indices create arbitrage opportunities. Broker dealers who job air rights stocks have taken advantage of the general confusion between two government-declared price indices. Arbitraging practices are employed in their initial purchase of ownership titles on the basis of 15% government-declared land value – roughly 1.5 per cent of market price - on the on hand. And on the other, they sell these stocks at around 80 per cent 'current value' price index – which is about 32 to 48 per cent of the market price. By relaying the arbitraging to the real property market, the developer was able to purchase additional floor area with prices which lower than the land price and sold out with standard market price in the new-built condominium market. Such a two-hand strategy of arbitrage enables actors across different positions⁶⁶ to swiftly reap profit from the price discrepancy. In 6.4.2, I have demonstrated the arbitraging of volume and price are found in the economic valuation of the TDR market. Through factors such as unbuilt volume and floating price, the urban morphologies are constantly reconfigured by trajectories of

⁶⁵ Interview with the Planning Official of Taipei City Government L, November 26th 2015.

⁶⁶ One thing I should note here is that there are actors who extend their scope from a developer to also managing brokerage business, and vice versa.

geographical arbitrages of mobile air rights stocks.

The sheer volume of air rights trades has been formidable. It was not until 2008 that Taipei City launched the programme for TDR for public infrastructure. While the exact numbers of land tracts becoming eligible sending sites are unknown, within an eight-year timeframe, and a stricter reviewing standard, Taipei City has issued 119 TDR permits through case applications from 2008 to 2016. While received 8.37 hectares of public infrastructure, it in return brought about 24.78 hectares' additional buildable floor area⁶⁷.

In New Taipei City, the statistics disclosed were from policy reports and recent public hearing. From its inception in 2000 to June 2009, the permitted 'air rights' of sending sites reached 6,217 tracts, comprised of 660 cases and accounting for 60.039 hectares (Institute for Physical Planning and Information, 2010, p. II–31). This, in return, doubled the additional building floor area to 134 hectares (ibid.). Moreover, the next five years (2010-14) saw a further flourishing: the number of sending sites rose to 9,462 tracts, and there were 686 applications that, together, converted 95.01 hectares of land reserved for public infrastructure into 113.44 hectares of additional buildable floor area.

The geography of arbitraging TDR also reveals different levels of speculation and liquidity in different municipalities. According to the central regulation, the *first* transfer of the sending site should be restrained to a receiving site within the same

67 Peng, Y.-K. (2017) 'Is TDR the Panacea for the Problem of Land Reserved for Public Infrastructure?' *Presentation Slides of Parliamentary Public Hearing Meeting 21 August 2017*, Legislative Yuan, Taipei. [Online] Available at: <https://www.slideshare.net/debspeng/ss-79040086> (Accessed: April 10th, 2018)

urban planning area (Lin 2008). Taipei City itself consists of one single urban planning area, whereas New Taipei City is subdivided into 46 urban planning areas. In other words, TDR in Taipei City can be transferred and anchored intra-city scale but TDR in New Taipei City, by contrast, has rather restrained receiving sites which have created a ‘crisis of liquidity’. For instance, until the end of 2015, the number of unallocated TDR grew to 3,700 hectares that are, in effect, dangling in the air and waiting to be matched to potential sending sites. This example shows how the TDR as a market device has overtaken its orientation as a planning instrument, and how the geographical divisions used for urban planning have been converted into a liquidity issue for the market. Accordingly, in order to increase the market liquidity and product deliverability, the New Taipei city government has undertaken new policy research to integrate 46 urban planning areas into two giant urban planning areas. An example that again shows how market liquidity rewrites the spatial structure of urban governance.

6.5 Speculating Spaces through Arbitraging

In this section, I will use two examples to illustrate the arbitraging practices in the urban built environment. The two examples correspond to two types of economic valuation. In the first example, I discuss the economic valuation of unbuilt urban spaces. I examine the textbook case of the Dadaocheng area - a historic preservation district – and, in particular, the ways it induced the provocative densification in the Neihu District amidst some other newly-urbanized areas. This example indicates the material consequences of TDR as property rights and the daily frictions of externality that are provoked by the operations of arbitrage. The dataset I have comprised and analyzed include interviews, minutes of city council meetings, policy

reports, and media coverages.

The second example looks at a new policy initiative on the TDR on waterways. The Water Resource Agency, an agency under the central government, sought to expand the remit of TDR and developed economic valuation on waterways – a type of land use that has no rights to development. For this case, I examine interview records, government reports, and minutes of debates in the legislation process. This instance exhibits how the arbitrating practice has, conversely, become a deliberate practice that is put to work in urban policymaking. Being adopted as an infrastructure-funding vehicle, TDR has created the contested valuations which unevenly leaning towards the volumetric growth of the built environment.

6.5.1 Historic preservation and High-Rise Boom

Surrounded by Tamsui River, Dadaocheng [大稻埕; Twatutia] was one of the three major historic areas in Taipei City. Once functioning as a major seaward gateway for Cross-Straits trades and migration between mid-nineteenth and early twentieth centuries, Dadaocheng eventually became a bustling hub for international and local commercial activities such as tea, fabrics, ceramics, herbal medicine, dry goods, puppet shows, traditional theatres, and tea houses and so on (Yen 2006). Not surprisingly, this commercial hub was also the venue for local and foreign elites, gentries, merchants and artisans. Not only served as the gateways for technological and infrastructural modernization, but this place also hosted a cluster of fusion building styles: 2-to-3-storey height townhouses, Western-style façades, consisted with a depth of two to three halls separated by courtyards. Entangled with the

history for political dissidents since the Japanese colonization, Dadaocheng was also a major locus of the February 28 Incident (known as the inception of White Terror) - during the KMT government-led massive suppression which later led to 38 years long martial law in Taiwan. For the above considerations, when the leading foundation, scholars and lay citizens launched historic preservation movement in the late 1980s, it was an ambitious preservation movement that was aiming at *area-wide* scale preservation: composed by 60 more street blocks, small or large, mainly owned by private owners. Also, it won a title of the special historic district since 1998. Nevertheless, even acquiring the official titles, these builds were still vulnerable to development pressures. Henceforth, TDR were weaved in as a strategic conservation tool.

For this first-ever zone-wide TDR case, Taipei City Government launched the tailor-made ‘Directions for Conducting TDRs in the Dadaocheng Historical Special District’ in 2003. Regarding the sending site, it designated 77 officially authorized historical buildings, ranking the top priority for TDR, although all buildings in this zone are eligible to apply. The volume being transferred from a sending site can be sliced into multiple instalments to transfer to different receiving sites where they are bundled together with other different types of air rights. Institutionally, only the first transfer is required to pass the Urban Design Committee Review, and a concession was made so that the discretionary power of these committees was the measure used to assure the deliverability of trading volumes. As an experienced broker-cum-consultant explained:

‘In the meetings of the Urban Design Review Committee, the Committee members were not authorized to deduct the volume of TDR. They will accept whatever volume the Department of Urban Development pronounced in the TDR permit.’

*That's it. No right of discretion. However, when it comes to the TDR for public infrastructure, Urban Design Committee is authorized to exercise their discretions.*⁶⁸

In other words, TDR for Dadaocheng Special District enjoys the privileged status of volumetric assurance, and thus are a firm assurance of profits for developers. Furthermore, as mentioned in 6.4.2, to enhance market response, Taipei City Government sought to develop an exceptional equation that funds the maintenance and restoration costs through air rights. In this fashion, any historic building in the Dadaocheng Special District is reconfigured into at least⁶⁹ three types of floor area (see Figure 6.3): ΔR_0 - basic floor area, ΔR_1 - reserved volume, and ΔR_3 - maximum 50 per cent of the cost of maintenance and restoration. In this way, TDR for historic preservation no longer stays at the level of 'space swaps space' but monetised to allow one to redeem economic costs with virtual space.

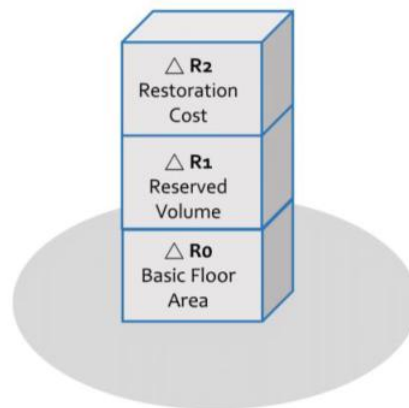


Figure 6.3 The Volumetric Composition of Historic Buildings in Dadaocheng Area

Source: Personal Collection

⁶⁸ Focus group discussion with the FG2, January 4th 2016.

⁶⁹ The technical details of the Directions have changed over time. The version being presented here is the latest urban planning comprehensive review during July 2016. Its previous regulation was highly resembled to the structure presented in Figure 6.5. A major difference lies in its numbering changed from ΔV_0 - V_4 reduced to ΔR_0 - R_2 .

Meanwhile, the receiving site was planned for strategic densification at the newly urbanized zones. In the beginning, receiving areas were limited to stations along two metro lines with the target area surrounding the northern bank of Keelung River, the location of Neihu Technology Park and its adjacent Reconsolidated Areas in Neihu District (see Figure 6.4). After June 2014, the location of receiving sites was further relaxed as explained in section 6.4.1 (d) (see Figure 6.2) Setting the maximum receivable volume between 30 to 40 per cent legal Floor Area Ratio, these receiving sites were often characterised as newly-consolidated areas where the government-declared current value price index was the average cost of reconsolidation and thus quite low in comparison to the market price (Tsai and Peng 2017).



Figure 6.4 The sending area (Dadaocheng) and major receiving area (Neihu) in Taipei City

Source: "Taipei City." 25°04'71"N and 121°53'29"E. Google Static Maps API, Accessed: April 10th 2018.

No sooner had this process of densification at receiving sites begun a series of

environmental issues arose at strategic receiving zones. The issues at stake included speculative housing prices, traffic knots, and insufficient public services and infrastructures. This phenomenon was not purely coincidental as all the places in question share a common feature: they are popular destinations for TDR, such as Chungshan District, Neihu District and Nangang District (see Figure 6.5). The everyday frictions brought by the booms of vertical enclosures particularly reflected upon the workings of arbitraging by volume (see 6.4.2 The Creation and Allocation of Value) are suggested in statistics. According to the Auditing Office, 11 hectares of airspace were generated through TDR mechanism between 2013 and 2014; and that Neihu District alone has received 23 to 24 per cent of the total amount each year between 2013 and 2016. While TDR for public infrastructure has undoubtedly been a main reason to blame, the scale of the spatial credits from TDR for historic preservation that have been pumped into Neihu and its adjacent areas is remarkable. It is known that 16.5 hectares were sent from the Dadaocheng area up until April 2010 and that, as of July 2017, this special historic zone continued to have 21 hectares in the queue with over 50 per cent of the TDR to be transferred.

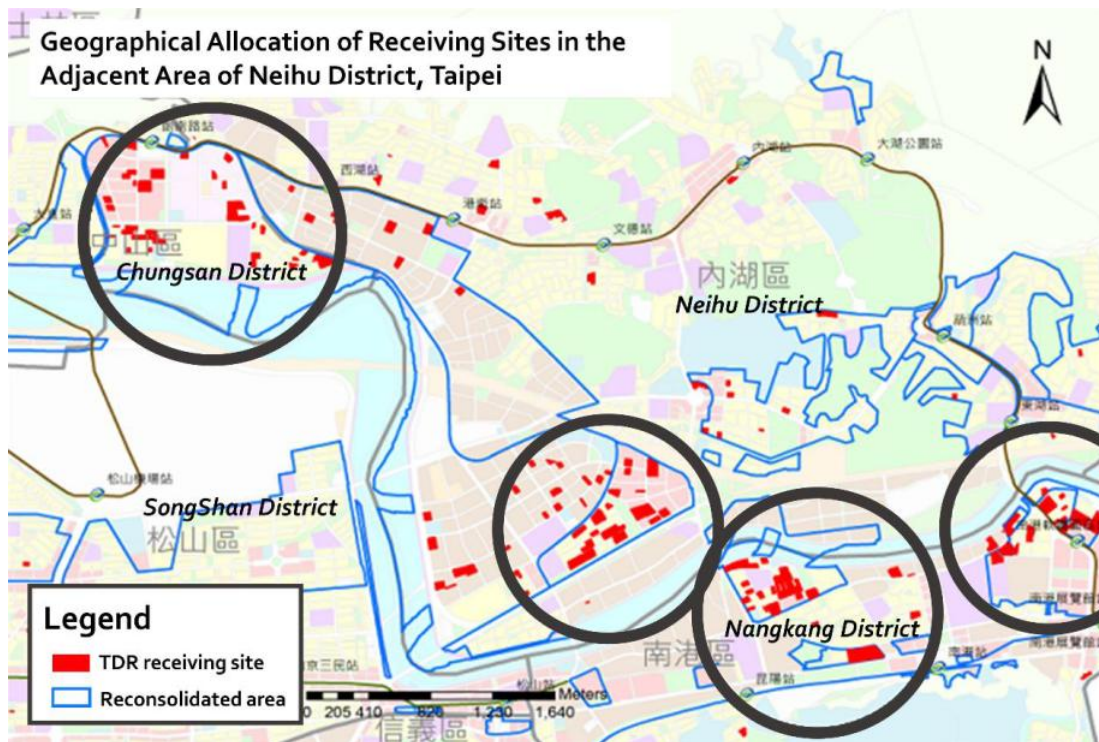


Figure 6.5 Geographical Allocation of Receiving Sites in the Adjacent Area of Neihu District, Taipei

Source: Amended from Tsai and Peng (2017)

The issue why TDR should be held accountable for various urban problems was raised in the aforementioned 2017 public forums launched by the Taipei City Government. By then the Taipei Mayor Ko denounced the unequal exchange by that ‘in the past decade the government issued 5.83 hectares of floor area. In return, we only received 0.13 hectares of road infrastructure. The more floor area, the more population influx, yet without the increased road infrastructure. This resulted in the traffic jam’⁷⁰. Mayor Ko’s moral denouncement attributed the corporeal annoyance of everyday road users to the unfair transactions. In Mayor Ko’s talk, we can see that his statement skilfully shied away from the critical environmental ethics of cashing in on the urban commons – such as skies and airs. Also, avoiding confrontation with the anxious private landowners, his vow to ‘reclaim people’s

⁷⁰ Ko, W.-J. (2017). ‘Who moved people’s cheese?’. Available at: <https://www.facebook.com/DoctorKoWJ/posts/1040222349413078:0> (Accessed: 31 March 2018).

cheese'⁷¹ was more about who earned the market incentives made from volumetric growth.

Nonetheless, Mayor Ko's battle came to an end when 80 per cent of city councillors vetoed the proposal of replacing existing TDR market for public infrastructure by government-issued IFA. Deeply entangled with market interests, some councillors proposed to relax further the criteria for sending sites – from at least 15 meters-wide road infrastructure to further include six and eight meters-wide planned roads – indicating there will be at the very least 165 hectares' air spaces cascading into the TDR market. Landowners from Dadaocheng furiously protested against the dumping of air rights. An anonymous Dadaocheng landowner ridicules this policy proposal that 'despite there are still 1,314 hectares' land for public infrastructure remaining un-expropriated. If we multiply the average conversion rate 3.2 and the 1.6 times coefficient (the actual area after development), this suggests a creation of 6,727.68 hectares [air space], namely 177 Taipei 101 in the pipeline!'⁷² To restore the rationale of TDR, the Dadaocheng landowners proposed that their stocks should be prioritized on the list to be bought. On the other hand, the brokerage perceived this as a precursor of gloomy market prospect. Because this oversupply of TDR for infrastructure unanimously depletes the value of their holdings from 70-80 per cent

⁷¹ Also, how the 'cheese' of TDR has been defined can be seen in a policy hearing held by legislators and urban issue-based NGO named OURs. They expressed the unequal exchange by switching between different price indices: In Taipei City, between 2008 and 2017, 143 cases of TDR for public infrastructure has issued air rights worth 65.4 billion NT dollars in market price, in return she received the public land worth 25.4 billion NT dollars in current value. On the other hand, New Taipei City had issued air rights worth of 592.2 billion NT dollars in market price, whereas the land they've swapped only worth 57.5 billion NT dollar in current value price index. In fact, the logic presented here is slightly problematic; as the point should be the inefficiency of conversion rate and unfairness of the super-normal profit; and not the worth of land the government have 'received'.

⁷² Chong, H.-L. and Kuo, A.-J. (2017) 'Deregulating the TDR for public infrastructure, Dadaocheng landowners denounced: prompting 177 new Taipei 101 in the pipeline', Liberty Times, June 7th [Online] Available at: <http://news.ltn.com.tw/news/local/paper/1108644> [Accessed April 9th 2018]

to 10 per cent current value.

The complex process of urban governance, in essence, has been reconfigured into contestations within multiple markets. Exchanges of values and the sequential environmental implications are conveyed through languages of calculation. Such contestations reflect the receding control of owner/stakeholder against the ascending power of market intermediaries. This eventually has been channelled into a promise to shareholders' value. To realize shareholders' value certainly requires institutional support of enhanced market liquidity. In this case, the disposition of TDR as market devices lies in the speculative enactment of volumetric financialization. Thereby the logic of urban production is saturated by the logic of arbitrage.

Next, we will turn to another example of urban-nature politics – TDR for waterways.

6.5.2 TDR for Waterways

The following example demonstrates how TDR for public infrastructure have ventured into schemes for flood risk management by inventing spatial credits for waterways. The previous example revealed multiplex contestations across municipal government officials, city councillors, developers, different landowners, and the broker-dealers, epitomized by the 2017 public forum series. In the series Forum XI, titled 'Urban Environment and TDR' hosted by Taipei City Government, a confrontation occurred that revealed how once mutually-conflictual voices (as listed above) could suddenly find united ground when scuffling with an emerging new actor - Water Resource Agency (WRA), Ministry of Economic Affairs. At the

Forum a range of market actors expressed dissent with the WRA. They listed threats and concerns about TDR for Waterways, such as their valuation and unregulated receiving sites that were ‘taming the waterways’ at the expense of urban capacity.⁷³ Responding to these opposition voices, the Vice Director-General of WRA, Mr Tsao Hua-Ping, simply defended that they will anyway ‘perform the administrative duties already passed by the legislation (Article 82-4 of the Water Resource Act)’⁷⁴.

The unanimously hostile reception towards WRA signals two issues: First, there are newly joined underlying market-political forces other than the existing groups of vested interests. Second, employing the logic of arbitrage helps us to understand the underlying contestations: the wider spreads bring the higher yields. With the operational logic that lower land price of sending site brings higher revenue stream for the market intermediaries. Waterway is potentially an attractive target for a new round of ‘gold rush’. The once worthless waterway is now a competitive and robust rival with the existing TDR credits.

To figure the dispute above into a bigger picture of infrastructural financing, we may juxtapose TDR for waterways with two relevant strands of discussions. The first strand shows that there are emerging concerns on the financialization of water (Allen and Pryke 2013; Bresnihan 2016; Loftus and March 2016). This strand of case studies empirically focuses mainly on the U.K. and Ireland. Featuring an operation mode by privatized water provision, these case studies show how the private sector sought to finance infrastructural provision and maintenance through techno-

73 Chong, H.-L. (2017) ‘TDR for river zone opposed by developers and Dadaocheng landowners’, Liberty Times, October 23rd [Online] Available at:

<http://news.ltn.com.tw/news/business/breakingnews/2231367> [Accessed: April 12th 2018]

74 Ibid..

financial devices, such as ‘smart meters’. In this way, smart meters not only ensure more acute control and risk management over the hydro-social cycles; but also map such cycles onto the asset management systems, such as the global financial investment in public utility.

The second strand has emerged from the policy initiatives of marketised environmental governance, such as flood risk management. In this strand, market-based instruments are widely discussed as methods to enact ‘autonomous climate change adaptation’ (Chomitz 2004; Filatova 2014). Whereby, the colossal costs for land and adaptation posit challenges for planners to cope with climate-induced flood risks. Thus, this strand of discussion falls on the research of policy initiatives such as marketable (tradable) permits system, whereby TDR was listed as a quantity-based market-based instrument. Comparing the above two strands, the example of ‘TDR for Waterways’ charts an alternative repertoire of financialization of water as it witnesses how TDR markets articulate between the proclaimed ecological-fiscal crisis and urban property market; and transfer the defaulted public debt into the TDR offset credits that exploit the built environment for future revenue streams.

Waterways in Taiwan are administered either by central or local governments. Since waterways may change over time, to cope with climate change, the WRA develops its river basin governance by drawing river regions [河川區域] that reflect potential routes of a waterway for an estimated period between 10 to 200 years flood cycles. As such, waterways often cover both public and private land ownership. To save the budget for land expropriation, the WRA sought to use TDR mechanism to compensate the land tracts on the un-expropriated waterways with those who have

concrete plans. According to the WRA, an indicated number of land tracts eligible for this new policy measure is 1,158 hectares⁷⁵ in the 2014 national statistics. For a city-wide scale, this means about 108 hectares' waterway out of a total 126 hectares' river zone will become new sending sites generated in Taipei City.

Acknowledging the fact that such an indigestible number of sending sites will induce reactive responses from local government. The high-level public employee M of WRA explained that 'we stress reordering various levels of urgency of flood governance to win over other major rivalries, such as TDR for public infrastructure.'⁷⁶ The techno-political craft of qualification involves a multi-layered work. Despite ferocious criticisms from municipal governments and scholars, on the floor of parliament, the qualification issue was justified by the following reasons. First, for administrative purpose, the implementation of river land reclamation requires landowners' agreement and thus needs concrete incentives to encourage landowners' agreement to reclamation projects. Second, legislators claimed that due to the flood management schemes, farmlands that were drawn into the river zone sequentially affected the livelihoods of farmers. This extensively disqualified their farmland collateral for the mortgage or loan. To compete against other existing air rights credits in the market, M illustrated the legitimacy also lies in the craftwork of project content. The WRA has restrained the criteria eligible waterway land tracts to those who have proposed engineering plans, 'such as river channel straightening, channel excavation, construction of flood embankments and so on'. Moreover, 'to increase the incentive [for the government],

⁷⁵ This number is comprised by 902 hectares' private waterway land administered by the central government and 256 hectares under the local governments.

⁷⁶ Interview with the high-level public employee M of WRA, December 1st 2015.

we need to emphasise it [the plan] ‘water-friendly, citizen-oriented public spaces’⁷⁷.

Meanwhile, the economic valuation of TDR for Waterways is another controversial issue. The valuation is developed upon the premise that the object land tract literally has no physical reference of underlying value. When asking M about how the WRA design the calculation of the receivable volume, M admitted that it was the most challenging part of his work. Being assigned to the design of equation from scratch, M said:

“At least one thing for sure: that the ‘flood risk governance will be managed through subdivided river sections. So we divide them [the rivers] into trapezoidal sections for engineering purposes. While the economic value of the waterway is extremely low, we adopt the *weighted average* of the current value price index by taking the reference to each side of the length of the river section and the current values of the adjacent areas as the underlying value.”⁷⁸
[Emphasized by the author]

This underlying value should follow the equation of TDR for public infrastructure (Equation 6.3). It is clear that this policy invention was emboldened by the precedent of TDR for land reserved for public infrastructure. This type of spatial derivative presents a stronger threat to the existing spatial derivatives as its mobility could potentially be greater, implying an enlarged scale of arbitrage. For instance, the commissioner of the Public Works Department of Taipei City Government illustrated in the aforementioned 2017 public forum: ‘take the example of the dredging work at the section between Xiu-Lang Bridge to Fu-He Bridge cross that straddled between New Taipei and Taipei City. The government-declared current value there can jump from NT. 9,406 dollars to 94,009 dollars per square metre,

⁷⁷ Ibid..

⁷⁸ Ibid..

namely 10 times difference [by the valuation method]. This difference appears when calculating the underlying value not simply by the object land tract but by the adjacent urban land.’⁷⁹ In other words, to save the government budget with an original standard of compensation cost (9,406 dollars per square metre), the transformation of TDR offsets could simultaneously lift the cost ten times more.

This peculiar articulation of TDR sources indicates not only a far-flung expansion of air rights credits but also the market operation of TDR has shown similar traits to derivatives trading, strikes an unexpected enunciation of the urban process towards financialization. Thereby the defaulted public debt is geographically diced; re-appraised through appropriated and elevated value; converted into TDR offsets, and bundled indifferently with other types of spatial coupons; then borrowed against and sought to appreciate by speculative property prices. This chain of connections now further de-territorialises the urban air rights market for market brokerages and local political factions.

As the above example has shown, the operation of ‘arbitraging the urban’ has experienced a qualitative shift. That shows attempts to commensurate spatial credits with different policies. The competition amongst various sources of credit also turn into a battle of securing values. These show, nonetheless, a result of transferring contestations over urban governance to market operations. Moreover, the exploitation of horizontal difference of spatial feature (such as types of land use; legal FAR; location) has now further articulated to exploit the pricing of vertical

⁷⁹ Yeh, J.-H. (2017) ‘TDR expands to waterway, scholars denounce: the creation of ghost floor area’, ETtoday News, October 23rd [Online]. Available at: <https://house.ettoday.net/news/1037320> (Accessed: 13 April 2018).

difference (e.g. strata titles). To summarise through the itinerary of tradable air rights: they have broadened from the transfer of ‘unbuilt space’ (original TDR for historic preservation) to the redeemable cost (TDR for Dadaocheng preservation); and then further to virtual floor area that has floating and ambiguous underlying values.

Differential and unequal temporal-spatial relationships are mediated through the TDR mechanism. It is made possible by framing market operations under the ‘logic of indifference’. The logic of indifference, as shown in both examples, is played out through the subtle qualification processes. That shows attempts to commensurate spatial credits with different policies. The competition amongst various sources of credit also turn into a battle of securing values. These show, nonetheless, a result of relaying contestations of urban governance to market operations. With a Deleuzian-inspired understanding, the relay of contestations, entail polyvalent urban air rights, is not attempt to labelling market forces as the erosive power. Instead, it is a critique of the redistribution of calculative agencements between TDR permits and different human actors; that, in all, seem in favour of the arbitraging practices.

6.6 Conclusion

TDR are both a mechanism that makes markets and a type of spatial credit that has mobility and detachability. In this chapter, we have examined how TDR have been figured into a market for developers; an upstream market for new-build development projects; a market for affluent taxpayers (see 6.3.2); and a market for environmental governance and so on. The roles of TDR offsets in making multiple markets which run across multifarious lives reflect both the intended outcomes of

a vibrant transaction; and unintended speculative developments of the policy design.

Exploring the evolution of TDR markets in urban Taipei, I have walked through the regulatory and policy assemblage that shapes TDR market (6.3.1); and the peculiar operations and valuations of TDR market that has been developed akin to derivatives trading (6.4). This chapter has shown how the TDR mechanism has created a relatively fluid spatial asset that allows market actors to hedge, arbitrage and speculate in multiple property markets.

Meanwhile, on the seemingly opposite side of hedging, arbitraging and speculating air rights, the TDR mechanism mitigates and mediates urban planning processes that aim to balance low and high density, conserve natural and historical values and thus confront fiscal and environmental risks. As such, TDR mechanism and its offset credits have revealed how they are uniquely different to general financial derivatives, as their ‘art of articulation’ brings forth more direct, visible and tangible socio-environmental implications.

As such, this chapter has visited various complex relations that show how TDR operate as a market device. Through examples I have shown how (1) TDR as a planning instrument has been superseded by its market underpinnings and, in addition, how market actors have shaped urban governance; (2) the TDR mechanism in Taiwan converts the taxation-based valuation system into market-based property valuation system, revealing the profit-making practices of arbitrage; (3) while arbitraging practices are often detached from the delivery of underlying assets, the regulatory bundling would nonetheless involve processes of disentanglement. For instance, the qualification process involves ‘clearing’ sending

site, during the course illicit and unethical conducts may emerge, such as harassment, eviction or tax dodging. Yet these were rendered rather unnoticeable through the fragmented itineraries of TDR. And (4) the premise of producing differentiated TDR offset credits is established upon a logic of indifference and the process of disentanglement. This occurs by shifting underlying assets from the land tract itself to the price index it probes and anchors. The qualification struggles against this principle of indifference are, in the meantime, made palpable through the multiple contested valuations invoked by such volumetric densification.

Furthermore, by reference to the notion of 'floating value' that is specifically enabled through the TDR mechanism, this chapter demonstrates how the volumetric financialization has been endogenous in the built environment; with the upstream operations of arbitraging practices of air rights. Thereby the spatial flows being examined include two existing patterns - 'arbitraging by volume' and 'arbitraging by price'. The former explains how the volumes being transferred seek speculative moves to sites with higher locational prices; explaining why developers have preferred to invest in renewal projects in locations of high prices. Whereas the latter follows the principal of equivalent value, suggesting the mobile pattern that the virtual air rights flow to the zones for new development, whereby their spread between price indices enable the so-called urban sprawl with high-density development.

In conclusion, following Transferable Development Rights contributes an understanding how TDR operate as a market device across multiple processes of economization. The secondary marketization of air rights has not only developed TDR into spatial derivatives but also its market operations evolve with the logic of

arbitrage. In this way, the socio-technical operations of TDR are essential to evoke urban financialization by redistributing calculative agency and consolidating the pattern of accumulation through the spatial flows of TDR.

7

Conclusion

7.1 Summary of the Argument

This thesis has shown that urban air rights – the principal constituent of market-based policy and planning instruments for urban governance – become the conduits between the real estate and infrastructure finance. In particular, it argues that air rights’ involvement in contingent processes of economization, i.e. commodification, marketization and capitalization, could amount to urban financialization. This thesis offers a detailed account of urban Taipei that focuses on how urban air/sky is being incorporated into the ambit of asset management and transformed into a source of revenue and repayment. The case study of Taipei shows how air rights change form and meaning across ownerships, credits and assets, and how the profit-driven real estate sector has shifted investment from reserves of *land* to *air rights* reserves. In unfolding the ways air rights operate at the urban-finance nexus, this thesis has made three key arguments.

First, it has argued that air rights are a very significant feature of the urban-finance nexus although they are understudied and their importance is under-appreciated.

Urban air rights have been making skyline changes in many cities worldwide but to date, their role in weaving and constituting the urban-finance nexus has not been properly examined. As such, this thesis has shed light on the role of air rights by highlighting their shape-shifting, volumetric propensities.

Based on seven months of original fieldwork, the thesis has empirically followed the routes through which air rights are transformed, from virtual airspace to accrued ownership, and again from ownership to concretized space. In the case study of urban Taipei, three market-based policy instruments have shaped these routes: Bonus Floor Area (BFA), Transferable Development Rights (TDR) and Incremental Floor Area (IFA). The thesis has followed these instruments primarily through two points of entry: (i) their production through municipal regulatory and policy assemblages in the Taipei Metropolitan Area, and (ii) the workings and practices in market intermediation, policymakers, local inhabitants and banking officials that are constitutive in revealing the distributed and relational agency of air rights. In so doing, it has exhibited how the meanings and practices of urban air rights have changed over time. It is through close examination of these processes that the thesis argues the various market-making and market-connecting processes of air rights are entangled with urban governance in urban Taipei.

In essence, air rights, as the preceding chapters have argued, function not only as urban policy tools but also as ‘market devices’. As market devices, urban air rights could further be unpacked into their *economic mechanisms* and *forms*. By describing policy instruments and their respective market operations as economic mechanisms, this thesis analyzes how their socio-technical workings constitute processes of economization. Meanwhile, air rights in the forms of bonus, offset

and permit entail socio-economic propensities that enable their engagement in processes of making markets, assets and profits. Moreover, air rights as market devices also involve framing and detachment (Callon and Muniesa 2005; Mcfall 2009). Such processes accompany reattachment and ‘overflow’ such that their effects can be traced in market realms and beyond. This argument points to several nascent potentials for cross-fertilizing between the urban economic geography and social studies of market and finance. For instance, research for this thesis has shown that urban air rights are now pitched at the intersection of three economic frontiers: urban nature, housing and infrastructure. Moreover, not only has focusing on air rights’ various physical forms enabled a relational exploration across different markets involved in the urban-finance nexus, but this thesis’s volumetric perspective has also revealed the implications of the changing structure of urban air rights for the urban politics of wealth redistribution in Taipei.

Second, this thesis has elaborated on the idea of urban air rights as market devices by documenting their work in complex and contingent processes of economization – i.e. commodification, marketization and capitalization – in relation to urban financialization. It has unpacked this specific argument about economization by following two threads. One thread running through the thesis unpacks how air rights are traded and proliferate as various kinds of ‘spatial credits’. For instance, BFA are spatial-based credits that are assigned to a customised (re)development project in order to accrue volumetric property claims. BFA are acquired through the format of project applications and are traded at the discretion of government institutions, a process depicted in the thesis as the peculiar transfiguration of local government into a quasi-market. As BFA (either alone, or bundled together with other types of air rights) gain prevalence in professional practices with their

enhanced application to a variety of regulatory and policy causes, they are often treated as prospective assets that can leverage in the present. Also, TDR credits are traded mainly through market intermediaries in the private-led markets. Policy applications of TDR in historic preservation and infrastructural financing have been figured into the markets for developers and upstream markets for new-build development projects. And yet, the heightened use of air rights, coupled with urban fiscal planning and taxation incentives, resulted in the TDR market becoming a market for affluent taxpayers rather than a market for environmental governance. The strengthened mobility of TDR credits has enabled a vibrant process of marketization and allowed market actors to hedge, arbitrage and speculate in multiple property markets. Another example for the speculative use of air rights credits is the tradable permit. It has been institutionalized in the context of value capture tools gaining in popularity. In urban Taipei, the kind of purchasable building permit has been promoted by the government against the active TDR market. By establishing the primary market channel and curtailing the dominance of TDR markets, the IFA mechanism has been tasked with reclaiming the windfall gains of real estate development. By staging three primary channels of air rights production, this thesis demonstrates how various types of air rights are developed into spatial credits with differentiated characteristics.

Ensuing from the thread mentioned above, the second related thread unpacked in the thesis is its clarification of how the economization of urban air rights facilitates urban financialization. Financialization is a term that constitutes a variety of empirical features and processes (van der Zwan 2014; Lavinias 2017) and is often used to signal a financialized accumulation regime. While it is informed by this regime-based approach, a distinctive feature of this thesis is its close focus,

reflecting its cultural economy approach to the socio-technical arrangements surrounding urban air rights. By examining the deepened connections between real estate and infrastructure financing, the thesis has found that the socio-technical operations surrounding air rights clearly map onto several features of urban financialization. These include, for example, the advance of financial derivatives markets (Bryan and Rafferty 2006; Lee and Martin 2016); the processes of asset-making (van Loon and Aalbers 2017; Muniesa et al. 2017; Visser 2017; Ouma et al. 2018); the rise of shareholderism (Froud et al. 2000; Erturk et al. 2008); and the increasingly embroiled creditor-debtor relations (Langley 2008; Lazzarato 2012; Tooker and Clarke 2018). These features have shown a growing reliance on market-based air rights instruments, such as the technical pooling of BFA credits, the TDR trading into futures contracts, and the earmarking practices of IFA. As case studies have shown, both public fiscal planning and development sectors in urban Taipei have exhibited changing professional practices that are conceiving of the assembled air rights as assets to leverage debt finance. Nonetheless, such changes have significantly transformed urban neighbourhoods, in light of the receding power of ownership against the intensifying dominance of management. As such, I have appropriated the concept of ‘coupon pool capitalism’ (Froud et al. 2002; Erturk et al. 2008) to discuss how urban neighborhoods under renewal projects start normalizing the financial logic of shareholderism. Advancing this view, this thesis also argues that while property ownership has been transformed into an equity share, the growth of volumetric ownership also experienced the restructuring of creditor-debtor relations. In brief, the myriad patterns demonstrated in this research have shown that the economization of air rights necessarily animates the process of urban financialization.

Third, this thesis has argued that urban air rights overflow into popular socio-economic life and urban politics. The empirical parts of the thesis (Chapters 4 to 6) have shown how BFA, TDR and IFA are employed across a wide array of sites and trajectories. At heterogeneous sites of urban Taipei, air rights instruments are assigned to underpin the operations that construct public transit infrastructure, conserve historic buildings and rehabilitate urban waterways. Air rights have laid bare a series of economizations and implications of overflowing which were a result of the changing composition of building rights. In this view, air rights' qualitative changes not only evolve alongside their travel and circulation, but also draw together different markets and urban domains.

For instance, air rights link vertical sprawl with the provision and delivery across various fields, such as transport infrastructure (Chapter 4), housing and commercial renewal (Chapters 4 & 5), historic conservation (Chapter 6), river rehabilitation (Chapter 6), and municipal tax and fiscal policies (Chapters 4 & 6). By following air rights into everyday economies of homeownership and popular urban politics, this thesis has contributed to elucidating a conundrum within existing accounts of 'rights to the city' – the popular contestations of property rights that lay seemingly exclusive claim to the city yet are restricted to rights to different forms of livelihood and housing. This thesis has shown how diverse rights claims emerged within and beyond multiple market actors, through contested right claims in redevelopment projects (Chapters 3 & 5) and how such rights claims overflow through public dissent over privatized vertical enclosures (Chapters 5 & 6). Facilitated through the special zone BFA, the construction of exclusive luxury housing commodities is, in return, exchanged with useless privately-owned public spaces (Chapter 5). Also, tensions of development may shift between urban zones.

For instance, historic preservation in the old town Dadaocheng provoked popular concern over traffic jams and high-rise booms in the newly developed area of Neihu and its vicinity (Chapter 6). Overflows also arise through inter-governmental conflicts over the newly issued TDR product or the termination of the secondary market (Chapter 6).

7.2 Contribution

A major contribution of this thesis lies in the introduction of urban air rights into geographical studies of urban financialization. By focusing on a spectrum of disparate yet relevant market-based planning instruments, this thesis has examined urban air rights as an empirical terrain, a theoretical lens and a methodological entry point for studying the dynamic processes of urban financialization.

Empirically grounded in the East Asian urban experience, this thesis has outlined geographically-varied market ecologies that offer an analytical alternative to studying 'land as financial assets' (see also Fairbairn, 2015, 2014). The urban land alchemy exhibited here centres on how planning instruments and policy initiatives render urban air/sky measurable, quantifiable and thus tradable as volumetric assets. The thesis develops the conception of urban air rights as market devices that develop upon an operational perspective to foster a theoretical alternative to the more prevalent Harveyian-inspired approach in critical urban studies. By adopting this conscious theoretical move, the thesis has sought to create space within geographical studies of urban finance for wider perspectives drawn from social studies of markets and finance. By bringing together cultural economy with political economy concerns, the thesis has sought to capture the new realities of urban

finance and the way they are being reshaped through the changing meaning and practice of urban air rights. By following the air rights methodologically, and undertaking a relational mapping that foregrounds the assembly of air rights at the urban-finance nexus, this research has offered a methodological critique of the way processes of urban financialization are conventionally studied. The following sections summarize the contributions of the thesis via discussion of its empirical (7.2.1), theoretical (7.2.2) and methodological (7.2.3) dimensions.

7.2.1 Empirical Contribution

The major empirical contribution of this thesis lies in it being the first thesis dedicated to examining the underexplored empirical terrain of urban air rights from a critical geographical perspective. To unpack the process of urban financialization empirically, this thesis examined the workings of air rights as they interweave between real estate and infrastructure financing. Three layers of the workings of air rights have been examined. The first layer focused on the policy and regulatory assemblage of urban air rights and the legal frameworks that produce volumetric ownership. The second layer extended to market operations, examining the ways air rights constitute processes of economization and reach beyond urban (re)development. The third layer analysed how air rights instruments articulate the relations between real estate finance and infrastructure financing.

The empirical contribution, firstly, has been to track and outline the miscellaneous socio-technical arrangements of economization; and to understand how these processes relate to urban financialization with specific operations. Such

arrangements of economization, in the study of urban Taipei, have been shown through three major forms of urban air rights – bonuses, offsets and permits – that locally took the form of BFA, TDR and IFA. By examining them separately and together, this thesis has generated a productive account that not only responds to the ‘relational turn’ in financialization studies (Knight and Sharma 2016; Hall 2017) but also provides an analysis with a ‘vertical/volumetric turn’. A key contribution, then, is to offer a volumetric lens that can (i) investigate urban air rights as an investment vehicle fulfilling both the asset-making of places and revenue-streaming of public infrastructure, and (ii) probe into three-dimensional changes of property relations and document the conjunction between volumetric sprawl and urban financialization in urban Taipei.

Secondly, the empirical importance of this thesis lies in its offering a variegated geographical reading to urban financialization. Developing beyond the empiric centres of the Global North in the studies of urban financialization, this thesis has not only contributed to study the financialization in ordinary cities; but also observed the underlying socio-economic transition of urban Taipei during a period of rapid urban vertical sprawl. As Chapter 4 has discussed, the ordinary trading practices of air rights show how urban air rights become akin to spatial credits, coupons or derivatives. As such, this thesis’s depiction serves a geographically diversified account of urban financialization. This leads us to understand how volumetric sprawl comes as the result of the proliferation of spatial credits and, at the same time, it develops a clearer idea about how the claims towards (dis)possession are variously shaped and contested against urban financialization. This thesis has moreover developed an account that is sympathetic towards property-based activism and that links to what Fields (2017a) calls ‘unwilling

subjects of urban financialization' in the Global East and South. In this regard, the thesis resonates with the concurrent rise of property-based activism in many cities of the Global East and South since 2010. This thesis has offered an analytical tool that shows that the asset-making processes of urban air rights are, in fact, rewriting the creditor-debtor relations and are necessarily the spatialized debt/equity registers. In Chapter 5, for example, the thesis shows how urban air rights are engaged in remaking a homeowner society into a shareholder society. In this way, the market incentives surrounding air rights cultivate a 'co-produced entrepreneurialism' between developers and residents and further turn many urban neighbourhoods under redevelopment into place-based joint ventures. In this way, the thesis responds to the call for variegated geographies of urban financialization through its focus on how air rights stitch together disparate realms of governance and multiple markets. The empirical account provided in the thesis enables us to see how the air rights economy overflows in the form of contestations in power relations, social networks and property structures.

Third, the empirical focus on urban air rights shows how they entail ownership claims on urban air/sky that lead to both processes of fragmentation and articulation. Both processes are entailed in the air rights assemblage whereby the trading of air rights between two or more related urban sites enact the fragmented itineraries of air rights. While trading and re-assembling urban air rights enact the co-becoming process of two to more sites, these acts are more than often blurring the seemingly discrete ideas of public/private domains. In this thesis, such co-becoming processes have been exhibited in different cases. On the one hand, as mentioned in 7.1, air rights are an empirical terrain that relationally connect across various markets and urban domains. Such connections, to examine further, jointly

present two to multiple ongoing processes (e.g. the demolition/conservation on one site and the reconstruction on the other). On the other, the acts of blurring are revealed through a simple example of the roles of the state in the geographies of market. Moreover, air rights figure in the terrain of urban political ecology and resource economy (Adey 2013a; Adey 2013b; Bridge 2013; Graham 2015a; Harris 2015). The thesis politicizes forces that facilitate the fragmentation and articulation of air rights in the following two dimensions. Considering the institutional role, the thesis demonstrates that the central and local states have played vital roles in promoting, negotiating and capitalizing on the rise and maintenance of air rights economy, despite the air rights economy primarily operating in private market sectors. Particularly in Chapters 5 and 6, it was shown that state institutions actively engage in the business of reaping speculative profits from the urban skies such that they end up as major actors in blurring the boundaries between urban planning policy and private urban development. Alternatively, air rights economy has extensively been constructed as part of what Stephen Graham has called the 'life-support' of the political ecology of urban air. In this thesis, airspace as an object that is unevenly distributed life-support is now fuelled by financial logic. The unevenly distributed life-support and its overflows are seen in the intensified urban contestations, kindled by the (dis)possession of such virtual, volumetric ownerships. As the thesis has shown, for example, the right to (re)housing has been reoriented towards future benefits and/or financial inclusion (Chapter 4), and also reframed as shareholders' rights (Chapter 5).

7.2.2 Theoretical Contribution

The theoretical contribution of the thesis is grounded in an engagement with both cultural economy and political economy that brings new vigour to the study of the urban-finance nexus. The thesis offers three main theoretical contributions.

First, this thesis provides an innovative framing of urban financialization which contributes to a situated account of the urban-finance nexus. Subjecting urban phenomena to scrutiny via the cultural economy's pool of conceptual resources – such as valuation studies and the social studies of market and finance – this thesis revisits the dynamic relations between financialization and urban processes. Through these tools it has interrogated the linear imaginary associated with scholarly accounts of a financial-led accumulation regime and, by focusing on the material process of volumetric sprawl, it has extended calls for developing analytical alternatives to the binary theoretical framing of financialization between productionist (real) economy, and the anti-productionist financial machinations (Pike and Pollard 2010; Hall 2013). Its account of the air rights economy of urban Taipei shows how the financialization of urban processes can be revealed through the material manifestations of vertical sprawl, and bridges the theoretical gap between the productionist capitalism and coupon pool capitalism. In particular, underpinned by a Deleuzian-inspired assemblage epistemic on urban financialization, this thesis has deployed the theoretical tools of cultural economy to show how the economizations unleashed by urban air rights provide a critical entry point for exploring the contingent and multi-fold processes of urban financialization.

Second, and relatedly, while taking a sympathetic stance to Muniesa et al. (2007)'s conceptual work on 'market devices', this project further complements their work by employing 'market devices' on the ground of a plural ontology of multiple-markets (Frankel 2015). Drawing upon a plural ontology of multiple markets, the renewed analytical strength of variegated geographies of urban financialization is established upon socio-material arrangements of air rights, instead of taking the conventional entry point of financial actors. This certainly brings challenges to balancing accounts between mapping the air rights assemblage and enumerating air rights' specific operations in urban finance. However, such ontological reconstruction has enabled a vision where air rights are not static ownership claims, but something that can be leveraged against as if they are credits, and hedged and arbitrated as though assets. In brief, by developing a theoretical lens that sees urban air rights as market devices, it enables the project to observe how market and finance logics have underpinned air rights sales and to re-evaluate diverse initiatives on capitalizing on the urban sky as tools to coordinate and resolve urban political conflicts.

Third, the thesis makes a theoretical contribution to economic geography through introducing a three-dimensional, volumetric perspective on the economization of air rights and how they rewire urban financialization. By viewing vertical sprawl as value-in-motion and economizing assemblages-in-action, the thesis contributes an innovative theoretical approach to study the valuation of urban land and sky, and to explicate the emotional-material politics of dis/possession associated with the volumetric expansion of virtual ownership. What this thesis offers, in short, is an alternative account of urban financialization that investigates how vertical spatial

forms and formations come to embody economic and financial logic, rationales and practices.

7.2.3 Methodological Contribution

This project has adopted and modified the methodology of ‘follow the thing’ for enabling research into the geographies of money and finance (Christophers 2011; Gilbert 2011). While ‘follow the thing’ has been widely developed through anthropological and geographical research into commodities, this thesis contributes to researching the relations between the urban built environment and the geographies of money and finance via the merits of airspace’s fluid propensities. Following air rights as a research methodology brings to light twofold contributions that draw on a relational mapping across fields and blur the sub-disciplinary boundaries.

First, the act of ‘following’ enables a re-description of the urban-financial processes. By revealing the itineraries and careers of urban air rights across multiple markets, this processual reading exhibits a critical analytical method. It evaluates how financialization might be triggered by the economic transmutation of urban air rights, from the regulatory parameter of urban planning to the market devices of air rights economy. In research practice, this has involved following air rights to the locations in and through which they are produced and legitimated (e.g. their regulatory and policy assemblage), the commodification and marketization (e.g. their measurement, valuation, calculation and transaction methods) and the practices of collaboration and/or conflict amongst market intermediaries and

participants. In this way, this thesis project demonstrates a topological mapping of air rights economy and their relations to various and discrete realms of governance. On the one hand, it makes visible the value-in-motion of volumetric growth – that air rights shift across property ownership claims, credits and assets, and are thus instrumental for connecting the built environment to the geographies of money and finance. On the other, the intangible and multifaceted connections in air rights employ a re-description that reveals the hidden dimension of spatial mobility in their virtual physicality.

Second, ‘following air rights’ is a methodology that can contribute to critical urban studies. The careers of urban air rights portray the (temporal) escape from the conventional dichotomy between space and capital. Such a description is methodologically distinct from a Harveyian-inspired capital-oriented approach. Shifting the object of study from capital flows to (virtual) spatial flows, and from capital accumulation to spatial-material proliferation, such a methodology reveals that financial rationales, logics, practices (e.g. portfolio management, coupon pool and debt leveraging) and subjective formations (e.g. shareholderism, creditor-debtor relations) have rewritten the short-term arbitrage and speculation activities of urban vertical sprawl in (ordinary) cities. Yet air rights also overflow, creating both positive and negative externalities that are borne by society and manifested in popular urban politics. Contemporary urban contestations have long been built upon institutional and ordinary social stratification and labelling. They appear commonly in categorized struggles over property statuses (e.g. tenants’ housing rights, property-based activism) and/or causes of controversy (e.g. mortgage default, displacement or forced eviction). Yet this research intervenes in ways that foreground ‘air rights economy’ as the coordinate reference, so that various types of

struggle and contestation can be located and connected across lines. To foreground the air rights economy is to enable a connective gesture in doing research into urban financialization.

7.3 Implications

This section outlines some critical implications of the research in light of the rising air rights economy in urban Taipei and beyond. Key findings from the research, and its analytical framework of urban air rights as market devices, are stepping stones for probing some related urban phenomena. These fell outside of the scope of the thesis but highlight its theoretical and methodological potential. Four themes are briefly discussed.

7.3.1 Volumetric Finance

While the construction frenzy spreading across many Asian cities (Roy and Ong 2011; Elinoff et al. 2017) has been a long-standing phenomenon since the late 1960s, it has been reoriented and intensified with renewed institutional incentives and measures. Air rights, to borrow the phrase of Jamie Peck (2012), have formed a systematic ‘operational matrix’ in devising the urban built environment. Such an operational matrix (what we might here call ‘volumetric finance’), features an increasing institutional investment in coordinating moves between real estate development and infrastructure financing. This move, as mentioned in the preceding chapters, emerges as a paradigm shift in the governance of both public finance and planning, characterized for its increasing entanglement with the so-called land value capture (LVC) scheme or value capture finance (VCF). With less

focus on the genealogy of LVC/VCF, this thesis has instead centred on the linkages between the public fiscal planning and private (financial) investment given the phenomenal rise of the urban air rights in one particular city.

Witnessing the nascent development of ‘volumetric finance’ in its own right, this research claim of air rights as market devices can be the entry point to examine international and local propaganda such as The New Urban Agenda; and re-politicize the flattened LVC model. Direct implications can be seen across the divide of Global South and North; as volumetric finance is part of the technical knowledge package transferring from the land economic experts of the World Bank Group (Suzuki et al. 2015). It also appears in the format of the development rights auction model envisaged by the *Land Value Capture* report jointly prepared by the Great London Authority and Transport for London since 2016 (Transport for London and the Greater London Authority 2017). Viewing the rising similar initiatives of volumetric finance in government policy moves amidst many African, Chinese, Latin American and Indian cities, this proposes enquires for further comparative research. The direct implication of this study is seen in its methodological working of air rights as a common parameter that works across widely diversified geographical and institutional contexts.

7.3.2 The Roll-out of Air Rights Economy

The analytical optic of this thesis has made the air rights economy the forefront of multiple urban processes, such as infrastructure provision, historic conservation and urban redevelopment. By offering an analytical framework that foregrounds the

air rights economy, this thesis is able to show how urban financialization and its relation to volumetric sprawl is mainly shaped by the increase in the volume of air rights traded and circulated in both public and private market channels, and by market practices that held the ownership as shares to access the air rights assets. This analytical optic shows its capacity for developing relational geographies in at least two ways. First, by following a particular air rights instrument (such as TDR), the thesis has shown how in the North American, European and Australian contexts TDR have continued to keep rolling out, tapping into programmes that manage biodiversity and ecosystem services, such as flood mitigation, river rehabilitation, farmland preservation and so on, enacting the needs of market-making for tradable permits (Robertson et al. 2014; Vejchodská 2016). Also, in Taiwan, seismic risks in recent years have also been incorporated into the BFA programme with legislative facilitation. For example, the state-led initiative of ‘urban renewal for disaster-prevention’ was launched to reinstate stronger legitimacy for necessary state intervention in redevelopment projects. In this way, disaster management and resilience have become a critical driver to complement the economic itineraries of air rights. The urban implication, then, casts doubt on the specific patterns of radical climate adaptation method, challenging its commitment and promise of a sustainable future and further question what sort of sustainability and to whom this sustainability belongs.

7.3.3 Environmental Politics of Urban Land, Air and Sky

The sheer volume of urban air rights creates material encounters as they circulate. This raises a further question: what are the implications of the myriad material

encounters of air rights and the environmental politics they have projected? While some are assigned with specific recipient sites (i.e. BFA and IFA), some of these air rights may actively seek opportunities for anchoring (i.e. TDR) (Theurillat et al. 2016). While some of may find chances to concretize, this process is made conditional when the existing concretized building stocks are being vacated, abandoned and/or demolished. In this way, material encounters, at the very least, have evolved with buildings' life cycles. This interconnects more broadly with what Stephen Graham (2015a) called 'life support' – the micro-meteorological, geological and environmental issues, from greenhouse gas emissions, urban heat-island effects, urban air pollution, the production of construction materials and wastes and so on.

The environmental implications of air rights are also found in various tangible, sensory and emotional experiences in the everyday life of the urban majority. For example, since 2014 the London Skyline Debate, launched both online and offline, has concerned 436 high-rise towers over 20-storeys in the pipeline of construction and how they would change London citizens' rights to light. Similar debates have resonated in Taipei and other cities. Also, in Hong Kong, the production of air rights has been part of the perennial debate on housing shortage and land scarcity. Solutions are proposed either from the reclamation of the sea or capitalizing on the sky. Urban sky and sea are thus turning into mutually inclusive options to ease the development pressure. More severe and striking experiences might be the 2015 landslide incident in the Southern Chinese City of Shenzhen (Elinoff et al. 2017). There a man-made hill of dirt and construction waste turned into a lethal landslide. The landslide comprised of construction debris engulfed a 10-hectare industrial zone, wrecked 33 buildings, fractured a 400-meter-long gas pipeline and left nearly

100 people missing or dead (Watkins 2015). As Elinoff et al. (2017) argued, the geologically significant mass of construction debris is the result of the building frenzy of the last three decades. While these worrying and somehow apocalyptic accounts would certainly not cease the tempting development projects of volumetric growth, an ethical prospect brought by the volumetric lens is thus to explore and investigate these material encounters. Namely, to be aware of the tensions between the vertical/volumetric growth and their wider interconnectivities. For instance, what will be the urban future for the increasing discrepancies between the heightened reliance on urban air rights and the shrinking population/cities in many East Asian urban areas? In this respect, the research methodology proposed in this thesis is critical to unveil air rights trading with the interconnections and co-becomings so that we can track down the consensus-building processes that made air rights economy what it is today. This will also allow us to demand more accountable decision-making processes in the miscellaneous projects of volumetric finance which lack comprehensive tool sets to monitor and regulate, and are often kept from the public eye.

7.3.4 Urban Contestations under Financialization

Financialization scholars have been working to make explicit the meaning of this term and how to maximize its analytical significance and actionable tactics (Aalbers 2015; Christophers 2015; Martin 2016; Fields 2017a). Financialization in scholarly works has primarily referred to what Aalbers describes as the ‘increasing dominance of financial actors, markets, practices, measurements, and narratives’ that are transforming ‘economies, firms, states, and households’ (Aalbers 2015, p.214).

However, this thesis, recalling Randy Martin's reminder that financialization 'must refer to many different processes at once' (2002, p.9), has focussed on urban air rights' multiple routes of economization. The connection between these two approaches, as this thesis has argued, lies in how the multifaceted contestation against financialization holds the two together in the real-world. For example, in a series of activist discussions on the theme of housing struggles over financialization in light of the 2016 UN-Habitat III Conference, I recall that there was a cognitive hurdle amongst participants for settling a collectively actionable slogan and agenda. Some Euro-American activists proposed to name globally-known 'reckless' financial (investor) landlords as their speculative operation in property market causes rent spikes and expulsions. Thus the proposal was to target global financial landlords as the common enemy. However, this does not fit into the diverse experiences of contestations in some other urban contexts whereby the so-called 'financial landlords' do not necessarily stand out. Instead, the list to be denounced may include the modified regulations that created the hotbeds for speculation, and the so-called 'non-market actors', such as the states and households, as the 'profiteers' behind projects who are inconspicuous, less global, and varied in scale. This blind spot looms particularly large when investigating urban financialization and its contestations in the settings of ordinary cities. This is because understanding the issues at stake requires a careful reading of how financial practice, measurement, logic and rationale are incurred or cancelled in many different and hybrid processes. As such, while the role of finance is undoubtedly prevailing in contemporary urbanization across the Global South and East (Rolnik 2013), this thesis highlights an important practical implication about how struggles over changing morphologies, patterns and experiences – i.e. 'context-dependent ways' (Fields 2017b) – outside of the epistemic North may be recognized and connected with. In this regard, research

on the air rights economy can strengthen understanding of the contested right claims that surround various processes. Through the *gateway* of 'air' rights, we may further imagine and investigate the underlying workings and crossings, between the right to breath and right to build, and between dis/possession and resistance to precarization.

7.4 Future Research

[A]ttempts at 'reweaving' the urban fabric must be done in ways that recognise the full plurality of highly unequal voices in contemporary cities. They must, as a starting point, provide a range of supports for an 'open' set of network spaces to encourage heterogeneous mixing rather than monofunctional and socially purified secession.

Graham and Marvin, 2001: 414

Continuing from the section on implications, this section points out some limitations of this research and brings forth four potential avenues that are worthy of further development.

First, while this thesis was necessarily constrained by the time and resources available, these limitations nonetheless open up potentialities for following up in future research. For example, additional empirical research on IFA is worthy of further study. When I encountered the IFA during the research process it was still in an experimental stage. Because my data collection on IFA does not have equivalent depth when compared to the other two instruments (BFA and TDR), I decided not to develop an individual chapter in the thesis on IFA. However, this implies there is potential to further study IFA (or various related forms of air rights

policy instruments) and examine their market operations and the inter-workings with the built environments in the Taipei metropolitan area.

Second, comparative research into volumetric finance, namely the nexus between infrastructural and real estate finance in cities with rapid vertical sprawl, deserves more development. Two types of comparative research are suggested in advance. One is a place-based, trans-local project on comparative urbanism that utilizes the thesis's methodological contribution to offer 'air rights' as both an empirical terrain and as methodologically 'minimalist components' (Robinson 2016, p.195). By making air rights the minimalist component, it is possible to bring diverse cases together and put them into a productive and wider conversation. The other is a more perspectival-based comparative project. Recognizing that a major limitation of this thesis lies in its focus on the practices of planning officials, consultants, architects and market brokerage, it would be valuable to study the perspectives and changing perceptions within the finance sector. In brief, a pragmatist account from other types of market participants, such as the financial analysts and general investors will also be worth further research.

The third prospective direction is to undertake further research into the dynamic relations between urban air rights and the geographies of money and finance. As mentioned in 7.3, relations between the expansion of credits and the proliferation of air rights have deep and wide roots in the (re)production of built environment. While the aforementioned case studies in section 7.3 demonstrate such potential, the thesis's conceptual analogy of air rights as spatial credits could make visible the ways that air rights are, despite money, another type of medium of exchange (although less liquid). These forms of theoretical and empirical potential continue

the thesis's objective of re-describing an epistemic project of urban financialization. From this perspective, the built environment is no longer the passive recipient of aggressive financial capital. Rather, it centres on the multifarious forces and fluxes that potentially can benefit or profit from, co-operate with, or counteract against the operations of financialization.

The fourth potential avenue is about urban air rights and the geographies of hope. The thesis project primarily focussed on unveiling the interconnectivity of the air rights economy. Nonetheless, to foreground the air rights economy is an ethical project in so far as it envisages how the right to build could further be brought into dialogue with claims on the right to breath clean air and the right to sunlight, on vertical surveillance and human security. In this project, the assemblage of air rights has enabled one to track how financial credits are shaped into particular mediums for political manoeuvring. Thereby various kinds of hopes are placed exclusively on volumetric growth. Future questions to be further studied are thus about the atmospheric linkages to emotional and environmental geographies over the resource economics perspective. That is to connect the bodily, sensory and emotional encounters that interact with financial measurement, rationale, logic and practice. Indeed, from housing renewal and disaster prevention to infrastructural provision, the preceding chapters have shown that hopes are manoeuvred through tangible landscapes and materials. Building upon the premise of relational geographies, it is possible to rethink (urban) air as an atmospheric commons. This will help to identify common grounds, and to envision the possibilities of infrastructure finance and real estate economy in post-capitalist politics. In sum, each of the potential avenues point to projects that rethink the geographies of distributional justice through the lens of a more-than-human commons.

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