Covid-19 and Swiss Post: Volume developments and the economic value of postal service in the pandemic and beyond.

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Abstract / Executive summary

We document the impact of the Covid-19 pandemic on the operations of Swiss Post, with a focus on parcel and mail volumes. Using weekly volume data from the course of the pandemic, we analyze the effects of different states of the pandemic such as the two lockdowns. We further present a careful assessment of the volume data in 2021 to infer about the long-term effects of the pandemic on volumes.

In 2020, Swiss Post saw both its greatest decline in mail volumes and growth in parcel volumes: Mail volumes declined by 5.6% and parcel volumes increased by 22.8%. According to our estimations, the pandemic explains more than half of these volume changes for both letters and parcels: 52% of the decline of letter volumes and 70% of the growth of parcel volumes can be attributed to the pandemic. Further, we show that the two lockdowns, in spring 2020 and early 2021, respectively, as well as the period in-between lockdowns had a significant impact on parcel volumes compared to pre-lockdown levels, whereas for mail, only the first lockdown had a statistically significant impact.

In the next step we highlight the role of Swiss Post during the pandemic as an enabler of ecommerce and quantify the wider economic impact associated with it. Estimations show, for instance, that during the first nationwide lockdown in spring 2020, about 3% of national GDP was supported by Swiss Post, along with about 40'000 jobs in other industries.

Estimations are based on an input-output model developed by Swiss Post that highlights the general socioeconomic value generated by Swiss Post. We present some of the methodological details and quantifications. Further, using additional data from the company and connecting it to data from the federal statistical office, we show, for instance, that Swiss Post is an employer in almost every second Swiss municipality.

Inhalt

1. Intro	oduction & Literature Review	. 3
2. The	Pandemic in Switzerland and its Effects on Postal Operations	. 4
2.1	The course of the pandemic in Switzerland	. 4
2.2	Parcel volumes in the course of the pandemic	. 5
2.3	Mail volumes in the course of the pandemic	. 7
2.4	How much did the pandemic influence volume developments in 2020?	. 7
2.5	The impact of pandemic periods on volumes	. 8
3. Gen	erating wider economic value as an e-commerce enabler	. 9
3.1	Lockdown I	. 9
3.2	Lockdown II	10
3.3	The whole pandemic	10
3.4	Impact of the Covid-19 volume effect	11
4. How	we quantify the wider Economic Value of Swiss Post in general	11
4.1	Results from the input-output analysis	12
4.2	Results from the municipality level dataset	12
5. Con	clusion	13

1. Introduction & Literature Review

There is no need to apply scientific approaches to see that the covid-19 pandemic had a substantial impact on the postal industry. For the first time probably, mail order was given a new role as part of a necessary basic service and it was no longer just the luxury of internet-savvy sections of the population. In the course of the pandemic, Postal Service Providers in general, and Universal Service Providers in particular, played a crucial role in ensuring the supply of the population with goods of all kind. The growth rates of e-commerce – and correspondingly of parcel volumes – in 2020 were as high as in several normal years combined, in a market that had already been growing strongly for some time.

The pandemic showed an acceleration of existing trends in the postal industry more generally. Mail, the classical postal product, received no comparable attention, and the quantities fell more sharply than in previous years, which had already been marked by a sharp decline.

In this article, we first document the pandemic from the viewpoint of the postal world in Switzerland, particularly Swiss Post as the Universal Service Provider, and further highlight the wider economic value and impact generated by Swiss Post in the course of the pandemic.

Further, we explore to what extent Swiss Post generates socioeconomic value more generally, apart from the pandemic.

In a broad sense, our research is related to a vast number of contributions describing the wider economic value of postal operators in a qualitative way. Many studies focus on the value of the universal service obligation (USO) carried out by a postal operator rather than of the value of the postal operator itself. In fact, there is a close link between a postal operator's generation of socioeconomic value and its USO, which requires the provision of certain goods in a way they would not be offered in an unregulated market. Often, the wider economic value is expressed by the differences between what is offered to the customers in the (regulated) Status Quo and what would be offered in an unregulated market.

Crew and Kleindorfer (2000) argue that the combination of ubiquity and uniformity in prices is the basis of the benefit of the USO as it reduces transaction costs for customers. Cremer et al. (2008) also examine the basic economic justification for a USO. These considerations can be a good reference for the different ways in which postal operators create socioeconomic value under a certain USO. Network externalities are probably the most common argument for a USO as it can be seen as a device to correct market inefficiencies in the presence of network externalities. Another argument often raised is redistributive pricing, which has important implications for rural development (see Cremer et al., 2008). Further, the USO's accessibility requirements usually include access points in rural areas, which supports employment and economic growth in these areas.

The importance of e-commerce delivery as a basic service has only recently been described. Copenhagen Economics (2020) assesses the role of national postal operators in connecting e-sellers in peripheral regions to their customers. They argue that e-commerce is becoming increasingly important for rural development as it offers a valuable business opportunity for firms located in remote areas. They estimate that in 2019, all EU postal operators together shipped products sold by e-sellers in peripheral regions for more than EUR 40 billion und thus, supported over 100'000 jobs in the e-commerce sector in peripheral regions. Our study analyses the impact of Swiss Post in the pandemic from a similar economic logic, but focusses on the importance of e-commerce during the pandemic with no specific focus on peripheral regions.

Several authors have described the enabler-role of postal operators. Jaag and Trinker (2011) also argue that postal operators act as enablers of other parts of the economy as they link buyers and sellers.

Borsenberger (2020) argues that the emergence of new technologies has extended the type of benefits (potentially) provided by postal operators through their network, now including indirect benefits through the postal operators' involvement in an inclusive and human digital economy, in elderly society and in sustainable, circular and solidarity economy.

In the context of recent market developments, challenges with the financial viability of universal service and discussions on the reform of postal regulation, there is a need for quantifying not only the costs, but also the socioeconomic value of the USO. Cost-benefit analyses using a willingness to pay (WTP) approach can help identifying the optimal scope of the USO (see, e.g., Lindhjem and Pedersen, 2012) and Houpis et al., 2015).

Pindus et al. (2010) provide a general framework for measuring the social value of the United States Postal Service. They identify eight broad categories of social values: 1. Consumer benefits, 2. Business benefits, 3. Safety and security, 4. Environmental benefits, 5. Facilitating delivery of other federal state and local government services, 6. Information exchange, 7. Social linkages, 8. Civic pride, patriotism and community identity. They also identify possible metrics and methods for estimating the value of these benefits. In our work, we additionally include purely economic benefits and distinguish two main categories of socioeconomic value: the production and the consumption side. The production side includes the Swiss Post's direct and indirect impact on the national levels of production, value added and employment, which makes its quantification relatively straightforward. The consumption side's quantification is more challenging, as it includes the consumer surplus and positive externalities caused by the postal services.

An easy approach to measuring the value of postal services from the consumption side is to identify the consumer surplus by comparing the WTP of customers to what they actually have to pay for the services. Ellison et al. (2016) apply such an approach and identify the WTP of households and SMEs for several Post office products in order to estimate the value of the UK's postal network. Depending on the method applied, they find valuations of the postal network between £ 4.3 billion and £ 9.7 billion per year. There are also studies identifying the WTP for specific services or USO dimensions (e.g., RAND Europe, 2011, Copenhagen Economics, 2011, and Lindhjem and Pedersen, 2012). Gough et al. (2017) consider the consumer surplus concept from another perspective and calculate the total price consumers have to pay for mail delivery, which includes any costs or disutility incurred by the consumer in obtaining the service.

Several studies quantitatively show that postal services are crucial for economic development. Boldron et al. (2008) argue that postal outlets in France play an important role in local economic development by generating spillovers and positive demand externalities for commercial services. Using international country-level data as well as US county-level data, Rogowski et al. (2019) show that post offices positively affected economic development in both the long and short terms. Further, they provide evidence that suggests that these effects are due to a reduction of transaction costs and a strengthening of social capital.

Our main approach to measuring the wider economic value of Swiss Post is yet another one: We conduct an input-output analysis in order to estimate Swiss Post's direct and indirect contributions to the national economy in terms of production value, value added and employment. To our knowledge, there is only one other study carrying out an input-output analysis for estimating a postal operator's wider economic value. Deloitte (2018) conduct such an analysis for the Australia Post and find a direct contribution to GDP of \$ 3.2 billion as well as an indirect contribution of \$ 2.8 billion in 2017. In other words, for every \$ 1 generated in value added, Australia Post generates another \$ 0.86 in other industries. Further, they find that for every full-time equivalent worker (FTE) directly employed, Australia Post creates almost another one elsewhere in other businesses and industries. In 2017, Australia Post directly employed 26'500 FTEs and indirectly sustained another 24'800 FTEs.

2. The Pandemic in Switzerland and its Effects on Postal Operations

2.1 The course of the pandemic in Switzerland

The course of the covid-19 pandemic in Switzerland is shown in Figure 1. The pandemic started in early 2020 much at the same time as in the rest of Europe, when cases started to rise quickly. The first lockdown, which included the closure of all stores, started on March 17th and lasted seven weeks, until May 11th (lockdown I). In this paper, taking an economic point of view, we consider the start of this lockdown as the start of the pandemic. With the lockdown, case numbers decreased again within a few weeks to low, but soon smoothly rising levels.

Covid-Cases in Switzerland and Political Response



Figure 1: The course of the Covid-19 pandemic in Switzerland. Source: Federal Office of Public Health, own presentation

In autumn 2020, the second wave started when case numbers started to ascent quickly to levels several times above the first wave, with a peak of the 7-day-average at the end of October. This led to political response in the form of tightened measures (although not a lockdown), and case numbers soon declined again, yet still remained at a level that could be considered high compared to the first wave until the beginning of 2021. In mid-January, the Swiss government initiated a second lockdown (lockdown II) which lasted until the end of February, a total time of six weeks. With the increasing number of administered vaccinations, major relaxations of the political measures occurred in April and June 2021.

2.2 Parcel volumes in the course of the pandemic

Using weekly data on the number of domestic parcels processed by Swiss Post, Figure 2 shows how parcel volumes have developed in every calendar week of 2019, 2020 and 2021 as well as major political responses to the pandemic. We observe that volumes in 2020 were slightly above those in 2019 in the first 12 weeks of the year and then increased sharply from around 600'000 to up to 900'000 parcels delivered per day.

After the lockdown, the two curves approached each other to a certain amount but still remained further apart than in the first 12 weeks of the year. In total, Swiss Post delivered 180 million domestic parcels in 2020, compared to 147 million in 2019 (+22.8%).

In 2021, parcel volumes started on a high level way above the pre-pandemic numbers from the year before and even increased during the lockdown in early 2021, to levels similar to those that had been observed in the first lockdown in 2020. Volumes have remained high at around 800'000 parcels per day ever since.

Especially in the beginning, it was difficult for Swiss Post to be able to process the unexpected large volumes. This was not only due to the high quantities themselves, but also to the restrictions caused by the pandemic, e.g. the absence of many employees and the protective measures in the sorting centers



Figure 2: Parcel volumes (domestic) of Swiss Post 2019-2021 and political milestones of the Covid-19 pandemic in Switzerland. Sources: Swiss Post, Federal Office of Public Health

Due to the exceptional situation, the national regulation authority for the universal service, PostCom, has agreed that Swiss Post would not take into account the periods from March to July and October 2020 to February 2021 for measuring the punctuality of parcels. (The Swiss USO requires that 95% of all parcels have to be delivered on time, which means D+1 for priority parcels and D+3 for standard parcels). Yet, with volumes remaining on high levels way above the levels that had been expected for 2021 in advance of the pandemic, punctual sorting and delivery remains a challenge for Swiss Post.

Unlike the lockdown period during spring 2020, Swiss Post was able to expect the high parcel volumes in the following autumn and winter. A number of measures were taken to cope with the record volumes. One such measure was the processing of smaller parcels in the letter centers – totaling up to 150,000 items a day.¹ Furthermore, and just at the right time, two regional parcel centers opened in September and November 2020 respectively, and eased the burden on the four existing parcel centers, and special shifts in sorting centers made it possible that parcels were sorted for up to 22 hours per day. Moreover, personnel in sorting centers and delivery was increased up to 30%, up to 400 additional delivery rounds per day were carried out, with around 300 extra delivery vans rented and delivery on Saturdays was introduced. In addition, thanks to a close dialog with corporate accounts, the mail-order companies helped in the process. They pre-sorted parcels, separated them by size and specific areas and announced the expected volumes in advance. Small parcels were transported to the letter centers from the very outset while bulky goods were sorted at the beginning of the process.

What developments can we expect in the future? Was (and is) the pandemic an exception in terms of parcel volumes, did it lead to a level effect or even to higher long-term growth rates, or to combinations thereof? It is still too early for save conclusion, but let us have a look at what the most current volume developments reveal. Total volumes between weeks 13 and 27 in 2021 have been only 2% higher than volumes of the same weeks in 2020 and the volumes of the two years are not statistically distinguishable, judging from a two-sided t-test (p > 0.4). When we compare only non-lockdown weeks characterized by relatively low case-numbers – weeks 20 to 27 – we observe that volumes in 2021 are 5.4% above volumes in 2020 and

¹ For more details see Swiss Post, "Swiss Post breaks record once again", press release 4 December 2020.

the difference is weakly significant (p = 0.076). Although with the necessary caution, we may interpret this a sign of a return to former growth rates, but on a higher base.

2.3 Mail volumes in the course of the pandemic

Using weekly data of letters processed by Swiss Post (including international mail)², Figure 3 shows how mail volumes (letters) have developed in every calendar week of 2019, 2020 and 2021 as well as major political responses to the pandemic. Compared to parcels, the patterns are generally reversed, but less pronounced. Mail volumes declined sharply during the lockdown in spring 2020 to on average 6.5 million items per day from on average 7.8 million items per day the year before (-17%). After the lockdown, the 2021 numbers approached the 2020 numbers again to about the difference seen in advance of the pandemic and almost were equal around Christmas. In total, Swiss Post delivered 1.829 million letters in 2020, compared to 1.938 million in 2019 (-5.6%). Notably, the volume of priority mail did not decline for the first time since 2012 and the total volume decline was purely driven by non-priority items. This may be attributed to the pandemic as urgent communication, for instance by public authorities, became relatively more important.



Figure 3: Letter volumes of Swiss Post 2019-2021 and political milestones of the Covid-19 pandemic in Switzerland. Sources: Swiss Post, Federal Office of Public Health

Due to the exceptional situation in 2020, the national regulation authority for the universal service, PostCom, decided to exclude the periods mid-March to July and December 2020 for measuring the punctuality of letters. (The Swiss USO requires that 97% of all letters have to be delivered on time, which means D+1 for priority letters and D+3 for standard letters).

2.4 How much did the pandemic influence volume developments in 2020?

In 2020, Swiss Post saw both its greatest decline in mail volumes and growth in parcel volumes: Mail volumes declined by 5.6% and parcel volumes increased by 22.8%. It is hard to say how volumes would have developed without the pandemic, but we try to estimate this by using the trend between the first 12 weeks of 2020 and the first 12 weeks of 2019 as a proxy for the rest of the year. We use daily averages as the first 12 weeks in 2019 had one working day more than in 2020 and adjust the prediction for the rest of the year to the fact that 2020 had five more working days than 2019. Figure 4 shows the results.

² Due to differences in the data generating process, these numbers differ slightly from those of the official reporting of Swiss Post.



Figure 4: Decomposition of growth rates 2020 in trend and Covid-effect

Without the pandemic, we would have expected a volume decline for mail of 2.7%. This number is somewhat lower compared to the rates in the last few years, which saw an average decline of 4.7% between 2017 and 2019. A further decline of 2.9% is attributed to the pandemic.

With respect to parcels we would have expected a growth rate of 6.8% without the pandemic, which seems reasonably in line with the average growth rate between 2017 and 2019 at 6.5%. A further growth of 16.1% can be attributed to the pandemic.

The pandemic hence explains more than half of the volume changes in 2021 compared to 2020 for both letters and parcels: 52% of the decline of letter volumes and 70% of the growth of parcel volumes can be attributed to the pandemic.

2.5 The impact of pandemic periods on volumes

Figure 5 shows volume trends in comparison to the same weeks a year before for four different periods: the pre-pandemic period (weeks 1-12 in 2020), the first lockdown (weeks 13-19 in 2020), the period inbetween lockdowns (week 20 in 2020 to week 2 in 2021) and the second lockdown (weeks 3-8 in 2021). All comparison periods are pre-pandemic and adjusted for the number of working days in each period.



Figure 5: Changes in parcel and mail volumes during different periods of the pandemic 2020/21

For both parcels and letters, the two lockdowns had a large impact on volumes. In the first lockdown in spring 2020, parcel volumes increased by 37.2% (compared to the same period the year before), compared to a pre-lockdown trend of 4.5%. The increase in the second lockdown in the beginning of 2021 was even greater at 44.5%, but the 44.5% are statistically not differentiable from the 37.2% of the first lockdown

(p=0.13, two-sided t-test). Between lockdowns, the volume increase was 22.2%, which is significantly lower than in the two lockdowns, respectively (p<0.01, two-sided t-test).

With respect to letters, a similar pattern with different sign occurs. Volume declines have been accentuated during the two lockdowns. Statistically, only the volume changes in lockdown I differ significantly from the pre-lockdown trend and the period between lockdowns (p<0.002, respectively, two-sided t-tests). The volume decrease in lockdown II is statistically not distinguishable from the volume decrease between the lockdowns (p=0.35) or pre-lockdown-levels (p=0.21).

3. Generating wider economic value as an e-commerce enabler

Since the beginning of the pandemic, e-commerce has been growing faster than ever before. Between 2019 and 2020, e-commerce consumption in Switzerland increased by 27.2% (GfK Switzerland AG, 2021). As Switzerland's universal postal operator, Swiss Post has played a crucial role in enabling this fast growth. It guaranteed the efficient and reliable delivery of thousands of e-commerce deliveries per day and thus, fundamentally supported the national economy during the pandemic. By means of an input-output model developed by Swiss Post, we have quantified the extent of this support. This model was initially developed in order to quantify Swiss Post's direct and indirect economic contribution through its own operations. We will discuss the results of this wider analysis in section 4. In this section, we will focus on Swiss Post's economic contribution through its role as e-commerce enabler. The input-output model can also be used to estimate the economic footprint of other industries, such as the e-commerce sector. In a first step, we estimated the revenues earned by online traders thanks to Swiss Post's services, as well as the value added and employment generated by these revenues. In a second step, we used the model to estimate the revenues, value added and employment indirectly generated by the e-commerce sector through its purchases in upstream industries. Adding up the direct and indirect contributions results in an estimate of the e-commerce sector's total economic footprint enabled by Swiss Post. In the following subsections, we will show the results of this analysis for the first and second lockdown, for the whole period of the pandemic as well as for the additional amount of parcels delivered thanks to the pandemic.

3.1 Lockdown I

During the first lockdown in spring 2020, stores were closed for 7 weeks in Switzerland. In this period, Swiss Post delivered about 26 million parcels. Assuming that 75% of these parcels were e-commerce deliveries and that the average order value was about CHF 125, we estimated that Swiss Post enabled CHF 2.5 billion of revenues as well as CHF 1.8 billion of value added in the e-commerce sector during the first lockdown. By means of our input-output model, we were able to estimate the online traders' indirect contribution through its procurements in upstream industries. The model finds a production multiplier of 0.49, which means that for every CHF produced in the retail sector, another 0.49 CHF is produced in other sectors. The corresponding value added multiplier is 0.28 and the employment multiplier is 0.14. Thus, the online retailers' procurements additionally generated CHF 1.2 billion of revenues and CHF 500 million of value added in upstream industries. In total, online trade supported by Swiss Post generated CHF 2.3 billion of value added during these 7 weeks, which corresponds to 2.4% of Swiss GDP. Further, Swiss Post contributed to secure 34'000 jobs in the e-commerce sector as well as 5'000 jobs in upstream industries. In total, this results in 39'000 jobs that were supported by Swiss Post in different parts of the economy – apart from its own employees.



Figure 6: Economic contribution thorugh e-commerce in lockdown I

It is important to note that procurements in the retail sector are often purchased abroad. However, in our analysis we only considered indirect contributions to the national economy. Thus, economic contributions to foreign economies through e-commerce procurements enabled by Swiss Post are not included in the figures above.

3.2 Lockdown II

The second lockdown in Switzerland was in winter 2021 and lasted 6 weeks. In this period, Swiss Post delivered about 25 million parcels. Using the same method as described above, we have estimated that thanks to the support of Swiss Post's services, online traders could earn revenues of CHF 2.4 billion and generate value added of CHF 1.7 billion during this period. Together with the indirect value added effects in upstream industries, Swiss Post once more supported the generation of CHF 2.2 billion of value added, which accounts for 2.7% of GDP. The amount of jobs supported by Swiss Post apart from its own employees was very similar to the first lockdown.



Figure 7: Economic contribution through e-commerce in lockdown II

3.3 The whole pandemic

In the course of the whole pandemic – lasting from spring 2020 until now – Swiss Post has delivered over 250 million parcels and has helped the e-commerce sector directly and indirectly generate a total of CHF 21.9 billion in value added, which accounts for 2.4% of GDP in this period. Again, it helped to secure about 39'000 jobs in the whole economy – apart from its own employees.

Whole period of the pandemic (2020-2021): During 80 weeks Swiss Post delivered 250 million parcels and enabled...



Figure 8: Economic contribution through e-commerce during the whole pandemic

3.4 Impact of the Covid-19 volume effect

Total parcel volume increased by 23% or 33.5 million parcels between 2019 and 2020. As parcel volumes have been rising for years already, it is clear that only a part of this increase was actually caused by the Corona pandemic. Assuming a pre-pandemic trend of 6.8% per year (see section 2.4), Covid-19 caused an increase of 23.6 million parcels in 2020. Coming from this increase, we estimated Swiss Post's additional economic contribution through its support of the e-commerce sector thanks the Covid-19 volume effect. The results below show that due to the pandemic, Swiss Post could help generate additional CHF 2.1 billion in value added in the e-commerce sector and its upstream industries.



Figure 9: Economic contribution through e-commerce for the pandemic caused parcel volume increase

4. How we quantify the wider Economic Value of Swiss Post in general

The input-output model used for the analyses in section 3 was developed by Swiss Post for an internal project with the objective to measure the wider economic value of Swiss Post. The model is based on an input-output table published by the Federal Statistical Office for the year 2014³ and was developed in accordance with the Eurostat Manual of Supply, Use and Input-Output Tables (2008). The model's initial purpose was to estimate the indirect effects in terms of production, value added and employment Swiss Post generates through its procurements in upstream industries across the whole country – which was the first part of the project mentioned above. Due to Swiss post's large market share, we could use the multipliers for the four sectors in which Swiss Post is engaged for this estimation. The e-commerce analysis presented in section 3 was only an addition to this main analysis. As a second part of the project, we

³ Available at: <u>https://www.bfs.admin.ch/bfs/en/home/statistics/national-economy/input-output.assetdetail.5453222.html</u>

combined internal data with publicly available administrative data to a municipality level dataset, which allowed for a few interesting quantifications that underline Swiss Posts wider economic value related to its de-centrality. In this section, we will present the most important findings of both parts of the project.

4.1 Results from the input-output analysis

In 2019, customers spent CHF 7.3 billion on postal services, which is Swiss Post's direct production value. CHF 4.1 billion of this production value was value added, which was mostly (CHF 3.6 billion) created by the Swiss Post's employees and payed to them as wages. Machines and other means of production created the rest of the value added (about CHF 450 million). Outlays made in upstream industries account for the remaining CHF 2.3 billion of the production value.



Figure 10: The composition of Swiss Post's production value, 2019

Thanks to these outlays, Swiss Post's activities indirectly generated additional economic value in other industries throughout the country. Our input-output model allowed us to quantify these indirect contributions. The table below summarizes the results:



Figure 11: Swiss Post's direct and indirect economic footprint, 2019

Additional to its own production value of CHF 7.3 billion, Swiss Post indirectly caused a production value of CHF 4.9 billion in upstream industries. Thus, it has contributed to the generation of CHF 2.4 billion of value added in these industries. In total, Swiss Post was responsible for CHF 6.5 billion in value added in 2019, which corresponds to about 1% of Swiss GDP. Also with respect to employment, Swiss Post additionally generated 14'800 full time equivalents (FTEs) thanks to its outlays. Together with its own 33'900 FTEs, Swiss Post was thus able to secure 48'700 FTEs in the whole economy.

4.2 Results from the municipality level dataset

Swiss Post creates social value through its presence in the whole country. This value is closely linked to its large de-centrality in terms of employment and procurements. From our municipality-level dataset we could derive some interesting quantifications that underline the extent of this de-centrality.



Figure 12: Swiss municipalities where Swiss Post has employees (blue), 2020.

Swiss Post has about 48'000 employees in Switzerland, which means that every 110th Swiss employee works for Swiss Post. These employees can be found throughout the whole country - in all of the four language regions, in all of the 26 cantons and in more than 900 municipalities, which accounts for almost every second Swiss municipality (43%), as you can see in figure 9.

In 2020, Swiss Post purchased procurements from around 20'000 different local enterprises with a value of CHF 2.7 billion. These enterprises are located in all language regions and cantons of Switzerland. As you can see in figure 10, Swiss Post purchased procurements in a very large part (78%) of all municipalities.



Figure 13: Swiss municipalities where Swiss Post procures inputs from local companies (blue), 2020.

5. Conclusion

To be added later.

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