

TELEMIGRATION AND DIGITALLY ENABLED SERVICE EXPORTS

Opportunities for Colombia

Richard Baldwin
Jeison Cárdenas
Cristina Fernández

THINKING
AHEAD ON
SOCIETAL
CHANGE

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SUMMARY

Telemigration is simply working from home when home is abroad. Will telemigration be an important aspect of Colombia's internationalisation in the coming years? This paper makes the case that the answer is 'yes'. The argument is founded on three facts. First, about 21% of Colombians have jobs that are 'teleworkable' (and thus potentially tradeable, given digital technology). Second, Colombian wages/salaries in teleworkable occupations are, on average, about a tenth that of US workers in similar occupations (and so there are potentially large cost savings to US firms if they outsource service tasks to Colombians). Of course, labour costs should be adjusted by labour productivity, but we do not have information on this. Third, very few Colombians are currently engaged in telemigration, judging from the data we gathered from the major freelancing platforms that provide one way to telemigrate.

Since so many Colombians could telemigrate but so few do, and since US firms could save so much money by hiring Colombian workers, we conjecture that service exports can play a significant role in the internationalisation of the Colombian economy. The paper discusses some barriers to telemigration and offers very preliminary indications of policies that might promote this form of export.

INTRODUCTION AND MOTIVATION

Digital transformation is changing the world economy at an explosive pace. One aspect of the phenomenon which is particularly pertinent to the Colombia Internationalization Mission is the way in which digitech is changing development journeys, or 'pathways to prosperity'.

The transformation is simultaneously making the China-path (manufactured exports) harder and the India-path (service exports) easier, as Baldwin and Forslid (2019) argue. This paper focuses on the India-path and suggests that the export of office services, 'telemigration', could be an important aspect of Colombia's internationalisation.

1.1. How has digitech changed the viable of development pathways?

The China-path is becoming more challenging due to automation and competition.

Digitally-led automation is taking the jobs out of manufacturing – thus making industrialisation a less attractive development pathway (Loungani et al. 2017, Hallward-Driemeier and Gaurav 2017). With few exceptions, industrialisation is no longer enabling transformations based on a big share of the population walking out of the fields and into factories. This 'robot-facturing' future is not for tomorrow, but it is coming. When contemplating massive infrastructure and industrial investments, governments should keep in mind that robots will eventually take the 'manu' out of manufacturing.

Moreover, the nature of international competition has shifted. What Baldwin (2006, 2016) calls the 'second unbundling' (industrial offshoring to developing nations teamed with knowhow transfers) transfigured comparative advantage by allowing producers in some developing nations to combine low wages with advanced technology. The resulting high-tech-low-wage combinations undermined the competitiveness of other developing nations who are competing the traditional way – with low wages and low-tech.

Moreover, since distance is critical in offshoring, the low-wage-high-tech combination is on offer only to nations sufficiently near the world's high-tech manufacturing hubs: North America, the EU, and North-East Asia. Faraway nations have little chance since the offshorable manufacturing stages are limited and there are many good alternatives that are closer to the hubs.

The India-path is becoming easier due to digital technology.

As digitech shuts off one pathway, it is opening another by making remote workers less remote – a key point since remote workers are so much cheaper. Digitech has enabled excellent telecommunications, radically improved machine translation, and allowed the rise of internet platforms that do for international trade in services what eBay and Alibaba have done for international trade in goods. Each of these is facilitating international price arbitrage in the service sector (in the form of service-sector offshoring).

1.2. The pandemic has radically accelerated this trend in four ways.

An epic number of people have been let go by rich-nation service firms (the potential employers of Colombian telemigrants).

The figures in America are in the tens of millions. Since sunk firing costs are important, firms' trade-off between local hiring and offshoring is very different once the domestic worker has already been let go.

A large share of service firms in Europe and America have learned to work with remote teams (Kilic and Marin 2020).

Estimates are that from 40-70% of workers in the US and Europe worked from home due to the pandemic (Berg et al. 2020, Dingel and Nieman 2020). Rich-nation firms have invested in hardware, bandwidth, collaborative software (and training), and secure online databases, and managers have learned how to manage virtual teams. Quite simply, the Great Lockdown shifted where we do office work, and how we do it. Employees have had to learn to work remotely, their managers have had to learn how to manage remotely. Everyone has had to invest in the hardware, software, and training that make it possible to create and deliver value from remote locations to customers who have had to learn how to buy and use services that are delivered by dispersed teams.

Anything that makes it easier to telework domestically tends to facilitate telemigration.

US firms will realise that they can get some of the remote work done at much lower cost by hiring workers sitting in low-wage countries. While it is certainly true that foreign talent working online is unlikely to be as good as domestic talent working in the office, the foreign talent may be a whole lot cheaper. This is just service-sector globalisation, so the deeper point is Covid-linked changes are lowering the technical barriers to this type of globalisation.

Office space in Europe and America got more expensive due to social distancing and other anti-contagion requirements.

This won't last forever, but it is likely to be true during much of the recovery phase. This also shifts the trade-off between local employment and offshoring in the direction of more telemigration. Finally, corporations piled on debt that means they'll be under intense cost-cutting pressure going forwards.

1.3. Telemigration as an attractive addition to export strategies

Several features of services suggest that the India-path may be an attractive route for nations, like Colombia, who are not geographically close to the industrial hubs. But before turning to these merits, it's worth pointing out how the China-path and India-path are fundamentally similar. The underlying source of comparative advantage is the same for both (Figure 1.1).

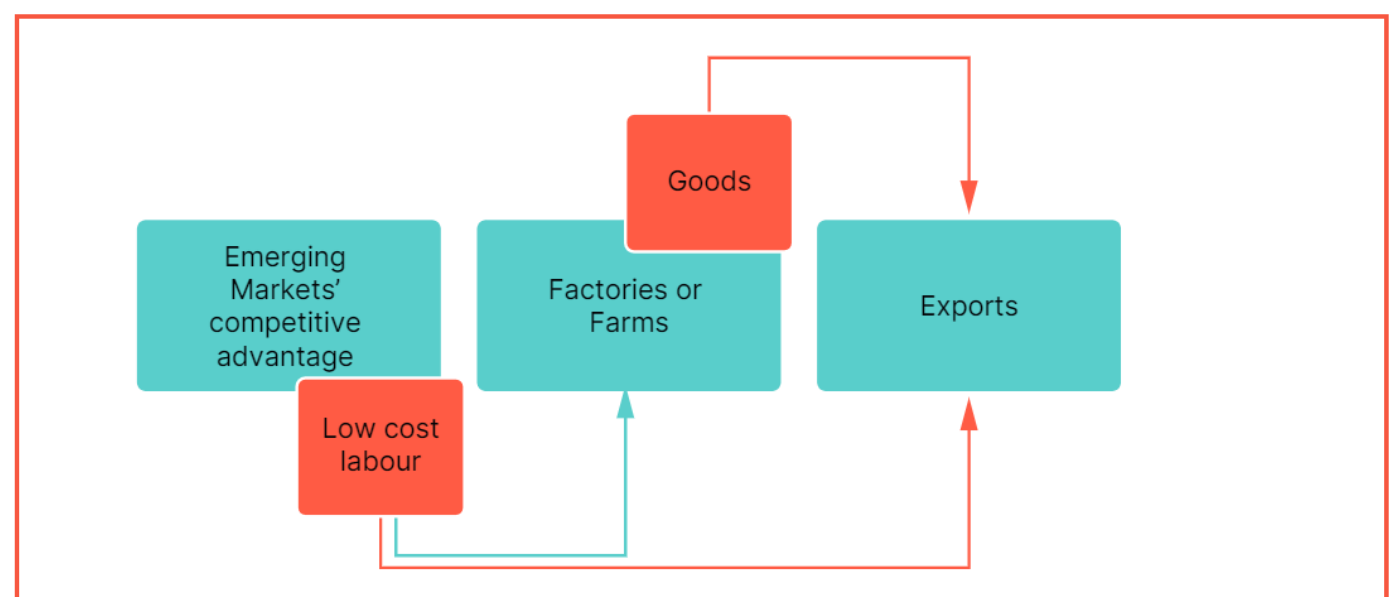
Comparative advantage is really all about the relative costs of production. For most developing nations, their relative cost advantages stem from relatively abundant labour or natural resources. Leaving resource sectors aside, the dominant cost advantage of a nation like Colombia

is based on the fact the unit-labour cost is lower in Colombia than it is in advanced economies in many sectors. That is, workers – even after adjusting for productivity – cost less in Colombia. In the goods sector, however, lower labour costs are necessary but not sufficient for competitiveness. Manufacturing is complex and subject to massive agglomeration economies that make it hard to break into. As a result of these powerful agglomeration forces, almost 80% of all manufacturing is in three regional hubs (37% in East Asia, and 19% each in North America and the EU).

Services are quite different in that many service sectors are subject to much less intensive agglomeration forces (Loungani et al. 2017, and Baldwin and Forslid 2019). Moreover, the means of 'transportation' and the 'logistics' of services are – thanks to digital technology – easier to get right.

To put it differently, trade in goods is a veil for trade in labour services, but the veil – setting up factories and transport infrastructure, establishing an industrial base, and breaking into foreign markets – is a not a simple thing. Industry is a classic chicken-and-egg case whereby a nation's industry can be competitive if it has a sufficiently large industrial base, but getting the base is hard without the competitiveness.

Figure 1.1: Service and goods export tap into the same comparative advantage



Note: Exports happen when things are cheaper in the exporting nation; for most things the sources of the cost-edge are wages that are lower even when adjusted for productivity. Exploiting this edge in goods (manufactured exports) requires complex organisation and is subject to important bottlenecks and large 'minimum efficiency scales'. Exploiting it in services is not trivial but involves much complexity and coordination. Source: Based on Baldwin and Forslid (2019).

When it comes to services, by contrast, the veil is much lighter. Digital technology allows service providers in one nation to sell to services buyers in another nation without elaborate investments. The trend has been there for many years, making remote workers less remote, so to speak (Kilic and Marin 2020), but the pandemic accelerated it. Covid-19 has made it even easier to sell services at distance and thus made the veil even lighter.

1.4. Outline of the paper

Sections two and three use labour market data to make the prima facie case that Colombia has a comparative advantage in service exports. The fourth section uses the CAGE distance framework to organise thinking about why Colombia's service exports are so modest to date.

Freelancing is the focus of the fifth section. It looks at how many Colombians work in service-sector jobs that could be done remotely with current technology. We identify these workers by using the Dingle-Neiman method to single out occupations whose job-descriptions suggest that 'work from home' is possible, i.e., they are already working in jobs that are 'teleworkable'. We argue that Colombian service workers are likely to be competitive in the US, by comparing US-Colombia wage gaps by occupation. The size of the gap provides a rough estimate of the gains that US-based firms could realise by outsourcing service tasks to Colombia-based workers.

Finding that Colombians could do work for foreign clients (i.e., export their services) and that their current wages suggest that they would be cost competitive if they did so, do not mean that these new exports will actually appear. The implicit cost arbitrage has been apparent for years – and indeed some foreign firms are already exploiting it, but in a small way. The hope is that the Covid-accelerated digital transformation of the US service sector will open the door to broader arbitrage and the service exports such arbitrage would create.

Section six considers non-freelancing vehicles for telemigrating. Traditional trade in services often involves large companies that either send the skills and talent abroad (say, hotel chains and financial sector firms) or bring the customers to Colombia (tourism, transport services, etc.). Telemigration is meant to refer to something quite different. It is Colombians working for foreign companies while sitting in Colombia. There are many ways in which this exporting could be done including Shared Services Centres set up by multinationals, or specialised Colombia-based firms that sell services to foreign customers (e.g., call centres, and business processing outsourcing, BPO, and knowledge processing

outsourcing, KPO). In this paper, we focus on the easiest option in terms of fixed costs and other entry barriers – online freelancing platforms like Upwork.

The section also presents examples of such firms that are operating in Colombia and draws some observations from the examples.

The last section, before our concluding remarks, briefly presents three case studies of countries that have made a success of service-sector exporting: Costa Rica, the Philippines, and (less so) Argentina.

2. HOW MANY COLOMBIANS COULD POTENTIALLY WORK ONLINE?

This section looks at what might be called the 'export potential' of the Colombian service sector. Many services are non-tradeable – for example, most government services, and household and personal services. Other services, by contrast, are highly tradeable, say financial services and international transportation services.

The basis of such differences has long been left to judgement and received wisdom, but it was always founded on the idea that things cross borders much more easily than workers. Services that require people to be face-to-face (haircutting) or face-to-things (household cleaning) or are only used by people located in one nation (issuing local driver's licences) were categorised as non-traded. Things, like financial services, that could be done by correspondence (in the old days), or digitally in recent decades, were classified as potentially tradeable.

A step towards quantification came in the 2000s, in the height of the offshoring debate in the US: Alan Blinder developed a method to determine which US occupations were 'offshore-able'. His ballpark figure for the US was that 30-40% were at threat. These numbers would have been alarming in any case, but he added to it by making the classic mistake of assuming the future would arrive faster than it actually did. Call it Blinder's blunder – a trap that this paper will strive to avoid.

2.1. The Dingel-Neiman method adapted to Colombia

We use the latest techniques – a procedure developed by Dingel and Neiman (2020) – to identify which Colombian services are tradeable and thus potentially exportable. In a sense, we are creating a new, customised definition of 'tradeable'

for the Colombian service sector. This sets the baseline expectations for how much service exports could expand.

The Dingel-Neiman procedure uses responses to surveys undertaken by the US Department of Labour that were designed to understand the nature of American jobs. US workers, whose jobs are classified very finely (into more than 1,000 occupations) answered questions about the nature of their jobs. Dingel and Neiman used the answer to specific questions to qualify particular occupations are 'teleworkable' or not. For instance, if the respondent answered yes to these questions, their occupation was classed as not teleworkable (i.e., cannot be performed from home): "Use email less than once per month," "performing general physical activities is very important."

Once they had a list of occupations that could be done from home, Dingel-Neiman uses the US Bureau of Labour Statistics (BLS) data to determine how many workers were in teleworkable occupations. The BLS data also contains a wealth of information about the workers including educational attainment, gender, location, and wage/salary. Their bottom-line aggregate figure was that 37% of jobs are teleworkable (at the high end of Blinder's guesstimate from 2006).

Bringing this methodology to Colombia is not a simple matter.

In Colombia, there are major barriers (e.g., informality) to using this methodology to calculate the share of teleworkable jobs directly. The Colombian household survey classifies occupations according to a 1970s classification that is outdated and difficult to match with the International Standard Classification of Occupations (ISCO). However, Cárdenas (2020) recodes the raw data from the household survey at the level of ISCO 4 digits. Using Cárdenas (2020) and Dingel and Neiman (2020) recoded in ISCO, we were able to identify the number of workers that perform occupations that are compatible with work from home. We also included workers who are unemployed but have experience in such occupations.

2.2. Results from the Dingle-Nieman method applied to Colombia

According to this procedure, around 3,700,000 Colombian workers, or about 20% of the employed population, are currently working in occupations that could be performed from home (Gran encuesta integrada de hogares [GEIH] 2019). Since we are addressing potential outcomes, we add to this figure around 740,000 unemployed people who have experience, or are looking for a job, in those teleworkable occupations. This is 33% of the unemployed.

Taken together, we estimate that around 4,451,303 Colombian workers could perform

their job from home. That is 21% of the labour supply. For comparison, Dingle and Neiman (2020) estimate that 37% of US workers have jobs that can plausibly be performed at home. We take this figure as indicative of the amount of work that might be performed online for clients abroad, i.e., exported (Table 2.1).

To make this aggregate figure more useful for policy purposes, we break this down by occupation. As Table 2.2 shows, the most teleworkable occupations fall in the 'professionals' category, followed closely by clerks and technicians – all with shares that are 50% or higher. At the other end of the spectrum are occupations that clearly involve workers being in the physical presence of someone or something. For example, the share of teleworkable jobs in the elementary occupations, plant and machine operators, and craft workers is below 5%. Senior officials and managers are in between with a share near the US figure.

There are a few provisos to these calculations. First, the crosswalks used in this exercise are sensitive to the level of development, and the abilities required to perform certain occupations are not necessarily the same in developed and developing countries, particularly among occupations that require low levels of education. Second, missing information arises from raw observations in the GEIH that could not be coded as ISCO,

and crosswalks imperfections. The percentages in this presentation assume that missing observations behave as observed values; in other words, the shares are calculated over observed data. Third, 2019 data is used in all exercises to avoid temporary effects caused by Covid-19 on the occupations.

To highlight the enormous variability across broad categories of jobs, we present the figures in a chart form (Figure 2.1). To address the common belief that telemigration is something that only workers with advanced education can undertake, the chart also shows the share of teleworkable jobs in the broad categories that require tertiary education.

The results are striking. In some types of jobs, telemigration is really not an option. In the primary sectors, workers have to be physically together with things like land and machines, and the same is true for plant and machine operators, elementary occupations, and craft and related trades workers. Other professions, like the military, are non-tradeable by nature (at least in times of peace).

The teleworkable jobs are concentrated in what might be loosely called office jobs or desk jobs. Among technicians and associate professionals, 50% of Colombian workers have jobs that are potentially appropriate for telemigration. Only 65% of these jobs also require higher education.

Table 2.1: How many Colombians work in teleworkable occupations?

	US	Colombia		
	Dingel-Neiman	Employed (Cárdenas-Montaña)	Unemployed with experience or looking for jobs	Total
% of occupations compatible with telework	37%	19.7%	32.6%	21%
Non-compatible with telework		15,107,253	1,530,841	16,638,094
Compatible with telework		3,710,847	740,455	4,451,303
Not identified		3,469,180	343,663	3,812,843
Working-age population		22,287,281	2,614,959	24,902,240

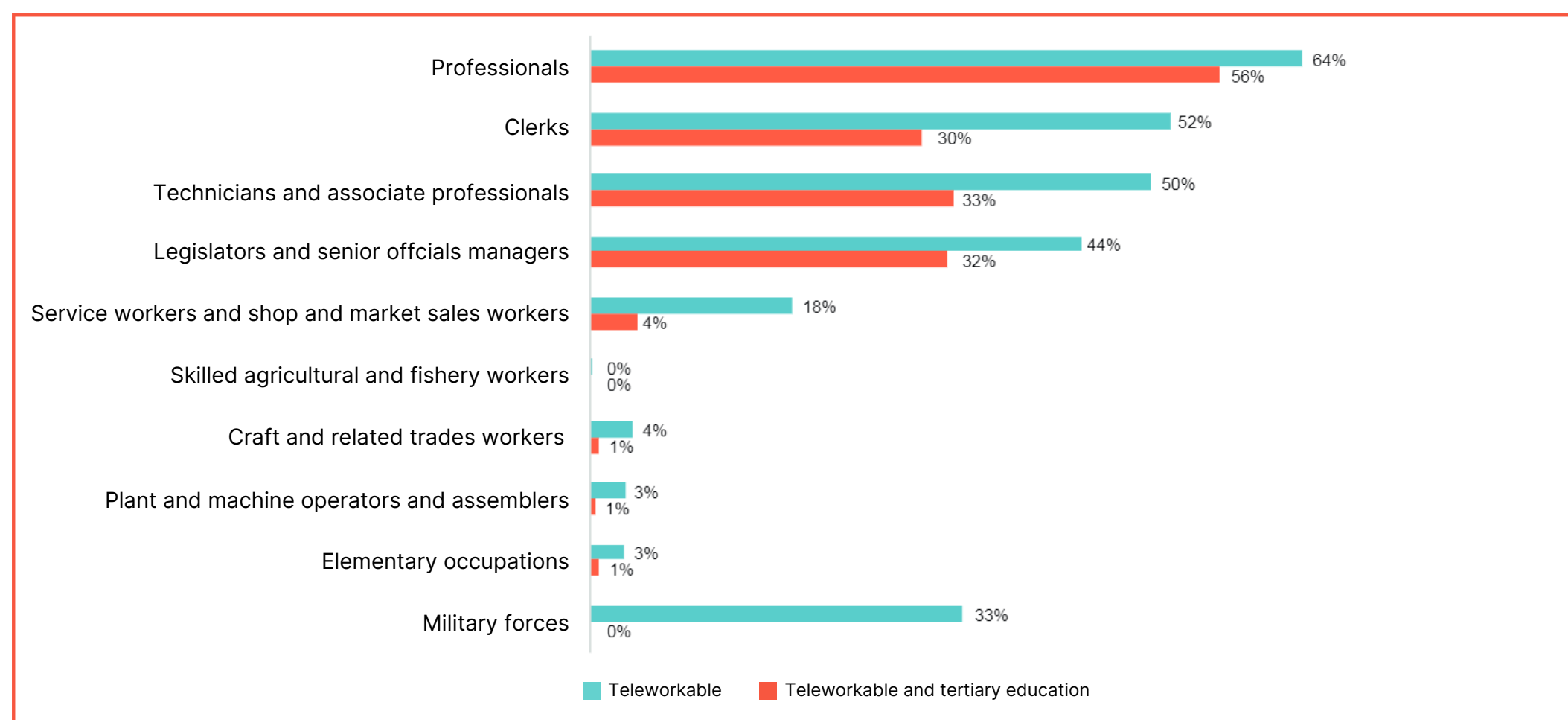
Source: Dingel & Neiman (2020), Cárdenas & Montana (2020) & authors calculations using GEIH (2019). *Shares over observed data.

Table 2.2: Jobs that can be performed from home among labour force (employed + unemployed) and over occupation (ISCO 1D)

	Compatible	Missing	Total (including missings)	% Compatible (excluding missing)
Professionals	1,471,792	283,441	2,593,180	64%
Science and technology professionals	525,668	150,446	1,277,718	47%
Law professionals	296,353	65,322	466,837	74%
Teaching and education professionals	649,771	67,673	848,624	83%
Clerks	726,505	366,950	1,764,917	52%
Technicians and associate professionals	644,738	267,199	1,553,034	50%
Legislators and managers	312,626	119,056	828,633	44%
Managers	260,124	99,076	734,303	41%
Legislators	52,502	19,981	94,331	71%
Service workers and shop and market sales workers	1,006,005	235,404	5,801,152	18%
Craft and related trades workers	102,814	358,187	3,054,462	4%
Plant and machine operators and assemblers	63,371	149,376	2,177,527	3%
Elementary occupations	121,926	535,198	4,525,231	3%
Skilled agricultural and fishery workers	1,301	63,435	1,168,836	0%
Military forces	224	1,422	2,094	33%
Missing	0	1,433,174	1,433,174	
Total	4,451,302	3,812,843	24,902,239	100%

Source: Authors' calculation, details available upon request.

Figure 2.1: Shares of teleworkable jobs by broad occupation and education level



Source: Authors' calculation, details available upon request

The highest share of teleworkable jobs is among occupations classed as professionals, and here, 88% of Colombians with teleworkable jobs in this category also have education beyond high school.

The importance of higher education is not universal. In the categories for service workers and shop and market sales workers, only 24% of the teleworkable occupations are associated with tertiary education.

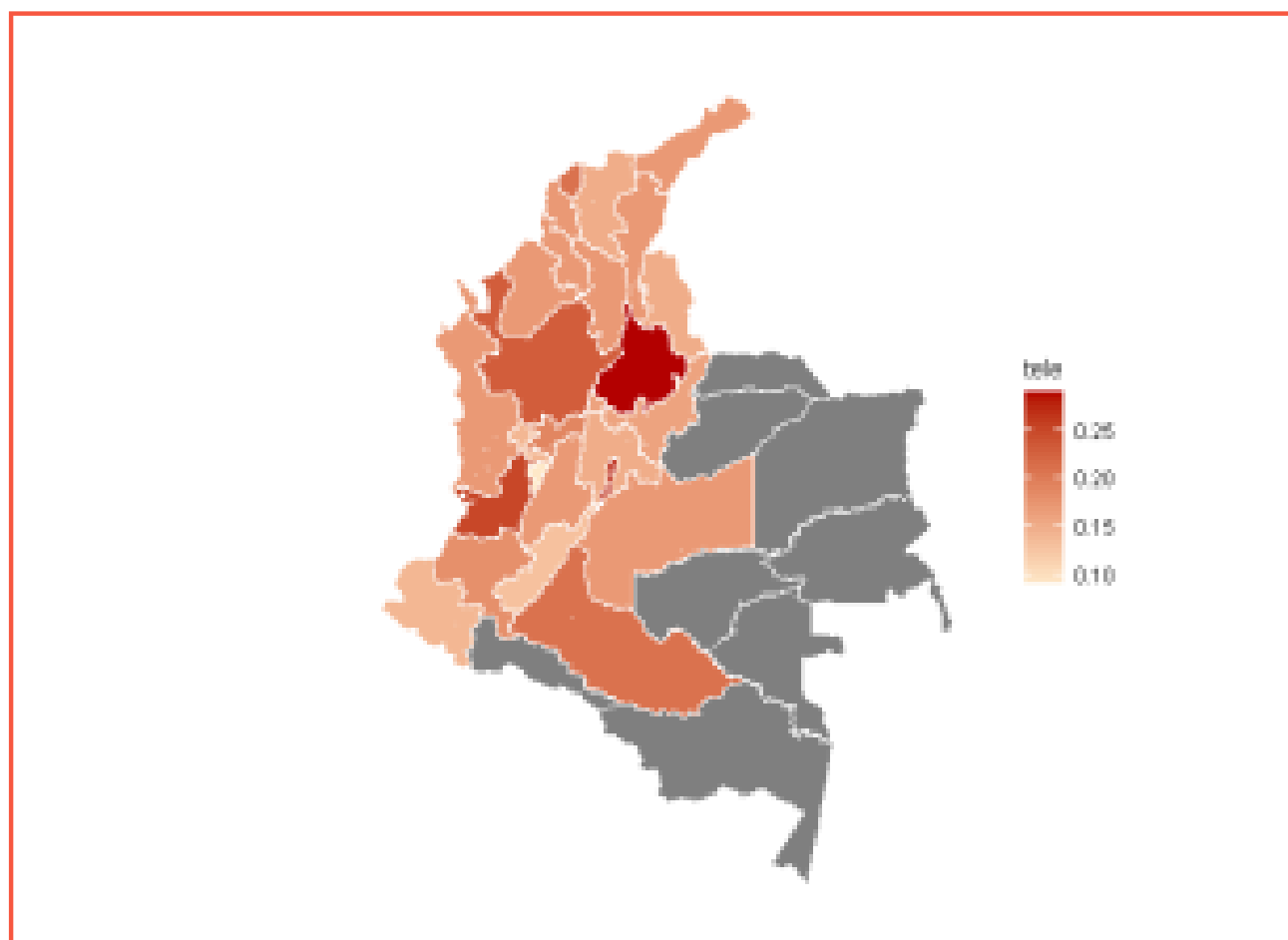
The geographic distribution of teleworkable jobs is highly skewed towards urban areas, as might be expected (Map 2.1).

Turning to the nature of the workers that have teleworkable jobs, we see that overall, the possible export possibilities are heavily aligned with education attainment (Figure 2.2). A number of aspects are worth highlighting. Note that a beyond-high-school education is a good indicator of teleworkability for some types of jobs but not for others. In the professionals category, 90% of teleworkable jobs require higher education. The opposite is true in 'service workers and shop and market sales' workers. In four of the broad categories, higher education is associated with teleworkability but not in the rest.

The opportunities are also not evenly spread by age but telemigration will not, according to these suggestive calculations, be only for those under 40. Around 55% of the potential is for workers over 40 years old (Figure 2.3).

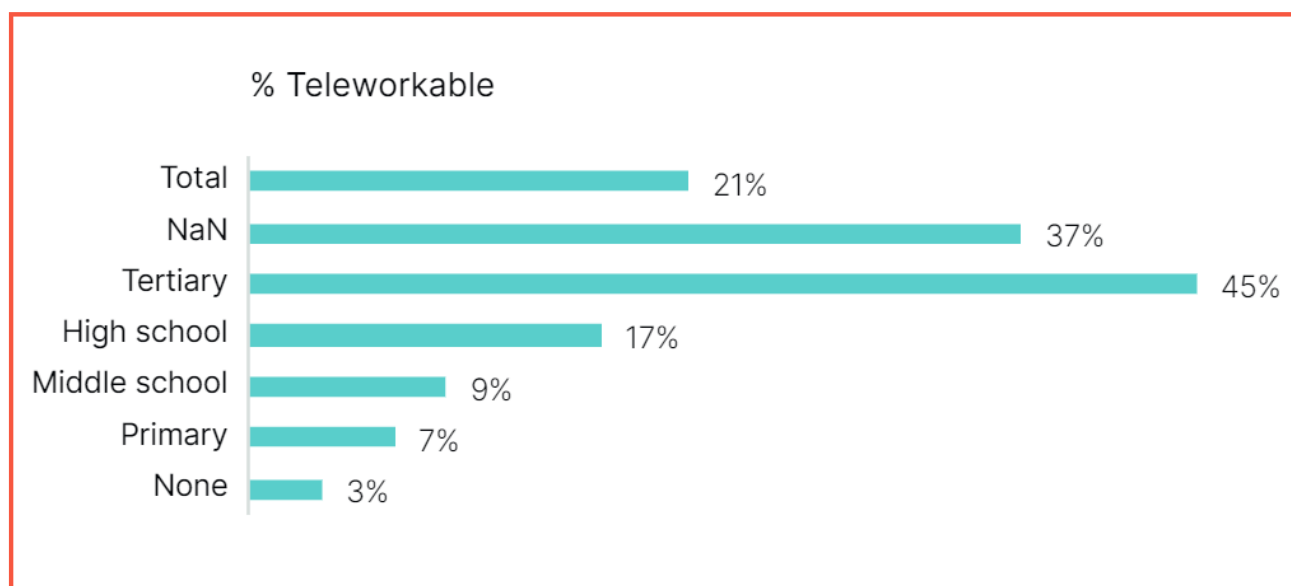
As far as the gender breakdown is concerned, we found that on average, i.e., considering the whole labour force, women have professions with higher

Map 2.1: Teleworkable jobs by region¹



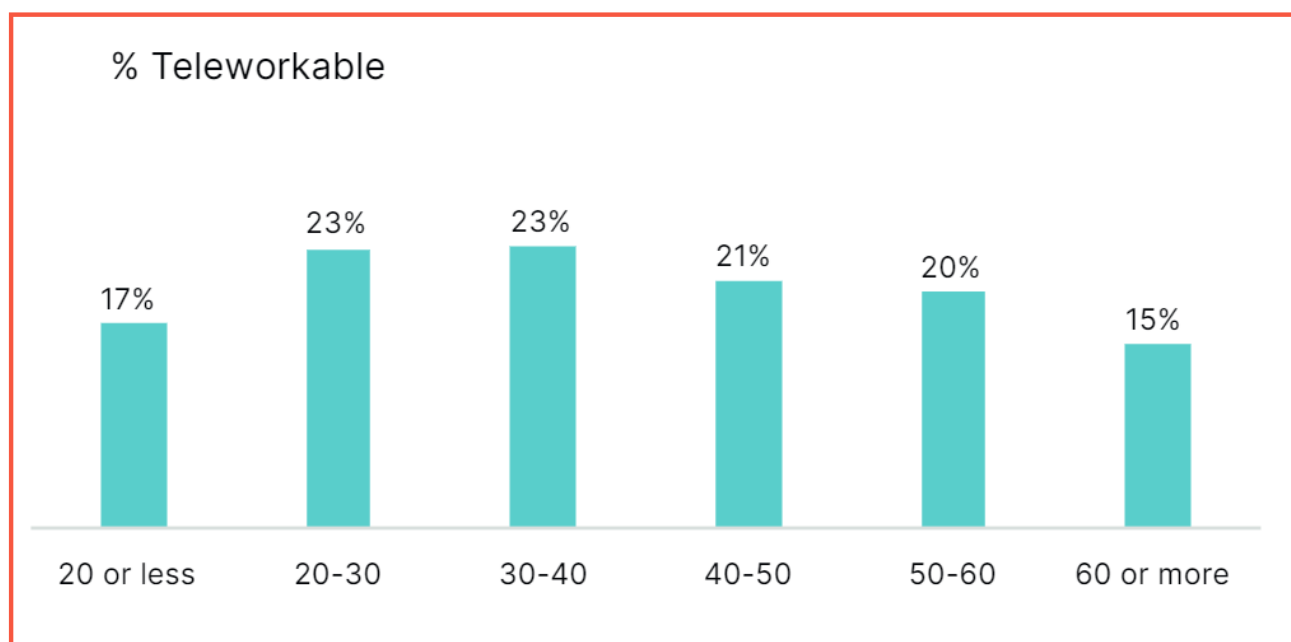
Map 2.1: Teleworkable jobs by region

Figure 2.2: Jobs that can be performed from home among labour force (employed + unemployed) by education level



Source: Authors' calculation, details available upon request.

Figure 2.3: Jobs that can be performed from home among labour force (employed + unemployed) by age



Source: Authors' calculation, details available upon request.

¹ The high level of teleworkable activities in Guaviare is related to the number of sales assistants.

Table 2.4: Jobs that can be performed from home among employed by formality status and ISCO 1D

% / total jobs	Informal	Formal	Total
	% Works performable from home	% Works performable from home	% Works performable from home
Managers	30%	61%	44%
Professionals	59%	66%	64%
Technicians and associate professionals	46%	53%	50%
Clerical support workers	54%	51%	52%
Services and sales workers	19%	15%	18%
Skilled agricultural, forestry and fishery	0%	1%	0%
Craft and related trades workers	2%	10%	4%
Plant and machine operators and assemblers	1%	7%	3%
Elementary occupations	2%	6%	3%
Total	14%	33%	19%

compatibility with remote work than men. Overall, about 16% of men have teleworkable jobs while about 26% of women have such occupations. Workers with informal jobs are about half as likely to have teleworkable jobs (about 11% compared to 20% for the whole workforce). This observation is important since women and young workers have been especially hard hit by Covid-19.

Two more slices of our calculations shed light on the sorts of jobs that are plausibly offshorable and thus open to exporting. Table 2.4 shows that there is not a dominate pattern in teleworkability in terms of formality or informality of the job, although there is evidence of a difference for managers . It is also worth noting that teleworkability is twice as high for formal jobs than it is for informal jobs.

Table 2.5 shows the breakdown by sectors of the economy where the various occupations are listed. The highest shares are in the high-end service sectors such as Financial and Information and Communication. Among the service sectors, the largest number of jobs, however, are in the Commercial sector – almost a million.

Table 2.5: Jobs that can be performed from home among labour force (employed + unemployed) by DANE 1D³ sector

DANE Title	% work performable from home	Number of jobs performable from home	Number of jobs not performable from home	Total (including missing)
Financial	63%	162,465.80	95,579.80	316,763.50
Information and communication	56%	140,223.10	109,761.40	323,212.60
Public administration	54%	1,097,299.80	941,745.50	2,529,626.30
Professional, scientific and technique	31%	351,745.40	773,155.90	1,381,835.20
Real estate	30%	765,427.30	1,758,248.30	282,711.60
Electricity, gas and water distribution	25%	34,805.00	106,098.40	197,180.10
Commercial	25%	946,735.10	2,893,159.80	4,250,235.80
Mining	17%	18,777.00	93,460.20	196,204.00
Industry and manufactories	15%	296,144.90	1,646,000.10	2,503,549.00
Other	13%	234,409.40	1,511,012.20	2,062,864.20
Transportation and storage	10%	140,046.60	1,262,656.70	1,545,165.40
Construction	9%	114,175.10	1,222,405.40	1,521,267.80
Hotel and accommodation	6%	89,017.80	1,337,195.00	1,655,384.30
Agriculture	2%	60,030.20	2,887,615.30	3,521,280.40
Total		4,451,302.5	16,638,094	22,287,280

³ CIU rev 4. 12 groups

3. HOW COMPETITIVE WOULD COLOMBIAN WORKERS BE IN THE US?

In this section, we turn to quantifying the wage gap between Colombian and US workers in various occupations. Occupational Employment Statistics (OES) is a good source for wages in the US. The difference in hourly wages (across sectors) between Colombia and US for jobs that can be performed from home is estimated using the GEIH (2019) and the OES (2020)⁴. Specifically, Colombian hourly income is converted from Colombian peso (COP) to USD using the average annual exchange rate of COP 3,281 per USD 1 for 2019.

On average, a worker in Colombia earns USD 2.2 per hour working on occupations that are teleworkable, while the average wage for such occupations in the US is USD 25, i.e., more than 11 times higher. Of course, the same occupation performed in the US and Colombia may be very different, but the very large gap suggests that outsourcing

service-sector tasks from US offices to Colombian service workers would have the potential to be cost saving.

to now. [Table 3.1](#) shows that the ratio ranges from almost 15 times in the 'legislators, senior officials and managers' category to about 12 times in the elementary occupations (which are not very teleworkable, as we saw).

3.1. Disaggregate results for wage gaps

The aggregate averages hide important differences that we turn

Table 3.1: Wage ratios for various occupations, US versus Colombia

ISCO title	Hourly wage USD (median) – teleworkable jobs		Wage ratio (US to pesos)	Wage ratio (US to Colombian PPP)
	Colombia (GEIH)	USA (OES)		
Legislators, senior officials and managers	3,52	51,4	14,6	6
Professionals	3,52	33,1	9,4	3,9
Technicians and associate professionals	1,76	24,4	13,9	5,7
Clerks	1,47	17,4	11,8	4,9
Service workers and shop and market sales workers	1	12,9	12,9	5,3
Craft and related trades workers	1,37	17,2	12,6	5,2
Elementary occupations	1,16	13,5	11,6	4,6
Weighted average (ISCO 1D level)	2,2	25	11,8	4,9
Median	1,7	30	17,6	7,3

Notes: Source: GEIH (2019) and OES (2020). The difference in hourly wages (across sectors) between Colombia and the US for jobs that can be performed from home is estimated using the GEIH and the OES. Colombian wages are converted from COP to USD using the average of the annual exchange rate of 2019 (COP 3,281 per USD 1) and a PPP ratio of (COP 1,349 per USD 1) using the average of the PPP exchange rate from the World Bank's WDI for 2019. Colombian hourly wages are estimated by dividing annual labour income by 52 times the reported weekly working hours.

The job classification in this table is highly aggregated, but it establishes a ballpark figure of US wages being 10-15 times higher than Colombian wages. Does the ballpark estimate hold for more finely defined occupations?

To address this, we selected the sectors with the largest median hourly wages for jobs that can be performed from home and compare them to the respective median hourly wage in the same sector in

Colombia. [Table 3.2](#) shows that for a selection of occupations at the four-digit level, the ballpark estimate is not too bad.

Table 3.2: Wage ratios for selected highly teleworkable occupations, US versus Colombia

ISCO 1	ISCO title	Hourly wage USD (median) – teleworkable jobs		Wage ratio (US to Colombian)
		Colombia (GEIH)	USA (OES)	
2144	Mechanical Engineers	3.7	50.3	13.7
2152	Electronics Engineers	5.1	50.5	9.8
1212	Human Resource Managers	3	51.7	17.2
2611	Lawyers	4.9	52.7	10.8
1211	Finance Managers	6.2	54.2	8.7
1221	Sales and Marketing Managers	7	55	7.8
1330	Communications Technology Services Managers	7.3	59	8.1

Source: Authors' calculation, details available upon request.

4. WHAT IS STOPPING THE ARBITRAGE?

When there is supply and there is demand but there are few transactions, something must be wrong, or more precisely, something must be hindering the transactions.

The first instinct of economists is to look for barriers to transacting – tariffs, quotas, regulations, and the like. But it is also possible that the supply does not match the expectations of the demanders. Logically, there can be demand-side problems, but in the case of the internationalisation of Colombia's service providers, this is of second-order interest. Of course, the factors all intertwine, and it is the combination of difficulties that really matters – see Dubuque (2021b, c), but here we focus on barriers using the well-known CAGE framework.

4.1. CAGE Framework

When it comes to trade in services, physical distance is not much of an issue (apart from time zones), and there are rarely tariffs or other taxes to hinder the trade. This is not to say the trade is unhindered. Ghemawat (2007) has developed a broader conceptualisation of distance called the CAGE distance framework that points to Cultural, Administrative, Geographic and Economic differences across nations.

As with all these frameworks for organising complicated things, its merit is mostly in helping policymakers consider a broad range of issues and realise that there is no silver bullet. There is no one trigger to pull.

When looking at service exports, CAGE helps encourage a shift in mindset away from what is important for trade in goods. When it comes to goods, the overwhelming importance of geographical distance is an empirical fact. More or less, doubling the distance between trade partners lowers the value of trade by half (Head and Mayer 2014). When it comes to trade in services, the dictatorship of distance is powerless. Geographical distance is a natural barrier, but manmade barriers to trade in goods are well-known to be important – something that policymakers

appreciate readily since they are negotiated in detail in every trade agreement.

Physical distance, by contrast, is of little import once the service supplier has a computer and good internet access. Traditional barriers – tariffs and quotas – are also mostly non-existent for many types of service exports that are delivered across borders (so-called Mode 1 services). The WTO's e-commerce moratorium has banned countries from imposing customs duties on electronic transmissions since 1998. This is supported to a large extent by the practical difficulty officials would have in collecting such duties. Moreover, WTO advance economy members committed to imposing no barriers on Mode 1 services in many areas back in 1994 – in part because they never believed that developing nations would be competitive in these sectors.

Our original surveys of freelancers reveal many barriers that the CAGE framework is useful in organising. Likewise, when we discuss success stories in other nations, the framework's usefulness is apparent. There is one very obvious barrier that is important in the area under study – communication links.

Table 4.1: More subtle barriers to trade: Ghemawat's CAGE framework

	Cultural Distance	Administrative Distance	Geographic Distance	Economic Distance
Unilateral	Different languages	Lack of colonial ties	Physical distance	Rich/poor differences
	Different ethnicities; lack of connective ethnic or social networks	Lack of shared regional trading bloc	Lack of land border	Other differences in cost or quality of natural, financial, human resources, infrastructure, or knowledge
	Different religions	Lack of common currency	Differences in time zones	
	Lack of trust	Political hostility	Differences in climates/disease environments	
	Different values, norms, and dispositions			
	Insularity	Non-market/closed economy (home bias vs. foreign bias)	Landlocked	Economic size
Bilateral	Traditionalism	Lack of membership in international organisations	Lack of internal navigability	Low per capita income
		Weak institutions, corruption	Geographic size	
			Geographic remoteness	
			Weak transportation or communication links	

Source: Wikipedia https://en.wikipedia.org/wiki/CAGE_Distance_Framework

4.2. Digital access from home

Many Colombian workers face important hindrances to telemigrating from home – even if their job features allow it. Of the labour force that could work from home, just 54% have a computer and 66% have internet access (Table 4.2).

There are other ways of accessing these essential digital tools, but the low figures suggest that technical barriers inside Colombia will need to be addressed before telemigration becomes a major vehicle for internationalisation.

4.3. Regulatory barriers

One of the most important regulatory barriers that telemigration exports could face is labour inflexibility, particularly concerning hourly jobs. In Colombia, it is possible to work by hours, provided that the worker earns a wage equal or higher to the monthly minimum wage adjusted to worked hours. However, in order to be formal, the worker and the employer (if there is an employer) must contribute to social security. This contribution is estimated over a monthly base income that cannot be lower than the monthly minimum wage.

Therefore, a person that works part-time at a low wage is very

Table 4.2: Jobs that can be performed from home among labour force (employed + unemployed) by digital accessibility

	Job is teleworkable	Job is not teleworkable	Missing
Computer at home (%)	54%	26%	37%
Internet access (%)	66%	39%	49%
Total	4,451,303	16,638,094	3,812,843

Source: Authors' calculation, details available upon request.

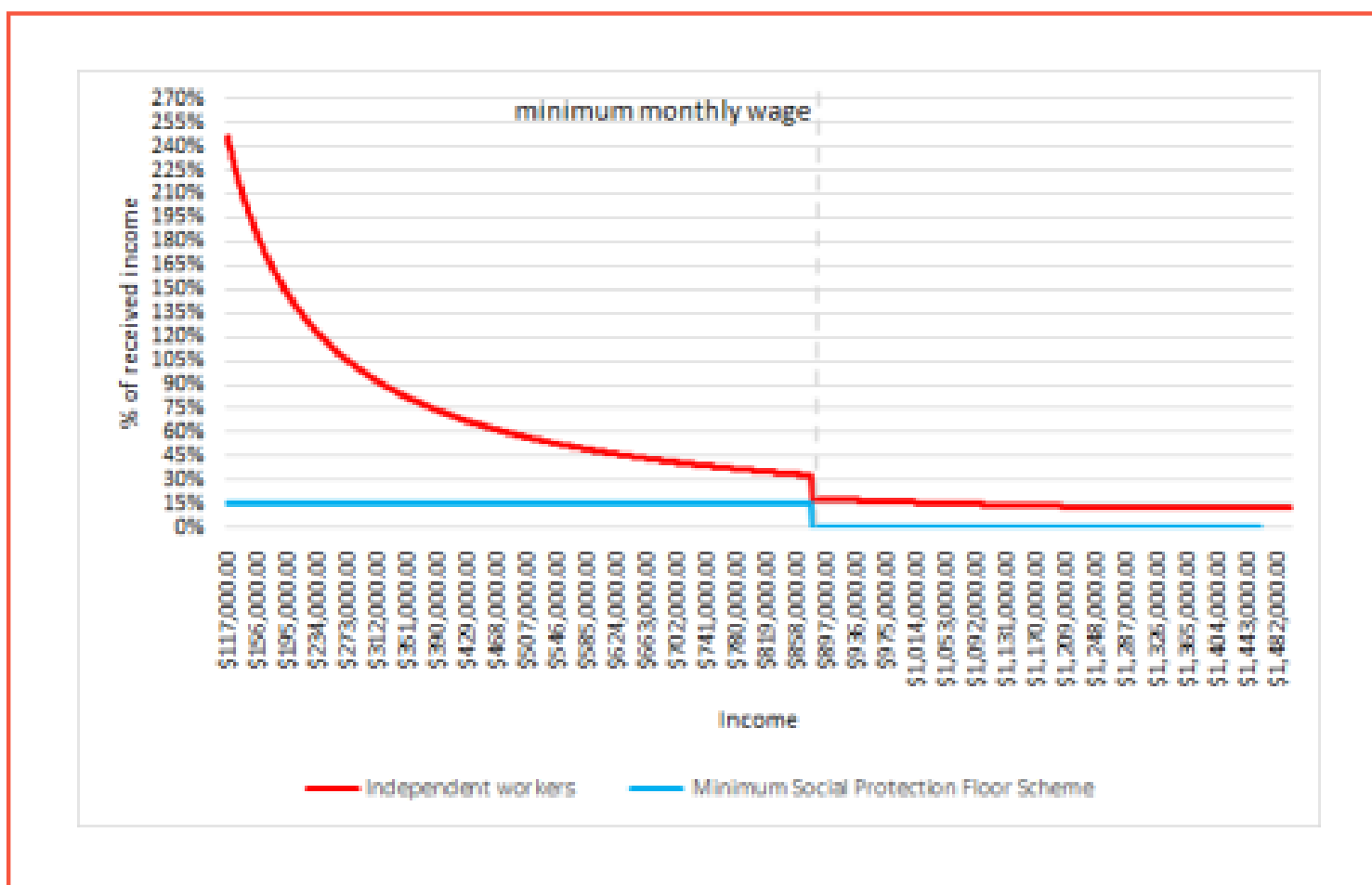
likely to pay a disproportionately high part of their income in social security, as can be observed in Figure 4.1⁵. In order to reduce this problem, the Congress of Colombia recently approved the Minimum Social Protection Floor (Piso Mínimo de Protección Social). This scheme obliges⁶ workers that earn less than a minimum wage – but equal or higher than the monthly minimum wage adjusted to worked hours – to contribute to a periodic savings accounts scheme. These savings are rewarded with a 20% subsidy at retirement age. However, workers under this savings scheme will not be considered formal. Workers that earn more than a minimum wage should pay the regular contributions (between 12% and 14%, depending on whether they are considered service providers or not). It should be noted that in Colombia, half of the workers earned less than the minimum wage in 2019.

Another possible source of legal barriers that might restrict the exports of telemigration services is the legislation projects that are circulating in Congress, concerning digital platforms. These projects were designed with transportation and delivery platforms in mind but might easily include freelance platforms. Most of these projects include additional taxes and

contributions and special provisions for social security that create distortions and perverse incentives. For example, they consider that the platform should pay the Social Protection Floor contribution when workers earn less than a minimum wage. Otherwise, workers should make their own contributions. As a consequence, workers would have incentives to work part-time and

platforms would have incentives to make them work full-time. Not less important is the risk of considering freelancers as dependent workers, which would lead to much higher inflexibility and social security contributions. Eventually, this could end any telemigration exports initiatives.

Figure 4.1: Minimum contributions to social security benefits for independent workers



Source: Fernández and Mejía (2021).

Figure 4.2: Minimum contributions to social security benefits for independent workers and waged workers



Source: Fernández and Mejía (2021).

⁵The weekly hiring contract created some years ago, but not yet used extensively, partially reduces the problem, but this is only available to cover salaried workers. We assumed that the freelancers are independent workers.

⁶The contributions under the Social Protection Floor are obligatory to workers that have several sources of income, as we assume is the case of freelancers and workers under a service providers contract, and voluntary for other independent workers.

5. FOCUS ON FREELANCING

We turn now to a specific form of service exporting – the hiring of Colombian freelancers on digital platforms such as Upwork.com. These platforms – which are very much like eBay but for services rather than goods – have created new ways of offshoring service tasks by making it easy for firms to find, hire, manage, and pay foreign-based freelancers.

From the hiring-firms' perspective (the 'importers'), these platforms have dramatically lowered the fixed cost of hiring foreign service workers while at the same time dramatically raising the flexibility of such contracts (MGI 2016). Specifically, they radically lower the international transaction costs related to things such as search, employment contracting, foreign exchange issues and risks, international payments, and non-payment and non-delivery issues.

From the freelancers' perspective (the 'exporters'), these platforms have opened markets that were previously almost completely closed to them (Kuek et al. 2015). Online freelancing is creating many new opportunities for sufficiently skilled service workers in emerging markets (ADB 2018, Kuek et al. 2015).

The phenomenon is already important. The largest of these 'matchmaking' sites is Upwork.com with 14 million users in 180 countries (processing over a billion dollars in freelancer billings, according to information on Upwork.com). There is, however, plenty of competition; platform competition is underway. Dozens of start-up competitors like TaskRabbit, Fiverr, Mechanical Turk, PeoplePerHour, and Freelancer.com are vying for market share. And recently, LinkedIn – with its 450 million registered business professionals – has entered the race with its

ProFinder. A Chinese freelancing platform, Zhubajie, has more than 16 million freelancers registered, and it recently launched an English-language version called WitMart.com. The phenomenon is also growing fast. A recent study estimates that the number of freelance projects that are online worldwide has been expanding at about 26% per year for the last few years (Kassi and Lehdonvirta 2017).

This 'online offshoring' is quite different from the traditional trade in services (Mode 1), and traditional service offshoring. Much Mode 1 trade in services is dominated by multinational firms that specialise in high-skilled services (Mann 2017), and the same holds for service offshoring (Infosys, Wipro, etc). Moreover, the firms offshoring jobs also tend to be large, due to the fixed costs of organising and managing offshored back-office operations, call centres, etc. The radical reduction in the cost of hiring foreign freelancers that comes with these new platforms seems to have changed this. While the evidence is anecdotal, the platforms seem to have expanded the range of tasks that can be economically offshored while making offshoring profitable even for micro-firms.

5.1. A look at data from three important platforms

This section looks at data scraped from three important freelancing platforms.

5.1.1. Discussion of the chosen platform and data gathered

Online job vacancies are a rich source of labour-market information since these sources can provide quick and relatively low-cost data about employers' requirements. Vacancy information is publicly available on the job portals but because the information is on different websites, it is necessary to apply distinct and relatively novel techniques to gather this information. In particular, web scraping is a well-known technique to collect a massive amount of data from the internet (in this case, job portals). Briefly, the web-scraping algorithms automatically recognise certain pattern or fields in the online job vacancies on the job portals (e.g., job description, job titles, wages, etc.) and download the corresponding information.

While web scraping yields valuable information, gathering information from all the job portals is challenging for a variety of reasons. First, as every job portal has its unique structure (HTML, JavaScript, etc.), it is necessary to program an algorithm for each website that recognises the corresponding job portal structure and collects the relevant information. As the number of job portals scraped increases, the programming effort needed to fit all the collected data together increases. Second, it is difficult to know exactly how many job portals for freelancers are actually available on the internet. Third, as jobs can be posted on more than one site, and freelancers may offer their talents on more than one site, issues of duplication grow with the number of portals scraped. Fourth is the problem of fraudulent or fake websites, which obviously should be considered.

Given the above considerations, we have followed three criteria to select the job portals to analyse the freelancer labour market:

- Traffic ranking
- Volume of vacancies/CVs
- Website information

We used www.Alexa.com to identify the data of job portals for freelancer ⁷. This search shows that Freelancer.com and Upwork.com are the most widely used job portals around the world. Moreover, these well-known websites have a considerable number of job vacancies and CVs registered. For instance, Freelancer reported in November 2020 around 17,150 job postings. Likewise, both job portals contain 'good quality' information. Employers can report detailed information about the job requirements.

Given that Freelancer and Upwork are Australian and US platforms, respectively, these sources may be biased to those regions. Consequently, to increase Latin American coverage, we have also selected Workana.com, a well-known Argentinian platform with a relatively high number of job vacancies and CVs. This website has a well-defined structured and employers can post detailed task requirements.

The next step is to scrape and organise the information for analysis. We use three algorithms to automatically collect the job vacancies, which we think of as the labour demand side, and workers' information, which we think of as

the labour supply side. The information on the demand side includes job titles, wages requested, location, skills, etc. These are collected daily over a prescribed period. Once the job portals have been scraped, the next step is to clean and organise the data.

Employers and job portals manage information according to different criteria. For instance, some employers or websites post the wage offered in dollars, others in pesos and so on. Furthermore, the wage variable may be displayed in words, ranges, or an exact number. Consequently, to a certain extent, it is necessary to standardise the job portal information to conduct a proper statistical analysis.

The standardisation process varies between websites. As mentioned before, job portals manage information according to their criteria. Thus, some variables may be available in some job portals (e.g., sector), while in other websites that information may not be available or may have different categories. Moreover, the job portals may display the labour-market information in different languages. For instance, in most cases, Freelancer.com displays the vacancies in English or Spanish. These job portal characteristics make standardisation challenging. Given that the job portals have different structures and use different languages, we cleaned and standardised the information within each job portal. The following presents a statistical analysis by job portal and language.

Table 5.1: Number of observations by job portal (November – December 2020)

Job portal	Vacancies	Job seekers
Freelancer English	20,137	11,001
Freelancer Spanish	1,331	
Upwork	53,986	6,699
Workana English	751	387
Workana Spanish	384	

Source: Freelancer, Upwork and Workana. Own calculations.

Table 5.1 shows the number of observations by job portal⁸. The number of vacancies scraped from Freelancer is 21,468 (20,137 in English and 1,331 in Spanish), while the number of job seekers on this website is 11,001. Upwork⁹ vacancies and CVs (i.e., job seekers) are 53,986 and 6,699, respectively. Finally, the number of vacancies scraped from Workana is 1,135 (751 in English and 384 in Spanish), while the number of CVs on this website is 387.

5.1.2. What jobs are most in demand?

The freelance sites have job posters (employers) and job seekers (the freelancers). These can be thought of as indicators of labour demand (postings) and labour supply (freelancers). So which types of occupations have most job postings, i.e., have the highest demand? A key limitation of our approach is that the jobs postings do not follow the same

standardised classifications we used for the teleworkability calculations. There is really no way around this without an enormous matching exercise.¹⁰

For the current paper, we settle for a more descriptive approach that suggests the sort of skills and tasks that are demanded and supplied on these platforms.

As Table 5.2 shows, the jobs listed are highly concentrated in just six occupations. As mentioned, these are not formal occupations in the traditional sense; they are 'skill bundles' on the worker's side and 'task bundles' on the employer's side.

Looking at the Freelancer figures to start with, the dominance of web and programming is clear. Of the jobs posted, 30.4% fall into the 'web and multimedia developers' category. The corresponding figure for the supply side (freelancers

offering services) is even higher, namely 56.3%. The numbers are not quite as lopsided on the other two platforms, but the category is the biggest on all three by a large margin. Note that there is a natural specialisation by platform in terms of skills, even though these three sites are broad in terms of CVs offered. Applications programmers are in second place, and taking the two categories together accounts for between 30-40% of the jobs posted on all the sites.

The next two most popular occupations are more creative or human-oriented, namely advertising and marketing professionals and graphic and multimedia designers. These are followed by two very specific skills: translators and data scientists.

Taken together, the six categories account for 65-70% of the jobs posted, and between 60% and 90% of skills offered.

Table 5.2: Share of job postings by 'occupation' for Freelancer, Upwork, and Workana

Share of total postings	Freelancer			Upwork		Workana		
	Jobs posted (English)	Jobs posted (Spanish)	CVs offered	Jobs posted (English)	CVs offered	Jobs posted (English)	Jobs posted (Spanish)	CVs offered
Web and multimedia developers	30.4%	30.6%	56.3%	28.0%	20.9%	31.7%	27.9%	21.5%
Applications programmers	9.7%	8.4%	10.2%	5.8%	1.9%	9.7%	3.9%	1.7%
Advertising and marketing professionals	6.6%	8.3%	4.0%	11.2%	8.2%	8.3%	15.1%	12.7%
Graphic and multimedia designer	11.2%	11.8%	18.2%	15.9%	37.6%	13.4%	17.8%	21.1%
Translator	7.3%	3.9%	3.1%	8.8%	12.6%	2.3%	1.0%	0.8%
Data scientist	5.1%	1.1%	2.5%	2.2%	1.9%	4.3%	0.3%	0.8%
Total	70.3%	64.1%	94.2%	71.9%	83.1%	69.7%	66.1%	58.6%

Source: Freelancer, Upwork and Workana. Own calculations.

⁸ Due to the limited time to perform the scraping and the number of queries per day allowed in each website, these numbers do not correspond to the total number of observations available on the websites. However, as the observations were randomly scraped, the information used in this report is expected to represent the job-market dynamics of the job portals selected.

⁹ Vacancies and CVs on Upwork tend to be posted only in English.

¹⁰ Unlike other job portals websites such as Computrabajo.com, Eempleo.com, etc., machine-learning occupational classifiers fail in classifying the information posted in the freelancer websites because in these job portals people tend to include 'noisy' information such people's general descriptions or the skills possessed or demanded instead of the job title. For instance, it is usual that in these freelancer websites people mention that they know Python, R, SQL, etc. instead of mentioning 'data scientist' in the job title. Consequently, it is necessary to code a set of rules that link keywords (e.g., skills) to each job title and occupation needs and develop an algorithm that automatically classifies the freelancer websites' information.

5.1.3. Broader analysis of the job postings – demand for freelancers

Critical to our labour-demand analysis are job titles. This variable provides an idea of the main characteristics of the demand for labour. The three job portals display the job title information, so analysis is possible, but they do not use a harmonised set of titles.

This section presents analyses of the most frequent jobs posted on the portals. Some websites display the vacancies in different languages (English, French, German, Portuguese, and Spanish). For this document, the analysis considers those vacancies posted in English or Spanish.

Figure 5.1 shows the most frequent words that appear in the job titles for each website. The size of the word indicates its frequency. For instance, the most frequent word on Freelancer is ‘website’, followed by ‘developer’, ‘app’, ‘WordPress’, and ‘Excel’, among others. Similar patterns are observed in Upwork and Workana. It is important to note that there is a high concentration of words in job titles. There are relatively few words with a large

size, while there are many words with a small size. This indicates that freelancers’ vacancies are focused on a specific task such as developing websites, apps, marketing, and other multimedia-related tasks.

The words in the word clouds are by no means a full description of the job postings. A typical job posting provides a text description of the task sought. We can use the frequency of common occurrences to get a more focused idea of the sort of temporary job that the employers are offering. We do this by looking at word associations, which is something like an ad hoc job description.

A word is associated with another word if both expressions frequently appear together. As it turns out, there are few combinations that appear frequently. For instance, the word ‘website’ has an association with ‘designer’ or ‘build’ on Freelancer.com. This indicates that most common job titles demanded are related to graphic and multimedia designers (ISCO code 2166). In fact, most of the job vacancies posted on all the

websites are related to web designers, app or web developers, marketing (logo design) and data management. Translation services are also highly demanded on Upwork, while social media content creators are considerably in demand on Workana.

Most frequent job titles demanded in Spanish

A similar pattern can be observed in the vacancies posted in Spanish. As Figure 5.2 shows, the most frequent words in the job titles are ‘web’, ‘developer’, ‘diseño’ (design) among others. The evidence suggests that similar jobs are demanded in Spanish or English on this job portal.

Figure 5.2: Most frequent job titles demanded in Spanish

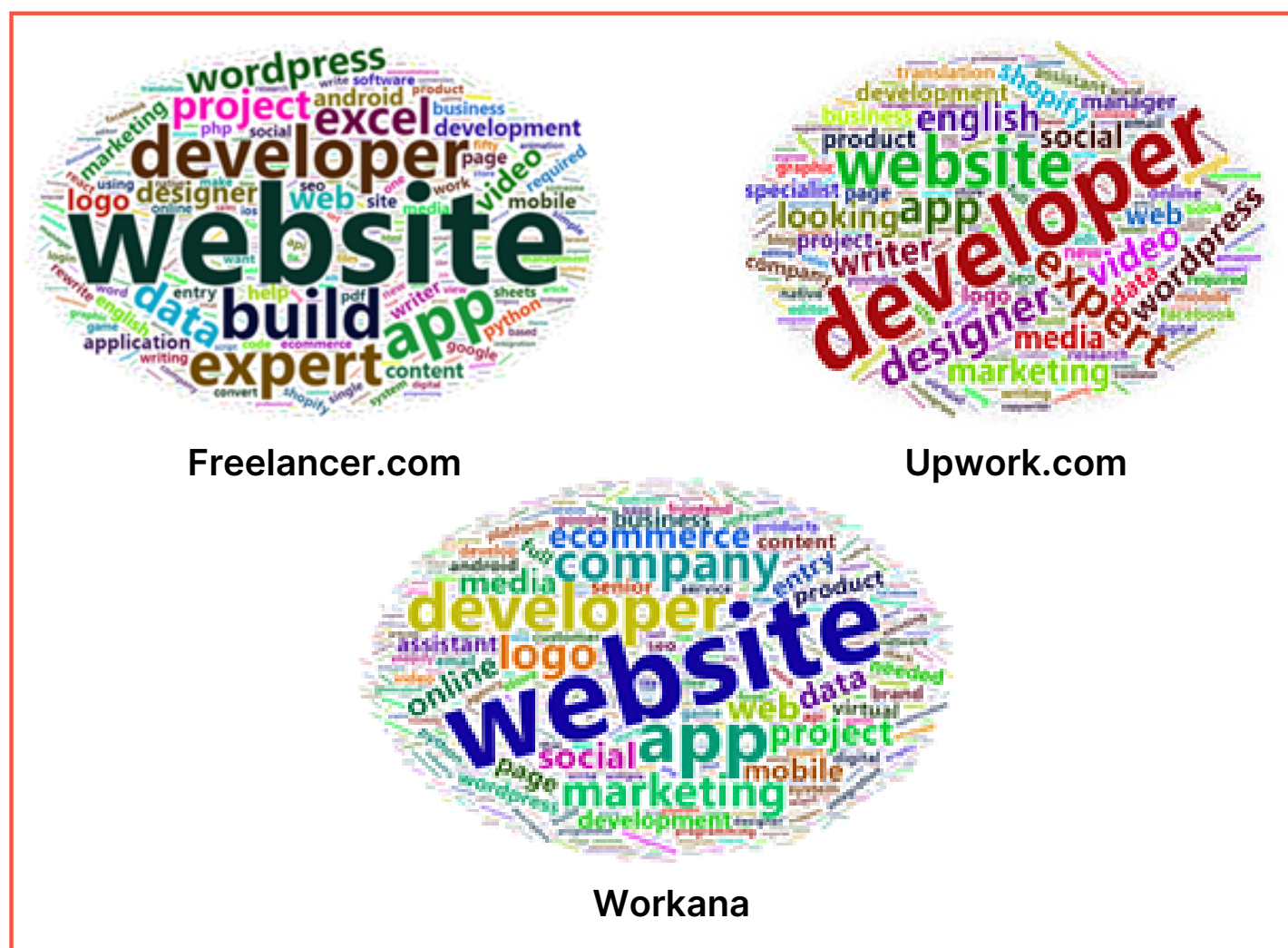


Freelancer.com

Upwork.com

Source: Freelancer, Upwork and Workana. Own calculations

Figure 5.1: Most frequent job titles demanded in English



Freelancer.com

Upwork.com

Workana

Source: Freelancer, Upwork and Workana. Own calculations

5.1.4. Analysis of the location of freelancers

Table 5.3 shows the distribution of job seekers according to the country of their residence.

Table 5.3: Job seekers by country

Country	Freelancer	Country	Upwork	Country	Upwork
India	25.50%	US	23.40%	Venezuela	33.30%
Bangladesh	19.10%	Ukraine	15.90%	Argentina	19.80%
Pakistan	11.70%	Philippines	4.90%	México	19.40%
Russian Federation	3.60%	Russia	4.80%	Colombia	7.60%
Ukraine	2.70%	India	4.70%	Spain	7.20%
Egypt	2.60%	UK	3.90%	Perú	3.40%
US	2.40%	Argentina	3.10%	Chile	3.00%
Indonesia	1.90%	Pakistan	3.10%	Ecuador	2.10%
Philippines	1.80%	Canada	2.40%	US	1.70%
Turkey	1.40%	Serbia	2.40%	Uruguay	1.70%
Serbia	1.30%	Egypt	2.10%	China	1.30%
UK	1.20%	Brazil	2.00%	India	1.30%
Palestinian Territory	1.10%	Venezuela	1.90%	Dominican Republic	1.30%
Sri Lanka	1.10%	Spain	1.40%	Russia	0.80%
Romania	1.00%	Bangladesh	1.20%	Guatemala	0.80%
Kenya	1.00%	Belarus	1.10%	Ukraine	0.80%
Morocco	0.90%	Romania	1.00%	Germany	0.40%
Spain	0.80%	Australia	1.00%	Bangladesh	0.40%
Malaysia	0.80%	Italy	0.80%	Costa Rica	0.40%
Nigeria	0.80%	Indonesia	0.80%	Honduras	0.40%
Colombia	0.40%	Colombia	0.60%		

Source: Freelancer, Upwork and Workana. Own calculations

The geographic dispersion of jobseekers is one of the more solid facts in the job portal information since the platforms have to make payments to specific bank accounts and the 'Know Your Customer' rules that developed to fight terrorist and criminal financing provide a check on falsification of geographic locations.

On Freelancer.com, 25.5% of job seekers are listed as living in India, followed by Bangladesh (19.1%) and Pakistan (11.7%). In Upwork, the top three countries are the US (23.4%), Ukraine (15.9%), and the Philippines (4.9%). On Workana, which is based in Argentina and focused on

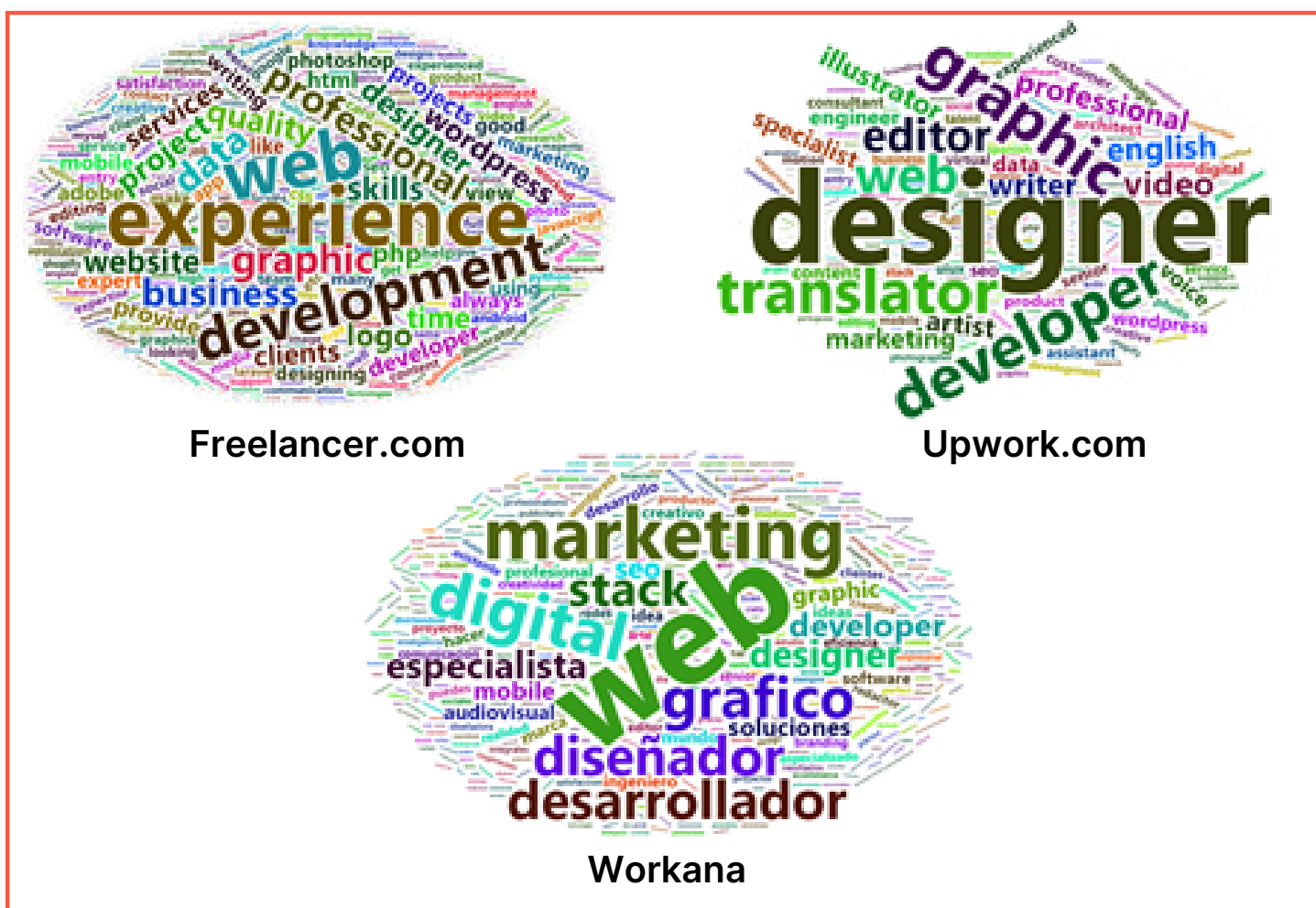
Spanish-speaking jobs and freelancers, one-third of workers as listed as living in Venezuela, followed by Argentina (19.8%) and Mexico (11.4%). The participation of Colombian job seekers in Freelancer and Upwork is relatively low (0.42% and 0.6%, respectively). However, in Workana, the proportion of Colombians is relatively high (7.6% of total job seekers). See details in Table 5.3.

5.1.5. Supply of freelancers: Most frequent job titles and skills offered

Figure 5.3 shows the most frequent job titles mentioned by the job seekers on each website.

As in the case of the labour demand, one of the most frequent words on the job portals are 'website', 'development', 'designer', and 'graphic', among others. We found that the job titles most demanded tend to be the most frequent job titles mentioned by the jobseekers – not a surprising result since both are endogenous choices. It is crucial for job seekers to highlight that they have work experience or signal that they are specialists in a particular field.

Figure 5.3: Most frequent job titles offered in English



A more detailed analysis of the skills offered by job seekers confirms that skills related to graphic design, web development, etc., are the most offered on job portals for freelancers (Table 5.4). Particularly, on Freelancer.com, 18.3% of job seekers offered logo design, 15.5% graphic design, and 14.5% Photoshop skills¹¹. In Upwork, the skills most frequently mentioned are Adobe Photoshop, English translation, and Adobe Illustrator, while in Workana, the most frequent skills offered are WordPress, graphic design, Adobe Photoshop, and design and multimedia.

Source: Freelancer, Upwork and Workana. Own calculations.

Table 5.4: Top 20 skills most offered on the job portals

Freelancer		Upwork		Workana	
Skills	Percentage	Skills	Percentage	Skills	Percentage
Logo Design	18.3%	Adobe Photoshop	21.9%	WordPress	40.9%
Graphic Design	15.5%	Translation English	15.6%	Graphic Design	36.3%
Photoshop	14.5%	Adobe Illustrator	13.7%	Adobe Photoshop	32.5%
Website Design	10.9%	Graphic Design	11.4%	Design & Multimedia	31.2%
PHP	10.6%	Logo Design	8.4%	Adobe Illustrator	30.8%
Data Entry	10.3%	WordPress	7.1%	PHP	30.4%
Illustrator	9.2%	Translation	7.0%	IT & Programming	27.4%
HTML	8.6%	JavaScript	7.0%	Web Design	25.7%
JavaScript	8.6%	Web Design	6.8%	JavaScript	25.7%
Excel	6.9%	Video Editing	6.4%	Article Writing	23.6%
Banner Design	6.8%	Data Entry	6.1%	MySQL	21.1%
WordPress	5.9%	Illustration	6.1%	Logo Design	19.8%
Data Processing	5.4%	PHP	5.6%	Feature Writing	17.7%
Copywriting	4.8%	Adobe After Effects	5.5%	Corporate Brand Ide	17.3%
Translation	4.1%	Proofreading	5.3%	HTML5	16.9%
Java	12.8%	Adobe InDesign	5.2%	SEO	15.6%
Python	17.0%	Photo Editing	4.8%	Internet Marketing	14.8%
MySQL	12.8%	3D Modelling	4.7%	Social Media Market	14.3%
Software Architecture	12.8%	Copywriting	4.6%	Creative Writing	13.5%
Android	12.8%	Microsoft Excel	4.5%	E-commerce	13.5%

Source: Freelancer, Upwork and Workana. Own calculations.

¹¹ The total number of skills offered on this website is around 1,426. This number for Upwork and Workana is 3,358 and 399, respectively.

5.1.6. Supply and quality of Colombian freelancers

The figures above illustrate the overall supply and demand for telemigration. Is this representative of the situation in Colombia?

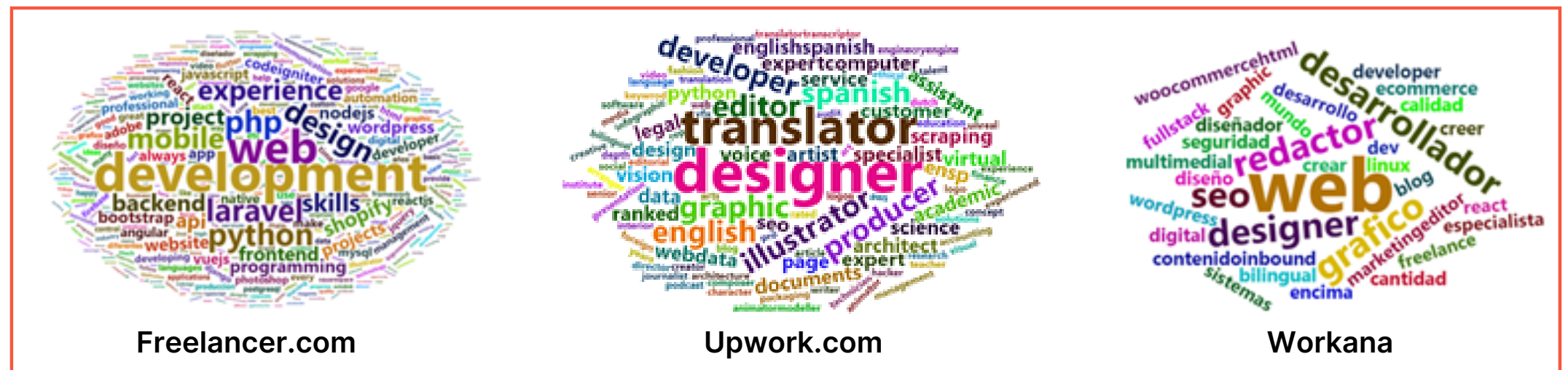
Figure 5.4 shows the most frequent job titles mentioned by Colombian job seekers. There is no considerable difference between the job titles mentioned by

Colombian jobseekers and those mentioned by people in other countries. In general, the job titles most mentioned by Colombians are related to web development, design and graphic design, and translation (English/Spanish), etc.

Table 5.5 shows the skills most frequently offered by Colombian job seekers. Like the above table,

the skills most frequently offered by Colombians are related to graphic design to web development. However, in Upwork, Colombian people tend to offer more frequently translation skills (English to Spanish or vice versa). Consequently, the data shows that Colombian job seekers' occupations and skills do not considerably differ from skills that other people around the world usually offer.

Figure 5.4: Most frequent job titles offered by Colombian jobseekers



Source: Freelancer, Upwork and Workana. Own calculations.

Table 5.5: Top 20 skills most offered on the job portals by Colombian job seekers

Ranking	Skills	Freelancer	Skills	Upwork	Skills	Workana
01	PHP	34.8%	Translation Spanish	25.0%	Adobe Illustrator	17.0%
02	JavaScript	34.8%	Translation English	22.5%	PHP	12.8%
03	HTML	23.9%	Adobe Illustrator	20.0%	IT & Programming	12.8%
04	Logo Design	19.6%	Spanish	20.0%	Graphic Design	12.8%
05	Website Design	19.6%	Proofreading	12.5%	Design & Multimedia	12.8%
06	Graphic Design	17.4%	Translation	12.5%	Article Writing	12.8%
07	WordPress	17.4%	PHP	12.5%	JavaScript	12.8%
08	React.js	15.2%	Laravel	12.5%	Adobe Photoshop	12.8%
09	Python	15.2%	JavaScript	12.5%	HTML5	12.8%
10	Illustrator	13.0%	CSS	12.5%	WordPress	10.6%
11	MySQL	10.9%	Virtual Assistant	12.5%	Marketing	10.6%
12	Laravel	10.9%	HTML5	12.5%	Web Design	10.6%
13	Engineering	8.7%	Illustration	10%	Blogs	8.5%
14	Software Architecture	8.7%	3D Rendering	10%	E-commerce	8.5%
15	Ajax	8.7%	Vue.js	10%	Video Editing	8.5%
16	CSS	8.7%	Social Media Management	10%	Adobe After Effects	8.5%
17	Corporate Identity	6.5%	Logo Design	10%	3D Modelling	8.5%
18	C# Programming	6.5%	Graphic Design	10%	Copywriting	8.5%
19	Solidworks	6.5%	Adobe Photoshop	10%	eBooks	8.5%
20	Wix	6.5%	Customer Support	10%	Corporate Brand Ide	8.5%

Source: Freelancer, Upwork and Workana. Own calculations.

5.2. Qualitative evidence: Interviews with employers and freelancers

To get a better picture of the challenges and rewards facing Colombians engaged in service exports, we interviewed a handful of service employers and service providers. All were engaged in hiring service workers remotely or providing services remotely – most of them via platforms.

5.2.1. Interviews with employers

We conducted in-depth, semi-structured interviews with three employers. They were:

- A food trading firm with business in 16 countries but mostly in Colombia and Japan. The firm hires many consultants but usually relies on informal networks to find the candidates rather than digital platforms.
- A Colombian firm in the summer-camp industry which hires both directly and online.
- An independent worker who has used digital platforms from the supply and the demand side. She has trained consultant workers in El Salvador to become successful online freelancers as part of an Inter-American Development Bank programme.

What were employers looking for?

We can classify the answers into soft skills and hard skills. On the soft side, the range of traits was not surprising, but it indicates that they were not looking for low-level workers that just had to perform simple and very well-defined tasks. The desiderata included versatility, adaptability, resourcefulness, and the ability to find solutions in the time frame available. There are here, and indeed throughout most of the interviews on both sides of the market, a very strong emphasis on being able to meet deadlines. Increasingly, employers put

together teams of freelancers to do particular projects, so soft skills like being able to work in teams were important.

The hard skills employers sought mostly had to do with particular qualifications or certifications (e.g., in computer languages). Fluency in English was a top skill demanded, but additionally, employers wanted their service workers to have some notion of ‘corporate culture’ and customers’ needs. Some form of international experience was mentioned as useful.

What were the pros and cons of hiring freelancers?

On the plus side, one of the key pros was the speed of hiring – especially on the platforms. New workers could be identified and hired in a few days. As one interviewee put it:

- “If I have to highlight some advantage of freelance platforms, it would be the speediness of the process... You say, ‘I need this translation’, you go to sleep and the next day, you have it there.”
- “The selection gets to be of better quality than a normal hiring process, where one asks: ‘do you know someone that could be interested in a position on community manager’, and the other person answers: ‘I can ask the son of a friend of mine who is unemployed...’ In the platform world, employers and workers post their needs and offers.”

The large pool of talent was also very attractive compared, for example, to limiting hires to people who lived within commuting distance.

- “There is a great variety of very qualified people at very low cost. It is very appealing to have access to highly skilled programmers in India at a very good cost.”

- “We have had several needs. One of them is a computer program called FileMaker... In Colombia, there are only 1 or 2 certified people on this platform. Therefore, I end up depending on a single person and the local developing of this platform became very costly. This encouraged me to look for offshore technicians. It was a relief to get into Workana and find many people programming with FileMaker in other countries.”

Sourcing labour on the platforms was also financially cheaper.

- “The highlight of these platforms is that you can get qualified labour at a lower cost than it would cost you to get it in your country, what do I mean? First-world companies in countries such as the United States, Canada, United Kingdom, Singapore, Australia (where labour is very expensive) save a lot of money by outsourcing workers through a platform: an assignment that in Australia is worth 500 dollars, can be offered at 250 dollars. That, compared to the salary in India or in the Philippines, can be very attractive.”
- “We hired a Colombian to develop some software. Thanks to his ability and skills, what he achieved would have cost us a fortune in Japan. What we have done in-house must have saved us at least 600 or 700 thousand dollars... easily.”

The negative aspects of freelancers included frustration with freelancers who were not familiar with the rules of the platform. This was mentioned surprisingly frequently. There was also an issue with the difficulty of establishing longer-term relationships with particular workers, for example, rehiring the same freelancers a year later to work on an update of the project he/she originally undertook.

Note that the platforms put some effort in trying to prevent this as they want the employers to hire via the platform rather than hiring the worker directly. Typically, the platform takes a 20% cut of each payment. This is sometimes paid by the employer, sometimes by the freelancer, and sometimes it is split. Language and culture were an issue frequently mentioned.

Were Colombian freelancers better?

The employers were generally well-disposed to Colombian workers. They found them well prepared, particularly in design and systems, as well as being willing to work with new technologies and to learn. On the downside, they tended to be more expensive than workers from India, the Philippines, or Vietnam.

Another big difference between Colombians and the freelancers that could be hired in, say, India and the Philippines was the existence of companies that could provide complete teams to complete projects with diverse needs, for instance setting up a website starting from scratch. This involves design issues, graphics, user experience experts as well as programmers and database experts.

The Colombian employers we talked to appreciated the ability to pay Colombians in pesos and to discuss the project in Spanish. Presence in the same time zone was also a plus, whereas this seemed to be a burden to foreign companies. Related to this, however, was the general reluctance of Latin American service providers to work outside the normal local working hours. For the Japan-based employer, a lack of understanding of Japanese social and corporate culture was a frustration. In particular, a rather relaxed attitude towards deadlines was cited as a key common weakness of Colombians.

We also have more quantitative evidence on the quality of Colombians working online. The data we scraped from the freelancing sites lets us look at the 'scores' that each freelancer has. These are rankings – done by past employers – of the quality of the work and worker, which are entered using a system very much like TripAdvisor. They are an important criterion in getting hired (as we'll see below).

A Colombia-based firm notes:

- “Some advantages of hiring Colombians are a shared language, currency and culture. They can understand much better the product that is needed, by speaking the same language, but also by being regulated by the same authorities.”
- “Is Colombia going to be an important player in this market? For me, language has to be in the equation that solves this question, but if I had to choose the variable that really moves the needle, what is going to be done is knowledge, design knowledge, software architect facilities, experience.”

- “Speaking fluent English is key, unless you plan to only interact with platforms like Workana; but if you want to interact with other platforms, more internationally, you must be able to have a conversation in English, to understand and to make yourself understood. It doesn't have to be perfect, but you need to be able to understand instructions, explain the work and write a proposal in English.”

As it turns out, the Colombians on the site we scraped tended to have somewhat higher performance scores than the average freelancer. On Freelancer.com, Colombians earned 4.95 out of 5 versus an average for the others of 4.88. A similar edge was found on the other two platforms (Table 5.6).

In our qualitative discussion of the challenges of being a freelancer (see below), it is clear that being a successful freelancer is not an easy thing. The higher quality scores could be caused by many things, but it does suggest that the Colombians that persevered sufficiently to be on the platform were of higher quality than the average.

Table 5.6: Scores of Colombian freelancers versus others

	Region	Score	Standard deviation
Freelancer	Rest of the world	4.88	0.39
(out of 5)	Colombia	4.95	0.09
Upwork	Rest of the world	93.5	9.63
(out of 100)	Colombia	95.1	7.49
Workana	Rest of the world	4.71	0.69
(out of 5)	Colombia	4.96	0.13

Source: Freelancer, Upwork and Workana. Own calculations.

Given there are big fixed costs of being a success on these platforms, and that this would lead to selection, the higher quality could suggest higher fixed costs for Colombians. That is, just like exports are dominated by large, highly productive firms (since those are the ones that can manage the fixed cost of breaking into foreign markets), higher average quality of Colombian workers observed on the platforms could be due to higher average fixed costs. Alternatively, it could be that the average quality of Colombian workers is simply higher across the board, so it is also higher on the platforms.

5.2.2. Stories from the workers' perspective

We interviewed five Colombians working online or trying to:

- A computer engineer, 24 years old, who lives in Sincelejo. He has four years of experience as a software developer and has completed more than 45 projects with Workana (plus some experience with Freelancer). His clients have been in Argentina, Belgium, Chile, Ecuador, Perú, Puerto Rico, Spain, and Uruguay.
- An economist, 22 years old, working for an investment fund. Did some freelancing on Workana and Torre (a Colombian platform) after just graduating from college.
- A computer engineer, who works for a bank and uses LinkedIn to get extra work.
- A lawyer from Argentina, who has not been successful in finding work on the online platforms.
- A graphic designer, 33 years old, who creates e-courses by adding illustrations and interactive components. She started out in a technical career.

What are the advantages of online freelancing from the workers' perspective?

The most frequently mentioned advantages of online freelancing were the chance to work with foreign employers, independence, flexibility, and ability to work from home. Also important was the availability of jobs – important in the current difficult situation in the Colombian labour market.

The downsides were: the difficulty of finding a good internet provider, and the difficulties connections cause. Time zones posed challenges: “It’s difficult to answer on time if the employer writes you at night.”

There was wide discussion of the difficulty of getting on the platforms. The platforms require certifications and tests, and the freelancers must fill in any holes in their CVs before they can start bidding for jobs on the platform: “This process can take up to one month.” They also complained that the demand is heavily concentrated in digital marketing and financial analysis.

One general concern was the difficulty of carrying your ratings scores from one platform to the other. That tends to lock freelancers into one platform since the platforms discourage competition by making the scores difficult to portage.

What are the key skills for success?

On the soft skills side, the following were widely mentioned.

- “Assertive communication”, that is, “to be able to understand the client needs, and to present your work.”
- “To be honest of own limits: what you can do and the availability of time that you have. Also, in the use of confidential information.”

- “Compliance and responsibility: otherwise, poor scores are obtained leading to difficulties in finding a new contract.”
- “To be humble: to be open to lessons and experiences.”

As for hard skills:

- “English. Lack of a good English level excludes you for jobs.”
- “Be informed on platform functioning.”
- “Specific knowledge: R, Python, JavaScript, econometrics applied to marketing, corporate finances.”

Suggestions from the interviewees for improving performance

There was a reasonable degree of agreement among the interviewees that simplifying, strengthening, and facilitating the certifications process would make it easy to work on and hire from the platforms. One of the interviewees had done training for the Inter-American Development Bank in El Salvador to help workers get online. She mentioned that workers needed training on how the platforms function and how to write their profiles to get more jobs. One suggestion was that the government of Colombia set up its own site to help get access to freelance platforms, such as the platform supported by the government, Servicio Público de Empleo (Labour Training Institute).

6. OTHER ORGANISATIONAL FORMS USED IN DEVELOPING NATIONS

Our discussion has focused so far on freelancing, which was the focus of our original research. Freelancing, however, is not the largest organisational form of service exports. We turn now to other vehicles for service exports used in developing nations.

As background, it is important to keep in mind the distinction between 'offshoring' (the location of the activity with respect to national boundaries) and 'outsourcing' (the location with respect to the firm's boundaries). Offshoring of services done within the firm happens via 'captive centres', also called shared service centres. The call-centre activities of Delta Airlines, for example, are undertaken by an unrelated company in India, Spectramind. This is outsourcing (ITC 2010). The business processing outsourcing (BPO) centre of Accenture in India, by contrast, is a captive centre, as its employees are Accenture employees (ITC 2010). This is in-house offshoring.

Multinationals like ABN Amro Bank, American Express, Bank of America, British Airways, Citibank, GE, and Swissair have all set up captive facilities in India. In general, countries that have less experience with service offshoring tend to rely on the captive-centre approach, i.e., foreign affiliates of large foreign firms. Even in the Philippines, these make up the lion's share of BPO exports. Likewise, in South Africa, over half the people working in the BPO export sector are employed directly by foreign-owned companies.

In Latin American and the Caribbean, the captive model dominates. The ITC (2010) report notes that a 2009 survey found the share of in-house offshore service employees to be 59% in Honduras, 63% in Saint Lucia, 82% in Saint Vincent and the Grenadines, and 90% in El Salvador.

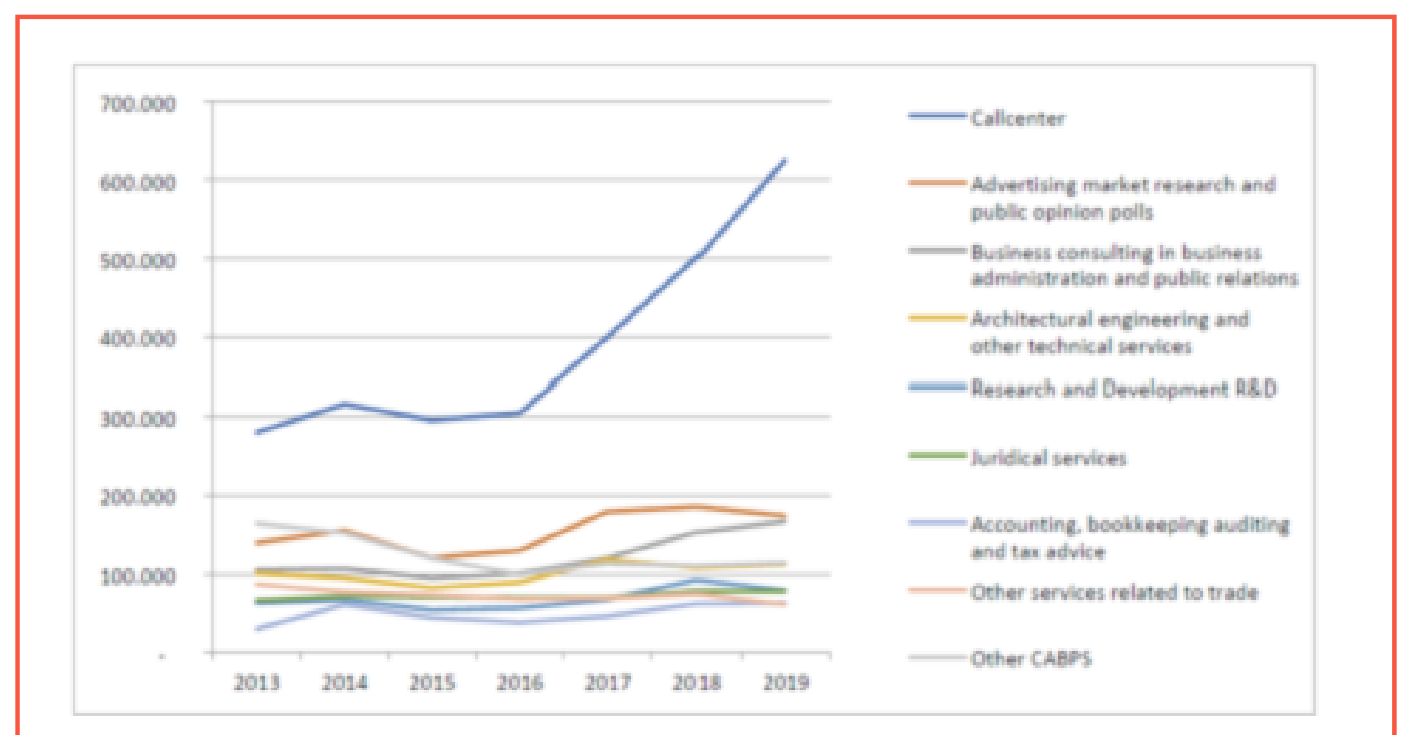
6.1. Examples in Colombia

One important strong point for Colombian export services is call centres. As the charts in Dubuque et al. (2021a) show, Colombia exports of call-centre services more than doubled between 2016 and 2019.

As in India and the Philippines, where call centres were the entry-level service exports, it may be that call centres in Colombia prove to be the wellspring for future growth. What do these firms do?

Consider a couple of leading examples, starting with Viapin Colombia SAS, which is located in Bogotá, has 42 total employees and generates almost a half-million dollars in sales, according to DNB.com. Although it is listed as a call-centre firm, Viapin offers a much wider range of services. Its website says:

Figure 6.1: Exports of other business services (thousand USD)



Source: Dubuque et al. (2021a) Figure 11.

"We focus on creating virtual solutions adapted to every business need. ... We have been focused on getting to know each client in detail, to be able to generate strategies based on their experience and objectives, adapting ourselves to every project and situation. This has been in great part the reason for our success with large companies in the United States and Colombia."

Another is Callzilla.net, a US company headquartered in Florida that operates two nearshore sites in Bogotá, Colombia. It provides outsourced call- and contact-centre services, as well as BPO services. Crunchbase describes them as: "the Hispanic call centre of choice for many of America's leading companies [that] offers the most neutral Spanish-speaking residents."¹² Callzilla has a few hundred employees. A hint about their more advanced services comes from this employment opportunity on their website:

"We are looking for bilingual contact center operational managers with experience in customer service, sales and/or retention, with minimum B2 level of English, technical degree, two years of experience in the position and that live in Bogotá or nearby. They must have skills related with coaching, be goal oriented and administration, with availability from Sunday to Sunday."

Datascoring De Colombia is a company specialising in debt collection in all its forms: consumer credit, loan credit, revolving credit, mortgage credit, automotive credit, among others. On their website the state: "We are a company with a unique focus on the implementation of technology for the integral management of the credit cycle in Latin America." Altycom BPO is a BPO service provider with hundreds of employees in Bogotá. It is a hybrid organisation in that it provides an online contact centre but also a face-to-face sales force

that has extensive experience and infrastructure to operate points of sale nationwide in Colombian retail. They manage and integrate the processes of inventory control and maximization of the productivity of the sales force.

The last example we look at is Colombian Outsourcing Solutions. Their website states: "We are a leading company in BPO at a global level, providing solutions oriented to the optimization of the quality of customer service for several countries in the world. Based on international quality standards, we manage telecommunications projects ensuring the design and implementation of strategies in service processes." According to the industry website Clutch.co, about 35% of its services involve non-voice BPO/back-office services, 35% voice services, and 30% accounting services.

6.2. Observations

This palette of examples is evocative of how Colombia's service-export industry could develop. The companies start small with a standardised service like call-centre tasks but branch out into a wider range of services and move into higher-value and higher-skill services such as BPO, knowledge processing offshoring (KPO), and customised software solutions. A fascinating example of this is the work that Tuatara, Boutique Agency, did for a German start-up, Eventfeed. The German company aspired to become the largest benchmark for multi-thematic events in Europe, such as concerts, art, exhibitions, parties, festivals, theatre, cinema, sports, and more. Tuatara designed and built a progressive web application for Eventfeed that provided a way to connect mobile users with events.

One opportunity for Colombia arises from the fact that large companies typically diversify locations. For example, HSBC had 1,500 employees in China and

2,000 in India, with about half the employees providing service to UK-based accounts. The firm also has a 500-person processing centre in Kuala Lumpur, and it is looking at Sri Lanka and the Philippines to mitigate country risks. Note that the giants in these fields are not only hailing from G7 nations. India's independent firms compete successfully with top firms from the industrialised nations, and they are offshoring jobs to, for example, Sri Lanka. It even goes 'uphill' in some cases. The Indian IT service company, HCL, runs a substantial call centre in Belfast (1,800 workers).

6.3. Principal success factors

The ITC (2010) study delves into factors that drove success in developing nations. It posits a model, dubbed the Oval Model (Figure 6.2). The schematic is suggestive and ITC judges that not all factors are needed to achieve success (as was the case in India service export sector in the sector's formative years).

Many of the factors require no comment since they are important in all realms of economic activity, not just services. What may be less familiar is the 'government vision and policy' factor when it comes to the services sector. This first point is that nations are trying to do promote service exports. "Governments in dozens of nations as diverse as Costa Rica, Iran, Kenya, South Africa, Bangladesh, Vietnam, and China, are taking concrete policy steps to promote their BPO services industry", notes ITC (2010).

Human capital investments are not just about degrees and qualifications; flexibility and adaptability are important soft skills because the services demanded change continuously. Even something like bookkeeping has changed dramatically in the last decade, with changes in data-processing systems, new regulations, and the like.

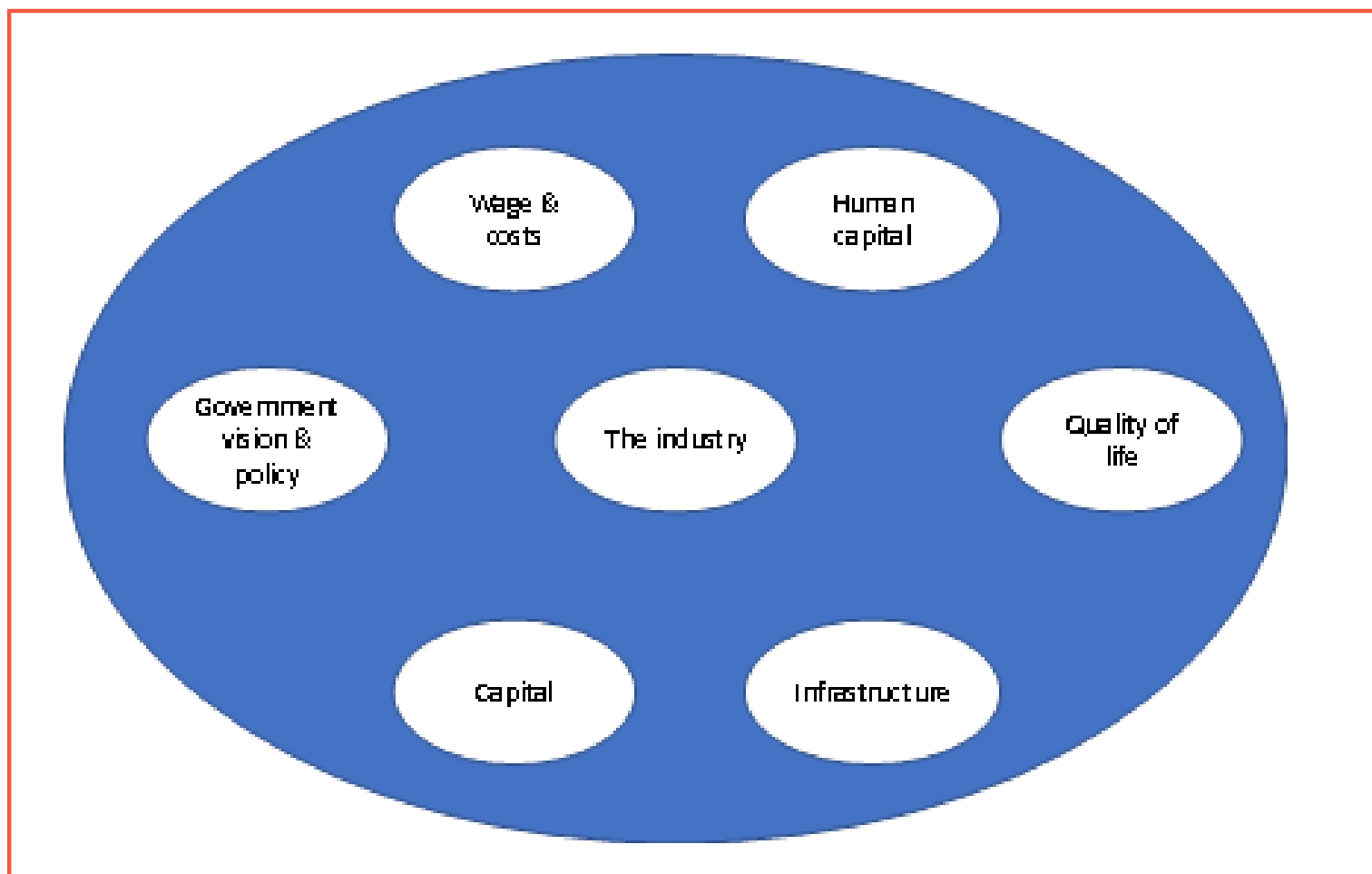
Competitiveness in BPO is about more than low costs (by G7 standards); flexible and skilled workers are also critical.

The infrastructure is also different in this sector than it is in trade exports of goods. Connectivity and telecommunications are necessary conditions. For example, a key step in India's success was the abandonment of its state-owned monopoly in telecoms. Private providers were allowed in the market and the quality of the telecommunication networks rose while cost levels plummeted. Many developing nations are following similar paths. The government of Sri Lanka is pushing a comprehensive

national information and developing nations are following similar paths. The government of Sri Lanka is pushing a comprehensive national information and communication technology (ICT) development strategy, e-Sri Lanka: An ICT Development Road Map, to boost online exporting. This complements its legal reforms and human resource development. The governments of Mauritius and Kenya have similar plans. The Indian government has a specialised agency, the Electronics and Computer Software Export Promotion Council, that organises promotion events.

As an empirical matter, clustering is important in this BPO sector. Successful firms are often located near other similar companies. Some of these clusters arise as a matter of government policy (e.g., the Multimedia Super Corridor in Malaysia), but in India, they arose organically in Bangalore. The source of the cluster advantage includes a shared labour pool and reputational spillovers.

Figure 6.2: The Oval Model of linkages and success factors



Source: Authors' elaboration inspired by Figure 1 in ITC (2010).

7. HOW OTHER NATIONS HAVE DONE IT: COSTA RICA AND THE PHILIPPINES

This section considers case studies of 'winners' in the service-export space. The purpose is to suggest that telemigration might work in Colombia, since it has worked in other developing nations.

7.1. Costa Rica

Costa Rica was the Latin American pioneer in embracing a service-export development strategy, starting in the mid-1990s - mostly by attracting multinationals to set up offices for their in-house back-office tasks and third-party service providers to use the country as a platform to export competitively priced services.

This has worked. A study that is somewhat out of date notes that in 2005, there were 33 multinational corporations in Costa Rica, employing 10,802 people (in a nation of 5 million) and exporting around USD 387 million in services – figures that tripled by 2011 (Marín-Odio 2014).

Since the mid-1990s, the country has leveraged its location in the US Central Time Zone, its largely bilingual population, and its relatively safe and stable security environment. Fernandez-Stark et al. (2013) characterise Costa Rica's service-export journey as having two stages. The first, from 1995 to 2003, started when several foreign multinationals decided to open a captive centre (i.e., all Costa Ricans at these centres worked for the multinational company) to get back-office operations performed at a lower cost. This is called business processing offshoring (BPO). The second phase was characterised by an influx of firms

into other segments of service offshoring, such as information technology outsourcing (ITO) and knowledge process outsourcing (KPO). The largest employers in the offshore services industry that operate in Costa Rica today entered during this second period.

The first-mover advantage has faded. Certain segments are coming under competitive pressure – especially transactional activities. In Latin America, "the majority of governments are actively recruiting offshore services providers to set up operations in their countries. These governments hope to attract offshore services [multinational corporations] by virtue of the availability of educated human capital, inexpensive labour and good telecommunications infrastructure their countries can provide", according to Fernandez-Stark et al. (2013).

7.2. The Philippines

The Philippines is another roaring success story when it comes to service exports. Its story has in fact been a key example of service-export-led development. The Philippines shifted from an agriculturally based economy to one dependent on services; manufacturing has played only a marginal role. In 2014, for example, service exports accounted for approximately 30% of exports – four times the share it was in 2005 (UNCTAD 2016).

The Philippines success story started with a strong advantage in call centres. Some special circumstances, in particular, the country's cultural affinity with the US (as a former colony and host to a major US military base), gave it an edge over India's call centres. The growth was nothing short of spectacular – and an indication of how large the potential service-export market is. In 2004, 100,000 people were employed in the sector; by 2014, the number was over a million and services accounted for about 20% of the nation's total exports.

Call centres were a focal point for development, policy, and training. The tasks performed – i.e., exported – included negotiating credit card repayments, troubleshooting, and booking flights and hotel room services. From this base, the Philippines upgraded into non-voice procedures, including email, chat, and social media branding, and back-office tasks in finance, accounting, and human resources. More recently, Philippines-based companies have started exporting higher-value services that require more trained personnel, such as medical transcription services and services related to gaming and animation (Fernandez-Stark et al. 2011).

How did the Philippines break into the BPO industry in competition with India? The most common factor cited is its large, English-speaking and youthful population. The call centres initially drew on previously marginalised workers. Another noteworthy aspect is that many of the Filipino firms are very large. Accenture's operations, for example, has 45,000 employees, and firms with tens of thousands are not uncommon. Many firms operate in secondary cities rather than Manila. Finally, it should be noted that these are considered good jobs. Call-centre work is respected within the Filipino community and workers earn good salaries by national standards.

7.3. Argentina

A study from Argentina provides a more recent example (Madariaga et al. 2019). Digital platforms are a recent development in Argentina. In 2016 there were only five such platforms in operation and all of them are domestic companies aimed mostly at domestic service suppliers and buyers. As the foreign-exchange restrictions relaxed, eight new foreign platforms entered the market. Interestingly, these new forms of work are not included in the government's official statistics and thus are to some extent invisible.

The study is based on a 2018 survey. A key finding is that the export service sector is important. The population of users and providers amount to 1% of all those employed in Argentina, some 160,000 workers. "That figure encompasses very different realities, from people transporting passengers in their cars to graphic designers working from home, or people renting out a room in their homes," as the report notes.

This new category of employment is not an unmitigated blessing. It offers new income sources to under- and unemployed workers on the positive side. On the negative side, it creates regulatory-arbitrage issues. It poses challenges to the application of labour, tax and worker-protection rules designed for the traditional economy.

8. CONCLUDING REMARKS

This paper presents data suggesting that digitally enabled service exports could be a useful vector for the internationalisation of Colombia. Our calculations suggest that about a fifth of Colombian jobs are teleworkable and thus conceivably tradeable and that the average Colombian wage in these occupations are a tenth of that in the US. Taking the two calculations together suggests that telemigration has the potential to contribute substantially to the internationalisation of the country. But potential and actual are – as always – two very different things.

The paper also presents a brief account of efforts other nations are making in this area, including a short case studies of countries who have had success stories with this.

8.1. Some policy ideas

8.1.1. Promoting freelancing to Colombians

Pro-export policies in services are mostly similar to those in other sectors. From our interviews, however, we gleaned some freelancing-specific ideas. On both sides of this market, the private platforms have an incentive to keep the service buyers and sellers transacting on the platform, rather than forming stable longer-term relationships off the platform. Similarly, each platform uses its TripAdvisor-like rating system to reduce mobility, and this lack of 'rating portability' hinders competition.

Neither of these are in the public interest. One concrete suggestion that arose from our interviews was to have the government create its own platform that could serve to smooth the entry of Colombians into the commercial world of freelancing. The platform could be part of a package that could include: training; assistance to obtain the necessary qualifications, certificates, and English fluency; and coaching on how best to craft a profile on the commercial sites and the importance of deadlines and communication. Most of this is just packaging together standard active labour-market policies but with the specific aim of promoting online work. The government-run site would act as an apprenticeship of sorts.

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