

Postal economic outlook 2019

Latest trends in an evolving sector

Berne, Switzerland – February 2019



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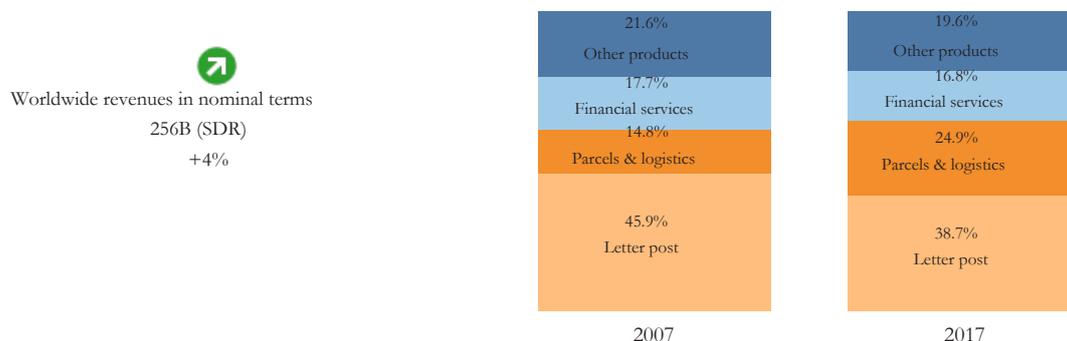
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Glossary

B2C	Business-to-consumer
CIS	Commonwealth of Independent States
DO	Designated operator
GDP	Gross domestic product
ITU	International Telecommunication Union
SDR	Special drawing rights
UPU	Universal Postal Union
USD	United States dollar
WDI	World development indicators

Key facts and figures

Postal revenues



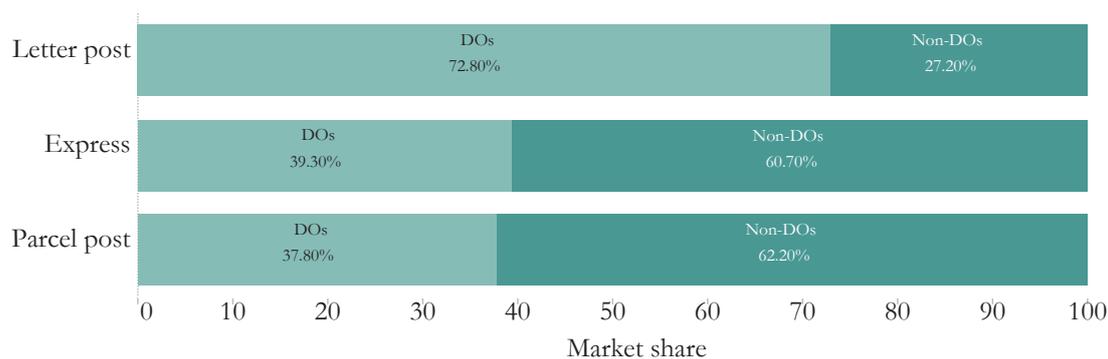
Postal revenues grew in 2017 in nominal terms to 256 billion SDR. In the last decade, designated operators have increased their reliance on parcels and logistics in order to diversify their revenue base.

Postal traffic



The secular trend of decline in the letter-post traffic of designated operators is slowing down, stabilizing at around 309.9 billion items per year, while parcel post continues to perform strongly.

Competition



While designated operators remain dominant in letter post, the picture is inverted when it comes to parcels, precisely the area that is growing fastest.

Source: UPU official statistics and estimates.

Notes: Annual revenue statistics for the year 2017 (with annual growth rates). Postal traffic statistics for the year 2017 (with annual growth rates). Competition statistics based on a three-year average (2015-2017).

Postal staff



Designated operators employ 5.3 million employees worldwide, a decline of 6% over the past decade but with an increase in the share of part-time staff.

Postal infrastructure



The number of sedentary postal offices in the world (668,445) shrank slightly over the last decade: a decrease of 1.6% was estimated for the 2007-2017 period.

Access to postal services



In 2017, more and more people had access to postal services. However, almost 5% did not have access to basic services.

Source: UPU official statistics and estimates.

Notes: The icons in this infographic are taken from Creative Commons, in accordance of their licence. The original illustrator is "Chanut is Industries".

Introduction

For the second year in a row, the Postal Economic Outlook reports on the latest statistics in the postal sector and puts them into perspective within the current macroeconomic context.

2017 and 2018 brought strengthened global growth figures in comparison with 2016. Indeed, 2017 was the first year since the financial crisis in which trade grew faster than GDP. Since trade has been a driver of economic growth in the recent past, its accelerated expansion was more than welcome.

However, the economic landscape for 2019 looks less bright. The rise of political uncertainty and signs of a potential crisis in investor sentiment has put the economic recovery at risk. These factors, and other spillovers, are likely to exert additional pressure on postal operators around the world, especially because of the pro-cyclical nature of their businesses.

Yet, so far, all the key factors that underpin the activities of postal operators continue to expand. E-commerce sales are still growing at double-digit rates; connectivity is on the rise, with over half of the world's population online; and remittance inflows are picking up again.

In this environment, postal operators are trying to adapt their business models, shifting their focus to parcels, logistics and financial services. However, this has not yet translated into increased revenues, as postal operators struggle to grow their turnover at the same rates as economic growth.

This phenomenon of “postal decoupling” corroborates the findings of past research by the UPU, including the Postal Development Report, which presented the Integrated Index for Postal Development and which highlighted the growing disparities in the postal sector, both between and within regions.

As a corollary to the shift in their business models, postal operators are also witnessing transformations in the nature of the traffic for delivery services. The letter-post segment continues to decline, with the exception of the international service in the Asia-Pacific region.

At the same time, parcels, especially cross-border, are expanding at double-digit rates.

For postal operators, this expansion in their activities is supported by one of the world's largest physical networks, spanning 668,445 post offices and 5.26 million employees. Yet the capillarity of this network is not the same everywhere, revealing once more the gaps in postal development across countries.

Beyond presenting the situation of the postal sector in all its traditional dimensions, a key innovation of this edition of the Postal Economic Outlook is the inclusion of a “zoom” on a particular topic.

This report zooms in on the increasing intensity of competition in the postal sector. In most countries, the sector used to be fully run by a single operator. But this situation has changed completely as a result of liberalization.

Using information collected by the UPU, it is possible to estimate the intensity of competition in the different postal segments, calculating the market shares of DOs for letters, parcels and express mail.

The analysis shows that while DOs remain dominant in the letter-post segment, the picture is inverted when it comes to parcels, precisely the area that is growing fastest today.

This report is structured around five sections. Section 1 presents the latest macroeconomic trends affecting the postal sector. Section 2 provides details on the evolution of postal revenues. Section 3 revolves around the latest developments in postal traffic. Section 4 covers statistical data on postal infrastructure. Lastly, section 5 zooms in on competition in the postal sector.

I. Macroeconomic trends

A fragile recovery

A decade after the Great Recession, economic growth has, on average, been stronger in 2017 and 2018 than in the previous years. However, the economic horizon for 2019 is clouded by political uncertainty, economic tensions in the international arena and changing financial market sentiment. As a result, most economic growth forecasts for 2019 have been cautious.

According to the projections of the World Bank, GDP growth in 2018 (3.0%) was lower than in 2017 (3.1%).ⁱ As the figures reported in Table 1 show, the expectations for 2019 are also lower, with the slowdown extending to 2020.

From a regional perspective, the Asia-Pacific region is still a powerhouse for global economic growth (6.6% in East Asia and Pacific, and 6.2% in South Asia in 2017) and is set to expand at around 6% annually in the coming years.

After reaching 2.3% in 2017, growth in industrialized economies is expected to enter a cooling down period, with rates below 2% by 2020.

A similar slowdown is forecasted to hit Europe and Central Asia, with growth rates dropping below 3% in 2019, down from 4% in 2017.

By contrast, after years of sub-par performance, growth in Latin America and the Caribbean is expected to rebound to 1.7% in 2019, accelerating further to 2.4% in the following year.

In the Arab region and in Sub-Saharan Africa, growth should also pick up in 2019 (1.9% and 3.4% respectively) and 2020 (2.7% and 3.6%).

International trade seemed to recover strongly in 2017, but new projections put the growth of worldwide trade volumes at 4.0% per year from 2018 through 2020.ⁱⁱ

Monitoring of key aggregates for the postal sector

For postal operators, the reversal of macroeconomic conditions has not yet translated into a slowdown in international activities, as cross-border e-commerce appears to continue its path of robust double-digit growth.

Nevertheless, the macroeconomic climate of uncertainty could still hamper the strong growth observed to date in international postal exchanges, putting the activities of postal operators under pressure. This is especially true given that securing investment might become more difficult in the presence of a more turbulent stock market, with rising borrowing costs for emerging markets owing to the strength of the United States dollar (USD).ⁱⁱⁱ

There may also be further pressures for electronic substitution as the trend towards more Internet connectivity continues. Indeed, according to the ITU, in 2017, for the first time in history, more than half of the world's population (51.2%) had access to the Internet.^{iv} Moreover, this growth is characterized by an increased dominance of mobile access, with almost the entire world population living within range of a mobile-cellular network signal.^v

In the area of financial services, remittance inflows are soaring strongly once again (6.6% and 10% in 2017 and 2018 respectively) after a slight drop a few years ago (-1.1% in 2016). This may create further opportunities for postal operators to weather the reversal in the macroeconomic climate.

Table 1 GDP projections

Real GDP growth (%)	2017	2018	2019	2020
World	3.1	3.0	2.9	2.8
Industrialized economies	2.3	2.2	2.0	1.6
East Asia and Pacific	6.6	6.3	6.0	6.0
Europe and Central Asia	4.0	3.1	2.3	2.7
Latin America and the Caribbean	0.8	0.6	1.7	2.4
Arab region	1.2	1.7	1.9	2.7
South Asia	6.2	6.9	7.1	7.1
Sub-Saharan Africa	2.6	2.7	3.4	3.6

Source: World Bank estimates and projections.

Notes: Regional aggregates based on World Bank regions. The World Bank refers to industrialized economies as “advanced economies”.

Table 2 Key macroeconomic indicators

Key indicators	2018
World trade (annual growth)	4%
% of individuals using the Internet	51.20%
B2C e-commerce sales	2,842 billion USD
B2C e-commerce sales (annual growth)	23%
Remittance inflows	642 billion USD
Remittance growth (annual growth)	4.60%
International postal tonnage (annual growth)	2.6%
International postal items (annual growth)	25%

Source: International Monetary Fund, World Bank, ITU, Statista, UPU big data.

Notes: Estimates for 2018.

II. Postal revenues

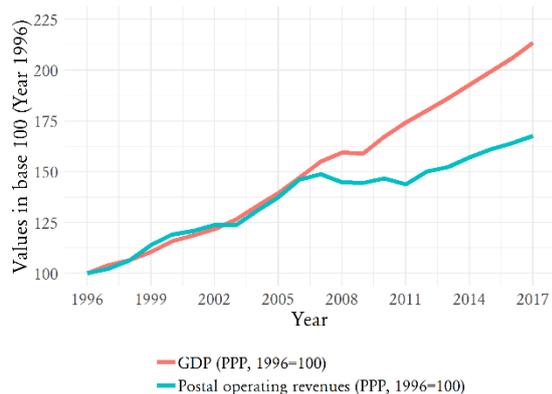
Postal revenue growth

In 2017, postal operators on average benefited from the positive economic climate. Globally, and in nominal terms, the revenues of DOs grew by 4%, reaching 256 billion SDR.

Nevertheless, these nominal values have two caveats. They control neither for inflation nor for differences in the cost of living across countries. To offer a more accurate picture, operating revenues can be transformed in real terms by controlling for the GDP deflator and purchasing power parity.^{vi}

When comparing postal operating revenues in real terms to GDP (Figure 1), it is striking to note that, since 2007, the postal sector has been consistently underperforming the real economy.

Figure 1 Postal output gap



Source: World Bank and estimates based on UPU official statistics.
Notes: Values normalized to 100 in 1996 to allow for trend comparison.

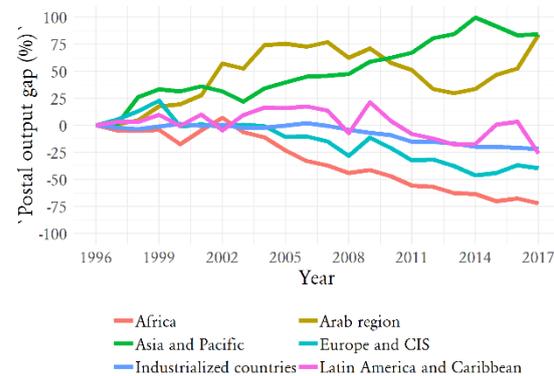
This trend of “postal decoupling” is a 21st century phenomenon, essentially taking place in the last decade. It coincides with many structural changes that economies around the world have been commonly facing, and it leads to two important observations concerning postal services.

First, growth factors in the real economy appear to be less complementary to postal services, reversing a historical trend that had been at work since the 19th century. In the past decade, the advent of digitalization and a challenging regulatory framework have pushed many postal operators to restructure their activities. While many have been successful in making the transition, on average the dividends of the transformation have yet to materialize for the sector as a whole.

Second, the gap is, on average, widening. In the period from 2007 to 2017, the real economy grew an average of 3.3% per year, while real operating revenues grew at the much slower annual pace of 1.2%. These numbers are at odds with the expansion observed in the 1996–2006 period, during which the real economy grew at 3.9%, the same growth rate of real postal operating revenues. As a result, the gap between the two indexes has widened from less than 1% in 2006 to 21.5% in 2017.

To complement the view of the global trend, Figure 2 shows the evolution of the postal output gap by region. It stands out that in the Arab and Asia-Pacific regions, postal operating revenues have been growing at a faster rate than the real economy. For the group of industrialized countries and Latin America and the Caribbean, there is only a slight negative gap. However, in Africa as well as in Europe and the CIS, postal operating revenues have underperformed the real economy significantly with a widening gap.

Figure 2 Postal output gap by region



Source: World Bank and estimates based on UPU official statistics.
Notes: The output gap is deviation of operating revenues' growth with respect to GDP in PPP (base 100–1996).

This trend is consistent with indicators of postal development, which also tend to depict significant disparities between and within regions, as explained in the Postal Development Report 2018.^{vii}

Evolution of the business model

As a result of the complex mix of factors influencing postal revenue growth, DOs have shifted their core activities significantly in the past 10 years. Figure 3 shows that, over the past decade, the single major change has been the decreasing reliance on letter post as the main

source of revenue, dropping from 45.9% of total revenues in 2007 to 38.7% in 2017. On average, more revenues in parcels and logistics have substituted for that segment – a development that highlights the transformative nature of digitalization. Indeed, while the share in “other” and financial services has remained almost stable, total revenues from parcels and logistics have grown steadily every year, jumping from 14.8% to 24.9% within a decade.

However, these global estimates do not reveal all the disparities in the business models adopted in the different regions of the world. As shown in Figure 4, postal operators in the industrialized countries, Latin America and the Caribbean, and in Asia-Pacific have considerably increased their reliance on parcels and logistics.

In Asia-Pacific, the share of letter post in total DO revenues has dropped below the 30% mark, making parcels and logistics the (new) core business (36.6%).

Figure 3 Breakdown of global revenues

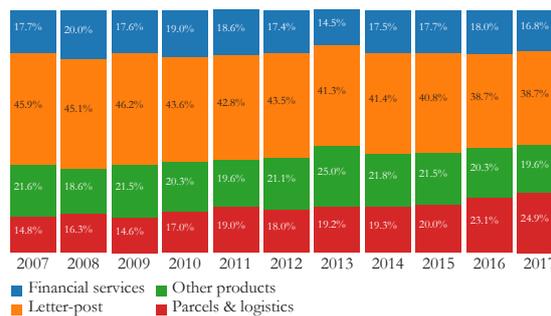
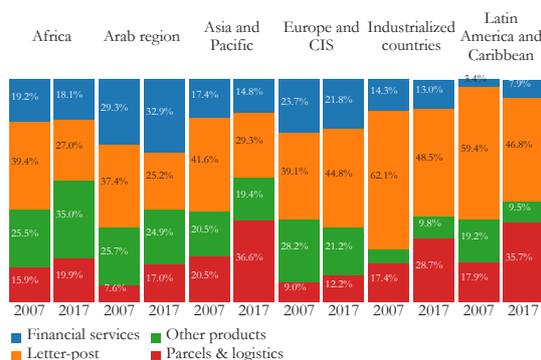


Figure 4 Breakdown of global revenues by region



III. Postal traffic

Global trends

The emergence of parcels as a revenue component for DOs is corroborated by postal traffic data. Indeed, the number of items for both domestic and international parcel post has increased markedly over the past decade. Conversely, the drop in letters is clearly visible at both the international and domestic levels. Table 3 provides the key figures for 2017.

Table 3 Snapshot of global postal traffic

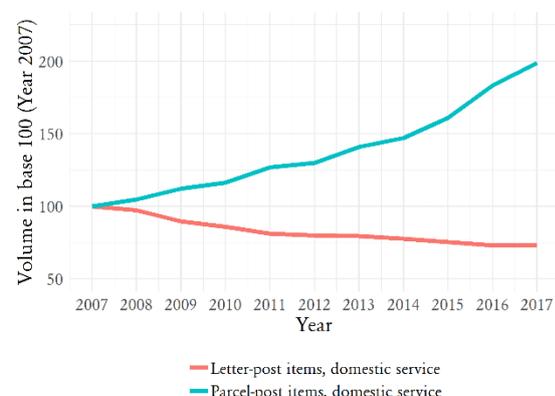
	Items (2017)	Annual growth rate (2017)	10-year compound annual growth (2007–2017)
Letter-post domestic	309.9 billion	0.3%	-3.1%
Parcel-post domestic	13.7 billion	8.6%	7.1%
Letter-post international	3.60 billion	-5.2%	-3.6%
Parcel-post international	0.18 billion	29.7%	13.3%

Source: Global estimates based on UPU official statistics.
Notes: Compound annual growth rates from 2007.

In 2017, the number of domestic letter-post items for DOs worldwide was estimated at 309.9 billion (see Table 3). The figure reflects an increase of 0.3% compared to 2016 and it shows that the drop in letters owing to electronic substitution is slowing down. Still, the compound growth rate of domestic letter post in the last decade has been -3.1% annually.

This evolution contrasts sharply with the strong

Figure 5 Worldwide evolution of letter post and parcel post



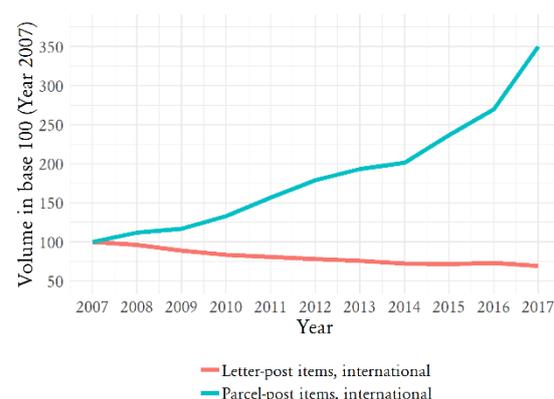
Source: Global estimates based on UPU official statistics.
Notes: Items normalized to 100 in 2007 to allow for trend comparison.

performance of domestic parcel post (Figure 5), which reached 13.7 billion items in 2017, i.e. an

increase of 8.6% from 2016, with a 10-year average rate of 7.1%.

While international traffic continues to be relatively small compared to domestic traffic (3.60 billion letters and 0.18 billion parcels), there has been a strong evolution in international parcel post, which grew by 29.7% in 2017. Since 2007, international parcel post has grown at double-digit rates. Figure 6 shows how the evolution compares to the decline of international letter post.

Figure 6 Worldwide evolution of international letter-post and parcel-post items



Source: Global estimates based on UPU official statistics.
Notes: Items normalized to 100 in 2007 to allow for trend comparison.

Regional trends

The global trends are confirmed from a regional perspective. The magnitude of traffic is reflected in Table 4.

With respect to domestic letter post, the bulk of the world traffic is still being generated by the group of industrialized countries (271 billion), followed by Asia-Pacific (16 billion), Europe and the CIS (12 billion), Latin America and the Caribbean (7 billion), Africa (0.95 billion), and the Arab region (0.56 billion).

2017 marked an annual decline of domestic letter post, which was particularly strong in Africa (-20.6%), the Arab region (-12%), Asia-Pacific (-10%), and Latin America and the Caribbean (-16%). In contrast, Europe and the CIS witnessed only a slight decline (-1.1%), and domestic volumes were even positive in industrialized countries (1.8%).

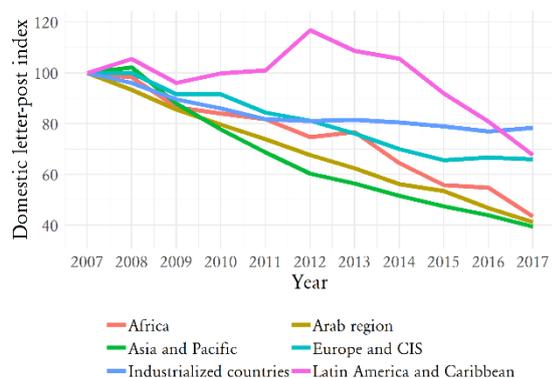
Table 4 Regional snapshot of postal traffic

Region	Measure	Items (2017)	Annual growth rate (2017)	10-year growth rate (2007–2017)
Africa	Letter-post items, domestic service	951 million	-20.6	-8.0
Africa	Parcel-post items, domestic service	4 million	3.1	1.0
Africa	Parcel-post items, international	0.3 million	0.6	-4.7
Africa	Letter-post items, international	36 million	-21.9	-11.6
Arab region	Letter-post items, domestic service	563 million	-12.0	-8.5
Arab region	Parcel-post items, domestic service	2 million	57.5	5.4
Arab region	Parcel-post items, international	1 million	61.5	11.8
Arab region	Letter-post items, international	43 million	11.6	-16.6
Asia-Pacific	Letter-post items, domestic service	16959 million	-10.3	-8.9
Asia-Pacific	Parcel-post items, domestic service	403 million	12.2	3.5
Asia-Pacific	Parcel-post items, international	4 million	-8.7	-0.3
Asia-Pacific	Letter-post items, international	1126 million	6.7	7.8
Europe and CIS	Letter-post items, domestic service	12155 million	-1.1	-4.1
Europe and CIS	Parcel-post items, domestic service	198 million	26.2	12.7
Europe and CIS	Parcel-post items, international	4 million	2.0	11.8
Europe and CIS	Letter-post items, international	154 million	-3.1	-5.3
Industrialized countries	Letter-post items, domestic service	271987 million	1.8	-2.4
Industrialized countries	Parcel-post items, domestic service	13010 million	8.1	7.1
Industrialized countries	Parcel-post items, international	166 million	32.1	14.4
Industrialized countries	Letter-post items, international	2207 million	-10.4	-5.5
Latin America and Caribbean	Letter-post items, domestic service	7301 million	-16.3	-3.8
Latin America and Caribbean	Parcel-post items, domestic service	122 million	23.0	17.8
Latin America and Caribbean	Parcel-post items, international	1 million	4.8	0.7
Latin America and Caribbean	Letter-post items, international	32 million	-4.3	-9.6

Source: Regional estimates based on UPU official statistics.

Notes: Estimates exclude the contribution of express items to respect comparability across countries. Regional groups are defined in the appendix.

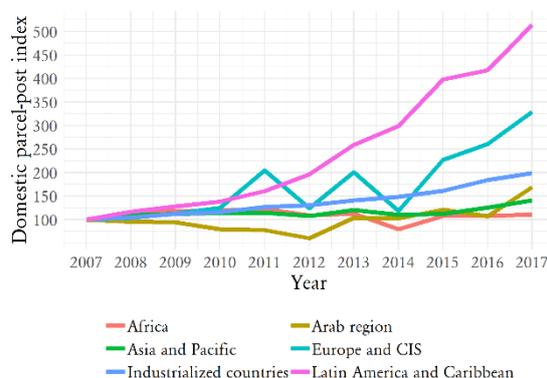
Figure 7 Regional trends, domestic letter post



Source: Regional estimates based on UPU official statistics.

Notes: Letter items normalized to 100 in 2007 to allow for trend comparison.

Figure 8 Regional trends, domestic parcel post



Source: Regional estimates based on UPU official statistics.

Notes: Parcel items normalized to 100 in 2007 to allow for trend comparison.

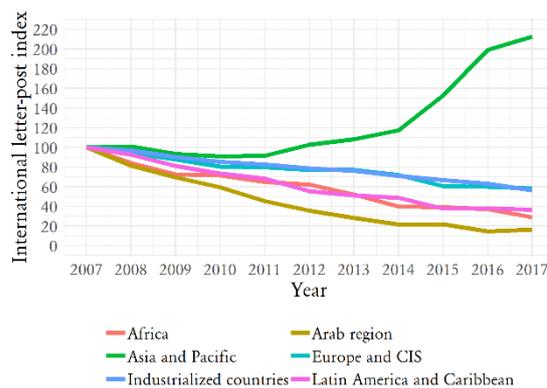
Indeed, the trend towards a decline in letter post has been a distinctive feature of the last decade. Figure 7 shows that this trend is slowing down in the group of industrialized countries as well as in Europe and the CIS.

The picture is the opposite in the case of domestic parcel post, which has grown significantly across most regions (see Figure 8). Given the increased reliance on parcels and logistics for revenue generation, this is an important segment to watch: its evolution in the coming years will be critical to understanding the fortunes of postal operators.

In the group of industrialized countries, parcel post has grown by 7.1% annually over the last decade, with an acceleration of 8.1% in the past year. Indeed, at 13 billion parcels, the progression has been tremendous. Growing at a similar rate (5.4% annually), DOs in the Arab region are trying to catch up in this segment (2 million in 2017). In Asia-Pacific, there were 403 million parcels in 2017, with an average growth rate of 3.5%. In Europe and the CIS, one can also see a rapid expansion of domestic parcels, with 198 million in 2017, i.e. a 10-year average annual growth of 12.7%. However, the most spectacular increase has been in Latin America and the Caribbean. With 122 million parcels, DOs in the region have grown in this segment by 17.8% annually since 2007. In contrast, Africa has been underperforming in this segment, with an average annual growth rate over the past decade of just 1%. In spite of that, there is currently a slight acceleration, with domestic parcels up by 3.1% in 2017 compared to 2016.

International letter post has been declining in every region with the exception of Asia-Pacific, where it has witnessed a positive expansion (Figure 9 shows the evolution across regions). The trend could be explained by the rise of small packages (below 2 kg) from e-commerce platforms, which are categorized as letter post. Indeed, at a 7.8% annual growth rate over the last decade, the increase has been remarkable.

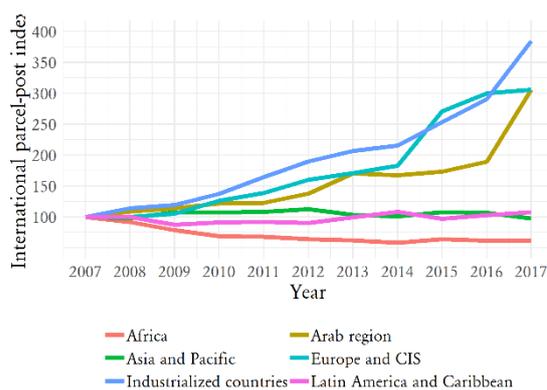
Figure 9 Regional trends, international letter post



Source: Regional estimates based on UPU official statistics.
Notes: Letter items normalized to 100 in 2007 to allow for trend comparison.

The picture has also been positive for international parcel post (Figure 10), although the quantities are still far from the levels of domestic parcel post and international letter post.

Figure 10 Regional trends, international parcel post

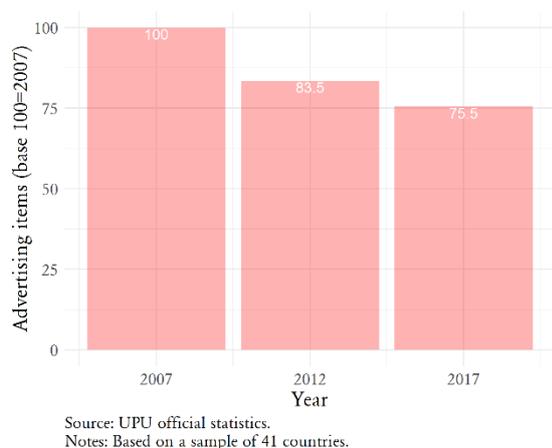


Source: Regional estimates based on UPU official statistics.
Notes: Parcel items normalized to 100 in 2007 to allow for trend comparison.

Trends in domestic advertisement items

Comparable statistics for domestic marketing mail are available for a group of 41 countries (the sampled countries are described in Table 10). The sample covers most of the DOs of large countries (Brazil, Canada, China (People's Rep.), Italy, the Russian Federation and the United States of America), which registered volume losses over the last decade. For the whole sample, there has been a shrinkage of 25% since 2007, which corresponds to individual volume losses of countries like the Czech Republic, Portugal, the Russian Federation and the United States (U.S. volumes account for 84% of the whole sample). There are also 15 cases in which a growing trend was observed, mostly in Eastern European countries such as Bulgaria (Rep.), Croatia, Hungary, Slovakia and Ukraine. Switzerland also resisted long-term shrinkage, although volumes decreased compared to 2012.

Figure 11 Evolution of advertising items

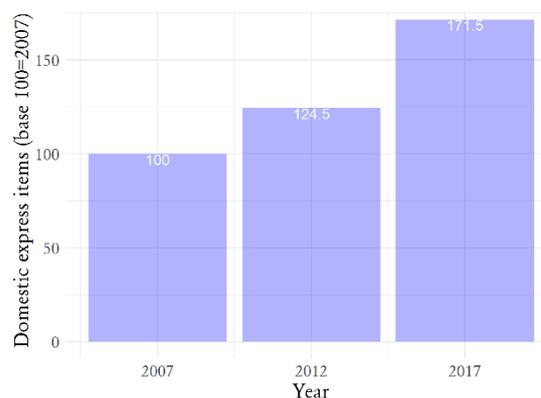


Trends in domestic express mail

The analysis of the evolution of domestic express mail is based on 56 countries (covered in Table 11). However, in this case, the data should be interpreted with caution. Most of the large operators are missing in the sample. Moreover, there may be different interpretations of the definition of express items within each country. Over the whole sample, volumes have grown by 71% since 2007. Particularly high growth was registered not only in Malaysia (23% per year) and in Thailand (12% per year). In fact, high average annual growth rates were also

observed in Turkey (20%), the Russian Federation (13%) and Italy (14%).

Figure 12 Evolution of domestic express items



Source: UPU official statistics.
Notes: Based on a sample of 56 countries.

IV. Postal infrastructure

Postal offices

The number of sedentary postal offices in the world (668,445) shrank slightly over the last decade: a decrease of 1.6% was estimated for the 2007–2017 period. However, trends differ across regions. In the Africa, Arab and Latin America regions, there was a considerable decrease of -19%, -13% and -17%, respectively. The decrease was smaller in Europe and the CIS (-5%) and in industrialized countries (-1%). In fact, Asia-Pacific constitutes the only region expanding its network of postal offices (5%), and this is mainly because of the considerable expansion of collection points in Indonesia. This region accounts for almost 50% of the global number of permanent postal offices (India alone accounts for 23% of the global network of postal offices).

Table 6 Delivery modes and access to postal services

	Population having mail delivered at home	Population having to collect mail from a postal establishment	Population without postal services
Africa	19.2%	54.3%	26.5%
Arab region	88.4%	9.8%	1.8%
Asia-Pacific	94.0%	3.4%	2.6%
Europe and CIS	97.3%	2.7%	0.0%
Industrialized countries	96.6%	3.4%	0.0%
Latin America and Caribbean	89.7%	5.1%	5.2%
World	85.8%	9.4%	4.8%

Source: Estimates based on UPU official statistics.
Notes: Regional groups are defined in the appendix.

Table 5 Regional distribution of postal offices

Region	Measure	Number (2017)	Change 2007–2017 (%)	Density per 100,000 inhabitants
Africa	Outsourced offices	2,911	-57.25	0.29
Africa	Offices managed by the operator	8,186	20.14	0.83
Africa	Total permanent offices	11,097	-18.55	1.12
Arab region	Outsourced offices	1,672	-60.25	0.40
Arab region	Offices managed by the operator	12,105	3.55	2.87
Arab region	Total permanent offices	13,777	-13.33	3.26
Asia-Pacific	Outsourced offices	103,500	-10.25	2.57
Asia-Pacific	Offices managed by the operator	226,174	14.42	5.62
Asia-Pacific	Total permanent offices	329,674	5.33	8.19
Europe and CIS	Outsourced offices	7,443	38.14	1.51
Europe and CIS	Offices managed by the operator	97,040	-7.89	19.70
Europe and CIS	Total permanent offices	104,483	-5.66	21.21
Industrialized countries	Outsourced offices	89,195	30.95	9.43
Industrialized countries	Offices managed by the operator	79,478	-22.36	8.41
Industrialized countries	Total permanent offices	168,673	-1.06	17.84
Latin America and Caribbean	Outsourced offices	27,225	-35.04	4.25
Latin America and Caribbean	Offices managed by the operator	13,516	-1.21	2.11
Latin America and Caribbean	Total permanent offices	40,741	-16.71	6.36
World	Outsourced offices	231,946	-4.05	3.09
World	Offices managed by the operator	436,499	-0.25	5.81
World	Total permanent offices	668,445	-1.6	8.90

Source: Regional estimates based on UPU official statistics.
Notes: Regional groups are defined in the appendix.

As regards outsourced offices (estimated at 231,946, i.e. 34.7% of the total number), reverse

trends can be observed. In the group of industrialized countries, the number has increased by 31% since 2007 with the simultaneous closure of offices managed by the operator. A similar pattern was observed in Eastern Europe and the CIS, where outsourced offices expanded by 38%. At the same time, the proportion of outsourced offices decreased in Asia-Pacific and in other regions.

Table 6 summarizes access modes to postal services, globally and within regions. The proportion of the total population without access to postal services is negligible in the group of industrialized countries as well as in Eastern Europe and the CIS, but remains high in Africa (26.5%). This figure is related to the low density of the African postal infrastructure (approximately one post office per 100,000 people and decreasing).

Postal staff

Total employment by DOs worldwide has decreased over the past decade by almost 6%. The only region that resisted this trend was Asia-Pacific, where the number of total staff has grown by 5.34% (see Table 7).

At the same time, in the group of industrialized countries, a trend for part-time employment can be observed. This is reflected by an estimated increase of 4.03% in part-time staff globally.

Nevertheless, full-time employment continues to dominate (4.15 million or 78.9%), while part-time employment accounts for 1.11 million. Comparing total employment in the six regions, DOs in industrialized countries employ around 2.44 million staff members. The second biggest region in terms of employment is Asia-Pacific, with 1.7 million, followed by Europe and the CIS, with 0.76 million staff. The remaining three regions together account for only 6.8% of staff employed by DOs.

Using the population data for each region, it is possible to calculate the number of people served by each DO employee (fifth column, Table 6). The results illustrate how different the level of service can be across the six groups. Whereas in industrialized countries one postal employee offers services for approximately 400 people, in Africa the number averages more than 17,000.

In Africa, workforce reductions and office closures over the past decade coincide. Considering the fact that, at the same time, the population of Africa has continued to increase, the DOs face an increasingly difficult task in ensuring the delivery of postal services to large portions of the population.

The reduction of postal staff – particularly in the group of industrialized countries and in Eastern Europe and the CIS – could be perceived as a consequence of the economic and financial crisis in 2008 as well as of digital substitution. However, postal traffic did not decrease at the same pace, which means that, for these two regions, productivity has increased.

Table 7 Regional distribution of postal staff

Region	Measure	Number (2017)	Change 2007–2017 (%)	Population per staff
Africa	Total staff	57,383	-2.52	17,218
Africa	Full-time staff	56,552	0.81	17,471
Africa	Part-time staff	831	-70	1,188,955
Arab region	Total staff	117,127	-6.96	3,606
Arab region	Full-time staff	115,074	-6.39	3,671
Arab region	Part-time staff	2,053	-30.59	205,739
Asia-Pacific	Total staff	1,702,450	5.34	2,364
Asia-Pacific	Full-time staff	1,370,286	9.36	2,938
Asia-Pacific	Part-time staff	332,164	-8.52	12,118
Europe and CIS	Total staff	759,375	-19.13	649
Europe and CIS	Full-time staff	554,023	-30.07	889
Europe and CIS	Part-time staff	205,352	39.95	2,399
Industrialized countries	Total staff	2,441,260	-6.75	387
Industrialized countries	Full-time staff	1,872,858	-9.5	505
Industrialized countries	Part-time staff	568,402	3.67	1,663
Latin America and Caribbean	Total staff	183,316	-5.8	3,494
Latin America and Caribbean	Full-time staff	180,757	-4.67	3,544
Latin America and Caribbean	Part-time staff	2,559	-41.93	250,320
World	Total staff	5,260,911	-5.97	1,428
World	Full-time staff	4,149,550	-7.41	1,811
World	Part-time staff	1,111,361	4.03	6,761

Source: Regional estimates based on UPU official statistics.

Notes: Regional groups are defined in the appendix.

V. Zoom: competition and market size of the postal sector

Competition in the postal sector – What do we know?

The rise of e-commerce, coupled with the pervasive liberalization of postal markets, has eased the entry of new postal operators. In order to measure the postal sector, it is necessary to estimate the market shares of DOs in their traditional segments.

It is essential to understand this global trend, as DOs have been relying more and more on parcels and logistics as alternative sources of revenue.

In this section, we estimate the market share of DOs – in their respective domestic markets – for both letter post, parcels and logistics using newly gathered information by the UPU.

Since 2015, the UPU official statistics questionnaires have been asking regulators about competition in postal markets in three key segments: letter post, parcel post and express services. In particular, one question in the statistical questionnaire requires regulators to declare the total traffic generated by all postal operators (DOs and their competitors).

In 2017, with three years of data, it was possible to have accurate information on a sample of 80 countries in the letter-post segment, 72 countries in the parcel-post segment and 65 countries in the express segment.^{viii}

Methodology

It is possible to extend, albeit with care, the findings of the statistics to a sample of 165 countries following standard treatments for missing data.^{ix} In order to do so, we start by computing, for each of the countries with available data, “competition multipliers” defined as follows:

$$M_{letters} = \frac{\text{Traffic letters DO}}{\text{Total letter traffic}}$$

$$M_{parcels} = \frac{\text{Traffic parcels DO}}{\text{Total parcels traffic}}$$

$$M_{express} = \frac{\text{Traffic express DO}}{\text{Total express traffic}}$$

To construct worldwide estimates, it is necessary to estimate the missing competition multipliers. To do so, we use a missing data imputation technique, namely a 5-fold nearest neighbor (5NN) imputation algorithm.^x The algorithm requires that similarity measures be defined between Posts so that observations with missing values can be estimated as a weighted average of the five closest available neighbours. For the purpose of the study, we use six similarity measures:

- i) **Income level of the country:** measured by GDP per capita in current USD.
- ii) **Digital environment:** measured by the percentage of the population with Internet access.
- iii) **Density of the postal network:** measured by number of postal offices per square kilometer.
- iv) **Economies of scale in letter post:** measured by the letter traffic per capita of the DO.
- v) **Economies of scale in parcel post:** measured by the parcel traffic per capita of the DO.
- vi) **Competition in a mail segment:** Value of the competition multiplier in one of the segments adjacent to the missing one.

The summary statistics for the competition multipliers are presented in Table 8. For comparison purposes, the table presents the statistics for both the non-imputed and imputed samples. Since the averages of the two samples are close enough, the use of the imputed sample is retained for the discussion of results.

Table 8 Summary statistics, competition multipliers

	Starting sample		Imputed sample	
	Mean	Number of obs.	Mean	Number of obs.
M letters	75.0%	80	72.8%	165
M parcels	42.5%	72	37.8%	165
M express	41.3%	65	39.3%	165

Source: UPU official statistics.

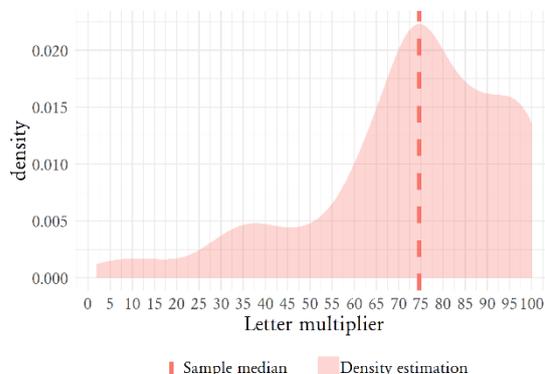
Notes: Imputed sample based on 5NN algorithm. The results are presented both for the non-imputed and imputed samples for comparison purposes.

Letter-post multiplier

Overall, we observe that DOs have a dominant position in the market for letter post, with on average 72.8% of the domestic traffic. The statistical distribution of the multipliers, depicted in Figure 13, shows that the distribution is highly concentrated around the median. Worldwide, 50% of DOs retain more than 75% of their domestic letter-post market.

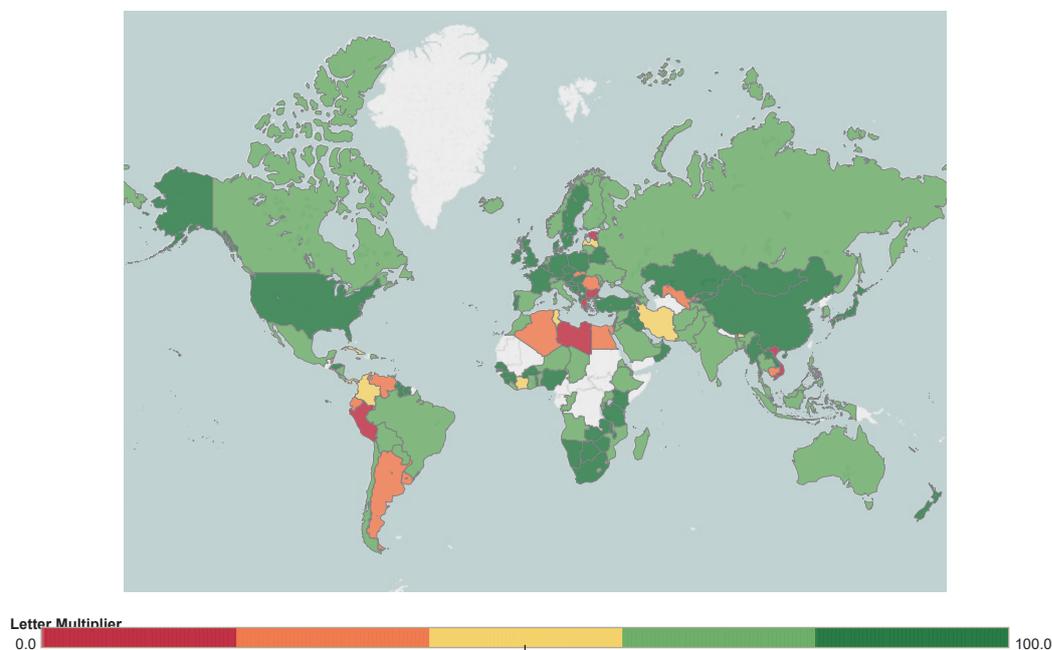
Figure 14 features the geographical distribution of the competition multiplier for letters. Averages at the regional level are homogeneous. In Africa, the average market share for letter post for DOs is 79%, although the absolute number of domestic letter items is small throughout the continent. In the group of industrialized countries, there is also a high average market share (78%), a number similar to the one for Europe and the CIS (75%). Competition appears stronger in Asia-Pacific, where the market share of DOs reaches 70%. The two regions where the letter-post market appears more open to competition are the Arab region (66%) and Latin America and the Caribbean (64%).

Figure 13 Statistical distribution of competition multiplier, letter post



Source: Global estimates based on UPU official statistics.
Notes: Kernel density estimate.

Figure 14 Geographical distribution of letter multiplier



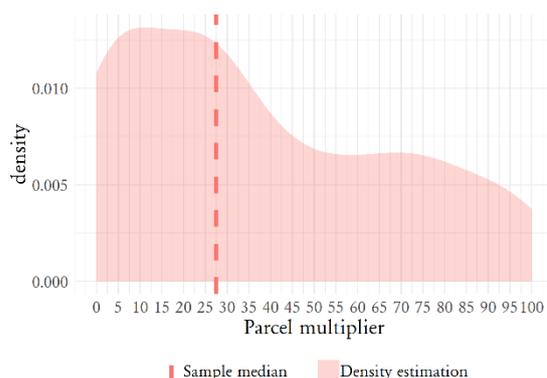
Parcel-post multiplier

In contrast to letter post, the parcel-post segment exhibits stronger competition. DOs have on average 38% of the market share for domestic parcels (see Table 8). The statistical distribution of the multipliers offers insight into the position of DOs at the global level. Figure 15 shows that 50% of DOs hold less than 27% of their respective domestic markets.^{xi} The explanation is two-fold. On the one hand, liberalization of parcel post has often preceded liberalization of letter post, with residual monopoly shares for DOs in order to compensate for their universal service obligations. On the other hand, the advent of e-commerce has opened up a door of opportunity for the delivery of goods. Thanks to a strong demand for digitally ordered goods, companies have invested in the sector.

From a regional perspective (see Figure 16), only in industrialized countries do DOs appear to have market share greater than 50% (their average multiplier is 66%). In Europe and the CIS, the market shares reach on average 47%.

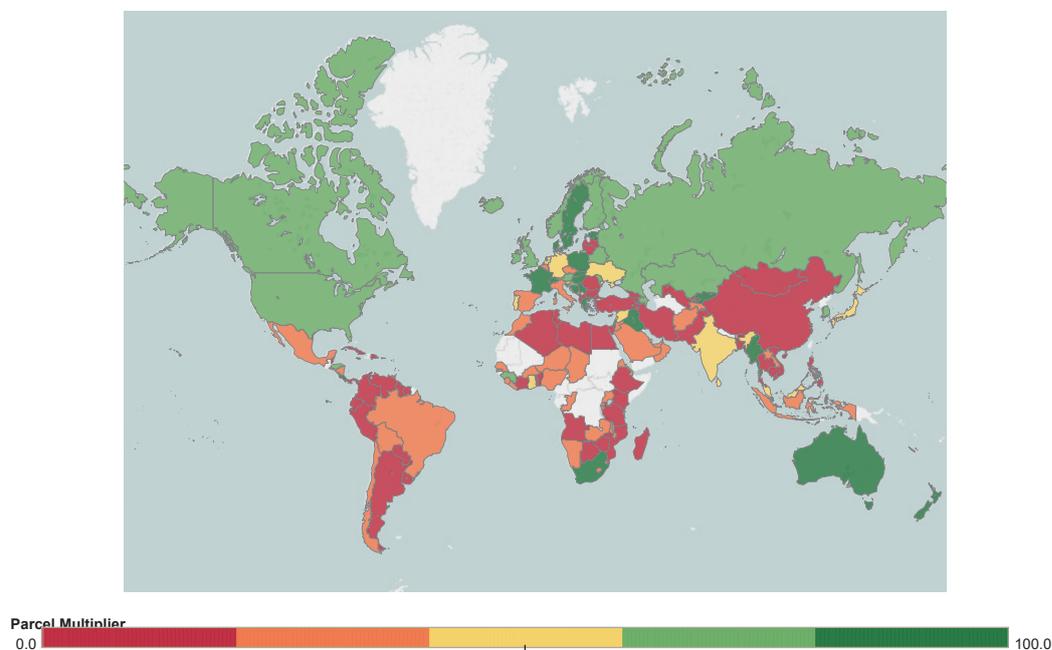
Market share averages for the parcel-post sector in Latin America and the Caribbean stand at 25% for DOs, a number close to what is observed in both Africa (23%) and Asia-Pacific (29%). The Arab region (36%) stands somewhere in between what is observed in Europe and the CIS and in Asia-Pacific.

Figure 15 Density estimation of parcel multiplier



Source: Global estimates based on UPU official statistics.
Notes: Kernel density estimate.

Figure 16 Geographical distribution of parcel-post multiplier



Source: Estimates based on UPU official statistics.
Notes: This map was produced by staff of the UPU. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the UPU, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

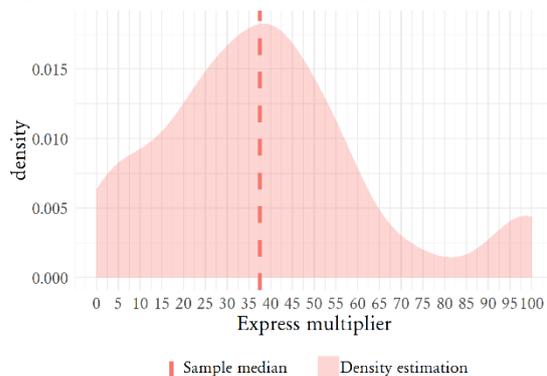
Express mail multiplier

The market for express deliveries of goods and documents shows a very similar structure to the one for parcel post. On average, DOs retain 39% of their domestic express market (see Table 8). As for the statistical distribution, it is less skewed than the one for letters and parcels (see Figure 18), with a larger concentration around the median.

The trend is also reflected in the geographical distribution (Figure 19). According to the estimates, DOs in industrialized countries have on average 35% of their domestic express markets. In Europe and the CIS, we observe a similar average (32%). The results are quite homogeneous across regions, with 42% in the Arab region, 40% in Asia-Pacific, 39% in Latin America and the Caribbean, and 48% in Africa.

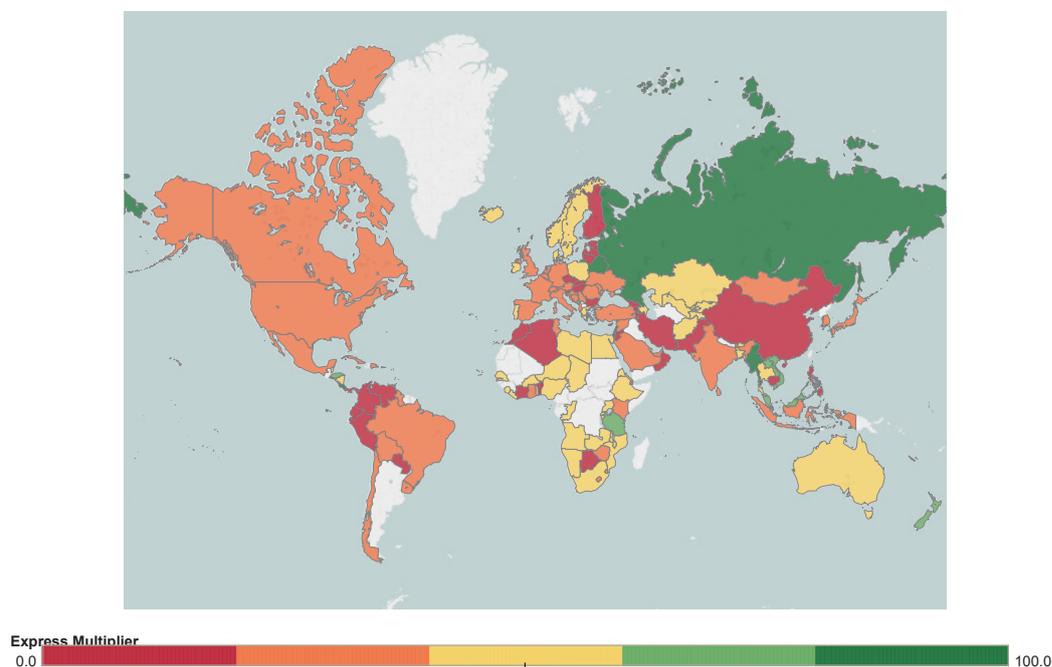
Overall, the estimates suggest that DOs hold higher market shares in domestic express than in parcel post.

Figure 17 Density estimation of express multiplier



Source: Global estimates based on UPU official statistics.
Notes: Kernel density estimate.

Figure 18 Geographical distribution of express multiplier



Source: Estimates based on UPU official statistics.
Notes: This map was produced by staff of the UPU. The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the UPU, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

Conclusion

As this report has shown, globally, whenever economic growth and trade pick up, as happened in 2017–2018, additional e-commerce sales are generated, which in turn boosts postal traffic, particularly in the parcels segment.

Moreover, owing to continuous growth in connectivity worldwide, e-commerce has proven to be relatively resilient to macroeconomic shocks, meaning that it should continue expanding even in the event of an economic downturn.

At first glance, this may be both bad and good news for the postal sector. Bad news because digitalization accelerates the substitution of mail, which still underpins the economic sustainability of postal networks. Good news because the growing sales made online generate additional demand for the delivery of physical goods.

However, this additional demand is being addressed by a larger number of players, in a much less profitable and controlled segment (parcels), where low margins and high volumes are the norm.

This may not necessarily imply that all economic agents are losing out. Indeed, consumers may be getting cheaper options to send and receive their physical items. Companies may also be expanding their businesses thanks to more cost-effective solutions to distribute the products that they sell online.

However, for postal operators, whether designated or not, this state of affairs creates a significant pressure for scale and operational efficiency.

The sheer size of the physical postal network worldwide would suggest that DOs are well positioned to take advantage of the scale of the network and thus serve the growing demand for delivery in a sustainable manner.

Yet this is not what the latest figures indicate. Over the past decade, the increased traffic in delivery services has not necessarily translated into higher revenues and greater postal development.

This means that the tremendous expansion of traffic in the parcels segment may not be a panacea for postal operators.

This also prompts the question of how to maintain, let alone further develop, the physical infrastructure needed to serve the needs of the well-connected citizens of the 21st century.

The answer of some DOs has been to adopt a cost-optimization approach, reducing the number of branches while keeping or even increasing the number of access points, e.g. through outsourcing or mobile deployment of postal agents.

This approach has sometimes clashed with the views of some governments, for which the physical presence of post offices is part of the public service that they provide. Branches are not seen as an anachronistic feature of old supply chains and consumer distribution channels, but rather, as part of a wider mission of public (universal) service and presence, especially in remote areas.

Only time will tell which vision will prevail, both politically and from the perspective of economic sustainability.

In the meantime, the benchmarking exercises conducted by institutions such as the UPU may provide guidance to national governments and regulators aiming to adjust their national policies to the imperative of benefiting from the expansion of e-commerce.

Appendix

Table 9 List of countries and regional classification

ISO	Country name	Region	ISO	Country name	Region	ISO	Country name	Region
AC	Ascension	IC	GM	Gambia	Africa	NL	Netherlands	IC
AE	United Arab Emirates	Arab Region	GN	Guinea	Africa	NO	Norway	IC
AF	Afghanistan	Asia Pacific	GQ	Equatorial Guinea	Africa	NP	Nepal	Asia Pacific
AG	Antigua and Barbuda	Latin America and Caribbean	GR	Greece	IC	NR	Nauru	Asia Pacific
AI	Anguilla	Latin America and Caribbean	GT	Guatemala	Latin America and Caribbean	NZ	New Zealand	IC
AL	Albania	Europe and CIS	GW	Guinea-Bissau	Africa	OM	Oman	Arab Region
AM	Armenia	Europe and CIS	GY	Guyana	Latin America and Caribbean	PA	Panama (Rep.)	Latin America and Caribbean
AN	Netherlands Antilles	Latin America and Caribbean	HK	Hongkong, China	Asia Pacific	PE	Peru	Latin America and Caribbean
AO	Angola	Africa	HN	Honduras (Rep.)	Latin America and Caribbean	PF	French Polynesia	IC
AR	Argentina	Latin America and Caribbean	HR	Croatia	Europe and CIS	PG	Papua New Guinea	Asia Pacific
AT	Austria	IC	HT	Haiti	Latin America and Caribbean	PH	Philippines	Asia Pacific
AU	Australia	IC	HU	Hungary	Europe and CIS	PK	Pakistan	Asia Pacific
AW	Aruba	Latin America and Caribbean	ID	Indonesia	Asia Pacific	PL	Poland	Europe and CIS
AZ	Azerbaijan	Europe and CIS	IE	Ireland	IC	PN	Pitcairn Islands	IC
BA	Bosnia and Herzegovina	Europe and CIS	IL	Israel	IC	PT	Portugal	IC
BB	Barbados	Latin America and Caribbean	IM	Isle of Man	IC	PY	Paraguay	Latin America and Caribbean
BD	Bangladesh	Asia Pacific	IN	India	Asia Pacific	QA	Qatar	Arab Region
BE	Belgium	IC	IQ	Iraq	Arab Region	RO	Romania	Europe and CIS
BF	Burkina Faso	Africa	IR	Iran (Islamic Rep.)	Asia Pacific	RS	Serbia	Europe and CIS
BG	Bulgaria (Rep.)	Europe and CIS	IS	Iceland	IC	RU	Russian Federation	Europe and CIS
BH	Bahrain (Kingdom of)	Arab Region	IT	Italy	IC	RW	Rwanda (Rep.)	Africa
BI	Burundi	Africa	JE	Jersey	IC	SA	Saudi Arabia	Arab Region
BJ	Benin	Africa	JM	Jamaica	Latin America and Caribbean	SB	Solomon Islands	Asia Pacific
BM	Bermuda	Latin America and Caribbean	JO	Jordan	Arab Region	SC	Seychelles	Africa
BN	Brunei Darussalam	Asia Pacific	JP	Japan	IC	SD	Sudan	Arab Region
BO	Bolivia	Latin America and Caribbean	KE	Kenya	Africa	SE	Sweden	IC
BR	Brazil	Latin America and Caribbean	KG	Kyrgyzstan	Europe and CIS	SG	Singapore	Asia Pacific
BS	Bahamas	Latin America and Caribbean	KH	Cambodia	Asia Pacific	SH	St Helena	Latin America and Caribbean
BT	Bhutan	Asia Pacific	KI	Kiribati	Asia Pacific	SH	Tristan da Cunha	IC
BW	Botswana	Africa	KM	Comoros	Arab Region	SI	Slovenia	Europe and CIS
BY	Belarus	Europe and CIS	KN	Saint Christopher (St. Kitts) and Nevis	Latin America and Caribbean	SK	Slovakia	Europe and CIS
BZ	Belize	Latin America and Caribbean	KP	Dem People's Rep. of Korea	Asia Pacific	SL	Sierra Leone	Africa
CA	Canada	IC	KR	Korea (Rep.)	Asia Pacific	SM	San Marino	IC
CD	Democratic Republic of the Congo	Africa	KW	Kuwait	Arab Region	SN	Senegal	Africa
CF	Central African Rep.	Africa	KY	Cayman Islands	Latin America and Caribbean	SO	Somalia	Arab Region
CG	Congo (Rep.)	Africa	KZ	Kazakhstan	Europe and CIS	SR	Suriname	Latin America and Caribbean
CH	Switzerland	IC	LA	Lao People's Dem. Rep.	Asia Pacific	SS	South Sudan (Rep.)	Arab Region
CI	Côte d'Ivoire (Rep.)	Africa	LB	Lebanon	Arab Region	ST	Sao Tome and Principe	Africa
CL	Chile	Latin America and Caribbean	LC	Saint Lucia	Latin America and Caribbean	SV	El Salvador	Latin America and Caribbean
CM	Cameroon	Africa	LI	Liechtenstein	IC	SY	Syrian Arab Rep.	Arab Region
CN	China (People's Rep.)	Asia Pacific	LK	Sri Lanka	Asia Pacific	SZ	Eswatini	Africa
CO	Colombia	Latin America and Caribbean	LR	Liberia	Africa	TC	Turks and Caicos Islands	Latin America and Caribbean
CR	Costa Rica	Latin America and Caribbean	LS	Lesotho	Africa	TD	Chad	Africa
CU	Cuba	Latin America and Caribbean	LT	Lithuania	Europe and CIS	TG	Togo	Africa
CV	Cape Verde	Africa	LU	Luxembourg	IC	TH	Thailand	Asia Pacific
CY	Cyprus	Europe and CIS	LV	Latvia	Europe and CIS	TJ	Tajikistan	Europe and CIS
CZ	Czech Rep.	Europe and CIS	LY	Libya (State of)	Arab Region	TL	Timor-Leste (Dem. Rep.)	Asia Pacific
DE	Germany	IC	MA	Morocco	Arab Region	TM	Turkmenistan	Europe and CIS
DJ	Djibouti	Arab Region	MC	Monaco	IC	TN	Tunisia	Arab Region
DK	Denmark	IC	MD	Moldova	Europe and CIS	TO	Tonga	Asia Pacific
DM	Dominica	Latin America and Caribbean	ME	Montenegro	Europe and CIS	TR	Turkey	Europe and CIS
DO	Dominican Republic	Latin America and Caribbean	MG	Madagascar	Africa	TT	Trinidad and Tobago	Latin America and Caribbean
DZ	Algeria	Arab Region	MK	North Macedonia	Europe and CIS	TV	Tuvalu	Asia Pacific
EC	Ecuador	Latin America and Caribbean	ML	Mali	Africa	TZ	Tanzania (United Rep.)	Africa
EE	Estonia	Europe and CIS	MM	Myanmar	Asia Pacific	UA	Ukraine	Europe and CIS
EG	Egypt	Arab Region	MN	Mongolia	Asia Pacific	UG	Uganda	Africa
ER	Eritrea	Africa	MO	Macao, China	Asia Pacific	US	United States of America	IC
ES	Spain	IC	MR	Mauretania	Arab Region	UY	Uruguay	Latin America and Caribbean
ET	Ethiopia	Africa	MS	Montserrat	Latin America and Caribbean	UZ	Uzbekistan	Europe and CIS
FI	Finland	IC	MT	Malta	Europe and CIS	VA	Vatican	IC
FJ	Fiji	Asia Pacific	MU	Mauritius	Africa	VC	Saint Vincent and the Grenadines	Latin America and Caribbean
FK	Falkland Islands (Malvinas)	IC	MV	Maldives	Asia Pacific	VE	Venezuela (Bolivarian Rep.)	Latin America and Caribbean
FO	Farøe Islands	IC	MW	Malawi	Africa	VG	Virgin Islands	Latin America and Caribbean
FR	France	IC	MX	Mexico	Latin America and Caribbean	VN	Viet Nam	Asia Pacific
GA	Gabon	Africa	MY	Malaysia	Asia Pacific	VU	Vanuatu	Asia Pacific
GB	Great Britain	IC	MZ	Mozambique	Africa	WF	Wallis and Futuna Islands	IC
GD	Grenada	Latin America and Caribbean	NA	Namibia	Africa	WS	Samoa	Asia Pacific
GE	Georgia	Europe and CIS	NC	New Caledonia	IC	YE	Yemen	Arab Region
GG	Guernsey	IC	NE	Niger	Africa	ZA	South Africa	Africa
GH	Ghana	Africa	NF	Norfolk Island	IC	ZM	Zambia	Africa
GI	Gibraltar	IC	NG	Nigeria	Africa	ZW	Zimbabwe	Africa
GL	Greenland	IC	NI	Nicaragua	Latin America and Caribbean			

Table 10 Marketing mail sample

ISO	Country name
AM	Armenia
BA	Bosnia and Herzegovina
BB	Barbados
BG	Bulgaria (Rep.)
BN	Brunei Darussalam
BR	Brazil
BY	Belarus
CA	Canada
CH	Switzerland
CN	China (People's Rep.)
CR	Costa Rica
CY	Cyprus
CZ	Czech Rep.
EE	Estonia
EG	Egypt
HK	Hongkong, China
HR	Croatia
HU	Hungary
IL	Israel
IR	Iran (Islamic Rep.)
IT	Italy
LT	Lithuania
MK	North Macedonia
MN	Mongolia
MO	Macao, China
MU	Mauritius
MX	Mexico
MY	Malaysia
NC	New Caledonia
NE	Niger
PT	Portugal
RO	Romania
RS	Serbia
RU	Russian Federation
SI	Slovenia
SK	Slovakia
SR	Suriname
TN	Tunisia
TT	Trinidad and Tobago
UA	Ukraine
US	United States of America

Table 11 Express mail sample

ISO	Country name
AL	Albania
AM	Armenia
AO	Angola
BA	Bosnia and Herzegovina
BB	Barbados
BF	Burkina Faso
BG	Bulgaria (Rep.)
BJ	Benin
BN	Brunei Darussalam
BR	Brazil
BT	Bhutan
BY	Belarus
CA	Canada
CD	Democratic Republic of the Congo
CH	Switzerland
CL	Chile
CO	Colombia
CR	Costa Rica
CZ	Czech Rep.
EE	Estonia
EG	Egypt
GL	Greenland
HK	Hongkong, China
HR	Croatia
HU	Hungary
ID	Indonesia
IT	Italy
KG	Kyrgyzstan
KH	Cambodia
LB	Lebanon
LK	Sri Lanka
MC	Monaco
MD	Moldova
MG	Madagascar
MK	North Macedonia
MM	Myanmar
MU	Mauritius
MW	Malawi
MX	Mexico
MY	Malaysia
PH	Philippines
PY	Paraguay
RO	Romania
RS	Serbia
RU	Russian Federation
SA	Saudi Arabia
SI	Slovenia
SK	Slovakia
TG	Togo
TH	Thailand
TN	Tunisia
TR	Turkey
TZ	Tanzania (United Rep.)
UG	Uganda
VE	Venezuela (Bolivarian Rep.)
ZW	Zimbabwe

Endnotes

ⁱ World Bank (2019). *Global Economic Prospects: Darkening Skies (English)*. Washington, D.C.: World Bank Group.

ⁱⁱ World Economic Outlook Update, January 2019. Washington, D.C.: International Monetary Fund.

ⁱⁱⁱ Ibid.

^{iv} Measuring the Information Society Report, Volume 1, December 2018. International Telecommunication Union.

^v Ibid.

^{vi} Operating postal revenues in the official statistics are computed in SDR. To control for inflation and allow for cross-country comparisons, the following adjustments are made. First, operating revenues are converted in current USD using the average annual SDR/USD exchange from the International Monetary Fund. Second, operating revenues in USD are divided by the purchasing power parity conversion factor available in the World Bank WDI to international USD. Third, operating postal revenues in international USD are deflated by the GDP deflator (World Bank WDI) to convert them into constant prices.

^{vii} Postal Development Report (2018). Universal Postal Union.

^{viii} The samples do not necessarily overlap, thus generating more variability for the estimates.

^{ix} Acuna, E. and Rodriguez, C. (2004). “The treatment of missing values and its effect on classifier accuracy.” *Classification, Clustering, and Data Mining Applications* (pp. 639–647). Springer, Berlin, Heidelberg.

^x Cover, T. and Hart, P. (1967). “Nearest neighbor pattern classification”. *IEEE Transactions on Information Theory*, 13(1), 21–27.

^{xi} The reader might compare both density distributions and notice that the 1st and 4th quartiles are almost exactly inverted. The dominant position in letter post does not translate into dominant shares in parcel post.

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