Inter-American Development Bank

The Transition to Telework after COVID-19 in Latin America and the Caribbean:

Four Key Findings using LinkedIn Data

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DISCUSSION
PAPER Nº
IDB-DP-00990

February 2023

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TELEWORK

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Four key findings using LinkedIn data[1]

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1. We gratefully acknowledge the support from LinkedIn in making their data available for our research. Data were obtained through the Development Data Partnership (datapartnership.org), a collaboration between international organizations and private sector companies to facilitate the efficient and responsible use of third-party data in international development.

We would also like to thank Mariano Bosch (IADB), David Kaplan (IADB) and Casey Weston (LinkedIn) for their very helpful comments on the manuscript.

The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Inter -American Development Bank, its Board of Directors, or the countries they represent.

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ABSTRACT

The COVID-19 crisis generated a sudden need for businesses to start operating remotely and for employees to work from home. In consequence, the rate of telework increased rapidly in Latin America and the Caribbean as it did all over the world. However, differences on the severity of containment measures by country, access to internet and particularities of each country's labor markets may have played a role in the divergence of trends across countries in the post-pandemic scenario. We use data from LinkedIn in 7 countries of the region between January 2020 and April 2022 to shed some light on how telework evolved in a selection of countries in LAC during and after the COVID-19 pandemic. This note summarizes four findings associated with telework adoption and on the divergences in telework behavior across countries in the post-pandemic period.

FINDING 1. *Countries with more strict government containment measures experienced higher telework rates along 2020*

FINDING 2. *Telework adoption seems unrelated with countries internet network coverage and internet network performance*

FINDING 3. *Telework adoption reflects the dynamics of the labor demand and was driven mostly by the professional services economic sector*

FINDING 4. *It seems evident that telework will not return to its pre-pandemic levels and it is here to stay.*

Telework understood as working from home but connected through information and communication technologies became an alternate workplace arrangement once COVID-19 pandemic stroke worldwide. However, countries and industries were not equally ready to shift to telework and only a segment of the labor market was able to adopt it. This note uses LinkedIn online job postings data to understand the dynamics of telework in seven countries of Latin America and the Caribbean (LAC) region and across economic sectors between January 2020 and April 2022.

Alternative sources of data such as online job postings become more relevant to explore telework trends than traditional ones. This because they allow to observe firms' real intentions and readiness to adopt telework in future hires rather than perception surveys that are not guaranteed to translate into actual hires, or administrative data that provide a less granular post-mortem perspective. As mentioned in Echeverría and Rucci (2022), one of the main benefits of big data analytics of online job vacancies, is the possibility of carrying out a granular, instantaneous, and low-cost analysis of skills demand.

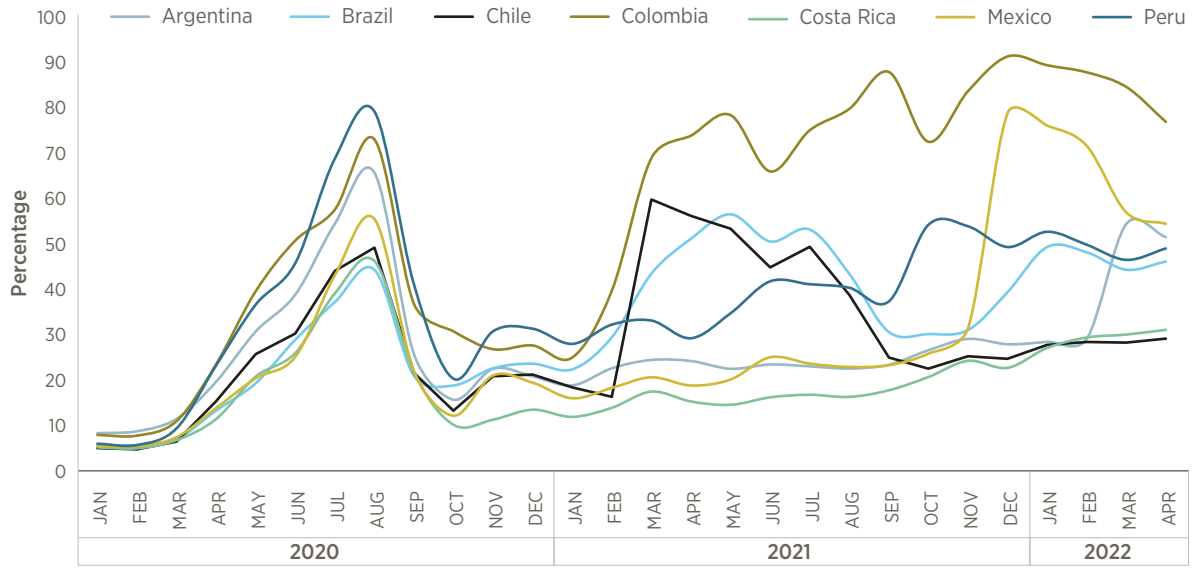
This note is an example of telework trends analysis that can be performed using information from online job vacancies for the LAC region that wouldn't be possible to carry out with traditional data. Integrated administrative data and specific surveys that include telework as a topic are available for developed countries as evidenced in Ker, Montagnier and Spiezia (2021), Jauneau and Vidalenc (2020), Office of National Statistics (2020), Australian Bureau of Statistics (2020), and U.S. Bureau of Statistics (2020). However, for LAC region that kind of information is scarce, and the cross-country analyses becomes a challenge.

LinkedIn data is relevant to understand and to analyze telework because it is oriented towards a subset of the workforce focused on knowledge-intensive sectors, which even before COVID-19 outbreak were already adopting telework agreements especially for high-skilled workers (Milasi et al., 2021); in other words, LinkedIn online job postings data captures and focuses on the most prone population to telework. Telework share (telework from now on) is calculated as the percentage of total online job postings that explicitly mention the possibility of teleworking.

The data used in this article shows that **all countries followed a similar trend in telework adoption in 2020 increasing rapidly the first months after the outbreak, with the highest rates in August and decreasing by the last quarter.** As shown in figure 1, at the beginning of the COVID-19 outbreak the seven countries under analysis presented a similar behavior and then switched to different patterns along the first months of 2021. This note presents four findings gleaned while trying to understand this behavior.

FIGURE 1: TELEWORK ACROSS LAC COUNTRIES AFTER COVID-19 OUTBREAK

The seven countries analyzed in LAC region present a sudden increase of telework at the beginning of COVID-19 outbreak (first semester 2020) and a sudden reduction for the second semester of the year. Telework series by country differ starting in 2021.



Source: Authors using LinkedIn data

GOVERNMENT CONTAINMENT MEASURES AND TELEWORK ADOPTION

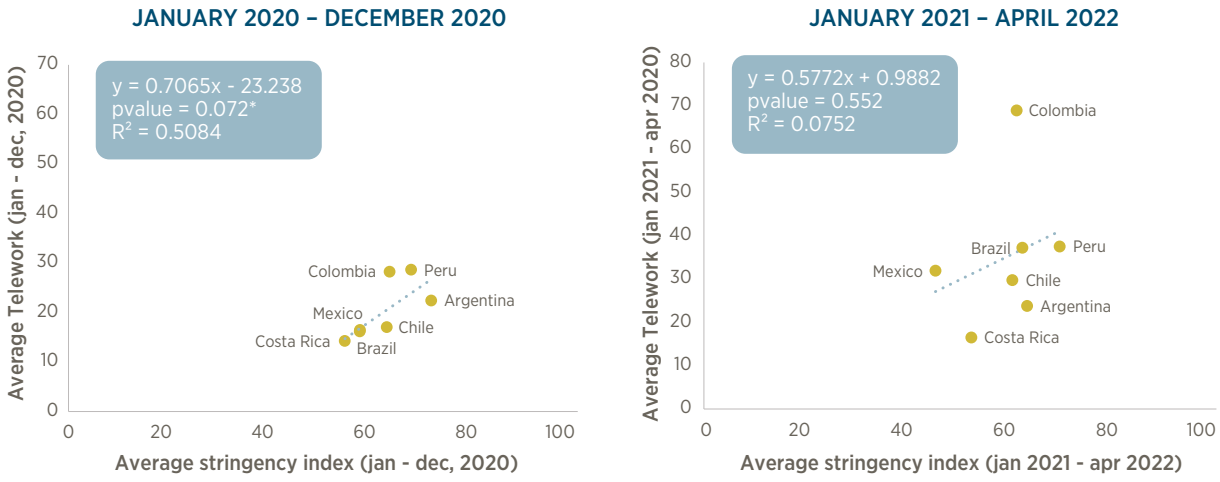
Most of the countries under analysis reacted similarly along 2020, when governments-imposed mobility restrictions and adopted other containment policies as a reaction to the pandemic. Could it be possible that telework behavior was driven by governments' containment measures?

To include the effect of these policies over the dynamics of telework in our analysis, we used the Oxford's stringency index which represents the strictness of "lockdown style" government measures into an index that ranges from 0 to 100. This index is calculated using containment and closure policy indicators, plus an indicator that records public information campaigns (Hale et al, 2021).

A direct relationship between telework and the stringency index it is expected, given that more restrictions (higher stringency index) would force more vacancies to include telework in their job postings. We used two different time frames in our analysis: first, we analyzed the relationship for 2020 (unexpected shock and no COVID-19 vaccine available for most of the countries in the region) when we would anticipate a positive relationship between telework and the stringency index; and second, we analyzed the relationship between January 2021 and April 2022 to understand whether the relationship held after COVID-19 vaccines were available and the containment measures were relaxed.

FIGURE 2: TELEWORK AND COVID-19 CONTAINMENT POLICIES

The relationship between the average telework share and COVID-19 containment policies are statistically significant only for 2020.



Source: Authors using data from LinkedIn and Hale et al (2021)
Note: Statistically significant at 1% ***, 5% **, 10% *

Figure 2 Panel A shows a statistically significant relationship between the average of telework along 2020 (mean between January 2020 - December 2020) and the average stringency index during the same year. On the other hand, Figure 2 Panel B compares the post-pandemic average of the stringency index (between January 2021 and April 2022) versus the average of telework for the same time frame. As can be seen in Panel B, the relationship is not statistically significant with countries like Brazil and Colombia having similar average stringency index (62.16 and 61.03 respectively) and telework shares that differ considerably (37.21 and 68.92 respectively). It is worth mentioning that some countries in the region already had Telework/Remote work legal frameworks established prior to COVID-19 pandemic (e.g. Brazil, Colombia, Costa Rica and Peru), and that many others elaborated and/or improved them along pandemic (e.g. Chile and Mexico); however, the Colombian government promoted the use of ITC - Information and Communication Technology for work and telework/remote work for public and private enterprises to cope with the health emergency earlier than other countries in the region (Presidential Directive 02 of March 2020 and Decree 749 from May of 2020). This strategy could have been one of the reasons Colombia shows a high average telework rate between January 2021 and April 2022 compared to the rest of the countries analyzed.

These results are indicative that the 2020 surge in telework could be related to the strategy that employers had to adopt to keep their businesses running. That is, employers that were forced to deal with particularly stringent government restrictions and with the lack of COVID-19 vaccines availability disproportionately turned to telework as an alternative for new hires. However, starting 2021 telework was no longer associated with governments' containment measures and other factor might have played a role in the switch to different telework patterns across countries. That said, it should be noted that these results are based on very small sample sizes and should be interpreted with caution.

FINDING 1:

Countries with more strict government containment measures were the ones that experienced higher telework rates along 2020.

Containment measures were associated with telework adoption along 2020 in all countries analyzed. Furthermore, those countries with particularly stringent containment measures showed particularly high use of telework in 2020. Nevertheless, in the post-pandemic scenario once governments started to relax the containment measures and COVID-19 vaccines became available, other factors might have played a role in telework adoption by country. For example, COVID-19 vaccines were available for Brazil and Colombia almost at the same time (January and February 2021 respectively) and both countries had similar average stringency indices for the post-pandemic period (2021 and 2022); however, Colombia reports on average almost twice the share of Brazil's telework.

AVAILABILITY AND QUALITY OF INTERNET CONNECTIVITY AND TELEWORK ADOPTION

A possible explanation for the different rates of post-pandemic telework adoption in the region is the availability and quality of internet connectivity in each country. Then, what was the role internet played once containment measures were removed?

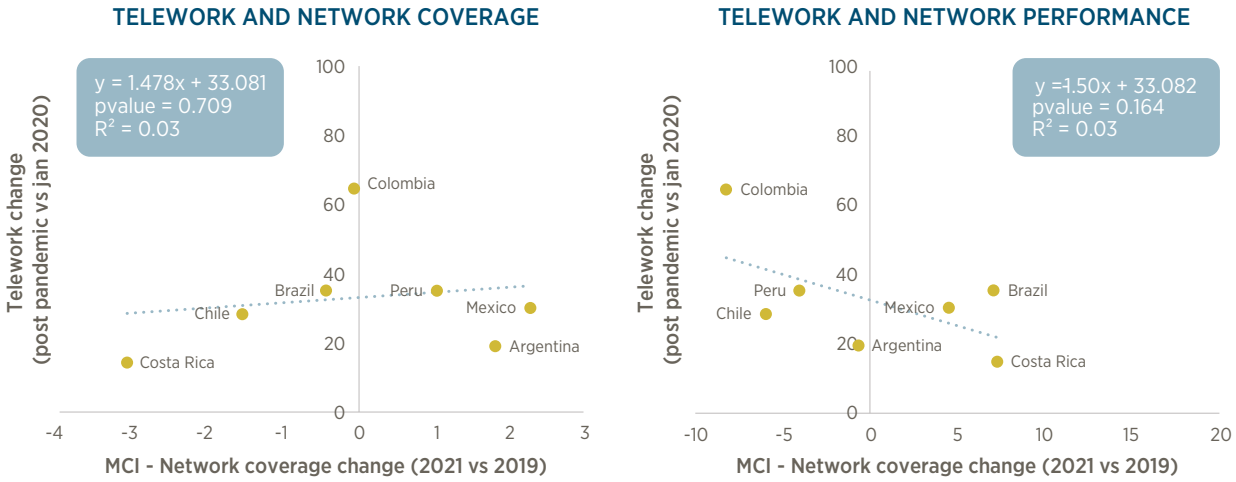
To answer this question, we used network coverage and network performance indicators extracted from GSMA Mobile Connectivity Index (MCI) and compared them with post pandemic changes in telework (average between January 2021 and April 2022 with respect to January 2020). MCI network coverage score is bounded between 0 and 100 and is estimated using the proportion of population with access to 2G, 3G, 4G and 5G networks; as for network performance, it is also bounded between 0 and 100 and is estimated using the speed of mobile uploads and downloads.

The results show a positive but non-statistically significant relationship between changes in network coverage[5] and post-pandemic changes in telework (Figure 3, panel A). The positive direction of this relationship was expected given that an increase in network coverage could ease telework adoption; nevertheless, more detailed data related to network coverage could be used in future work to evaluate this relationship and even to identify the direction of the causality given that an increase in telework could also push internet providers to expand their networks.

5. Network coverage change is estimated as the 2019 vs. 2021 change in the difference between each country's MCI network coverage index and the index average of the countries under analysis. In a similar fashion, network performance change is estimated as the 2019 vs. 2021 change in the difference between each country's network performance index and the index average of the countries under analysis.

FIGURE 3: TELEWORK AND INTERNET CONNECTIVITY

Our analysis shows non-statistically significant relationships between post-pandemic changes in telework (with respect to the beginning of the pandemic - jan2020) and changes in network coverage and performance.



Source: Authors using data from LinkedIn and GSMA (2022)

As for the relationship between telework and network performance (Figure 3, panel B), we found an unexpected negative and non-statistically significant relationship. A potential explanation for this behavior is that a higher demand for internet due to the COVID-19 pandemic (virtual school classes, telework, communication, etc.) put a strain on internet networks affecting their performance. This made some countries network performance indicators (upload and download speed) worsen or remained still such as Colombia or Chile even though telework increased.

It should also be considered that one of the limitations of MCI is that it does not differentiate between urban and rural network coverage and performance; this could affect the relationships observed in figure 3 given that telework job postings are concentrated in urban areas. More detailed data regarding internet network coverage and performance would be useful to understand these relationships better.

FINDING 2:

It is unclear what was the role that internet network coverage and internet network performance played over telework adoption after the containment measures were removed.

We were unable to identify a statistically significant relationship between telework adoption and network coverage or network performance. More data would be needed to test if the apparent positive relationship of telework with network coverage would hold and if network performance is relevant for telework.

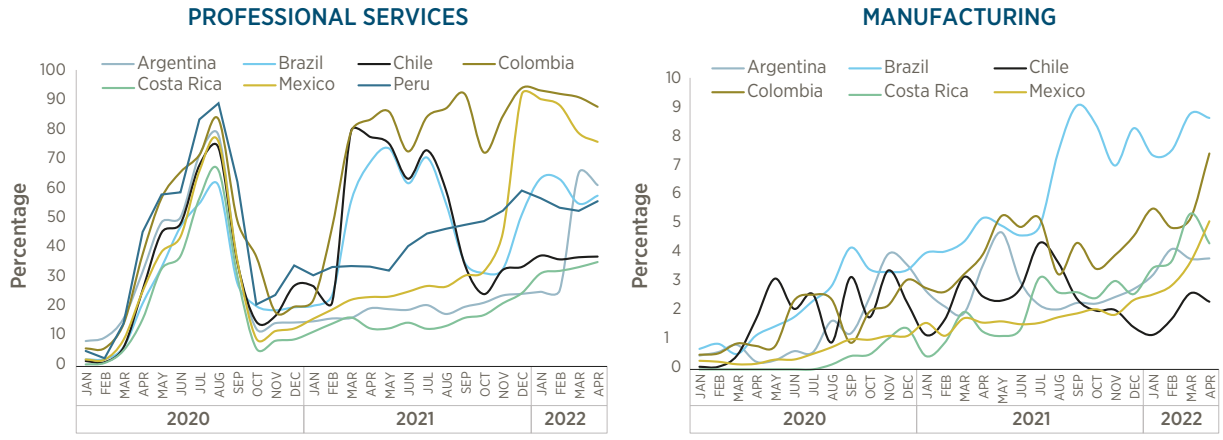
COUNTRY SPECIFIC LABOR MARKET DYNAMICS AND TELEWORK

The adoption of telework along 2020 was mainly related to the containment measures implemented in each country. However, in the post-pandemic period (starting January 2021) this relationship didn't hold. We also observed that internet connectivity didn't show a statistically significant relationship with telework. Then, what other factors could explain telework adoption in the rest of countries analyzed in the post-pandemic scenario?

A potential answer is that telework behavior could be mimicking the unique patterns of the demand side of the labor market in each country. To address this, we compared the individual series of telework by country with available vacancies data between January 2020 and December 2021 extracted from IDB's labor market observatory. Using a CD-test for cross-sectional dependence (Pesaran, 2004 and Pesaran, 2015) to our whole sample we find that vacancies and telework are correlated across countries between January 2020 and December 2021 since the results allowed us to reject the null hypothesis of cross-sectional independence. However, to analyze the divergent pattern observed in the post pandemic period, we explore the behavior by economic sector.

As Rodrik (2016) points out, the region is going through a structural transformation towards deindustrialization. This could favor telework given that the spotlight will be on the services economic sector which has a higher adaptability to telework than other economic sectors. However, not all jobs can be performed in a digital environment, and it is expected that countries that are more advanced in their deindustrialization process (higher proportion of workers in the services economic sector) will have a higher telework share of online job postings than a country with a traditional productive structure.

FIGURE 4: **TELEWORK EVOLUTION BY ECONOMIC SECTOR**



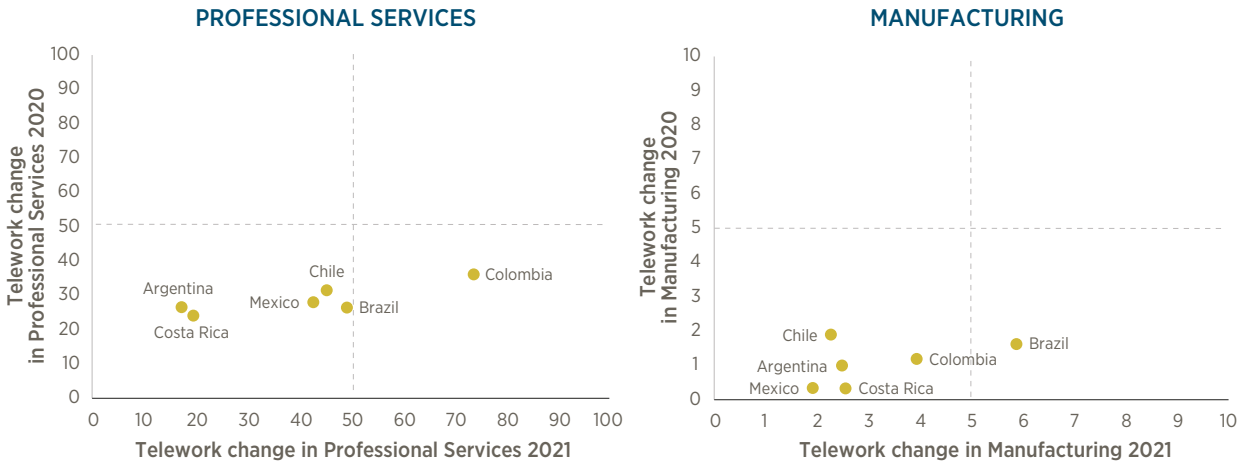
Source: Authors using data from LinkedIn

Figures 4 and 5 confirm that changes in telework were higher in the professional services economic sector when compared with manufacturing. Variations in telework along 2020 (estimated as the change in the average of telework between February 2020 and December 2020 with respect to January 2020) shown in Figure 5 depict that telework in the professional services sector increased almost 3 times telework in the manufacturing sector, although it is important to note that telework also increased in manufacturing. Apparently, the labor market tightness faced during COVID-19 pandemic was reflected to some extent in enterprises adoption of telework even in economic sectors that did not traditionally adopt this labor modality.

Figure 5 also presents an interesting pattern regarding the differences between the two periods. All countries analyzed presented changes in telework with a similar magnitude in 2020. In professional services (panel A) the changes ranged between 24.05 and 36.07 percentage points in 2020 while in the post pandemic period they ranged between 17.30 and 73.78 percent points. Similarly, manufacturing changes (panel B) ranged between 0.33 and 1.89 percentage points in 2020 while in the post pandemic period they ranged between 1.92 and 5.88 percent points. This greater variability in the post pandemic period may be reflecting the intrinsic differences in the labor market in the two different economic sectors.

FIGURE 5: CHANGE IN TELEWORK BY ECONOMIC SECTOR (2020 VS 2021)

Changes in telework were more pronounced in the professional services economic sector. The changes in telework are more notorious for the post-pandemic period.



Source: Authors using data from LinkedIn

FINDING 3:

Telework adoption reflects the dynamics of the labor demand and was driven mostly by the professional services economic sector

There is an overall correlation between telework and vacancies across the countries analyzed between January 2020 and December 2021 meaning that telework reflects to some extent the aggregated demand of the labor market. However, when analyzing LinkedIn data by economic sector, our data also shows that telework behavior is driven mostly by job postings in the professional services economic sector; even though economic sectors such as manufacturing, where telework is not so common, also present a positive trend in most of the countries in the post pandemic period.

A LAST THOUGHT: THE FUTURE OF TELEWORK

Under this new post pandemic context where telework is a feasible alternative adopted in more economic sectors than before COVID-19, an opportunity to implement policies that support workers arises. Workers need skills to adapt to this transition either by acquiring new capacities or by transforming the ones they already have (reskilling); employment offices need new strategies to cope with the new labor market, and vulnerable populations need assiduous attention, so they will not be left behind. Alaimo et al. (2022) show that more than half of surveyed firms in Latin America and the Caribbean that have adopted flexible work arrangements (including telework) have offered digital training to their workers. It is also likely that labor regulations need to be modernized, as labor regulations were the second most-often cited impediment to the adoption of flexible work arrangements (after incompatibility with the production process).

Data related to skills demand becomes crucial to deal with the new normal and to tackle new challenges. This information can be extracted form website platforms in an efficient, granular, and low-cost manner, which makes them a useful tool that should be considered as a feasible alternative for the generation of evidence in the future.

FINDING 4:

It appears that telework will not return to its pre-pandemic levels and it's here to stay.

That is, increased use of telework appears to be a permanent feature of labor markets. In this sense, the appropriate regulation of telework appears to be a permanent need for labor codes, and not simply a temporary measure in response to the containment measures implemented during the pandemic. For example, a simple comparison of telework rates from January 2020 to January 2022 shows that the increase in the use of telework ranged from 19.95 percentage point in Argentina to 80.80 percentage point in Colombia.

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ANNEX 1:
CD-TEST FOR CROSS-SECTIONAL DEPENDENCE

VARIABLE	CD-TEST	P-VALUE	AVERAGE JOINT T	MEAN P	MEANS ABS (P)
VACANCIES	3.904	0.000	23.71	0.17	0.35
SHARE	14.62	0.000	24	0.65	0.65

Notes: Under the null hypothesis of cross-section independence, CD ~ N(0,1). P-values close to zero indicate data are correlated across panel groups.


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