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Transforming Shanghai’s waterfront

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Financialising urban redevelopment: Transforming Shanghai's waterfront

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ABSTRACT

Chinese cities have experienced rapid urbanisation and attracted massive investment in the central city through urban redevelopment. Developing less favourable urban areas such as former industrial sites along the waterfront is less attractive for investment as these areas usually need to deal with poor environments and complicated land ownership. It is therefore important to understand how these urban projects are carried out and what financial instruments are used. This paper examines four waterfront redevelopment projects in Shanghai in the last three decades and asks how they got financed. The financial mechanism in the examined cases confirmed that land-based capital accumulation is central in the financialisation of these projects, with the important role of the state-owned development companies in each project to mobilise capital and carry out development. The paper also finds that the variety of innovative financial instruments like bonds, public-private partnership or the urban regeneration fund are explored to tap capital from domestic and international investors. These financial instruments are complementary to the land-based finance which facilitates urban redevelopment in less attractive waterfront areas, allowing new financial players to explore the potential for the waterfront.

1. Introduction

Chinese cities have transformed at a rapid speed since economic reform and the open-door policy. The transition from a central planning system to a market system allowed Chinese cities to acquire more autonomy in allocating their revenue. Often these investments were concentrated in large-scale urban development projects that were strategic to realising a city vision. In the urban development process, governmental actors play an important role via their strong control over land ownership and financial resources. Because of tight budget constraints, local government explores entrepreneurial strategies to attract investment. Land-based accumulation amounts 60–80 % of local revenue. Along with land reform and housing reform, opportunities have been created to allow private investors to participate in the local urban development process, including both state work-units and related real-estate companies, domestic and overseas investors, banks and government investment arms (Wu et al., 2007).

There has been a growing body of literature on China's land-based finance. Chinese urbanisation is considered to be investment-driven or land-based urbanisation (Hu and Qian, 2017; Huang and Chan, 2018; Lin and Yi, 2011; Lin, 2014; Xu and Yeh, 2009). While many studies examine how land is used as an asset to generate finance in urban development, what has been less examined is the evolution of the financing of urban development. In the earlier years after reform, Chinese cities attracted massive investment for prominent inner-city areas for high profit. Gradually, investors have come to look at more peripheral or less favourable locations, especially former industrial sites within cities, for development. Often, these projects face polluted urban environment, high cost in relocation and complex land ownership. How to develop and finance these less attractive urban projects remains a major challenge for Chinese cities, which is the research question addressed in this paper.

The question raised above will be examined in this paper, using four waterfront redevelopment projects in Shanghai. The article is divided into five sections. The following section summarises the theoretical framework of financialisation in urban development and within the Chinese context. Section three describes the choice of cases and provides a historical overview of the application of financialisation in the four waterfront redevelopment projects ranging from the 1990s to the 2010s. An analysis of how financialisation influences urban development strategies and the various financial tools in the four projects will be given in section four, followed by a discussion and conclusion at the end of the paper.

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2. Literature review

2.1. Financialisation and governance in urban development

Current urban development activities encounter complex urban contexts in which globalisation, technological innovation, urbanisation and other urban changes intersect. These urban development projects do not simply feature public sector or private sector-initiated activities, but rather involve diverse governmental and non-governmental organisations. Both local politicians and the business sector look more intensively for development opportunities, good locations and appropriate financing instruments to improve the land use to its optimal capacity. Especially under the influence of neoliberalism, carrying out successful urban development activities to create attractive urban spaces and land value has become a central focus for local governments. At the same time, they tend to promote new, decentralized forms of governance and market-led development. This governance approach allows the involvement of many actors outside local government in the local urban development process (Swyngedouw et al., 2002; Salet and Gualini, 2007; Tasan-Kok, 2010). The shift in governance reflects the emergence of a much looser process "conducted across public, private and voluntary/community sectors through networks and partnerships" (Stewart, 2003: 76). This alliance between the public and private sectors at different scales is crucial in large-scale urban development projects, especially in the neoliberal context (Brenner and Theodore, 2002). For cities with a less generous financial capacity, various forms of financial scarcity and limited access to resources have challenged both public and private sectors both during the economic crisis and in the post-crisis period (Buček, 2016: 19). Financial actors and market financial instruments have thus gained more prominent roles to fill the gap in which public finance used to function. It is interesting to see the increasing role of financial institutions in urban decision-making, in which financial capital investment plays an important role in what gets built and where (Rutland, 2010; Robin and Brill, 2018).

The importance of financialisation in urban projects has been addressed in various studies as many recognize its role in shaping urban governance and defining urban rules (Peck and Whiteside, 2016). Financialisation is considered as a process of "widening and deepening the reach of financial interests" (Pike and Pollard, 2010: 33), and the "growing influence of financial markets over the unfolding of economy, polity and society" (French et al., 2011: 1). In urban projects such capitals can come from real estate developers, construction companies and increasingly financial institutions, financial markets and financial élites (Buček, 2016: 8). The World Bank defines innovative finance for real estate development that involves non-traditional forms of funding through private mechanisms (private initiatives), solidarity mechanisms (public-to-public transfers using concessional flows), public-private partnership mechanisms (private finance for public service delivery and other public functions), and catalytic mechanisms (public support for market creation or private entry into existing market) (Grishankar, 2009). The European Union (EU) states the development financing as measures that provide financial support to address policy objectives through the use of loans, guarantees, equity or quasi-equity investment, or other risk-bearing tools. These financial instruments can be combined with grants and involve risk-sharing with financial institutions, or a blending of loans and grants, or can be in the form of development charges or land value finance (Aalbers, 2019a, 2019b).

As real estate plays a pivotal role in the city, how urban projects are financed has been under scrutiny in European cities, especially since the economic crisis of 2007–2008. The financial constraints by government and markets lead to the active experiment of a variety of innovative financial instruments that have emerged in urban development projects (see e.g. Huang and Chan, 2018; Liu et al., 2018). In recent decades, we observed the involvement of emerging financial players such as institutional financial investors. Guironnet et al. (2016) suggest that the outcome of redevelopment is treated as pure rent maximisation by landowners and city governments, reinforcing the tendency to treat "land as a financial asset" (Harvey, 2006). Financialisation may intensify "the speculative, boom/bust characteristic of the real estate market" through the so-called hot money (Fainstein, 2016: 2). Especially with the retreat of the public financing of urban development, space is provided to accommodate private developers as well as private finance, often with the help of financial brokers, consultants or the securitisation of future fiscal income (Weber, 2010; Strickland (2013)). Guironnet et al. (2016) also pointed out the acquisition of financial capital investors during the restructuring of the property market. Private investors in European cities have intensified their diversification strategy by investing in urban regeneration projects aiming at perceived returns, the security of investments and the spreading of risk (McGreal et al., 2000; Nappi-Choulet, 2006). The various forms of public–private partnership involved in urban development projects demonstrate a shift from public finance to capital markets and private investment in the built environment. The economic crisis also prompted the emergence of financial innovations such as asset-backed securities and mortgage distribution (Guironnet et al., 2016; Erturk and Solari, 2007).

2.2. Financialisation in Chinese urban development

Chinese cities started to experiment with various economic liberalisation measures such as decentralisation, privatisation, deregulation and tax change from the end of the 1970s. The economic reform allowed market forces to play its role in the production and consumption of goods, following the world trend in the privatisation of public services. These measures gradually created space for the private sector to emerge and lay out the principles for the market to function. In Chinese land tenure system, the state ownership has remained a key priority whilst the commercialization of land-use rights aims to enhance economic efficiency (Yeh and Wu, 1996; Lin, 2014). Financialisation has gradually come to play an important role in China's urbanisation because that most cities faced a capital shortage when carrying out urban development projects. Land leasing is an important revenue for the local state and an important source of investment in urban development and infrastructure projects. Such land-driven urbanization is based on decentralizing power and responsibilities in land management and urban planning while recentralizing both tax and fiscal regimes (Theurillat, 2017). These basic principles have important consequences for the role of the state in the politics of land. The state has a vested interest in dominating land development via its entrepreneurial agency (Wu, 2018). First, land governance is shared between the central state and the local state even though the local state controls the ownership and development rights of urban space (Xu and Yeh, 2009). Second, the land banking mechanism was created to allow local municipalities to carry out land acquisition, landholding, site preparation and land deposition via a land development corporation (Huang and Chan, 2018; Wu, 2020). Land development Centres (LDCs) are public entities and have been used as a key means for local government to acquire bank capital to fund urbanization in the early 1990s. Since 2010, restriction from the central bank to control local debts led the (re)use of the local government investment vehicles (LGIVs). LGIVs are registered State-owned Enterprises and have more channels to access to capital. They usually have a land reserve and can collateralize land in their reserve. In the development of large-scale urban development projects, an entrepreneurial establishment of the urban development companies (UDC) is often used as a representative of the state that carries out primary land development from land clearance, relocation, infrastructure development. They are state-owned enterprises or joint ventures with other public or private entities that are project or location-oriented. They have a more flexible structure that allows them to seek fund from the financial market or have the possibility to collaborate with property developers in property development (Huang and Chan, 2018).

Although the land finance using public land banking system has been explored in the European context, like the Netherlands (van Loon et al., 2018), the public-led land development is only one of several different land development mechanisms due to the existing of prevailing private land in most of the countries. Besides, the administrative and organisational entities - municipal land banks in the European context are general public entities and are defined by public law. In the land development process, they depend on special-purpose state bank with low interest or municipal reserve to finance and have far less flexibility as the UDCs in China in approaching banks or market parties and in their business activities. Furthermore, in the Chinese context, the decentralisation allows local government to explore the land as an instrument for capital accumulation and capture the substantial land value when the land use function change from agricultural to commercial or residential purpose.

While land finance is a crucial focus in the literature to understand the financializaton in China, financing urban projects is much more than just land finance (Wu, 2019). Theurillat (2017) suggest tracing the bank and direct financial circuits (e.g. development loans, housing mortgage loans and own funds) as well as the financialized circuits (e.g., special purpose vehicles like trust and funds or financial platform and capital market) to understand the financialisaton of the property development industry in China. Previous studies have suggested that innovative financial mechanisms that Grishankar (2009) and Aalbers (2019a, 2019b) suggest have been adopted in China's urban development projects, like tax-related policy or public-private partnerships (Zhang, 2010; Chang, 2013). As Chinese cities started their ambitious urban (re) development process since the 1980s, most municipalities faced a serious budget shortage. For strategic urban projects, many municipalities turned to the (global) capitals from non-government sources. In the development of Chinese large-scale urban development projects, we have seen a continuous increase in the amount of investment from domestic and international injected into the region, as well as the arrival of multinational corporations, the banking and financial sector, property developers and global pension funds. These flagship projects are often marketed as promoting economic development from which all will benefit. As a result, these projects have often been experimenting fields with innovative ways of launching and financing such projects (Buček, 2016). Despite the immature investment environment, foreign capital participates via transnational corporations or direct investment in urban projects for high profit. It is also observed that institutional investors act on a speculative, short-term basis. Also, as China's land and housing reform provided the conditions necessary for and favourable to the emergence of a real estate market (Wu, 2015; Aveline-Dubach, 2013; Theurillat, 2017), it is interesting to explore how the financializaton evolved in the long process and how public and private financial instruments have been selected and applied to the specific local and economic circumstance.

3. Method and four cases of waterfront redevelopment

Following the theoretical review, this paper showcases four waterfront redevelopment projects Shanghai during a period of thirty years (1990–2020). They help understand the financialisation of urban development and how public and private financial instruments involved and evolved alone with local circumstance. Hereby are some argument regarding the choice of waterfront redevelopment projects. On the one hand, the change of land use from industrial to commercial or residential offers economic benefits like higher land value, property development and even job opportunities. On the other hand, the waterfront often has a historical identity that gives character if the preservation of the industrial legacy is incorporated in the urban transformation process of the waterfront. There are, nevertheless, various challenges encountered in such transformation processes. The territory was often isolated from public access and mostly faced severe environmental challenges, social integration and a lack of infrastructure. Beyond these spatial, environmental and social challenges, carrying out waterfront redevelopment remains complicated due to the fragmented jurisdictional involvement and takes a long period to be implemented, thus requiring massive financial investment. In most situations, innovative financial instruments have been explored to achieve breakthroughs in these projects besides traditional financing. The waterfront redevelopment projects in Chinese cities face exactly the similar challenge and were even more in desperate need of massive investment due to their budget deficit. Examining the financialisation of the waterfront redevelopment in Chinese cities will shed light on financial instruments behind each project that was initiated at different historical moments.

Another important argument is regarding the choice of the waterfront redevelopment projects in Shanghai, China's economic centre (Fig. 1). It is a city that grew along the Huangpu River and Suzhou Creek, depending on the growth of its ports to connect with the outside world. The city experienced rapid development and its industry sector emerged along its waterfront since the 19th century. After a long period of stagnant city development between the 1950s and 1970s, Shanghai slowly revived, starting with the transformation of its inner-city and later waterfront areas in the less developed but more spacious suburban Shanghai. Pudong – the old waterfront on the eastern bank of Huangpu River, approximately the size of Singapore – was the first large-scale waterfront development project developed for the creation of a new centre of economic and city life. After the city had carried out several large-scale urban (re)development projects in the inner-city areas, Shanghai again looked for new urban space for its inhabitants, businesses and tourists, and the Huangpu River banks offered such space. For a long time, only a three-kilometre waterfront of the Huangpu River out of the full 113-kilometre extent could be accessed by the public, while all other parts were occupied by Shanghai's heavy industrial sectors. These harbour-related enterprises were state-owned under the administration of the central government and did not necessarily come under the local development plan, resulting in complexity in negotiation and land transfer in the redevelopment process. The four cases examined below are located in different urban districts, had industrial legacy when the projects were initiated and were positioned at different stages of the economic reform with certain strategic consideration. Thus, the four cases show both the constraints for waterfront redevelopment and the unique challenges related to the location self. They can provide insightful information on how such projects were carried out and financed. Drawing from interviews as well as secondary research materials for 20 years, this study examines the evolution of financial instruments and the involvement of new financial players in the regeneration process.

3.1. Lujiazui Financial and Trade Zone

The development of the 28-square-kilometre Lujiazui Financial and Trade Zone is one of the earliest waterfront redevelopment projects in the 1990s. The area was occupied by factories, workers' villages and low-quality housing quarters. When Shanghai decided to become an international centre of finance, trade and transportation in the Asia Pacific region, the waterfront area on the east side of the Huangpu River and opposite the downtown Bund area became a suitable location to experiment with all these daring plans. In 1990, Pudong New Area as a national-level special economic zone (SEZ) was established by the Shanghai Municipal Government (SMG), supported by the central government. Pudong New Area, including Lujiazui Financial and Trade Zone and three other economic zones, could engage with the market and private investment to develop new economic functions like finance and the trade sector. Following the master plan, Lujiazui Financial and Trade Zone including two parts- the high-end Lujiazui Financial Centre as Shanghai's new CBD and Zhuyuan Commercial and Trade District.

With the unattractive urban environment and limited resources to attract external investors, the question of how to finance such a mega project mounted a major challenge for the SMG. The first consideration to stimulate investment was establishing various national and local preferential policies. These included allowing foreign banks to be

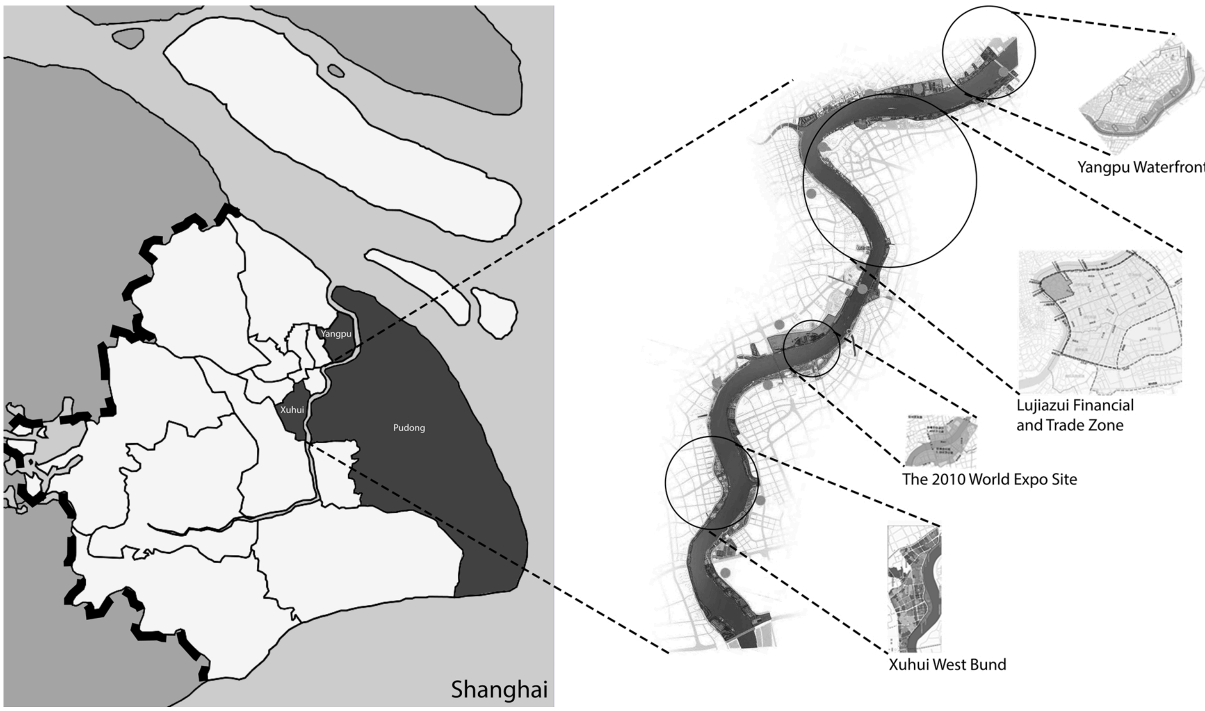

Fig. 1. Location of the four waterfront redevelopment projects in Shanghai.
(1. Lujiazui Financial and Trade Zone 2. The 2010 World Expo site development 3. Shanghai West Bund 4. Yangpu waterfront redevelopment).

located in Pudong to conduct business in the local currency, granting projects in Pudong the status of National Priority Projects, lifting the status of Pudong New Area higher than normal urban districts to allow the approval of larger sum investment and allocating 700 million yuan (US$ 90 million) to Pudong in government loans (Table 1). State funds accounted for 3.9 % in 1990 and 0.4 % in 2004 of the total investment in Pudong, with most of the funds invested in Lujiazui Financial and Trade Zone. The SMG was also allowed to issue bonds to raise capital. Secondly, finance was mobilised through land development as the land was used as a financial asset. Land development in Lujiazui was facilitated by the newly established property development company, Shanghai Lujiazui Development (Group) Company Limited (SLDC), which played a crucial role in developing, operating, marketing and selling the land. Initially, SLDC had little money, except for one priceless asset – land. Soon after SLDC was set up it was allowed to acquire a certain amount of land from the municipal land office at a relatively low price with a cheque from the SMG. The investment from SMG made it a major shareholder in the development company, so gaining a voice in the way how the zone was developed. Thus, the development companies, in part representing the government, developed the land and sold the land-use rights for profit. By 2019, SLDC has developed a total amount of 236, 398 m^2 land. While keeping a small proportion to develop in office, housing, rental apartment, retail, hotel and elderly house, SLDC strived to attract financial and insurance institutions to Lujiazui and real estate companies to invest in property development. To mobilise more finance, SLDC listed part of its assets on the stock market and continued issuing short-term bond (e.g. 4 billion yuan issued in 2014, 1.8 billion yuan 2019 and 2 billion yuan in 2020). Furthermore, it followed a diversification strategy by having 54 subsidiary companies involved in real estate, construction, insurance and the high-tech sector. Many of these subsidiaries set up joint ventures with other public or private companies to gain more capital through joint ventures, joint operations and co-financing arrangements (Chen, 2007a, 2007b). Since 2016, SLDC has gained full ownership of one trust company, one securities Co. ltd and one finance Co. Ltd. as its subsidiaries to seek finance from diverse sources.

Table 1
Finance on the development of Lujiazui Financial and Trade Zone 1990–2004 (Shanghai Pudong New Area Statistic Bureau, 2005).

	USD 100 million	percentage
Amount of approved and contracted projects	104.42	100
Value of overseas investment	30.10	28.8
Domestic Investment absorption	74.32	71.2
Among which:		
Non-Shanghai Investment	21.81	20.9
Shanghai investment	52.51	50.3

To attract investment to develop Lujiazui, various financial channels were used. The development of infrastructure to connect Lujiazui with the downtown Puxi like the Nanpu and Yangpu bridges area was financed by a low-interest loan obtained from the Asian Development Bank. By leasing the operational right of the two bridges and the Dapu Road Tunnel to CITIC Hong Kong (Holdings) Ltd., the SMG got 2.5 billion yuan (US$ 0.3 billion) to build the Xupu Bridge. The Lupu Bridge was financed with a consortium of six shipping-related companies. In the early phase between 1990 and 1992, most of the companies investing in Lujiazui were supported by Chinese ministries, provinces or neighbouring cities. They were given preferential policies on land prices and taxation for property development, resulting in 67 property developments like Jinmao Tower. Besides policy stimulation, SLDC looked for reliable developers as partners in property development. For example, the 40-ha Fortune World is realised by SLDC and Thailand-based Chitai Group via a public-private partnership joint venture. Shanghai New International Exhibition Centre is developed by a 50−50 joint venture between Shanghai Lujiazui Exhibition ltd, a daughter company of SLDC and German International Exhibition ltd.

Involving global investors was a top priority for the development of Lujiazui Financial and Trade Zone. In terms of real estate investment, 30 % came from international investors (Table 1). Despite limited impact from the perspective of investment volume, the global investors introduced international standards regarding property development, investment and various financial tools. In the early phase, international investors considered an investment in Pudong too risky. What became a common practice was for international investors to participate in local real estate practices through financial injections into local real estate companies, like Greenland Group and Forte Group. Furthermore, to facilitate capital flows, several capital markets were established in Pudong to trade stocks, securities, futures, gold, etc. SLDC was listed in the stock market to obtain more investment. Thus, the money required for this huge investment was raised from a combination of public funds and private investment sourced both domestically and internationally.

3.2. *The 2010 World Expo site development*

The initiative of hosting a mega-event like the 2010 World Expo was taken while Shanghai was experiencing rapid urban development and economic growth. Shanghai considered that such a mega-event could facilitate the regeneration process of Shanghai's waterfront along the Huangpu Riverbank into the host city's new cultural and exhibition agglomeration (Chen, 2018). Before the expo, Shanghai established the Shanghai Expo Land Holding Co. (SELHC) responsible for relocating users on the 6.68 square-kilometre expo site (including 1.4 square kilometres of a preserved residential area) on both sides of Huangpu River (Table 2). This organisation provided the expo site with basic infrastructure facilities, an initiative fund and land for the expo exhibition halls and expo site, as well as continued expo site development in the post-expo era. However, this cost only accounts for 12 % of the total 66-billion-yuan investment, as two-third of its investment for the expo project is used for the compensation for relocation and housing for relocated inhabitants. The massive investment that SMG can invest in the preparation of a flagship project is in contrast with the difficult situation Lujiazui development faced in 1990. The SMG expected the change of land function from industrial (about 62 % of the land area before the expo) to cultural, business and commercial uses allowed to capture the difference in land value to compensate for the huge investment made in the expo site development. In the same year, the SMG established another public company, Expo (Group) Company (EGC), to take care of the two permanent expo buildings and post-expo development. The 13 subsidiaries cover various cultural and exhibition-related businesses which later helped the operation of the expo facilities and the subsequent development of the expo site.

Although most of the investment in the expo site came from public funds, the host cities adopted innovative ways to attract investment from other sources, such as bank loans, sponsorship from enterprises, the lottery, financial instruments and tourist-oriented business products. To obtain extra investment, the Shanghai Municipal Government issued expo bonds. EGC was listed on the stock market to obtain extra investment. The audit report of the World Expo 2011 (Shanghai Auditing Bureau, 2011) confirms that investment in 47 projects on the expo site for the world expo preparation came from local government fund, bank loans and bonds as is shown in Table 3. During the expo, a total of 246 countries and international organisations, 25 enterprises, 80 cities and 31 provinces and regions either invested in or rented temporary exhibition halls. To redevelop several industrial properties into cultural facilities that could be used as exhibition halls, some form of public–private partnership was used to redevelop these projects with collaboration between the public company and the owners of these industrial properties, like Jiangnan Shipyard. As the income of the expo and the rent of exhibition halls exceeded the original budget, the expo committee decided to use the extra income, which was about 1 billion yuan, for the construction and adaptation of the expo exhibition halls to become cultural facilities such as the China National Exhibition Hall, the Expo Museum and the Contemporary Art Museum.

Table 2
Expo finance before and during expo (Source: Shanghai Expo auditing result, 2011).

Total investment by 2011	Billion Yuan 18	Percentage 100
Among which:		
Local government budget	2.66	14.8
Donation from enterprises and society	2.86	15.9
Cultural specific fund	1.2	6.7
Expo bond	5.5	30.6
Bank loans and project initiative finance	5.78	32

According to the post-expo master plan, the expo site will be developed into mixed areas of regional headquarters, exhibition, tourism and retail and eco-residential area. Both EGC and SELHC continued to use bond for extra finance in infrastructure and cultural facility, issuing around 850 million yuan in total by 2019. Besides, more than five square kilometres of land were available from industrial to business and residential functions. This change allowed the local government to capture the increased land value. For example, an 18.72-ha headquarters cluster was constructed for 25 domestic and international corporations. Corporation (regional) headquarters can apply to a series of funds for tax deductions and other advantages for their employees. The international business quarters were opened to bids from international investors. Given the fact that some of the land disputes had not yet been settled during the expo preparation, some of the redevelopment was done in collaboration with the factory owners who moved out of the expo site but retained a strip of land on the expo site, like Jiangnan Shipyard. Nevertheless, there were unsettled issues on what to develop, what flexibility should be granted in the implementation of the master plan and who should be involved, resulting in less interest from the private sector and slower progress.

3.3. *Xuhui West Bund*

Xuhui West Bund, established in 2008, is a brownfield waterfront redevelopment project in the east of Xuhui District – one of Shanghai's richest districts famous for shopping centres and cultural attractions. It covers an area of 9.4 square kilometres of waterfront adjacent to the 2010 World Expo site with a shoreline of 11.4 km. This area used to be a cluster of important infrastructure nodes (such as Longhua Airport, Nanpu Train Station and Beipiao Coal Terminal), manufacturing factories (such as Shanghai Cement Factory and Shanghai Aircraft Factory) and several warehouses. Xuhui District Government saw the potential of the location as a cultural and media cluster. The project was incorporated in the Shanghai Huangpu Riverbank Comprehensive Development Scheme published in 2010 to help Shanghai invest in innovation, cultural and media functions. By 2010, Xuhui West Bund had relocated 116 enterprises and 3500 households, prepared about 280 ha of land with services as a land bank and transformed 8.4-km former industrial waterfront into public space. In the master plan, the project includes five theme areas: "Shanghai Dream Centre," the "West Bund Culture Corridor," the "West Bund Media Port," the "Shanghai International Aviation Service Centre" and "Longhua Area Comprehensive Reconstruction".

To facilitate the development of the West Bund project, a public company – Shanghai West Bund Development (Group) Company Ltd (SWBDC) – was founded in 2012 by Xuhui District State-owned Assets Supervision and Administration Commission (SASAC), together with Shanghai Xuhui Land Development Co. Ltd and Shanghai Guangqi Cultural Industry Investment Development Co. Ltd (Qiu, 2019). Together with its nine subsidiaries, the West Bund Development Company focused on early-stage planning, land acquisition and land bank, property development, infrastructure investment and construction of the West Bund, as well as the development of new public services and the overall operation and comprehensive management of the area.

Different strategies were used to facilitate the development of each functional zone. For the West Bund Culture Corridor, the local district government aimed to lure private investors with spacious land on the prominent waterfront along Huangpu River. The Xuhui District Government granted land to the Long Museum West Bund and wrote off the land cost for 50 years of land transfer to the Yuz Museum. Besides, they agreed to provide a one-time subsidy to the private museum and exempted taxes for ticket sales (Tu, 2018). Another cultural project, Tank Shanghai Art Park, is an exhibition hall transformed from a former industrial property like an oil tank. This was a collaboration between Shanghai West Bund Development (Group) Company and a private collector. The second theme area, the 19-ha West Bund Media Port, was initiated in 2014, to develop the cultural, media and telecommunications sector in the area. Shanghai Dream Centre is a 20-billion-yuan major cultural flagship project in the area and is one of the largest cultural projects in China. It was developed by Oriental DreamWorks (ODW), a joint venture between China Media Capital (CMC), Shanghai Media Group (SMG), Shanghai Alliance Investment, Ltd. (SAIL), and DreamWorks Animation SKG, Inc. Situated in the former Shanghai Cement factory and facilities, the Dream Centre combines global entertainment, culture, and retail and creative office development. In comparison, the theme area of Shanghai International Aviation Service Centre was transformed from the former Longhua Airport and redevelopment was carried out by a collaboration between its former land user China Aviation Administration of China and Xuhui Government to develop a multi-function area for business, hotels and exhibitions.

3.4. Yangpu waterfront redevelopment

The 12.93 square kilometre Yangpu post-industrial waterfront is located along a 15.5-km long waterfront line in Yangpu District at the north-eastern edge of the city. As an urban district that once accommodated some 2000 factories and related workers' villages, the waterfront of Yangpu District had long been characterised by its industrial legacy. With 11 universities, several research institutes and tens of thousands of graduates, Yangpu District hoped to become a national innovation district since 2010. Since the project started in 2002, the Yangpu District Government strove to transform the industrial-dominant waterfront with limited success. Developers often hesitated to deal with the relocation of bankrupted factories which included the pensions of retired employees in the cost; besides, developers could face high costs in the transformation of neighbourhoods often with crowded informal houses. In the Master Plan, the waterfront along the Huangpu River should be transformed to accommodate a design centre, a technology exchange centre and a media centre. Yangpu District Government has used a land bank to steadily transform the waterfront from industrial to commercial and residential purposes. During 2005–2010, 94 ha of land were completed with land-use changes and 50 ha were completed with the transfer of land use rights. During the 2010–2015 period, 48.4 % of the total 177.75 ha of land from the southern Yangpu waterfront was completed with land-use function and 22.7 % was sold to new owners for development. The remaining 3.2 % of the land parcel was planned to be sold or developed after land-use changes in the phase 2016–2020 (Yangpu District Government, 2016). The Yangpu District government can make use of the revenue to improve the public space along the waterfront or for the relocation of the owners of an existing property. If landowners want to develop, they need to pay the extra land value to gain the development rights for their land parcels.

One major challenge in the transformation of Yangpu waterfront was how to deal with a large number of industrial monument buildings. In the south part of Yangpu waterfront alone, there were 66 buildings in 24 locations in this category. By changing the land use from industrial to commercial function and using a public bidding process, Yangpu District Government was able to obtain a large amount of revenue to refund the massive investment involved in the relocation process of factories and workers' villages along the waterfront. For some of the buildings to upgrade commercial use, Yangpu District Government attempted to collaborate with the higher-level administrative organisation of the industrial property owner. The objective of the redevelopment included investing in the location as a headquarters office, innovation base or training centre. For example, China Communication Construction Group transformed the former Shanghai Shipyard into its Shanghai Headquarters office. Shanghai Electric Power Company established a joint venture with Yangpu Waterfront Investment and Development Ltd (YWIDL) to transform one of its four land plots - Yangshupu Power Plant into a cluster focused on the energy and environmental technology sector. Shanghai Textile (Group) Limited Company transformed its textile factory into Shanghai International Fashion Centre, a cluster for creative, cultural and commercial functions, and invited a professional company to operate and maintain the centre. YWIDL invested in the transformation of the 100-year-old Yong' an Warehouse. It invited the Commercial Press to locate its library in one of the twin buildings and worked with the World Skills Organisation, the Ministry of Human Resources and Social Security of China and the Shanghai Municipal Government to build the World Skills Museum.

Since 2008 the Yangpu District government has aimed to use innovation and entrepreneurship to drive the transformation of its industrial waterfront. Shanghai Yangpu Technology Investment Development Co. Ltd (SYPTIDC), an investment company mainly investing in the university science and technology park and high-tech projects, thus became a big player in the transformation project in Yangpu waterfront. Changyang Valley is invested by SYPTIDC to transform the factory buildings of a former cotton mill into a creative cluster, accommodating start-ups with low rent. This site provides 120,000 square metres of office space to accommodate more than 200 companies and more than 18,000 people. The companies located in Changyang Valley can benefit from subsidies from the local district government and deduction of taxes for innovation projects since 2017 to sustain them. The development of such transformation projects has gradually transformed the landscape of the Yangpu waterfront. In 2017, two publicly funded companies – Yangpu Waterfront Investment and Development Ltd and Shanghai Innovation Capital – established a joint venture Yangpu Binjiang innovation Urban Investment Management Centre and jointly established the Urban Regeneration Fund to invest in waterfront projects and develop science and innovation sector in the Yangpu waterfront area (Fig. 2). The first phase of the Urban Regeneration Fund involves 5–10 billion yuan. The Urban Regeneration Fund is a Chinese Government guide fund, using the form of Fund of Fund (FOF) model to attract finance from the financial institutions, enterprises and private investors. In this model, there is an initiative fund from the public sector. The fund will then be divided into different branch funds and invest in various projects like land development, infrastructure, public space, regeneration of industrial property. In this way, Yangpu Waterfront redevelopment can tap finance from the financial institution and private investment in financing its projects.

4. Project initiatives, development strategies and the financing of waterfront projects

Since the 1990s, Shanghai has surprised the world with its fast economic growth and physical transformation. The discussion of the four waterfront redevelopment projects in the previous section explored how urban projects in less favourable locations were carried out and financed. It is therefore interesting to know what development strategies and what financial instruments were explored.

4.1. Project initiatives and development strategies

When Shanghai mapped out an ambitious plan to become an international economic, financial and trade centre in the 1980s, Shanghai had suffered for years from urban decay, environment pollution and limited investment on improving the urban environment. The development of the Pudong New Area in 1990 allowed Shanghai to establish its service sector and upgrade its outdated manufacturing sector with advanced technology in the less-developed urban area. The development of the Lujiazui Financial District in Pudong New Area aimed at creating a new CBD with a stronger financial sector. Value capture came through the change of land-use from industrial to high-end commercial/

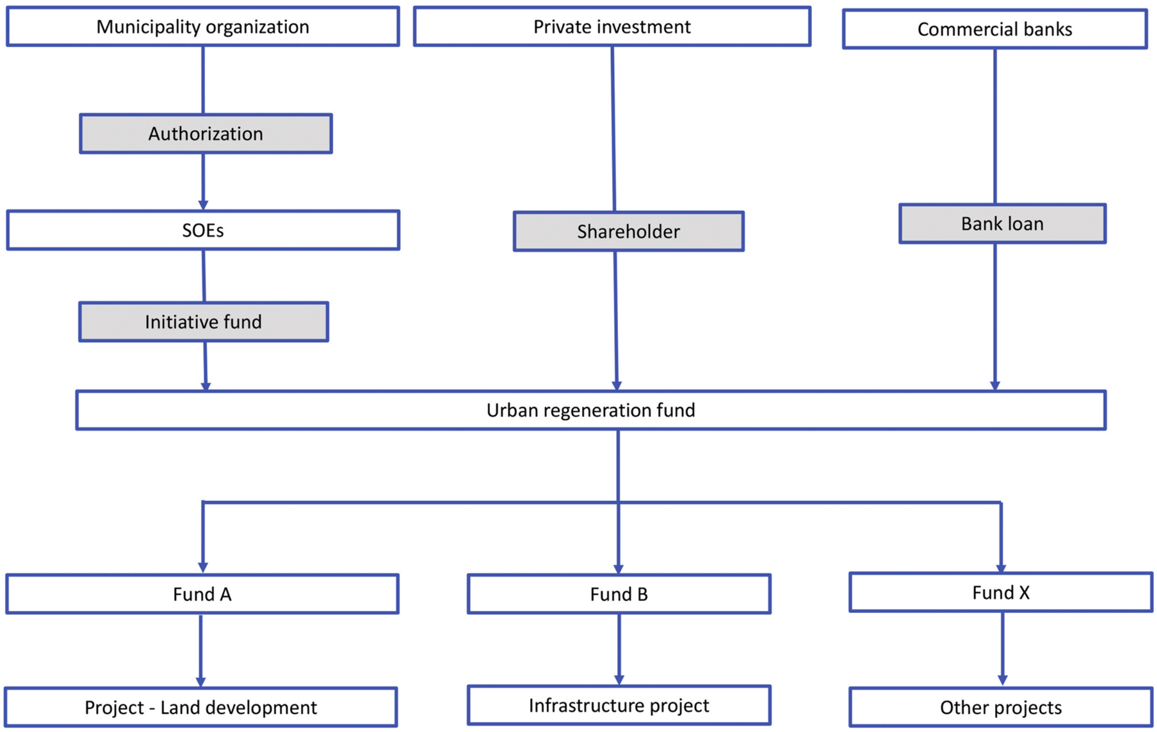

Fig. 2. The operation of urban regeneration fund (made by the author).

residential function. Shanghai could expect some public finance for this strategic project though far from enough to support the project in the long term. Using the status of SEZ, various financial and non-financial instruments could be explored in urban development to tap capital from the domestic and international market.

In comparison, the development of the other three projects came more than a decade later (Table 3), after Shanghai had achieved double-digit growth for 15 consecutive years since 1992, the fastest economic growth of any megacity since the early 1990s. Investment in urban infrastructure was twelve times higher in 2003 than in 1990, giving a significant boost. To accommodate new growth, Shanghai needed to look for new urban space for inhabitants, businesses and tourists, and Huangpu river bank offered such space not far from the city centre. Shanghai used the World Expo 2010 to persuade the powerful state-owned enterprises located within the expo site to relocate to other more spacious locations in suburban areas. The world expo catalysed the development of the host city's new cultural and exhibition agglomeration, with four expo exhibition halls transformed into museums or performance centres with the help of public finance. Two zones were designed to attract the headquarters of corporations while the third zone was planned as a high-end international business/residential quarter. As a result, the main source for the project's finances has been the income of the world expo as well as the revenue earned from the change of land use from industrial to commercial, cultural and residential function.

The last two waterfront projects belonged to the official established Huangpu Riverbank Development project aimed at regenerating the whole 130-kilometre long waterfront along Huangpu River. As the two projects were located in two districts, namely the richer commercial Xuhui District and the relatively poor post-industrial Yangpu District, there was a distinct difference in how the projects were received by the market. In the West Bund case, each of the designed themes aimed to attract large corporations to develop not only the real estate project but also the cultural-related sector in the area. The designation of the media port had been projected for years, gaining support from an international collaboration between DreamWorks, Lan Kwai Fong Group and several TV stations such as TVB, EEG, CBN and HNTV. The Yangpu waterfront had difficulty in attracting developers due to the possible high cost of relocating industrial and residential estates. Thus, the strategy Yangpu waterfront redevelopment project adopted was to use a land bank to change the land use on the one hand and combine waterfront redevelopment with innovation and entrepreneurship on the other hand. Attempts have been made for new business models in property development. For example, the industrial owner or the mother company of the industrial owner participated directly in the urban regeneration of own industrial property plot, often with the intention to involve creative sector or business/exhibition function. Otherwise, these plots would be transferred to the land bank to attract investment through public auction. In both scenarios, the focus is on how to facilitate start-ups or

Table 3
Comparing four waterfront redevelopment projects: project initiatives and development strategies.

Project	*Lujiazui Financial and Trade Zone*	*2010 World Expo site*	*Xuhui West Bund*	*Yangpu waterfront redevelopment*
Project period	1990	2002	2010	2002
Area	28 sq.km	6.68 sq.km	9.4 sq.km	12.93 sq.km
Pre-development condition	Industrial, residential, agricultural	Industrial, residential	Industrial, former airport	Industrial, residential, transport nodes
Development strategy	Special economic zones	Mega event (world expo) strategy	Culture-led regeneration	Entrepreneurship, adaptation and regeneration
Goal	New CBD, financial centre	Headquarters cluster and business centre	Cultural and commercial cluster	Urban innovative district

creative industries, sustaining and developing them in the renewed property.

4.2. Actors and financial instruments

For most emerging markets like China, liberalisation and privatisation helped by opening up a real estate market that was previously closed to outsiders. Compared with the developed economies, the real estate markets of emerging economies can be characterised as "embryonic and growth-oriented" (Lynn et al., 2011). Despite the increasing demand for housing, office, retail and industrial properties and the rapid growth of relatively unsophisticated real estate players, these markets are large, diverse, complex, highly fragmented and immature (Lynn et al., 2011). Entry into these markets can be difficult due to a weaker legal structure and sometimes ambiguous laws governing real estate rights, title and investment. As financial mechanisms and financial investors have played a significant role in urban projects (Guironnet et al., 2016), whether the four waterfront redevelopment projects in a less attractive location and less favourable investment environment in Shanghai could be carried out successfully depended heavily on the involvement of proper financial instruments. We have seen some interesting features in term of financing (Table 4): First, all four cases extensively used the land as a financial asset and generated profit from transferring land use from industrial to commercial or residential functions and from land sales. In the Lujiazui case, an extra form of value capture was to convert rural land to urban land. In the Yangpu case, when the market was not yet well received, Yangpu District Government worked on preparing the land to be ready for sale by looking for available industrial properties to commercial or residential. The profit from this became the main source to invest in improving public space and urban infrastructure. Second, the four cases explore one or more local government development company to mobilise capital. These companies were established by the local government either solely by a public fund or in collaboration with other public or private organisations. They all follow a diversifying strategy to establish various subsidiaries to help mobilise capital or develop certain sectors the projects envisioned for. They explored public-private partnership (e.g. Lujiazui case) or invited market players to form a consortium (e.g. West bund case) for development. SLDC in the Lujiazui case even went so far as to use the stock market to mobilise extra finance for its projects. Third, the various innovative financial instruments used were adopted due to the specific economic circumstances, the investment environment of the time, and the legal possibilities provided during the institutional transition. Lujiazui case suffered from the Asian Financial Crisis in the late 1990s. Besides state fund, we have found that the most innovative financial instruments were explored in the Lujiazui case, such as issuing bonds to obtain extra capital, borrowing loans from domestic banks and international corporations, public–private partnership. Various policies used in the special economic zones were explored in the Lujiazui case, like tax deduction or exemption policy or a one-stop approval procedure to reduce red tape, to attract investment from domestic companies or focused financial sectors. In the Yangpu case, the urban regeneration fund was used to tap private investment from society. This form of fund of fund was originally used in China to stimulate innovation and entrepreneurship-related project since 2007 but fit well with the vision of Yangpu waterfront redevelopment in combination with the innovation-related sector. Fourth, we have seen the financial instruments explored are partly defined by the status of the project and the status of the higher-level administrative levels which the projects' development companies belong to. Lujiazui case and a large part of the expo case are located in the Pudong New Area, which is developed as a national SEZ and enjoys its administrative status higher than the normal urban district. Both cases received either central state fund or city cultural fund and both explored bonds and stock market for capital, which cannot be found from the other two projects.

What is interesting to observe is the diverse players besides real estate developers. In the Lujiazui case, it is the domestic organisations backed by the ministries and provincial government or by the banking and insurance sector from both within and outside China. In the expo case, the earliest investors after the expo were domestic and multinational corporations. In the Xuhui West Bank case, the active players came from the cultural sector, like Disney DreamWorks or private museum owners. In the Yangpu waterfront project, many industrial properties and their higher administrative levels participated in real estate development, like Shanghai Textile (Group) Limited Company. Furthermore, we also see interesting collaborations between the public and private sectors, between developers and the banking sector, and among different private companies as well as outsourcing to professional companies for property operations. In the Yangpu case, the use of urban regeneration fund tapped the vast capital from the individual and private sector that seek a stable return. This interesting phenomenon shows the diversity with which new investors jointly created new urban space which incorporates innovation and new business concepts.

The internationalisation of the real estate market in China has accelerated local real estate markets to adopt global real estate standards, developing the corresponding legal and professional infrastructure needed to attract companies, businesses and investment capital (Table 5). The tools include methodologies, valuation techniques, tax analysis, limited liability structures or models for investment. Although only 10 % of the investment has come from global investors and 20 % from Hong Kong, Macau and Taiwan, it has gradually influenced the way the local real estate sector operates. The involvement of multinational corporations such as the Asian Development Bank introduced internationalised methods and the global investors reinforced the adoption of global standards, such as the adoption of public-private partnerships or private finance initiatives in the Oriental DreamWorks project from the Xuhui West Bank project, or the use of loans, funds and tax policy. Other financial instruments, like REITS, have been examined by the real estate sector in Shanghai but there is no evidence of extensive use in the above four cases.

5. Conclusion

While China's urban development has been extensively examined, how projects were financed has received less attention. As China's urban development is situated in the context of economic reform, market development and globalisation, the four waterfront redevelopment projects in Shanghai examined in this paper have shed light on the

Table 4
Comparing four waterfront redevelopment projects: actors and financial instruments.

Projects	*Lujiazui Financial and Trade Zone*	*2010 World Expo site*	*Xuhui West Bund*	*Yangpu waterfront redevelopment*
Main public actors	SLDC; Pudong New Area Government; SMG, Central Government	SELHC; EGC; Pudong New Area Government; SMG	SWBDC; Xuhui District Government	YWIDL; SYPTIDC; Yangpu District Government;
Main private actors	Domestic and international real estate companies, State-owned (investment) companies, banks and insurance companies, retails	International organisations and foreign governments, cultural companies; After the expo: (multi-)national corporations, real estate companies, investment companies	Private museums, cultural and retail enterprises; Real estate companies	Real estate companies, diverse industrial sectors, private investors, incubators

Table 5
Innovative finance mechanisms in four waterfront regeneration projects in Shanghai.

Projects Innovative mechanism	*Lujiazui Financial and Trade Zone*	*The 2010 World Expo*	*Xuhui West Bund*	*Yangpu waterfront redevelopment*
Solidarity mechanisms	Tax incentives; state fund; special economic zones; simplification of procedure	Tax deduction; cultural fund; lottery; donation	Tax incentives; land price discount; subsidies; fund for AI related sector	Tax incentives
Public–private partnership mechanisms	Public–private partnership; private finance initiatives	Public–private partnership (with SOEs)	Private finance initiatives	Public–private partnership; private finance initiatives; Outsourcing contract
Catalyst /loan and bond mechanisms	Bonds; Stock market shares	Bonds		Fund of fund
Traditional finance mechanism	Land-based finance; bank loans; self-raised funds by public actor			

financial instruments to redevelop less favourable urban waterfront areas. At the beginning of the development phases, the four projects experienced different levels of investment scarcity, motivating these projects to seek more creative financial instruments.

The four cases confirm the extensive use of land-based finance in urban redevelopment projects. Changing land use from rural to urban functions or changing from industrial to commercial and residential functions allowed the district government to capture the land value, which could then be used to improve infrastructure and public space. The improved urban environment further increased the land value of the waterfront area. The four cases also demonstrate how urban redevelopment projects have been used to trigger economic growth. Although the four waterfront redevelopment projects allowed the city to generate enormous profits through land and property development, specific economic policies and specially targeted public funds/bonds/tax deductions or exemptions were effective to address the long-term sector development. The banking and insurance sector in Lujiazui, the cultural and exhibition sector in the expo site, the media, museum and creative sector in Xuhui West Bund, and innovation and entrepreneurship in Yangpu have all received financial support and preferential policies. Furthermore, we also see when the status of the higher administrative level is higher like Pudong New Area, it opens the door for the project development companies to explore certain financial instruments like bonds that are not allowed to be explored in other cases (Li and Xiao, 2020).

The four cases show how several real estate funding mechanisms were explored, such as the solidarity mechanism (tax-related policy, special economic zone), the public-private partnership mechanism (public-private partnership or private finance initiative), the loan and bond mechanisms (bonds, loans, trusts) across the four projects. They also demonstrate that creative financial instruments were actively explored at the earlier stage of Shanghai's waterfront redevelopment to mobilize capital. Besides, the targeted financial actors in the four cases were not only locally bonded but also globally oriented. Either through a negotiated way to persuade or stimulate the entry of global investment or the use of a public-private partnership to secure the inflow of FDI by sharing risk, the local government of Shanghai and its agents managed to integrate local government power, external sources of business activities and global investment in less favourable waterfront projects.

While most financialisation studies focus on land finance in Chinese cities, this paper presents a more comprehensive picture of the financialisation of urban development projects beyond land-based finance. While the four waterfront redevelopment projects show not only how land-driven projects play a significant role to ensure capital accumulation, but also how innovative financial mechanisms found their way to an immature investment environment. As Chinese cities become more conscious with increasing competition among cities for talent, capital and knowledge, these focus points within a broader context may lead to new financial strategies and the involvement of new players that may influence the financing of urban development.

CRediT authorship contribution statement

Yawei Chen: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resource, Writing-original draft, Visualization-review & editing.

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Appendix A. Supplementary data

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