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The limits to FinTech unveiled by the financial geography of Latin America

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ABSTRACT

To address the paucity of research on the financial geography of Latin America and contribute to the emerging geographical literature on FinTech, we use quantitative financial data and qualitative insights from expert interviews, to explore the relationships between FinTech development and financial geography of the region, with focus on Brazil, Mexico and Argentina. We show that despite its fast growth driven by high costs of financial intermediation, policy of financial inclusion and financial regulation, FinTech in Latin America has thus far played out on the margins of the global FinTech industry and the margins of its financial systems, with limited impacts on financial inclusion. We argue that FinTech has not challenged but contributed to an already high level of concentration in the geographies of financial services in Latin America. This is affected by the proximity of FinTech firms to incumbent banks (which are active in FinTech), sources of capital and skilled labour, and reinforced by the fact that leading financial centres in Latin America are also the main centres of technology industry. Finally, we demonstrate that FinTech has not yet had a significant impact on the low level of financial integration in Latin America, with fragmentation determined by political, economic, and financial instability, combined with a lack of compatibility in financial regulation. Put together, our findings add to the literature that advocates a degree of scepticism about the impacts of FinTech on financial centres, if not the financial system overall.

1. Introduction

While in most Latin American countries social inequality has decreased in recent decades, spatial inequality (between cities and regions within countries) persists at some of the highest levels in the world (Aroca and Atienza, 2016). Addressing these inequalities is thus one of the biggest policy challenges in the region[1]. Finance is one of the crucial factors affecting both social and spatial inequality globally (Ioannou and Wójcik, 2021), but as finance changes due to regulation, technology and other factors, its impacts can change too. At present, the world of finance is witnessing a FinTech fever. FinTech can be defined as "as a set of innovations and an economic sector that focus on the application of recently developed digital technologies to financial services" (Wójcik, 2021a, 1). Proponents of FinTech expect it to improve access to capital and financial services, improve financial inclusion, effectively democratising finance and lowering inequality. Referring to spatial inequality directly, some claim that FinTech breaks the link between the financial wealth of a city and its commercial power, acting as a leveller, making smaller cities and remote regions able to punch above their weight (Findexable, 2020). Sceptics, however, point to the potential of FinTech to concentrate financial services production (Haberly et al., 2019), centralise financial power (Gruin and Knaack, 2020), and create a capitalism on steroids (Grabher and König, 2020).

In this context, the goal of our paper is to explore the emerging impacts of FinTech on the financial geography of Latin America. Geographically, we focus on Brazil, Mexico and Argentina as the largest economies of the region, but we consider them in the broader context of Latin America as well as regional and extra-regional relationships. Specifically, our paper addresses three questions:

1. What factors drive the development of FinTech in Latin America?
2. How does the development of FinTech relate to the spatial concentration of the financial sector in Latin America?

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[1] We follow established literature in history, geography and beyond which refers to Latin America as a supra-national region (see e.g. Meade, 2016), although we recognise the limitations of such a term given the heterogeneity and diversity of the countries involved. Importantly for financial geography, financial intermediaries, including index providers like S&P and MSCI, also refer to Latin America as a region.

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3. How does the development of FinTech relate to cross-border financial integration in Latin America?

While exploratory in nature, our paper offers contributions to the literature on the economic geography of Latin America and financial geography, including the emerging geographies of FinTech and its controversies (Knight and Wójcik, 2020). As such, we respond to calls for more economic and financial geographies of non-Western economies (Grandi, Sellar and Jafri, 2019). While we have seen significant research interest in topics such as the rise of Asian finance (e.g. Lai et al., 2019) or financialisation and microfinance in Africa (Bhagat and Roderick, 2020), Latin America has been rather neglected in English-language literature, both in financial geography and history. In keeping with its exploratory character, our investigation is based on mixed methods, combining the analysis of international data on FinTech and financial sector development with insights from expert interviews conducted in Brazil, Mexico and Argentina.

The paper starts by outlining the main features of Latin America's financial geography and potential ways in which FinTech could influence these features and vice versa. Next, after a brief description of our data and methods, we address each research question in turn, from factors driving FinTech fever in Latin America, through impacts of and on the concentration of financial services, to relationships with cross-border financial integration. In conclusions, we summarise our findings and reflect on directions for future research.

2. Financial geography of Latin America meets FinTech

There are three groups of features that characterise the financial geography of Latin America and are most relevant to our investigation. First, compared to global averages, the region exhibits low to medium levels of financial development. Domestic credit to private sector as a percentage of GDP in 2019 was only 16% in Argentina, 37% in Mexico and 64% in Brazil, far below the global averages of 148% and 107% in high- and middle-income countries respectively (World Bank, 2019).[2] The percentage of 15+ year olds with a bank account in 2017 was 37% in Mexico, 49% in Argentina and 70% in Brazil, compared to the global average of 69% (World Bank, 2019). Given the high level of urbanisation in the region, with the share of urban population of 92% in Argentina, 87% in Brazil, and 81% in Mexico, against a global average of 56% (World Bank, 2021), the low levels of financial development cannot be explained by the difficulties of physical access to banks. Second, high and persistent levels of urban primacy in the region accompany very high and persistent levels of financial centre primacy, whereby the largest cities in terms of population and income (and in most cases capital cities) also dominate the financial sectors of their countries as centres of employment and decision-making (Aroca and Atienza, 2016). This is the case even in Brazil, despite the relocation of capital to Brasília (Contel and Wójcik, 2019).

As the third feature, cross-border financial integration in Latin America is weak, a reflection of weak political and economic integration, with a history of failed co-operation initiatives (historically torn by the conflicting currents of the cold war and other forces), and a patchwork of organisations, such as Mercosur, operating as a customs union (including Argentina and Brazil, but Mexico only in an observer status), with limited application to financial services. Mexico is part of the United States-Mexico-Canada Agreement (USMCA), which in 2020 replaced the North American Free Trade Agreement (NAFTA), introducing more protection for the US business, but is still facilitating access to each other's financial markets. Research shows how NAFTA has stimulated economic growth in the northern part of Mexico, thus reversing the old trend of spatial concentration in the capital region (Hanson, 1997). Although Latin American countries underwent waves of financial liberalisation, most notably in the 1990 s, most of them, including the three largest economies maintain a degree of capital controls (Fernández et al., 2016). Whereas annual gross cross-border capital flows to GDP were 27% for the period 2000–2016 for the world's average country, in Argentina they only amounted to 3%. Throughout the same period, gross capital flows to GDP in Brazil and Mexico amounted to 7.3% and 6.6% respectively (source: IMF IFS).[3]

Given limited integration, despite the prominence of leading financial centres in their domestic contexts, it is difficult to identify the financial centre of Latin America as a region. Historically, there was a wave of foreign investment from Europe to Latin America after most countries in the region gained independence from Spanish and Portuguese rule in the early 19th century. Much of it was intermediated by Rothschilds and Barings, with Rio de Janeiro and Buenos Aires as leading centres, connected to London, and later in the 19th and early 20th century to New York (Cassis, 2006). Both cities lost these privileged positions in the second half of the 20th century with political and financial instability in Argentina, and the growth of São Paulo. The latter may host the largest capital market and some of the largest banks in the region, and is the city with the most internationally connected financial and business services in Latin America (Taylor and Derudder, 2016), but its connections with the rest of the region are rather weak. Mexico City may be the second largest centre in the region in terms of the size of its capital markets and banks but is strongly oriented toward the US, lacking strong connections in South America (Parnreiter, 2013). There are hardly any foreign companies listed on stock exchanges in Brazil or Mexico. Chile may have most developed and open financial market, but its market is too domestic and small to perform the role of a leading regional financial centre.[4]

With such features in place, Latin America offers a very important context for questions about the mutual relationship of FinTech with financial geography. What kind of conditions do these features create for the development of FinTech, and in turn how could FinTech affect these features?

The main distinction in the geography of FinTech is made between FinTech in developing and developed markets, with FinTech focusing on 'banking the unbanked' in the former and 'transforming banking' in the latter (Langley and Leyshon, 2020). Latin America represents a combination of both categories. Low financial development, particularly low levels of financial inclusion present a clear opportunity. This should be further enhanced by a high level of urbanisation in the region, which means that a larger share of the population has access to basic infrastructure (mainly telecommunication), which is necessary for FinTech development. At the same time, given the presence of big domestic

[2] Credit to GDP is commonly used as a proxy of financial development (see e.g. World Bank, 2019). While we are sceptical of the simplistic treatment of the ratio for such purposes, and recognise that very high ration can indicate excessive debt dependence and credit bubbles, it is safe to state that its low levels in Brazil, Mexico, and particularly Argentina reflect limited access of both firms and households to credit.

[3] Gross cross-border capital flows allow for an approximation of financial openness of a country. They are calculated as the absolute sum of capital inflows and outflows in a country, including foreign direct investment, portfolio investment, and other investment. Our global estimate is based on the coverage of IMF's database (IMF, 2018).

[4] Latin America is also a major stage of offshore finance. The Caribbean is the world's largest concentration of offshore jurisdictions (Haberly and Wójcik, 2014). In a rather unknown episode of financial geography and history, Montevideo attempted to develop Uruguay into an offshore financial centre (a kind of Latin American Switzerland or Luxembourg) in the 1990s, but this was opposed by the OECD and Uruguay's big neighbours, Brazil and Argentina (Campos and Borba, 1997). From an offshore financial perspective, Miami could also be considered the centre of Latin American finance, where a lot of offshore wealth, siphoned off (often illegally) all over Latin America (not only Cuba), is managed, intermediated, and often invested in real estate (Sassen and Portes, 1993).

banks in the region, including foreign financial institutions (with large Spanish and US banks in the lead), we would expect the development of FinTech to be shaped significantly by the incumbents. While prophecies of FinTech causing disruption and disintermediation of the financial sector are popular, emerging research shows that banks have responded to and participated in FinTech, developing digital banking, acquiring and incubating FinTech start-ups through financial and other support, and collaborating with them through alliances and joint ventures (Lai, 2020; Drasch et al., 2018). Chen et al. (2019) for example find a positive impact of FinTech innovations in the USA on the market value of the financial sector as whole, implying that on balance market participants believe that FinTech enlarges the pool of potential profits in the financial sector.

The impacts of FinTech on financial centres depend crucially on its impact on intermediation. If FinTech was to disrupt and disintermediate finance, shrinking the incumbent financial sector in the process, it could indeed diminish the significance of incumbent financial centres. Geographers, however, have argued that FinTech re-intermediates finance, with incumbent financial institutions that are able to adapt, financial platforms offered by big technology companies, and a myriad of FinTech firms, representing a new but still intermediated financial ecosystem (Hendrikse, Bassens and van Meeteren, 2018; Lai, 2020). Fin-Tech could also unbundle value chains in financial services, with different functions performed by different apps, firms, and from different locations (Carney, 2017), with bank functions reduced to deposit-taking, and FinTech firms taking over the front and back office (Sangwan et al., 2019). Unbundling, however, may be accompanied by re-bundling, driven by economies of scale, scope, and networks.

Emerging empirical studies indicate that FinTech bolsters established financial centres (Lai and Samers, 2020; Lai, 2020; Hendrikse et al., 2020) and positions them as beneficiaries in the network of FinTech-intermediated financial flows (Langley and Leyshon, 2017). Leading financial centres offer FinTech firms proximity to financial sector incumbents, corporate and retails customers, financial skills, support services (including corporate law, accounting, and all types pf consulting), capital for development, as well as connectivity with FinTech centres around the world. High financial centre primacy in Latin America would only enhance the appeal of leading financial centres to FinTech in the region. While new FinTech centres can arise in cities with a strong technology sector (Wójcik, 2021a; Cojoianu et al., 2020), in Latin America the latter are found mostly in the same cities as the leading financial centres.

Low cross-border integration is both a challenge and an opportunity for FinTech. On the one hand it hinders opportunities for sourcing capital, labour and other production factors from abroad, and limits the pool of potential customers to domestic markets. Internationalisation of FinTechs requires major investments in infrastructure and cross-border regulatory compliance, representing a major obstacle, particularly in the context of weakly integrated Latin America. On the other hand, the fact that incumbent financial institutions, particularly domestic ones, have relatively weak cross-border networks of activity around the region, gives FinTechs a chance to lead the establishment of such networks and export their services. Given the nature of their cutting-edge technologies, FinTechs have a big potential for fast internationalisation, leading to claims that they can operate as 'born global' firms (Zalan, 2018).

When analysing the relationship between FinTech development and financial geography of Latin America, we consider both similarities and differences between countries. While the region as a whole can be described as having a low level of financial development and cross-border integration, and high dominance of primate financial centres in national financial systems, the degree to which these descriptions fit the three countries under consideration differs. Argentina probably fits these descriptions best, while Brazil has both a higher level of financial development and less geographically unipolar financial system, with Mexico in the middle, and with the most internationally integrated economy of the three countries. Another reason to consider differences within the region seriously is financial regulation. Cross-country studies suggest that regulatory quality positively affects FinTech development (Rau, 2019; Laidroo and Avarmaa, 2019) but research on detailed impacts of specific types of regulation is missing. Globally, regulation of FinTech is nascent, variegated, and experimental (Andresen, 2017), and missing entirely in many developing and emerging economies (WB and CCAF, 2019). Thus, it is possible that even small differences in the regulation of FinTech across Latin America have a significant impact on FinTech development in the region.

3. Data and methods

One limitation in studying FinTech is the lack of comprehensive quantitative data on the balance sheets of FinTech firms. To reach a picture as complete as possible, we consider both quantitative and qualitative data, based on a mixed methods approach (Jick, 1979). For quantitative data our sources are reports of the Cambridge Centre for Alternative Finance (CCAF) and other organisations, such as the Bank for International Settlements (BIS). Typically, CCAF reports are based on standardised surveys of hundreds of FinTech representatives and regulators from around the world, and often form the basis of reports compiled by other institutions too.

On the qualitative front, our analysis is based on fieldwork research conducted in Brazil, Mexico, and Argentina, between May 2019 and April 2020. We conducted 34 interviews, all in English, with high-profile professionals from finance and advanced business services, as well as high-level officials from regulatory agencies. Eight were with FinTech professionals, and the rest with professionals with whom we discussed FinTech as part of a broader conversation about the financial geography of Latin America (see Appendix). Interviews in all countries lasted about an hour, and were recorded and transcribed.

All interviews were semi-structured (Longhurst, 2010). Prior to each, we shared a list of broad topics with our interviewees, which were centred around the evolution of the region's leading financial centres, such as São Paulo, and other issues, related to financial stability, the nexus between finance and politics, as well as the development of FinTech. We also gave our interview partners an opportunity to spend more time discussing issues they were most familiar with and considered most important to the topic (Clark, 1998).

Our starting point for identifying suitable interviewees was to list the biggest financial and advanced business services firms, and the most significant regulatory institutions in each country (including big banks, leading consulting firms, corporate law firms with specialisation in finance, and the central bank of the country). For arranging interviews, we used our own networks, as well as corporate websites and LinkedIn. When using our networks, we applied the snowballing technique of asking contacts whether they could introduce us to others. Our target in terms of seniority of interviewees was the executive level, whenever possible. The names of interviewees, details of their organizations, and precise locations of interviews have been anonymised.

While interviews in Brazil were conducted as part of our fieldwork in São Paulo in May 2019, those in Argentina and Mexico were conducted online due to the covid-19 pandemic. They took place between March and April of 2020, and thus coincided with the very first weeks of lockdown in Europe and Latin America. This entails certain advantages and disadvantages from the perspective of our research topic. On the one hand, we could not gain first-hand experience of Buenos Aires and Mexico City as financial centres (as we did in São Paulo). On the other hand, interviewing finance and FinTech professionals at the time of great disruption and uncertainty allowed us to hear about the sudden changes in their working habits, such as home-working, and the use of technology in communication with clients and co-workers. They were also useful for recording expectations as to how the world was envisioned to change at the very start of the pandemic. Having said that, given our interview sample as a whole, the pandemic and post-pandemic

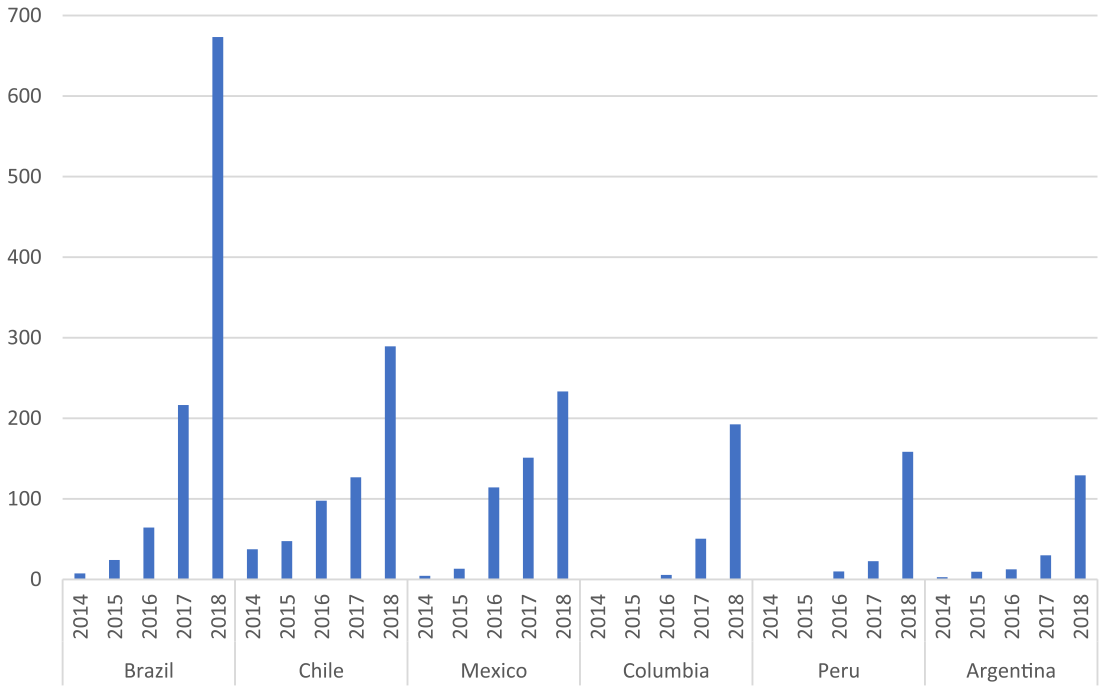

Fig. 1. Volume of FinTech activity in Latin America (USD million).
Source: CCAF, 2020

challenges to FinTech and financial centres in Latin America are not the focus of the paper.

4. FinTech fever

While still small in comparison to the world total, FinTech activity in Latin America has exhibited an exponential growth over the recent years. As reported by CCAF (2020), the total volume of FinTech activity in the region reached 1.8 billion USD in 2018, from 660 million in 2017 and 20 million in 2013.[5] As shown in Fig. 1, Brazil is currently the leading country in the region, with FinTech activity of 673 million USD recorded for 2018 (37% of the region's total), a figure which also ranks Brazil as the 13th biggest FinTech market in the world. Chile is ranked second in the region, followed closely by Mexico. Argentina occupies the 6th position, but with a sizeable growth in FinTech activity, from 30 million USD in 2017 to 129 million in 2018. Ranked in terms of the total number of start-ups, Mexico and Brazil seem to be contesting the first place, with 394 and 380 start-ups respectively in May 2019 (Finnovista, 2019). Overall in 2018, Latin America accounted for 1% of global FinTech activity (CCAF, 2020)

Similar to the global landscape of FinTech, peer-to-peer (P2P) consumer lending is the largest segment of FinTech in the region, though it is not as dominant as it is globally (CCAF, 2020). Whereas globally P2P consumer lending occupies 64% of the market (about 36% if China is excluded), in Latin America it represents 24%. This is followed by invoice trading with a share of 22%, and P2P business lending with 15%. Within the region, Brazil is documented as the undisputed leader in both P2P and balance sheet consumer lending. Consumer lending is also strong in Mexico (about 30% in total, i.e. combining P2P and balance sheet lending), though weaker than total business lending (48%). Argentina exhibits an interesting exception with more than half of the country's FinTech market dedicated to invoice trading (54.6%).

To date, FinTech innovation in Latin American appears to follow more advanced FinTech markets. All eight interview partners from FinTech firms mentioned US and European (including UK) FinTech firms as their role models, including Square, Monso, and N26. The dominance of the US as a source of FinTech innovation is also linked inextricably to the fact that, as discussed in Section 5, all eight firms sourced venture capital from the US. The majority of our partners also acknowledged China as a source of innovation, particularly relevant in the context of underdeveloped financial infrastructure and an underbanked population (conditions that apply in both China and Latin America). An interview partner from a Brazilian FinTech for example (INT_20) associated funding from the Chinese FinTech giant Tencent with the opportunity to bring knowledge, experience, and networks into the firm.

There are various driving forces behind FinTech's growth in Latin America. A factor pointed out by various commentators are the persistently low levels of financial inclusion (Wójcik, 2021a; 2021b). Banking the unbanked appears to be the common vision of FinTech firms. In a typical example, the founder of an Argentinian payment and microlending start-up told us, in a passionate tone, that "people are doomed to cash […] we wanted to provide everybody with a personal payment account in a country where 50% of people have never paid with something that wasn't cash" (INT_6).

Available evidence paints a mixed picture regarding the orientation of Latin American FinTech lending to date. Fig. 2 relates the share of the population without a bank account to the share of the unbanked among FinTech borrowers for Latin America as a whole and individual countries for which such data are available. It shows clearly that while FinTech in Latin America reaches the unbanked, it does not focus on them. For the whole region, 49% of FinTech borrowers were reported to be already banked, 24% underbanked, and 27% as unbanked (CCAF,

[5] As classified by the CCAF, Latin America and the Caribbean are grouped together, hence the regional aggregates reported here correspond to that area. CCAF's classification of alternative finance (what we treat as fintech here) does not include BigTech firms, hence the figures reported do not include Mercado Libre, Argentina's biggest FinTech enterprise.

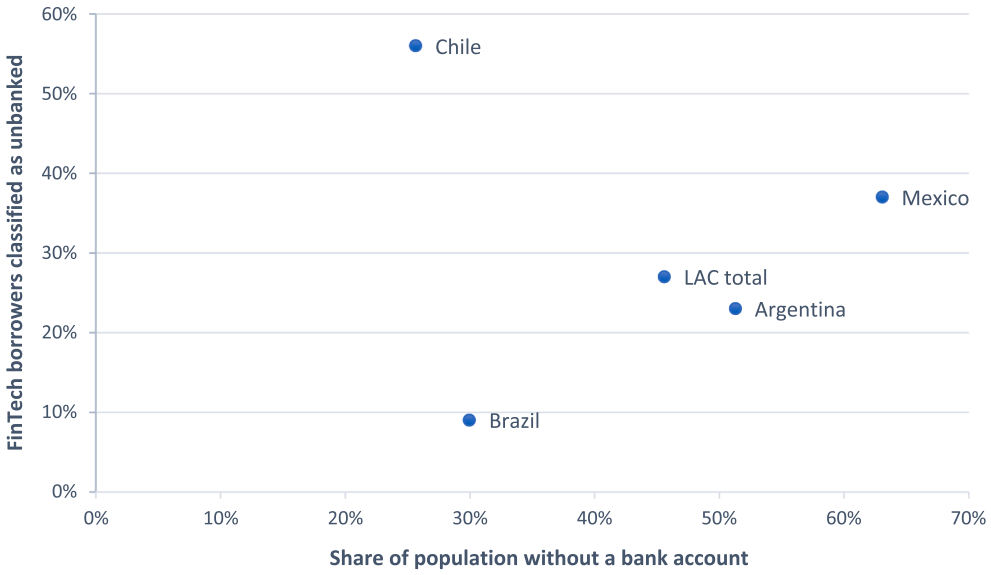

Fig. 2. Relationship between share of population without a bank account and share of FinTech borrowers classified as unbanked for 2017 (LAC for Latin America and the Caribbean).
Source: CCAF (2018a), World Bank (2018)

2018a). The picture varies by country. In Brazil, only 9% of FinTech borrowers were unbanked, while 16% were documented as underbanked[6]. In line with this observation, an interviewee who was a representative of a leading Brazilian FinTech (INT_20) confirmed that their initial target were the affluent urban elites, particularly millennials, who were then expected to start "telling their parents and their grandparents and their friends and everyone else" about the app. In Argentina, 23% of FinTech borrowers were registered as unbanked, and 47% as underbanked. Mexico and Chile, on the other side, registered higher shares of FinTech borrowers as unbanked, 37% and 56% respectively.

Another driver of FinTech development highlighted in the literature is the low level of competitiveness in banking (Rau, 2019). In the case of Latin America, we do indeed observe centralised banking structures in several countries. For 2017, the average Latin American country recorded 68% of assets in the hands of its three biggest banks (World Bank, 2019). Our countries of interest present a more variegated picture. On one side, Argentina and Mexico recorded 41% and 49% as the shares of assets of their three biggest banks in 2017. For comparison, note that the corresponding shares in the US and the UK in the same year were 35% and 49% respectively. On the other side, a higher centralisation was observed in Brazil, where the share of the three largest banks was 57%. Indicatively, the country's largest banking group, Itaú, reported 433 billion USD of total assets at the end of 2017, about a fifth of the total asset size of the country's banking sector (2108 billion USD; source: S&P Global).

Besides bank centralisation, our interview partners mentioned high fees, inefficiency and opaqueness that often characterise banking systems in Latin America (e.g. INT_14, INT_19, INT_8, INT_4, INT_16, INT_3). Interviewee INT_19 from Brazil, for example, described how in the absence of a centralised credit bureau at the time (May 2019), his/her FinTech platform aimed at pooling together the data of a customer from different banks, enabling more accurate credit scoring and lower interest rates[7] (S)he also described how their money management services help customers avoid certain behavioural "traps" set by incumbent banks, such as the inclusion of overdraft in the projection of available balance in a bank account.

A further aspect explaining FinTech growth, particularly in Argentina, is enduring macroeconomic instability, with high inflation and currency volatility in the lead. Indicatively, inflation in Argentina was 34% in 2018 and 53% in 2019. Similarly, the exchange value of the Argentinian Peso to the US dollar went from about 9:1 in 2015, to 28:1 in 2018, and 48:1 in 2019 (source: S&P Global).

The influence of economic instability on FinTech growth can be both indirect and direct. Indirectly, instability often leads to crisis episodes, which can harm the reputation of incumbent banks and thus create a predilection for alternative finance (Laidroo and Avarmaa, 2019). More directly, high inflation might explain, for example, the prominence of invoice-trading in Latin American FinTech that was documented above: given the uncertainty in prices, even on a daily or weekly basis, apps that help expedite the settlement of payments should be expected to be highly valued by merchants. Further, currency instability is closely related to the popularity of platforms specialising in currency and cryptocurrency trading, an observation confirmed by several of our interviews with FinTech professionals in Argentina (INT_8; INT_9; INT_6).

Financial regulators have also aided the expansion of FinTech, as part of their agendas on financial inclusion and competition. As for instance expressed in one of our interviews with officials from the Brazilian Central Bank (INT_16):

> "We at the Central Bank, we are very worried about […] the impacts of concentration in our financial system and in our payment system, and we are trying to intervene in order to promote competition and to facilitate the entrance of new players in this market […] we [also] have a very relevant concern regarding financial inclusion in Brazil. Brazil is a very diverse country. It's a huge continental country and lots of pockets of poverty and illiteracy, and we have this concern regarding financial inclusion, and we can see credit FinTechs as important vehicles in terms of financial inclusion…"

In a recent overview of FinTech regulation around the world, Latin American regulators were found to hold the most positive views about FinTech (WB and CCAF, 2019). 70% expressed a positive view on the impact of FinTech on inclusion. Similarly, 79% of the respondents expressed a positive view about FinTech's impact on bank competition.

[6] As defined in CCAF (2018a, p. 49) underbanked are the "users that have access to some basic financial services/a bank account, but do not have access to a complete suite".

[7] More recently, the Brazilian Central Bank has initiated the implementation of open banking, see for instance Pinho de Mello (2020).

The average figures for the rest of the world were 50% and 59% respectively.[8] In line with such positive predisposition seems to be the observation that only 12% of Latin American jurisdictions actively regulate P2P lending (compared to the global average of 22%).[9]

Out of the three countries we focused on, Mexico has been recognised as a pioneer in FinTech regulation since its establishment of the FinTech Law in 2018 (WB and CCAF, 2019). Financial inclusion and competition are two cornerstone objectives of the law, together with consumer protection, financial stability and anti-money laundering. Inclusion and competition are also two of the flags of the BC Plus agenda of the Brazilian Central Bank, the framework that encompasses FinTech regulation in the country (BCB, 2020). Argentina, on the other hand, presents a more mixed picture, largely due to its transition from a centre-right to a centre-left administration in late 2019 (INT_3; INT_2). Whereas the previous administration was fond of leaving the FinTech sector unregulated to let it grow in size, the succeeding government placed more emphasis on consumer protection and financial stability, thereby introducing tighter regulatory requirements for FinTech payments and lending.

5. Fuelling concentration

Financial systems commonly exhibit strong centralisation tendencies, with leading financial centres attracting disproportionate resources from the rest of their economies (Verdier, 2002; Klagge and Martin, 2005). Such tendency has also been documented in Latin America (Aroca and Atienza, 2016; Contel and Wójcik, 2019). In line with this literature, our own evidence from Oxford Economics confirms that São Paulo, Mexico City and Buenos Aires continue to dominate the financial landscapes of their countries, albeit with some variegation in degree. As displayed at the left-hand side of Fig. 3, the share of financial and business services (FABS) employment of Brazil concentrated in São Paulo in 2017 was 16%, up from 13% in 2005. In Rio de Janeiro, Brazil's second biggest city, FABS employment in 2017 was less than half of São Paulo's (7%). In Mexico, the share of FABS employment in Mexico City in 2017 was 28%, followed by Monterrey with 6.5%. At an even more extreme level, the share of FABS employment of Argentina concentrated in Buenos Aires in 2017 was 53%, nearly six times Rosario's share of 9%.

Despite a mild reduction of the shares of FABS employment in the Mexican and Argentinian capitals from 2005 to 2017 the changes recorded seem nowhere near in challenging their primacy. Another interesting aspect of financial geography in these two countries is that the difference between the second and third biggest city in FABS employment is quite small. Brazil, in turn, is the only country in which the top-3 changed from 2005 to 2017, with Belo Horizonte marginally overtaking Brasília (not depicted here).

In line with this evidence, all our interviews unanimously confirmed the unchallenged status of São Paulo, Mexico City and Buenos Aires as the leading financial centres of their countries. In Argentina, for example, an interviewee from a consulting firm characteristically said "God is everywhere but he attends in Buenos Aires" (INT_11). Likewise, an interviewee from a corporate law firm confirmed the increasing concentration of legal services in Buenos Aires over the last five decades, which (s)he attributed to the internationalisation of corporate law transactions, and the increasing need to network with foreign law firms (INT_10). Interview partners from banking, consulting and corporate law firms made similar remarks regarding the centralisation tendencies of their firms and sectors in Brazil and Mexico (e.g. INT_18; INT_27; INT_25; INT_26; INT_23; INT_33; INT_30). One exception was INT_30 in Mexico, who also mentioned Monterrey as an important domestic hub for consulting after Mexico City. While technology has enabled the development of back and mid office centres, in Latin America's case these are often located within the metropolitan areas of primate financial centres (INT_18; INT_11; INT_34; INT_28).

While FinTech development is still in a nascent phase in Latin America, it seems that so far, the Latin American FinTech sector has followed the tracks of incumbent institutions, predominantly locating in the leading financial centres of the region. In CCAF's global ranking of the top-30 FinTech centres, São Paulo, Buenos Aires and Mexico City are the only Latin American cities mentioned in the report (CCAF, 2018b). São Paulo, in particular, is identified as the leader of the region. It is ranked 27th most important FinTech hub across the world, but also 12th in terms of FinTech usage (measured as % of total population). Buenos Aires and Mexico City are flagged as emerging FinTech hubs. Based on a different methodology and a wider coverage of cities, Findexable (2020) puts São Paulo 5th in the world, Mexico City 21st and Buenos Aires 42nd. In Brazil, a few other cities are mentioned as smaller FinTech hubs, most importantly Rio de Janeiro and Belo Horizonte (57th and 69th in the world respectively). In Argentina only Mendoza is mentioned as a smaller FinTech hub (135th in the world), whereas no other city is mentioned in Mexico.

There are various reasons that explain FinTechs' tendency to predominantly locate in the leading financial centres of Brazil, Mexico, and Argentina. To begin with, none of the three countries has any major contender from the side of the technology sector. In the US, for example, San Francisco Bay Area has risen to prominence as a FinTech hub due to its pre-existing status as a leading high-tech centre (top FinTech hub in the world according to Findexable, 2020, and second after Beijing according to CCAF, 2018b). Similarly, in the UK, Cambridge has created an inviting space for FinTechs thanks to the pre-existence of a strong information and communications technology (ICT) cluster (Cambridge is ranked 32nd best FinTech hub in Europe, according to Findexable, 2020). In line with the above observations, recent econometric studies have highlighted the importance of ICT industry clusters for the creation and attraction of FinTechs (Laidroo and Avarmaa, 2019; Cojoianu et al., 2020).

A further explanation for FinTechs' location preferences is their strategy to collaborate with incumbent banks, the headquarters of which are located predominantly in São Paulo, Buenos Aires and Mexico City. The significance of collaboration was repeatedly mentioned by our interview partners (INT_27; INT_15; INT_23; INT_17; INT_1; INT_34), who also identified it as a means for incumbent banks to internalise new technologies and tackle FinTechs' threat to intensify competition (Hendrikse et al., 2018 make a similar observation in the European context). Typically, the partnership between FinTechs and incumbent banks takes the form of accelerators and incubators. In São Paulo, for example, Itaú has established an incubator called Cubo; in Mexico City, Citibank and BBVA have also set their own spaces to a similar end (Findexable, 2020). This usually involves provision of financial technology solutions for bank operations, in exchange for the supply of infrastructure and/or the injection of equity.

Third, as confirmed by several of our interview partners, FinTechs' customers are often clustered in big cities. In Brazil, for example, interviewee INT_19, from a leading payment and lending platform, told us that 60% of their customers were based in São Paulo. Interview partner INT_20 also confirmed the clustering of their customers in São Paulo metropolis and the state. Similarly, INT_5 from a lending FinTech in Argentina told us that the map of their customers largely follows the population density of the country, with a big part concentrated in Buenos Aires. It would only make sense to expect FinTechs to be incentivised to locate close to their customers, for instance in order to make themselves more visible and understand better their customers' needs and preferences. This is even more so considering that urban customers, including millennials, often come from middle- and high-income tiers of society.

Besides customers, big cities offer the types of skilled labour required

[8] The report's classification Includes Europe and Central Asia, Sub-Saharan Africa, and Other, as the regions outside Latin America and the Caribbean.

[9] This figure, however, might be partly biased due to the inclusion of the Caribbean in the reported aggregates.

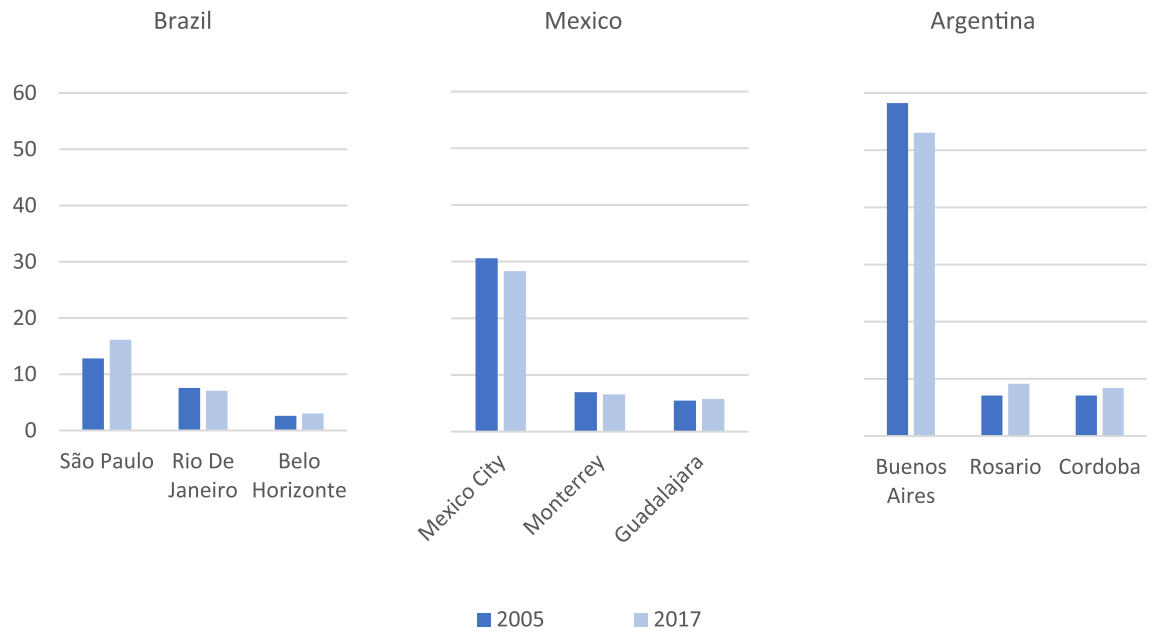

Fig. 3. Changes in concentration of financial and advanced business services (FABS) employment in Brazil, Mexico and Argentina (unit: % of total FABS employment in each country; source: Oxford Economics).

by FinTechs, particularly people with expertise in banking and technology. Our interview with a leading FinTech in Brazil (INT_20) confirmed that their decision to locate in São Paulo was partly driven by the fact that the city offers a great pool of high-quality engineers, thanks to proximity to USP (University of São Paulo), the country's leading university, and other factors. In a similar fashion, a lending FinTech in Argentina (INT_5) confirmed the abundance of professionals with banking knowledge in Buenos Aires, contrary to other cities in the country. Availability of skilled labour, particularly from the technology sector, is also identified by Findexable (2020) and CCAF (2018b) as a key determinant for the success of cities becoming FinTech hubs.

Another advantage of big cities, and particularly leading financial centres, is that FinTech founders often come from established banks and advanced business services, hence they are likely to be already based in those cities. In Brazil, for example, the founder of one of a FinTech we interviewed (INT_19) came from a major global consulting firm. In Mexico, an interview partner from a banking association told us that most FinTechs (s)he knows in the country have been established by former employees of big banks (INT_29).

As with incumbent banks, FinTechs also seem to value being close to regulatory agencies, which in most cases are to be found in leading financial centres (with the partial exception of Brazil where the regulatory and political capital is in Brasília - though the central bank and the securities and exchange commission of the country also have branches in São Paulo). In Argentina, for example, the country's main FinTech lobbying organisation, Cámara FinTech (FinTech Chamber), is located in Buenos Aires, about 10 min walking distance from the premises of the central bank.[10] FinTech interviewee INT_9 acknowledged that engagement with regulators "requires a lot of lobbying and a tonne of discussions". A central banker (INT_3) from the country confirmed that the establishment of a Financial Innovation Round Table was part of the Bank's approach for bringing together people from banks, FinTechs and regulators.[11] Another interview partner from an incumbent bank (INT_13) said that relevant meetings are usually scheduled on a monthly basis.

Lastly, as with other firms, locating in leading financial centres allows FinTechs to optimise their connectivity with the rest of the world. According to the most recent evidence provided by the International Air Transport Association (IATA, 2020), São Paulo, Mexico City and Buenos Aires were the most internationally connected cities in Latin America (in that order) for 2019.[12] Fourth was Cancun, a major tourist destination in Mexico. Rio de Janeiro was ninth, with a connectivity score about a third of São Paulo's. Besides Buenos Aires, no other Argentinian city is mentioned in the report's top-20. Importantly, IATA's methodology for calculating its international connectivity index includes a weighting for economic importance of destinations, an aspect relevant to the topic in hand.

High international connectivity is essential for allowing FinTech entrepreneurs to travel to global FinTech fora and other events; for facilitating access to foreign capital; and third, for making it easier to hire professionals from abroad. With regards to access to foreign capital, international connectivity can support FinTechs by maximising opportunities for networking with foreign investors (related to the first point above); and by making it easier for foreign investor representatives to visit them, for evaluating business plans, monitoring performance, and so on. Indicative of the dependence of Latin American FinTechs on foreign financing is that all eight of the FinTechs we interviewed had raised funds from US venture capital firms and/or incumbent banks at least once. Regarding the hiring of foreign professionals, it would make sense to expect well-connected cities to be attractive destinations for work to people from abroad, e.g. due to the convenience for traveling, the diverse character of these cities, and amenities they can offer. In our interviews with FinTech representatives, INT_5, INT_20 and INT_19 mentioned global competition for hiring high-quality engineers, while the latter two also described their demand for foreign professionals to fill in senior positions. INT_20 told us that 20% of their workforce comes from outside Brazil, from about twenty different nationalities. (S)he also mentioned that the main language in their company is English.

[10] For Cámara FinTech https://camarafintech.com.ar/ (in Spanish); for the premises of the Argentinian Central Bank see http://www.bcra.gob.ar/Institucional/Patrimonio_Arquitectonico_i.asp

[11] Also see http://www.bcra.gov.ar/noticias/Mesa-innovacion-financiera.asp (in Spanish).

[12] Of course, available data does not reflect yet the implications of the covid-19 pandemic.

6. Limited cross-border integration

While São Paulo, Mexico City and Buenos Aires are the undisputed financial centres within their countries, their importance across borders is more limited. According to the Global Financial Centre Index (GFCI) of the Z/YEN institute, Mexico City is only ranked 70th most important financial centre in the world. São Paulo is ranked 80th, while Buenos Aires is placed in the 94th position (Morris et al., 2020). In line with this evidence, the majority of our interview partners in the three cities were also sceptical when asked whether they would identify their own city as regional or international financial centre, and whether their city has come closer to such status over the recent decades.

History and geography matter for explaining these findings. First, Latin America in general has a long record of political and economic instability, with frequent episodes of economic crises. For Argentina, the IMF records four banking and five currency crises since the 1970 s, putting the country in one of the top positions in the world's crisis rankings (Laeven and Valencia, 2018). Brazil and Mexico register two banking crises each (e.g. Mexico's Tequila crisis in 1994), and plenty of currency crises (six in Brazil and three in Mexico). All three countries have also experienced a sovereign debt crisis, with Argentina's 2014 crisis being a recent example.

To cope with economic instability, the three countries have long adopted a relatively defensive stance towards global finance. In a recent study examining international capital controls across a hundred of countries (Fernández et al., 2016), Argentina was ranked as the fifth most regulated economy for 2016. Brazil and Mexico were also high in this ranking, 33rd and 35th respectively. Unavoidably, the relatively high levels of financial regulation also make these countries less inviting for foreign investors, and thus limit the potential of their financial centres to function as important hubs for cross-border financial activity.

Geographically, financial development in Latin America has also been long influenced and overshadowed by the US. Together with the supreme status of the USD in the world economy, this explains why Latin American countries tend to be more connected to the US than to one another. Indicative here is that none of our interviewees from global firms mentioned regional Latin American headquarters. On the contrary, many of our interview partners, not just from US, but also from non-US financial institutions, confirmed that key decisions concerning their operations in Latin America are routinely taken from the headquarters in New York. In São Paulo, interview partner INT_21 from a Swiss bank, and INT_26 from a Japanese investment bank were two such examples. Others related to US banks, were INT_24 and INT_32, from São Paulo and Mexico City. Interview partner INT_18 pointed out that major Brazilian financial institutions are usually listed in the US, or in Europe, rather than in domestic or regional stock markets. Brazilian interviewees INT_26 and INT_17 mentioned linguistic difference as an additional barrier for regional integration between Brazil and the Spanish speaking Latin America, although we should mention that the low level of integration within the latter suggests that language is not a key factor in this regard.

In further confirmation of the influence of the US, interviewee INT_12, from Buenos Aires, was quick to point at New York, when asked which in his/her opinion is Latin America's leading financial centre. Furthermore, interviewees INT_15, INT_22, INT_12 and INT_28 suggested that Mexico's financial system is so blended with the US, that is effectively detached from the rest of Latin America. As expressed by INT_28:

> "…Latin America is not a continent in the economic sense, a country like Mexico, our economic cycles are completely linked to the US […] the only thing that we have in common with Argentina is that we more or less speak the same language, but that's basically it […] there isn't really the idea of Latin America anymore, Mexico is the poor cousin of the US while South America is a completely different environment…."

Against this background, it is unsurprising to find FinTech firms oriented predominantly towards their domestic markets. Finnovista (2019) reports that only 20% of the FinTechs operating in Mexico in 2018 had established presence outside Mexico, mostly in other Latin America countries and the US. For the same year and with respect to the broader region, Cantú and Ulloa (2020) find that 60% of Latin American payment and lending FinTechs were domestic, providing more than 80% of total lending volume in their countries. In Argentina and Brazil, FinTech lending was almost exclusively provided by domestic FinTechs. In Mexico the corresponding share was close to 80%, the same as the region's average. On the other hand, 70% of FinTech lending in Peru was provided by foreign firms. Overall, throughout the continent, only 30% of FinTechs were reported to have expanded cross-border.

Although not necessarily representative of the broader picture, four of the eight FinTechs we interviewed had established cross-border operations (INT_20; INT_9; INT_8; INT_7). In the case of an Argentinian FinTech (INT_8), our interview partner mentioned connectivity with players in other countries as a key factor for expanding their business. In their decision to expand to the Dominican Republic, for example, they were influenced by one of their main investors already being active in the country. We also found that FinTechs interested in expanding abroad often prefer countries with less developed FinTech ecosystems (INT_8; INT_31). This might help explain the abovementioned high penetration of foreign FinTechs in Peru.

There are two additional factors relevant for understanding FinTechs' limited cross-border integration to date. One is the fact that most of Latin American FinTechs are still very small in size, hence not well connected with foreign institutions, and without access to the equity required for expanding abroad. Put counter-factually, it is not a coincidence that two FinTechs operating cross-border, Nubank from Brazil, and MercadoPago from Argentina, were already the biggest FinTechs in their countries, before they expanded abroad.

Second, FinTech regulation across Latin American countries is often incompatible (Cantú and Ulloa, 2020). As indicated in WB and CCAF (2019) regulators tend to learn how to regulate the FinTech sector from countries they identify as FinTech "leaders". According to the survey results of this report, the UK is the most frequent point of reference, followed by the US and Singapore. Within Latin America, only 34% of the regulators that responded to the survey said their point of reference is intra-regional. For those who did, their prevalent point of reference was Mexico. Related to that, Latin American regulators were those found to rely the most on global institutions, such as the World Bank, for regulatory guidance and support.

In practice, regulatory incompatibility means that the same FinTech firm could hold a different legal status in different countries, with different requirements and costs for registration and operation. While in Mexico FinTech firms can choose to be licensed in a way that allows them to keep deposits on their own balance sheets, in Argentina they are required to store 100% of clients' deposits in an account of an incumbent bank, and obliged to disclose on their websites that "the funds deposited in payment accounts do not constitute deposits in a regulated financial institution and do not have the guarantees of deposits in financial institution".[13] At the same time, as pointed out by interview partner INT_20, FinTechs in Brazil cannot keep deposits in their books, but neither they are required to place them in the account of an incumbent bank. Instead, they can either place them at the central bank, or use them for buying Brazilian government bonds.

[13] In Mexico FinTechs are allowed to keep deposits if registered as Sofipos (acronym for 'Sociedades Financieras Populares'), a rough equivalent of a regional bank with a specific purpose, such as financial inclusion (CNBV, 2020). For an example of an Argentinian FinTech website with a statement as the one quoted here see the website of Ualá, a prominent micro-lending FinTech in Argentina, https://www.uala.com.ar/legales (in Spanish).

7. Conclusions

To address the paucity of research on the financial geography of Latin America and contribute to the emerging geographical literature on FinTech, we have used quantitative financial data and qualitative insights from expert interviews, to explore the relationships between FinTech development and financial geography of the region, with focus on Brazil, Mexico and Argentina. Our investigation has led to a number of findings. First, FinTech in Latin America has thus far played out on the margins of the global FinTech industry and the margins of its financial systems, with FinTech activity estimated to represent only 1% of the global markets. As previous research suggested, Latin America is a late starter in FinTech (Bassens, 2020; IMF, 2019; Zalan and Toufaily, 2017). Nevertheless, the sector is growing fast driven by high costs of financial intermediation, and financial regulators' positive predisposition towards FinTech, in the name of enhancing financial inclusion and financial sector competition, even though the actual impacts of FinTech on those two areas of finance to date has been minimal.

Second, FinTech has not challenged but contributed to an already high level of concentration in the geographies of financial services in Latin America. This is driven by the proximity of FinTech firms to incumbent banks, sources of capital and skilled labour, and reinforced by the fact that leading financial centres in Latin America are also the main centres of technology industry. The relatively large share of services to businesses (as opposed to individuals) in the revenue mix of FinTech firms, further contributes to their concentration in leading business centres, although given the high population primacy in the region, large numbers of wealthy individuals as well as young and economically dynamic customers can also be found in the very same cities.

Third, FinTech has not yet had a significant impact on the low level of regional financial integration in Latin America. The latter is still determined by political, economic, and financial instability, combined with a lack of compatibility in financial regulation. Global financial firms hardly see Latin America as a region. Given the continued gravitational pull towards the US economy (if less often its politics) and location in the same time zone, global firms typically run domestic operations in the region or coordinate them from regional headquarters in the USA. Having said that, the immaturity of the sector means it is still likely that more FinTech activities follow the footsteps of Nubank and Mercado Libre (with its digital part Mercado Pago) and expand abroad.

There are similarities and differences between FinTech sectors in Argentina, Brazil and Mexico. These are related to the spatial structure of the financial sector in these countries, their political-economic geographies, and histories. Argentina, as the least financially developed, least integrated, and most geographically unipolar economy, has a less developed FinTech industry than Brazil and Mexico. São Paulo, hosting big banks active in FinTech, Nubank as the biggest FinTech firm in Latin America, and a myriad of smaller FinTechs, has been emerging as the leading centre of FinTech in the region, but with still limited influence abroad. Mexico, in turn, has been pioneering FinTech regulation.

Our results point to the limits of FinTech and contradictions at the heart of its development that are significant beyond the Latin American context. There is a gulf between the expectations that FinTech will revolutionise access to finance and improve financial competition and the reality of FinTech still focusing on the relatively wealthy urban dwellers, who already have bank accounts, and the role of incumbent banks in the process. Such expectations, however poorly grounded in reality, drive FinTech friendly regulation. Meanwhile, there is also a gulf between the expectations that FinTech will decentralise finance in spatial terms, and the reality of FinTech enhancing the power of established financial centres. Financial geography has a crucial role to play by investigating these contradictions, and reminding everyone, including policy-makers that financial re-regulation and technology have defied expectations before, driving institutional and spatial concentration instead of the hoped-for competition and decentralisation (see e.g. Haberly et al., 2019; Christophers, 2018; Tomaskovic-Devey and Lin, 2011). Today these contradictions with regard to FinTech seem to be particularly stark in Latin America, home to some of the optimistic expectations and the most meagre outcomes in the world.

Our paper, exploratory in nature, offers directions for future research. While we have touched on the relationship between FinTech and the state, by discussing aspects of financial regulation relevant to financial centre development, there are questions of state use of digital infrastructure, including FinTech as tools for development and control, which should be examined in the Latin American context. Future research could also explore more analytically the impacts of the COVID-19 pandemic upon Latin American FinTech. FinTechs, particularly small and those not yet fully operational and with little capital, have struggled since March 2020, while at the same time, the demand for online financial services has increased (see also Wójcik and Ioannou, 2020). It remains an open question to see how these (also contradictory) dynamics will play out in the medium to long run. Finally, there is scope for a more political-economy-focused analysis of FinTech. One way to interpret FinTech in Latin America is as another (mainly) US technology that makes other countries embrace market (read FinTech) friendly policies, favouring US investors, in the hope (or under the guise) of positive outcomes for society.

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CRediT authorship contribution statement

Stefanos Ioannou: Methodology, Investigation, Resources, Data curation, Visualization. **Dariusz Wójcik:** Conceptualization, Methodology, Investigation, Resources, Supervision, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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None.

Appendix. List of interviews

Interview Code	Country	Sector	Position	Date
INT_1	Argentina	Academia	Director of FinTech programme	17/03/2020
INT_2	Argentina	Central Bank	Board Member	27/03/2020
INT_3	Argentina	Central Bank	Financial Innovation Manager (former)	26/03/2020

(*continued on next page*)

(*continued*)

Interview Code	Country	Sector	Position	Date
INT_4	Argentina	Consulting	Leading Partner	20/03/2020
INT_5	Argentina	FinTech	Chief Executive Officer	20/03/2020
INT_6	Argentina	FinTech	Founder	27/03/2020
INT_7	Argentina	FinTech	Chief Executive Officer	03/04/2020
INT_8	Argentina	FinTech	Chief Executive Officer	18/03/2020
INT_9	Argentina	FinTech	Chief Executive Officer & Co-founder	25/03/2020
INT_10	Argentina	Law Firm	Senior Partner	16/03/2020
INT_11	Argentina	Law Firm	Partner	17/03/2020
INT_12	Argentina	Law Firm	Partner	17/03/2020
INT_13	Argentina	International Bank	Chief Risk Officer	23/03/2020
INT_14	Brazil	Bank Lobbying Organisation	Board Member	20/05/2019
INT_15	Brazil	Bank Lobbying Organisation	Chief Economist	22/05/2019
INT_16	Brazil	Central Bank	Executive (Banking Supervision Department)	23/05/2019
INT_17	Brazil	Consulting	Director	24/05/2019
INT_18	Brazil	Consulting	Leading Partner	20/05/2019
INT_19	Brazil	FinTech	Founder & Chief Executive Officer	24/05/2019
INT_20	Brazil	FinTech	Public Policy Director	20/05/2019
INT_21	Brazil	Intenational Bank	Credit Risk Manager	24/05/2019
INT_22	Brazil	Intenational bank	Head of Debt Capital Markets	23/05/2019
INT_23	Brazil	International Bank	Treasury Director	22/05/2019
INT_24	Brazil	Investment Banking	Vice-President	21/05/2019
INT_25	Brazil	Investment Banking	Partner	21/05/2019
INT_26	Brazil	Investment Banking	Managing Director	22/05/2019
INT_27	Brazil	Law Firm	Partner	21/05/2019
INT_28	Mexico	Asset Management	Chief Economist	24/03/2020
INT_29	Mexico	Bank Lobbying Organisation	Coordinator of FinTech Group	23/03/2020
INT_30	Mexico	Consulting	Leading Partner	26/03/2020
INT_31	Mexico	FinTech	Chief Operating Officer	25/03/2020
INT_32	Mexico	Investment Banking	Head of Operations	25/03/2020
INT_33	Mexico	Investment Banking	Chief Economist	24/03/2020
INT_34	Mexico	Stock Market	Executive (Investor Relations)	24/03/2020

References

Andresen, S., 2017. Regulatory and supervisory issues from FinTech. Remarks at the Cambridge Centre for Alternative Finance conference on Navigating the Contours of Alternative Finance, 29 June 2017, Cambridge. Available at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/annual-conference/#item-4 (accessed 24 February 2021).

Aroca, P., Atienza, M., 2016. Spatial concentration in Latin America and the role of institutions. J. Reg. Res. 36, 233–253.

Bassens, D., 2020. Emerging geographies of FinTech: A comparative study of organizational, institutional, and strategic financial center change. COSMOPOLIS Working Paper.

Bhagat, A., Roderick, L., 2020. Banking on refugees: Racialized expropriation in the fintech era. Environ. Plan. A: Econ. Space 52 (8), 1498–1515. https://doi.org/10.1177/0308518X20904070.

Campos, G., Borba, C., 1997. Uruguay's offshore trilogy. Int. Tax Rev. 8 (2), 37–42.

Cantú, C., Ulloa, B., 2020. The Dawn of Fintech in Latin America: Landscape, Prospects and Challenges. Bank for International Settlements. BIS Papers No. 112. Available at https://www.bis.org/publ/bppdf/bispap112.pdf (accessed 24 February 2021).

Carney, M. 2017. The promise of FinTech – something new under the sun? Speech at the Deutsche Bundesbank G20 conference on Digitising finance, financial inclusion and financial literacy, 5 January, Wiesbaden.

Cassis, Y., 2006. Capitals of Capital. A History of International Financial Centres. Cambridge University Press, Cambridge, pp. 1780–2005.

CCAF, 2018a. Reaching New Heights. The 3rd Americas Alternative Finance Industry Report. Cambridge Centre for Alternative Finance. Available at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/reaching-new-heights/#.X7_WZi-cZQI (accessed 24 February 2021).

CCAF, 2018b. The future of finance is emerging: new hubs, new landscapes. Global Fintech Hub Report. Available at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/2018-global-fintech-hub-report/#.XsZRFRNKjEY (accessed 24 February 2021).

CCAF, 2020. The Global Alternative Finance Market Benchmarking Report. Cambridge Centre for Alternative Finance. Available at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/the-global-alternative-finance-market-benchmarking-report/ (accessed 24 February 2021).

Chen, M., Wu, Q., Yang, B., 2019. How valuable is FinTech innovation? Rev. Financ. Stud. 32 (5), 2062–2106. https://doi.org/10.1093/rfs/hhy130.

Christophers, B., 2018. Financialisation as monopoly profit: the case of US banking. Antipode 50 (4), 864–890. https://doi.org/10.1111/anti.2018.50.issue-410.1111/anti.12383.

Clark, G.L., 1998. Stylized facts and close dialogue: methodology in economic geography. Ann. Assoc. Am. Geogr. 88 (1), 73–87. https://doi.org/10.1111/1467-8306.00085.

CNBV, 2020. Sociedades Financieras Populares. Comisión Nacional Bancaria y de Valores. (online resource in Spanish). Available at: https://www.cnbv.gob.mx/SECTORES-SUPERVISADOS/SECTOR-POPULAR/Preguntas-Frecuentes/Paginas/Sociedades-Financieras-Populares.aspx (accessed 24 February 2021).

Cojoianu, T.F., Clark, G.L., Hoepner, A.G.F., Pažitka, V., Wójcik, D., 2020. Fin vs. Tech: How does new knowledge creation and lack of trust in financial services incumbents influence the emergence and financing of fintech start-ups? Small. Bus. Econ. https://doi.org/10.1007/s11187-020-00367-3 (online first).

Contel, F., Wójcik, D., 2019. Brazil's financial centres in the twenty-first century: hierarchy, specialization and concentration. Profess. Geogr. 71 (4), 681–691. https://doi.org/10.1080/00330124.2019.1578980.

Drasch, B.J., Schweizer, A., Urbach, N., 2018. Integrating the 'troublemakers': a taxonomy for cooperation between banks and fintechs. J. Econ. Bus. 100, 26–42. https://doi.org/10.1016/j.jeconbus.2018.04.002.

Fernández, A., Klein, M., Rebucci, A., Schindler, M., Uribe, M., 2016. Capital control measures: a new dataset. IMF Econ. Rev. 64 (3), 548–574.

Findexable, 2020. The Global Fintech Index 2020. Available at https://findexable.com/ (accessed 24 February 2021).

Finnovista, 2019. The Mexican Fintech ecosystem recovers the leading position in Latin America and approaches nearly 400 Fintech startups. Online article, 23 May. Available at https://www.finnovista.com/en/radar/el-ecosistema-fintech-mexicano-recupera-el-liderazgo-en-america-latina-y-se-acerca-a-la-barrera-de-las-400-startups/ (accessed 24 February 2021).

Grabher, G., König, J., 2020. Disruption, embedded. A Polanyian framing of the platform economy. Sociologica 14 (1), 95–118. https://doi.org/10.6092/issn.1971-8853/10443.

Grandi, S., Sellar, C., Jafri, J., 2019. Geofinance Between Political and Financial Geographies: A Focus on the Semi-Periphery of the Global Financial System. Edward Elgar, London.

Gruin, J., Knaack, P., 2020. Not just another shadow bank: Chinese authoritarian capitalism and the 'developmental' promise of digital financial innovation. New Political Econ. 25 (3), 370–387. https://doi.org/10.1080/13563467.2018.1562437.

Haberly, D., Wójcik, D., 2014. Regional blocks and imperial legacies: mapping the global offshore FDI network. Econ. Geogr. 91 (3), 251–280. https://doi.org/10.1111/ecge.2015.91.issue-310.1111/ecge.12078.

Haberly, D., MacDonald-Korth, D., Urban, M., Wójcik, D., 2019. Asset management as a digital platform industry: a global financial network perspective. Geoforum 106, 167–181. https://doi.org/10.1016/j.geoforum.2019.08.009.

Hanson, G.H., 1997. Increasing returns, trade and the regional structure of wages. Econ. J. 107 (440), 113–133. https://doi.org/10.1111/1468-0297.00145.

Hendrikse, R., Bassens, D., van Meeteren, M., 2018. The Appleization of finance: charting incumbent finance's embrace of FinTech. Finance Soc. 4 (2), 1–22.

Hendrikse, R., van Meeteren, M., Bassens, D., 2020. Strategic coupling between finance, technology and the state: cultivating a Fintech ecosystem for incumbent finance.

Environ. Plan. A: Econ. Space 52 (8), 1516–1538. https://doi.org/10.1177/0308518X19887967.
IMF, 2018. International Financial Statistics. Available at https://data.imf.org/?sk=4C514D48-B6BA-49ED-8AB9-52B0C1A0179B (accessed 24 February 2021).
IMF, 2019. Fintech: the experience so far. IMF Policy Paper. Policy Paper No. 19/024. June 2019. Available at https://www.imf.org/en/Publications/Policy-Papers/Issues/2019/06/27/Fintech-The-Experience-So-Far-47056 (accessed 24 February 2021).
International Air Transport Association, 2020. Air Connectivity. Measuring the Connections that Drive Economic Growth. Available at https://www.iata.org/en/iata-repository/publications/economic-reports/air-connectivity-measuring-the-connections-that-drive-economic-growth/ (accessed 24 February 2021).
Ioannou, S., Wójcik, D., 2021. Finance, globalization and urban primacy. Econ. Geogr. 97 (1), 34–65. https://doi.org/10.1080/00130095.2020.1861935.
Jick, T., 1979. Mixing qualitative and quantitative methods: triangulation in action. Adm. Sci. Q. 24 (4), 602–611. https://doi.org/10.2307/2392366.
Klagge, B., Martin, R., 2005. Decentralized versus centralized financial systems: Is there a case for local capital markets? J. Econ. Geogr. 5 (4), 387–421. https://doi.org/10.1093/jeg/lbh071.
Knight, E., Wójcik, D., 2020. Fintech, economy, and space: introduction to the special issue. Environ. Plan. A: Econ. Space 52 (8), 1490–1497. https://doi.org/10.1177/0308518X20946334.
Laeven, L., Valencia, F., 2018. Systemic Banking Crises Revisited. IMF Working Paper. Working Paper No. WP/18/206. Available at https://www.imf.org/en/Publications/WP/Issues/2018/09/14/Systemic-Banking-Crises-Revisited-46232 (accessed 24 February 2021).
Lai, K.P.Y., 2020. FinTech: The dis/re-intermediation of finance? In: Knox-Hayes, J., Wójcik, D. (Eds.), The Routledge Handbook of Financial Geography. New York: Routledge, pp. 440–458.
Lai, K.P.Y., Samers, M., 2020. Towards an economic geography of FinTech. Prog. Hum. Geogr. 45 (4), 720–739.
Lai, K.P.Y., Pan, F., Sokol, M., Wójcik, D., 2019. New financial geographies of Asia. Reg. Stud. 54 (2), 143–148. https://doi.org/10.1080/00343404.2019.1689549.
Laidroo, L., Avarmaa, M., 2019. The role of location in FinTech formation. Entrepreneurship Reg. Develop. 32 (7–8), 555–572. https://doi.org/10.1080/08985626.2019.1675777.
Langley, P., Leyshon, A., 2017. Capitalizing on the crowd: the monetary and financial ecologies of crowdfunding. Environ. Plan. A: Econ. Space 49 (5), 1019–1039.
Langley, P., Leyshon, A., 2020. The platform political economy of FinTech: Reintermediation, consolidation and capitalization (online first). New Polit. Econ.. https://doi.org/10.1080/13563467.2020.1766432.
Longhurst, R., 2010. Semi-structured interviews and focus groups. In: Clifford, N., French, S., Valentine, G. (Eds.), Key Methods in Geography. SAGE, London.
Meade, T.A., 2016. A History of Modern Latin America. John Wiley & Sons, Chichester.
Morris, H., Mainelli, M., Wardle, M., 2020. The Global Financial Centres Index 28. September 2020. Financial Centre Futures, Long Finance Institute. Available at https://www.longfinance.net/media/documents/GFCI_28_Full_Report_2020.09.25_v1.1.pdf (accessed 24 February 2021).
Parnreiter, C., 2013. Mexico City: The Making of a Global City? In: Jacobs, A.J. (Ed.), The Worlds Cities. Contrasting Regional, National, and Global Perspectives. Routledge, New York, pp. 50–61.
Pinho de Mello, J.M., 2020. Open Banking as a strategy to foster competition and consumer benefits. Banco Central do Brasil. Available at https://www.bcb.gov.br/content/about/presentationstexts/BCB_Open_Banking_as_a_strategy_to_foster_competition_and_consumer_benefits_June_2020.pdf (accessed 24 February 2021).
Rau, P.R., 2019. Law, trust, and the development of crowdfunding. SSRN Working Paper. Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2989056 (accessed 24 February 2021).
Sangwan, V., Harshita, H., Prakash, P., Singh, S., 2019. Financial technology: a review of extant literature. Stud. Econ. Finance 37 (1), 71–88. https://doi.org/10.1108/SEF-07-2019-0270.
Sassen, A., Portes, A., 1993. Miami: a new global city? Contemp. Sociol. 22 (4), 471–477. https://doi.org/10.2307/2074362.
Taylor, P.J., Derudder, B., 2016. World City Network: A Global Urban Analysis. Routledge, London.
Tomaskovic-Devey, D., Lin, K.-H., 2011. Income dynamics, economic rents, and the financialization of the US economy. Am. Sociol. Rev. 76 (4), 538–559. https://doi.org/10.1177/0003122411414827.
Verdier, D., 2002. Moving Money. Banking and Finance in the Industrialized World. Cambridge University Press, Cambridge, UK.
Wójcik, D., 2021a. Financial geography I: exploring FinTech – maps and concepts (online first). Prog. Hum. Geogr. 45 (3), 566–576. https://doi.org/10.1177/0309132520952865.
Wójcik, D., 2020. Financial geography II: the impacts of FinTech – financial sector and centres, regulation and stability, inclusion and governance (online first). Prog. Hum. Geogr.. https://doi.org/10.1177/0309132520959825.
Wójcik, D., Ioannou, S., 2020. COVID-19 and finance: market developments so far and potential impacts on the financial sector and centres. Tijdschrift Voor Economische En Sociale Geografie 111 (3), 387–400. https://doi.org/10.1111/tesg.v111.310.1111/tesg.12434.
World Bank, 2018. The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. World Bank: Washington, DC. Available at https://openknowledge.worldbank.org/handle/10986/29510 (accessed 24 February 2021).
World Bank, 2019. Financial Development and Structure Dataset. World Bank: Washington, DC. Available at https://www.worldbank.org/en/publication/gfdr/data/financial-structure-database (accessed 24 February 2021).
World Bank and CCAF, 2019. Regulating alternative finance: results from a global regulator survey. Cambridge Centre for Alternative Finance. Available at https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/regulating-alternative-finance (accessed 24 February 2021).
World Bank, 2021. The World Bank Data. https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS (accessed on 11 November 2021).
Zalan, T., 2018. Born global on blockchain. Rev. Int. Bus. Strategy 28 (1), 19–34. https://doi.org/10.1108/RIBS-08-2017-0069.
Zalan, T., Toufaily, E., 2017. The promise of fintech in emerging markets: not as disruptive. Contemp. Econ. 11 (4), 415–430.