

# The Austrian bank branch network from 2000 to 2019 from a spatial perspective

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*This paper presents results of an analysis of the spatial distribution of bank branches in Austria over the period from January 2000 to December 2019 from two perspectives: First, we analyze the temporal development of bank branch availability at the municipality level. Second, we present estimates of travel distances to the nearest bank branch. At the end of 2019, 555 municipalities (27% of 2,096 Austrian municipalities) did not have a bank branch, which compares with 271 municipalities in January 2000. We show that the bulk of the increase in “branchless” municipalities occurred after 2014. The closure of the last branch in a municipality occurred predominantly in municipalities with fewer than 2,000 inhabitants, and, overall, only a relatively small share of the Austrian population live in municipalities that became branchless (4.6% or 410,000 inhabitants). Given this trend, which we also see at the international level, we study travel distances to bank branches (as of 2019). On average, Austrian residents have to travel 1.5 km from their homes to the nearest bank. This distance varies from 2.7 km in municipalities with fewer than 2,000 inhabitants to 0.7 km in larger cities. A total of 77% of the population resides within a 2 km travel distance to the nearest bank. Although our results suggest that, on average, Austrians have reasonable access to bank branches, a more disaggregated analysis allows us to identify municipalities where travel distances are longer. For example, about 433,000 residents (4.9% of the population) have to travel more than 5 km. Municipalities with a high share of residents who have to travel farther than 5 km have 1,000 inhabitants on average and are located in all provinces except Vienna.*

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Throughout the past decades retail banks have downsized their branch networks. First, this has occurred for economic reasons, i.e. increased competition and/or banks' aim to reduce costs. A second, and closely connected, reason is digitalization. Survey data from 2019 show that about 58% of Austrians (aged 14 or older) use online banking, and close to 50% more frequently bank online than at a bank branch or at a bank's self-service counter. In 2018, one-third of Austrians visited a bank desk once a year at most (see Ritzberger-Grünwald and Stix, 2018).

In Austria, as in many other countries, the reduction of the number of bank branches has triggered a debate about the supply of firms and consumers with local banking services, in particular in rural areas. This debate is closely linked with the question of how to secure people's access to cash.<sup>2</sup> Longer travel distances to the

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<sup>2</sup> Although the bulk of withdrawals occurs at ATMs, local bank branches often operate ATMs and provide for the possibility of depositing or withdrawing higher amounts. See Stix (2020) for more details.

closest bank branch could affect those segments of the population that have not adopted online banking or cashless payment products: typically older persons in rural areas. An international perspective shows that there are countries which are already further down the road with regard to the reduction of the branch network. In Sweden, for example, concerns that some segments of the population are under-supplied have led to proposals that certain banks should be required to “provide cash withdrawals and process daily receipts to the extent that reasonable access to these is provided” throughout the country (SOU, 2018, p. 24). In its Retail Payments Strategy, the European Commission (2020, p. 14) states that it “[e]xpects Member States to ensure the acceptance and accessibility of cash as a public good”.

There are many different views and aspects to be considered in the debate about whether a bank branch network is too large, too small or just right, and, clearly, any answer will depend on the perspective from which this question is analyzed. This notwithstanding, it is evident that the debate should best be based on information about the regional availability of bank branches. The aim of this paper is to provide regionally disaggregated information and to present estimates about the physical distances Austrian residents need to travel from their homes to reach the nearest bank branch. These estimates can be used for comparing the availability of bank branches in urban and rural areas and for conducting international comparisons, and they also provide a benchmark for monitoring future developments.

Specifically, we utilize a newly constructed geolocation dataset of Austrian bank branches over the past 20 years to study two questions:

- How many and which municipalities have no bank branch? How has this number changed over time?
- What is the average distance Austrians need to travel to their closest bank branch? In which areas are these distances longer?

Analyzing the number of bank branches per municipality allows us to assess the changes over time from January 2000 to December 2019. For example, we identify the municipalities which became branchless (i.e. the last branch closed) in this period and provide a basic analysis of their characteristics (i.e. their location and size). This analysis is based on the level of municipalities.

While this analysis is informative, it also has its downsides. Municipality borders change over time, and the sizes of municipalities differ widely across provinces due to political decisions, topology, population density, etc., which inhibits meaningful comparisons. Furthermore, it is not clear a priori that residents of a municipality without a bank branch must travel large distances to the next bank, e.g. if a nearby municipality has a bank branch. Therefore, we discuss a second metric for assessing access which is more robust to such differences: travel distances to the nearest bank branch. We compute these distances for each 100 m by 100 m grid cell in Austria that was populated on January 1, 2019, thereby covering the entire Austrian population. Moreover, the distances reflect “true” travel distances based on the Austrian road system. We consider this important, given that applying straight-line (“as the crow flies”) distances, as is typically done in other studies, might be problematic in less populated regions. These travel distance estimates provide information about the average degree of reachability of the Austrian bank branch network and allow us to identify those areas where it is lower. We note that these distances refer to the branch network at end-2019.<sup>3</sup>

<sup>3</sup> *Travel distances for earlier years could not be computed as both the street network and the structure of settlements have changed since 2000.*

When interpreting the findings of this paper, the following should be taken into account. First, this article provides only a descriptive account and therefore seeks to avoid, as much as possible, normative judgments, which would require a more elaborate analysis (and a theoretical framework which allows normative statements, e.g. “access is good”). Second, we use the term “access” in a way that only refers to travel distances, neglecting online access, for example, or other dimensions of access to banking services (e.g. exclusion from loans). It must be borne in mind that the same physical distance can have very different implications for different people, depending on mobility, the use of online or mobile banking, health, availability of means of transport, etc., all of which are not taken into account in this analysis. Third, a change in the number of branches does not necessarily imply deteriorating access or a deterioration in the quality of service, since, for instance, branches may have been relocated to provide better services. Moreover, the increased use of online banking has certainly decreased the demand for physical bank branches. Finally, the process of georeferencing bank branch addresses is prone to errors. Although intensive data checks were conducted, some errors will remain, at least regarding the exact location of branches. For the earlier years of our sample period, there may also be a margin of error regarding the assignment of branches to municipalities. Nevertheless, we are confident that the results regarding averages are not overly biased by remaining errors, qualitatively.<sup>4</sup>

The paper proceeds as follows. Section 1 describes the bank branch dataset. Section 2 presents results from a spatial analysis of municipalities, section 3 discusses travel distances to bank branches, and section 4 summarizes and concludes.

## 1 Data description

We use a registry of addresses of all Austrian bank headquarters and branches provided by the OeNB to build up a panel dataset of Austrian bank branch locations. From January 2000 to December 2019, there are 9,699 unique addresses, which we georeferenced.

Subsequently, the following definitions and restrictions will apply:

- As the focus of this paper is on the availability of banks to consumers, we will henceforth focus on retail banks and neglect other banks (e.g. leasing banks, building and loan associations, bureaux de change). In Austria, there are the following types of retail banks: joint stock banks, savings banks, state mortgage banks, Raiffeisen credit cooperatives and Volksbank credit cooperatives.
- The registry distinguishes between headquarters and branches. It is a matter of convention whether headquarters are counted as entities providing banking services. While the headquarters of many smaller banks with only a few bank branches (e.g. local Raiffeisen banks) are likely to provide retail banking services, this is likely not the case for larger banks. In the following we will count all addresses, regardless of whether it is the location of headquarters or an associated branch and refer to all locations as “bank branches” or “banks.”
- The registry only contains staffed branches; therefore, our analysis does not include self-service branches.

<sup>4</sup> Results for individual municipalities, however, could be affected more strongly by remaining errors. Therefore, the corresponding results should be taken as indicative only.

Table 1

**Number of bank locations in Austria over time**

	Jan. 2000	Dec. 2000	Dec. 2005	Dec. 2010	Dec. 2015	Dec. 2019	Percent decrease from Jan. 2000 to Dec. 2019
<b>All banks</b>							
Bank locations	5,116	5,449	5,137	5,003	4,836	4,098	-19.9
of which							
headquarters	924	908	883	842	741	573	-38.0
branches	4,192	4,541	4,254	4,161	4,095	3,525	-15.9
<b>Retail banks</b>							
Bank locations	4,995	5,328	4,929	4,772	4,631	3,927	-21.4
of which							
headquarters	844	827	755	717	628	488	-42.2
branches	4,151	4,501	4,174	4,055	4,003	3,439	-17.2

Source: OeNB.

Note: The table shows the temporal development of the number of headquarters and of branches (1) for all banks and (2) for retail banks.

**Bank branches over time**

Table 1 summarizes the evolution of the number of bank addresses from January 2000 to December 2019 for (1) all banks and for (2) retail banks. The number of retail bank addresses decreased by 21% from January 2000 to December 2019, but the decline was not steady. Specifically, there was relatively little change until 2015 and a strong downward trend thereafter.<sup>5</sup> Also, the drop in the number of headquarters by -42% reflects a consolidation of the Austrian banking market.

**2 Analysis from a municipality perspective**

Municipality boundaries change over time, e.g. when smaller municipalities are merged.<sup>6</sup> In order to conduct a temporal comparison, we therefore need to set a reference year. Specifically, our results refer to municipality boundaries as they were on January 1, 2019. We note that a different reference year would affect results as changes in municipality borders were substantial in certain years (e.g. in 2015, the year of a large-scale reform of municipal structures in Styria).

Table 2 (column 7) shows that 27% of the 2,096 Austrian municipalities had no bank branch at end-2019; about 7.6% of the Austrian population resides in these municipalities. For a number of provinces we observe between 30% and 40% of municipalities without a bank branch. The lowest percentage is found for Salzburg, with only about one-tenth of municipalities without a bank branch. Columns 1 to 4 of table 2 summarize the change in the number of municipalities without a bank branch over time. Again, it should be noted that the figures were computed assuming municipality borders as they were on January 1, 2019.<sup>7</sup> In January 2000, 271 municipalities had no bank branch. Up to end-2014, there was only a modest increase to 347. After 2014, the increase accelerated, to 380 municipalities at end-2015, 407 in 2016, 469 in 2017, 524 in 2018 and 555 in 2019 (all numbers refer to year-end).

<sup>5</sup> From end-2015 to end-2019, the largest relative change in the number of branches occurred for branches of Volksbank credit cooperatives.

<sup>6</sup> See Jiménez Gonzalo and Tejero Sala (2018) for an interesting analysis for municipalities in Spain.

<sup>7</sup> Alternatively, one could vary municipality borders for each year. However, this analysis was not possible as Statistics Austria provides municipality borders only back to 2011.

Table 2

**Number of Austrian municipalities with no bank branch by province**

	Jan. 2000	Dec. 2010	Dec. 2015	Dec. 2019	Percent increase (Jan. 2000 to Dec. 2019)	Absolute increase (Jan. 2000 to Dec. 2019)	Percent share of municipalities with- out a bank branch (Dec. 2019)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Austria</b>	271	304	380	555	105	284	27
Burgenland	25	33	43	67	168	42	39
Carinthia	10	15	17	23	130	13	17
Lower Austria	78	85	110	174	123	96	31
Upper Austria	45	47	52	68	51	23	16
Salzburg	11	8	9	12	9	1	10
Styria	24	31	46	83	246	59	29
Tyrol	61	64	79	99	62	38	35
Vorarlberg	17	21	24	29	71	12	29

Source: OeNB.

Note: Municipality borders as of 2019.

It is evident that the aggregate view is strongly influenced by provinces with a high total number of municipalities. For example, an additional 42 municipalities in Burgenland that became branchless (column 6) may imply a large impact relative to the total number of municipalities in Burgenland, but only a modest impact on the aggregate figure for Austria. In terms of percentages, the number of branchless municipalities roughly doubled in Austria (+105%). By provinces, the increase was strongest in Styria and Burgenland (245% and 168%, respectively). The smallest changes occurred in Salzburg (+9%), Upper Austria, Tyrol and Vorarlberg (+51% to +71%).

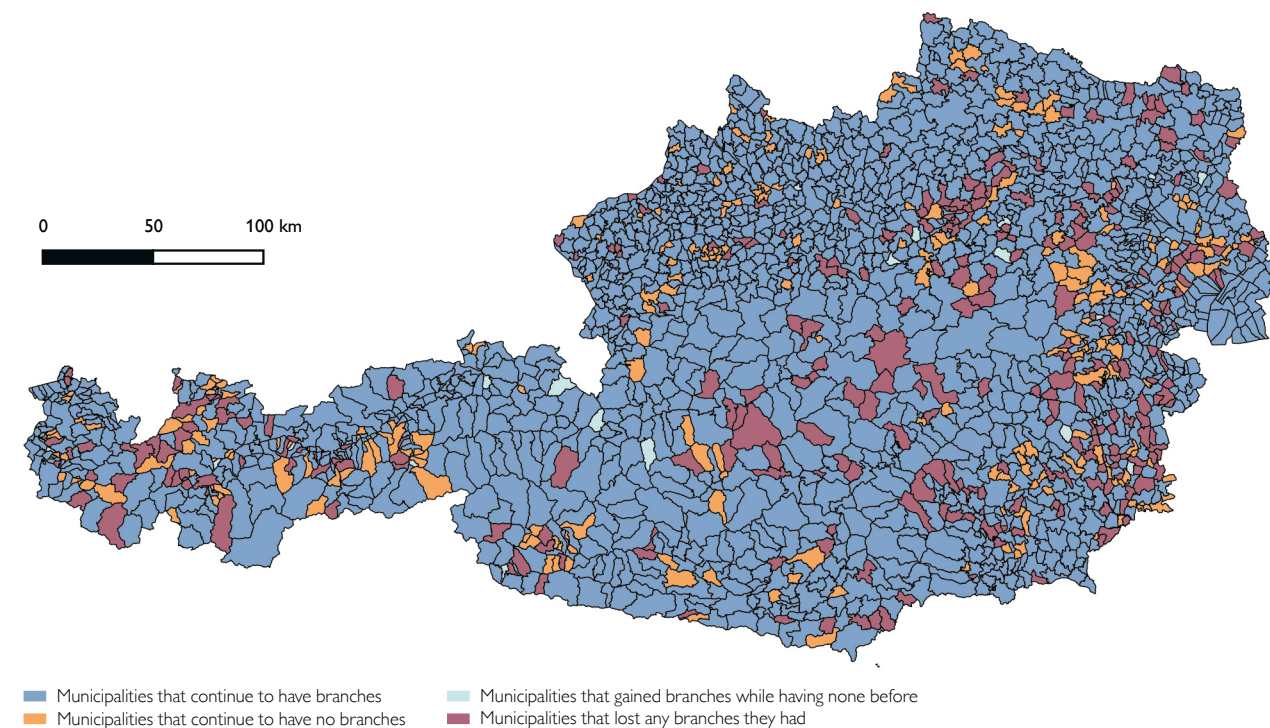
**Municipalities where the last bank branch closed**

Do some of these 271 municipalities that did not have a bank branch in 2000 now have a branch? And how many municipalities became branchless?

The results show that there are 1,542 municipalities (74% of all municipalities) which had at least one bank branch both in January 2000 and at end-2019. In 305 municipalities there was a branch in January 2000 but no branch at end-2019 – these municipalities became branchless. The vast majority of the 271 municipalities which did not have a bank branch in January 2000 remained branchless. New branches were opened only in 21 municipalities.

Chart 1 maps these branch dynamics by municipality. A closer analysis of which municipalities became branchless shows that out of the affected 305 municipalities, 83% (254) have fewer than 2,000 inhabitants (as of 2019), and a further 12% have between 2,000 and 3,000 inhabitants. Municipalities that saw a closure of their last bank branches (red areas in chart 1) can be found in all provinces except Vienna. Relative to the total number of municipalities in a province, the incidence of last branch closures was highest in Burgenland (25% of municipalities), Styria (21%) and Lower Austria (18%). However, we emphasize that comparisons across provinces must be treated with great caution as sizes and numbers of municipalities differ substantially across provinces due to differences in topology, settlement structures, etc.

### Changes in bank branch availability from January 2000 to December 2019



Source: Statistik Austria – data.statistik.gov.at, OeNB.

Note: The analysis of changes in the availability is based on the basis of municipality boundaries as of January 1, 2019. Using municipality boundaries of other years will affect results. Results for individual municipalities could be affected by errors in the assignment of branches to municipalities. Results should thus be treated as indicative only.

### 3 Spatial analysis: distances to nearest bank

While the analysis by municipalities is informative, it only provides an incomplete view of the density of the branch network. First, our results are affected by the reference year as municipality borders vary over time. Second, such an analysis may reveal inaccurate information on the actual distances households need to travel to their next bank branch. As a case in point, travel distances could be reasonable in a branchless village if a neighboring village has a bank branch. Therefore, we discuss an alternative metric which is robust to definitions of administrative boundaries. Specifically, we analyze geographical distances, i.e. we assess travel distances on streets and identify the route to the closest bank branch for all Austrian addresses.

The analysis is based on a 100 m by 100 m geographical grid of Austria. As starting points, we do not use exact addresses but the center points of 580,995 grid cells of 100 m by 100 m which were populated on January 1, 2019. The computations of routes and the identification of the closest bank branch were carried out by an external company which used TomTom (©, road network as of June 2020). The annex provides a brief exposition of how routes were calculated. A more detailed description, also discussing the limitations of this approach, can be found in Stix (2020). The distances reported below refer to the shortest distance to the nearest bank branch, either by walking or by driving, whichever is the shorter route.

Table 3 shows that the average distance to the nearest bank branch in Austria is about 1.5 km; for 50% of Austrian residents, the shortest distance to the next bank branch is 0.8 km or less (median). About 10% of the population has to travel more than 3.7 km. As expected, the results show that the average travel distance is closely correlated with the size of a municipality, ranging from 2.7 km for municipalities with up to 2,000 inhabitants to 0.7 km for municipalities with more than 50,000 inhabitants.

Apart from analyzing average distances, we also look at the share of the population that has to travel less than a specific distance to the nearest bank branch. We find that for about 29% (or 2.5 million people) it is less than 500 m to the closest bank branch, for 77% it is less than 2 km. The results of this analysis are summarized in table 4.

Chart 2 depicts how the share of the population that resides within a certain distance of a bank branch varies across municipality size classes. If we take 1 km as an arbitrary benchmark value of good access (the sum of the dark blue, light blue and dark green bars), we find that around 80% of the population in larger cities with more than 50,000 inhabitants resides within this distance. For smaller municipalities, this share is substantially smaller and a sizable share of the population needs to travel a distance of more than 5 km to the nearest bank branch.

In general, it is difficult to choose a specific threshold value which universally separates satisfactory from unsatisfactory access to bank branches, given differences

Table 3

### Distance to nearest bank branch by municipality size

	Mean	Median	p90	p99	Inhabitants
	km				
Austria	1.5	0.8	3.7	7.7	8,858,775
<b>Municipality size classes</b>					
Up to 2,000 inhabitants	2.7	2.1	5.9	10.7	1,333,610
2,000–3,000 inhabitants	2.1	1.4	4.8	8.1	927,388
3,000–5,000 inhabitants	1.8	1.1	4.1	7.6	1,209,729
5,000–10,000 inhabitants	1.5	1.1	3.5	6.9	1,146,491
10,000–50,000 inhabitants	1.2	0.9	2.5	6.2	1,283,163
50,000–1 million inhabitants	0.7	0.6	1.4	3.4	1,060,888
Vienna	0.7	0.5	1.4	2.7	1,897,506

Source: OeNB.

Note: The figures refer to December 2019. Results are population-weighted. Total population: 8,858,775. P90 (P99) denotes the 90<sup>th</sup> (99<sup>th</sup>) percentile, which means that 90% (99%) of the population have to travel less far than the value specified.

Table 4

### Cumulative distance from home to nearest bank branch in Austria

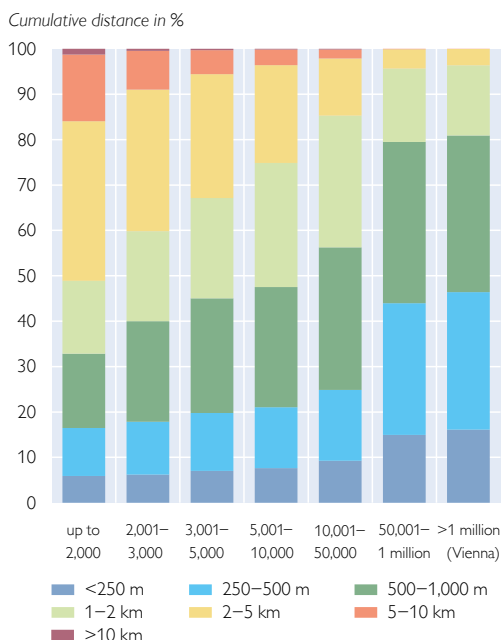
	Distance to nearest bank branch						
	<100 m	<250 m	<500 m	<1 km	<2 km	<5 km	<10 km
Cumulative share of population (%)	2.2	10.1	28.6	56.4	76.9	95.1	99.7
Number of inhabitants	190,563	891,956	2,531,088	4,998,404	6,815,596	8,425,915	8,830,969

Source: OeNB.

Note: The results are population-weighted and refer to December 2019.

Chart 2

### Distance to nearest bank branch by municipality size



Source: OeNB.  
 Note: The chart shows the (population-weighted) share of the population living at various distances from the nearest bank branch.

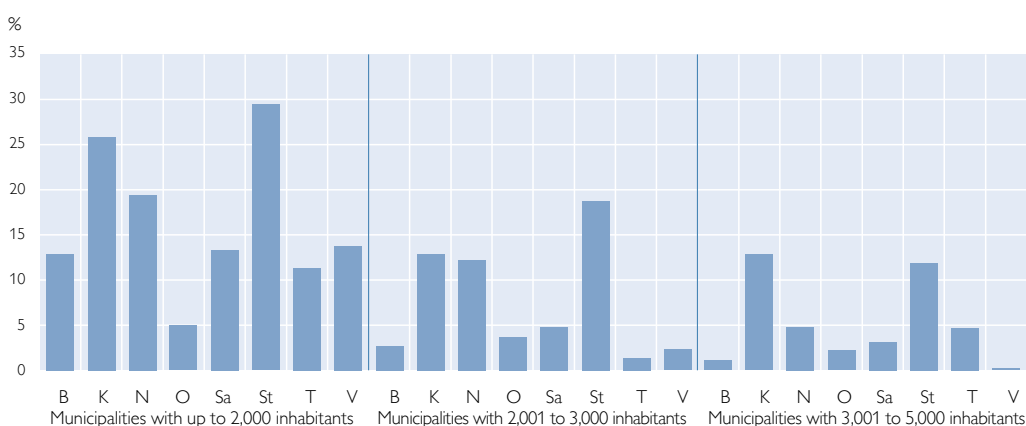
in personal mobility, the availability of transport, personal preferences, etc. In the following, we nevertheless define this threshold value to be at 5 km, which could be considered acceptable for a large part of the (rural) population.<sup>8</sup>

Overall, about 4.9% of Austrians (or about 432,000 persons<sup>9</sup>) have to travel farther than 5 km to reach the nearest bank branch. These values vary considerably across municipality size classes. In villages of fewer than 2,000 inhabitants, for 16% of residents (about 212,000 persons) it is more than 5 km to the nearest bank. In municipalities with 5,000 to 10,000 inhabitants, this share is 3.6%, and in larger cities of more than 50,000 inhabitants, it is close to zero.

There are also marked differences across provinces. However, again, we think that such a comparison might not be overly meaningful because of differences in municipality structure, topology, etc. Therefore, we look at specific

Chart 3

### Share of population living more than 5 km from nearest bank branch by municipality size and province



Source: OeNB.  
 Note: Province abbreviation key: B (Burgenland), K (Carinthia), N (Lower Austria), O (Upper Austria), Sa (Salzburg), St (Styria), T (Tyrol), V (Vorarlberg), W (Vienna).

<sup>8</sup> There are two additional arguments for choosing the 5 km threshold. First, because it is in line with international studies (e.g. NFPS, 2017). Second, because survey data on respondents' satisfaction with the accessibility of their bank branch indicate that satisfaction declines if distances are 5 km or longer. However, this result rests on rather shaky ground as the number of respondents in the survey for whom distances are longer is small (unpublished survey results).

<sup>9</sup> Throughout this paper, absolute population figures refer to persons of all ages. The reason why we do not refer to the adult population, for example, is that the age structure of residents is unavailable for 100 m by 100 m grid cells.



municipality size classes, which controls for one but not all of these salient differences. Specifically, chart 3 depicts the share of the population for whom the distance to the nearest bank is more than 5 km. In municipalities of fewer than 2,000 inhabitants, this share is higher than 25% in Carinthia and Styria and 19% in Lower Austria. For municipalities between 2,000 and 3,000 inhabitants, the share is above 10% in Carinthia, Lower Austria and Styria.

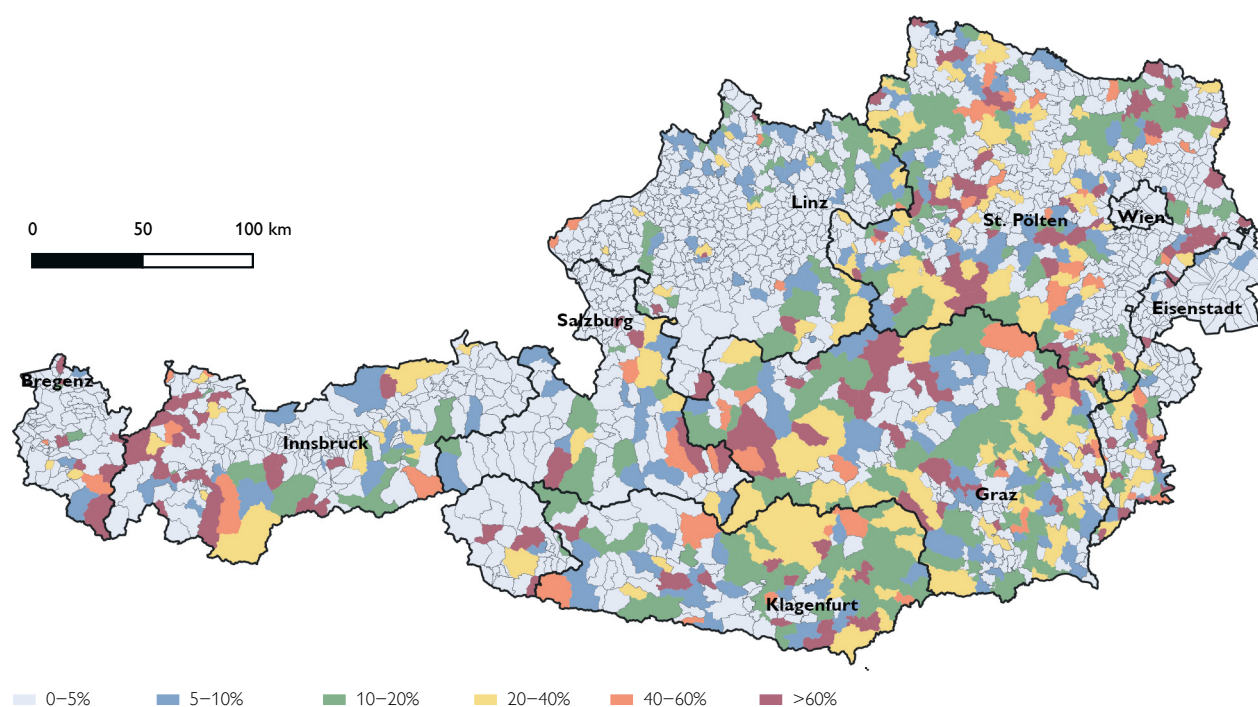
This analysis can be further disaggregated geographically. Chart 4 provides a map of all Austrian municipalities and shows the shares of the population that travel more than 5 km to the nearest bank by municipality.<sup>10</sup> This analysis indicates that there are some municipalities with a more limited availability of branches. Specifically, in 178 municipalities more than 60% of the population has to travel farther than 5 km to the nearest bank branch. In another 59 municipalities, this share is between 40% and 60% of inhabitants.<sup>11</sup>

The vast majority of these municipalities is small; on average, municipalities with a share higher than 40% have about 1,000 inhabitants. 25% of such municipalities have fewer than 500 inhabitants. This implies that the actual number of inhabitants that travel more than 5 km to the nearest bank is low (e.g. 50% of 1,000 persons). While we have not further scrutinized the reasons behind the relatively long distances, we conjecture that some municipalities consist of several clusters of smaller but fairly scattered agglomerations. It would also be worthwhile to study this further,

Chart 4

### Share of municipality population living more than 5 km from nearest bank branch

Share of population in %



Source: Statistik Austria – data.statistik.gov.at, OeNB.

<sup>10</sup> Again, we note that results for individual municipalities could be affected by errors in the assignment of branches to municipalities. These results should thus be seen as indicative only.

<sup>11</sup> We note that these results do not necessarily imply that the respective municipalities are undersupplied with banking and/or cash services, as our analysis does not include postal offices, self-service branches or ATMs.

as well as the socioeconomic characteristics of these municipalities (e.g. average income, age structure).

### **How do our results compare to studies in other countries?**

We are unaware of recent studies which report road travel distances to the closest bank branches in a similar way. However, several recent studies are based on straight-line (“as the crow flies”) distances.

Delaney et al. (2019) compute travel distances to cash access points in Australia. They do not specifically focus on bank branches, but nevertheless report some results for cash deposit facilities. The results suggest that close to 90% of the Australian population resides within 5 km to the nearest cash deposit facilities of a bank branch. For the U.K., Sonea et al. (2019) present results regarding distances from the centroids of small statistical areas to the closest banks, post offices or ATMs and define several indicators of spatial access. There are also interesting studies for France (Banque de France, 2019) and Spain (Jiménez Gonzalo and Tejero Sala, 2018), which mainly focus on the availability of bank branches or ATMs across municipalities and thus apply a somewhat coarser geographical perspective.

For the Netherlands, NFPS (2017) reports that 97.77% of residents are found to have resided within 5 km of cash deposit facilities in 2017.<sup>12</sup> The metric used in NFPS (2017) expresses the degree of bank branch coverage. A circle is drawn around each branch and then the number of residents that reside in these circles is counted. This metric is computationally less demanding than route distances but has the disadvantage that it relies on straight-line distances, which might provide a biased picture in comparison to actual route distances, in particular for longer distances (compare Stix, 2020).

In order to compare the situation in Austria with that in the Netherlands, we applied the approach used in NFPS (2017) to compute comparable statistics. The results show that 66.5% of the Austrian population resides within a radius of 1 km, 91.5% within a radius of 3 km and 98.4% within a radius of 5 km of a bank branch.<sup>13</sup>

These findings suggest that the coverage of consumers by the branch network is of roughly similar magnitude in the two countries. We consider this finding interesting as there are about 2.8 times more bank branches in Austria than in the Netherlands. This could imply that a cross-country comparison of an unadjusted metric like the number of bank branches per capita, which is often used for such comparisons, could be misleading (at least with respect to assessing spatial access). This suggests that adjusted metrics that account for differences in population density and topology would be preferable.<sup>14</sup>

<sup>12</sup> There are differences which affect comparability with the Austrian result. First and foremost, NFPS (2017) analyzes bank-operated cash facilities where consumers and businesses can deposit cash, while we analyze bank branches. We conjecture that the overwhelming share of cash deposit facilities is located at bank branches, but some might in fact be off-bank branches, so that compared to our results, the results for the Netherlands are likely to reflect an upper bound. Another difference is that the study for the Netherlands, as explained in NFPS (2017), does not focus on grid cells but on 6-digit postcode areas.

<sup>13</sup> A comparison with table 4 reveals the bias that arises between travel distances and linear distances. The linear distances suggest that 66.5% of the population lives within 1 km. The routing result shows that this share is just 56.4%.

<sup>14</sup> Data about bank branches refer to 2018: AT: 3,631 branches, NL: 1,489 branches. Source: EU structural financial indicators, [https://www.ecb.europa.eu/pub/pdf/annex/ecb~10913d25c1.pr190604\\_ssi\\_table.pdf](https://www.ecb.europa.eu/pub/pdf/annex/ecb~10913d25c1.pr190604_ssi_table.pdf). In per capita terms, the difference would be even larger.

Table 5

**Estimated distance from home to nearest bank branch by change in availability**

	Mean distance to nearest branch	Median distance to nearest branch	Share of population for whom travel distance is more than 5 km
	km		%
Change from Jan. 2000 to Dec. 2019			
Municipalities that continue to have branches	1.7	1.1	3.5
Municipalities that gained branches while having none before	1.6	1.1	1.9
Municipalities that continue to have no branches	3.9	3.6	21.3
Municipalities that lost any branches they had	5.0	4.6	42.9

Source: OeNB.

Note: The results are population-weighted and refer to December 2019. For comparability, the analysis was conducted only for municipalities with fewer than 3,000 inhabitants.

**Are travel distances larger in municipalities without a bank branch?**

Table 5 summarizes average and median travel distances for four groups of municipalities by change in bank branch availability.

First and foremost, the table shows that the mean distance is roughly similar for municipalities that had a bank branch in December 2019 (lines 1 and 2 of table 5), irrespective of whether this municipality had a bank branch in the year 2000. A considerably higher average travel distance (3.9 km) is found for those municipalities that neither had a bank branch in 2000 nor in 2019. The highest average distance of 5 km is found for those municipalities which became branchless. These differences are rather robust to outliers, as a similar pattern can be observed for the median distance and for the share of the population for whom the travel distance to the nearest bank is more than 5 km.

Do these results imply that the closure of the last bank branch in a municipality causes an increase in the travel distance? Unfortunately, this comparison does not allow making such a causal statement as for such a conclusion we would need to know the travel distances in the respective villages before the last branch closed; the travel distance could have been high already before the last bank branch closed. As such comparisons are only possible with the availability of further data vintages, the results just allow to establish that travel distances are relatively high in municipalities that became branchless.

**4 Summary and conclusions**

This paper presents a first attempt to assess the spatial distribution of bank branches in Austria and how it has developed over the past 20 years.

We document the scope of bank branch consolidation, which accelerated after 2014, and show that closures of the last bank branches in municipalities occurred mainly in smaller municipalities with fewer than 2,000 inhabitants. Given that the analysis of the development of the number of bank branches per municipality is only of limited use for assessing the spatial access to bank branches, we present estimates of road travel distances (as of end-2019) to the closest bank branch, which is a more robust metric for changes in administrative boundaries.

Although the aim of this paper was to provide a descriptive account of the change in travel distances, we think that results allow us to conclude that – at least

on average – Austrians appear to have relatively satisfactory access to bank branches. 77% of the Austrian population resides within 2 km and 95% within 5 km of the nearest bank branch. As expected, travel distances are larger in rural areas, but even there a high share of the population resides within 5 km of the nearest bank branch. The geographically disaggregated analysis allows us to identify municipalities with a lower availability of bank branches. For example, in 178 municipalities (out of 2,096 Austrian municipalities), more than 60% of the population has to travel farther than 5 km to the nearest bank branch.

As one of the aims of this paper was to establish benchmark estimates for assessing future changes in the branch network, we would like to put our results into a broader context and to highlight some directions for future research.

First, with the increased use of online and mobile banking, the physical distance to a bank branch has clearly lost importance. Over the past two decades, the share of the population that uses online banking has increased from 7% to close to 60%.<sup>15</sup> Nevertheless, in some segments of the population the use of digital banking and payment products is still limited – mainly among older persons (Ritzberger-Grünwald and Stix, 2018). For example, the share of online banking users is 83% among Austrians aged between 14 and 35 years, 49% among persons aged between 51 and 65 years and 14% among persons aged 66 years or older. To better understand and assess the demand for physical banking services, it would be interesting to complement the detailed geographical information presented in this study with further information on the use of digital banking and payment products in rural areas and across socio-demographic groups, which could be obtained, e.g., from population surveys. Moreover, it would be interesting to study the factors affecting banks' location decisions and how socioeconomic characteristics of municipalities (e.g. the age structure and economic profile of a municipality) affect the decision to close branches (see Beckmann et al., 2018).

Second, results from OeNB surveys of spring 2018 and fall 2019 show that a very high share of Austrians is satisfied with access to their bank branch (48% of Austrians aged 14 years or older are very satisfied and a further 41% are satisfied). Interestingly, satisfaction is higher among residents of rural areas, who, on average, face considerably larger physical distances than among residents of urban areas. These survey results indicate that, on average, and if distances are not too long, the physical distance to a bank branch might not be of prime importance to bank clients. For example, a distance between 2 km and 5 km might be inconsequential if a trip to a bank branch is combined with another purpose. This notwithstanding, we find some evidence that (increases in) distances matter for bank clients' satisfaction, which is 14 percentage points lower in municipalities where the last branch closed in the years since 2015 than in municipalities that still have a branch.<sup>16</sup> We find higher travel distances for the 3% of Austrians who are very unsatisfied with the reachability of their bank branch.

In this context, it would be interesting to develop a framework that allows us to define threshold distances for “good” access and incorporates information on the

<sup>15</sup> OeNB survey results. For a description, see Ritzberger-Grünwald and Stix (2018). The most recent results refer to a survey conducted in summer 2020 (unpublished).

<sup>16</sup> These results are based on a regression controlling for age, employment status, household income, provinces and the use of online banking.

demand for physical banking services. Information about the age structure of the population, the availability of public transport, the use of digital banking channels, the availability of high-speed internet, etc. could provide some evidence in this direction. Furthermore, it would be interesting to study whether a change in the travel distance, i.e. the closure of the last bank branch, affects the behavior of bank clients, e.g. whether demand for bank products is affected.

Third, given the important role of cash for society, many central banks aim for an efficient and dense supply of cash withdrawal facilities. Assessing the quality of access to cash withdrawal facilities thus requires a view beyond bank branches that also includes ATMs. This issue has been analyzed in a separate paper (Stix, 2020), whose results show that travel distances to ATMs are lower than for bank branches, which is not surprising given that there were 9,058 ATMs in operation as of end 2019, as opposed to 3,927 retail bank branch addresses. 82% of the Austrian population have an ATM within 2 km and 97% have an ATM within 5 km of their homes. The average distance to ATMs is 1.2 km and the median distance is 0.6 km (50% of the Austrian population have to travel less far).

Finally, we note that while this paper provides only a descriptive account of the spatial distribution of the bank branch network, the results could be used for more elaborate analyses, for example to determine the location choices of banks and the degree of local bank competition (compare, e.g., Basten and Ongena, 2019; Chen and Strathearn, 2020), the effect of local banking conditions on firms (e.g. Baumgartner et al., 2020) or their consequences for payment choice and cash demand (Huynh et al., 2014).

## References

- Banque de France. 2019.** État des lieux de l'accès du public aux espèces en France métropolitaine, [https://www.banque-france.fr/sites/default/files/media/2019/07/23/rapport\\_-\\_accés\\_au\\_public\\_aux\\_especes\\_en\\_france\\_metropolitaine\\_-\\_23072019.pdf](https://www.banque-france.fr/sites/default/files/media/2019/07/23/rapport_-_accés_au_public_aux_especes_en_france_metropolitaine_-_23072019.pdf)
- Basten, C. and S. Ongena. 2019.** The Geography of Mortgage Lending in Times of FinTech. Swiss Finance Institute Research Paper No. 19-39.
- Baumgartner, S., A. Stomper, T. Schober and R. Winter-Ebmer. 2020.** Bank Equity, Risk, and Small-Firm Employment: Evidence from Firms Affected by Climate Change. Paper presented at the Annual Meeting of the Austrian Economic Association. January.
- Beckmann, E., S. Reiter and H. Stix. 2018.** A geographic perspective on banking in Central, Eastern and Southeastern Europe. In: Focus on European Economic Integration Q1/18. OeNB. 7–28.
- BEV – Bundesamt für Eich- und Vermessungswesen. 2019.** Address Register – Relational Table – Reference Date Data (© Österreichisches Adressregister, data of the record date April 1, 2019). [http://www.bev.gv.at/portal/page?\\_pageid=713,2601271&\\_dad=portal&\\_schema=PORTAL](http://www.bev.gv.at/portal/page?_pageid=713,2601271&_dad=portal&_schema=PORTAL)
- Chen, H. and M. Strathearn. 2020.** A Spatial Model of Bank Branches in Canada. In: Bank of Canada Staff Working Paper 2020-4.
- Delaney, L., A. O'Hara and R. Finlay. 2019.** Cash Withdrawal Symptoms. In: Reserve Bank of Australia Bulletin June. <https://www.rba.gov.au/publications/bulletin/2019/jun/cash-withdrawn-al-symptoms.html>
- Deutsche Bundesbank. 2020.** Cash withdrawals and payments in urban and rural areas. In: Monthly Report June. 33–44.
- European Commission. 2020.** Retail Payments Strategy. [https://ec.europa.eu/finance/docs/law/200924-retail-payments-strategy\\_en.pdf](https://ec.europa.eu/finance/docs/law/200924-retail-payments-strategy_en.pdf)

- Huynh, K., P. Schmidt-Dengler and H. Stix. 2014.** The Role of Card Acceptance in the Transaction Demand for Money. Working Paper No. 196. OeNB.
- Jiménez Gonzalo, C. and H. Tejero Sala. 2018.** Bank branch closure and cash access in Spain. In: Banco de España Financial Stability Review. Issue 34. [https://www.bde.es/ff/webbde/GAP/Secciones/Publicaciones/InformesBoletinesRevistas/RevistaEstabilidadFinanciera/18/MAYO/Articulo\\_Jimenez\\_Tejero\\_en.pdf](https://www.bde.es/ff/webbde/GAP/Secciones/Publicaciones/InformesBoletinesRevistas/RevistaEstabilidadFinanciera/18/MAYO/Articulo_Jimenez_Tejero_en.pdf)
- NFPS (National Forum on the Payment System). 2017.** Interim report for 2017 on accessibility of ATMs and cash deposit facilities in the Netherlands. [https://www.dnb.nl/en/binaries/Interim%20report%20for%202017%20on%20accessibility%20of%20ATMs%20and%20cash%20deposit%20facilities%20in%20the%20Netherlands\\_tcm47-369712.pdf](https://www.dnb.nl/en/binaries/Interim%20report%20for%202017%20on%20accessibility%20of%20ATMs%20and%20cash%20deposit%20facilities%20in%20the%20Netherlands_tcm47-369712.pdf)
- Ritzberger-Grünwald, D. and H. Stix. 2018.** How Austrians bank and pay in an increasingly digitalized world – results from an OeNB survey. In: Monetary Policy & the Economy, Q3/18. OeNB. 52–89.
- Sonea, A., W. Guo and S. Jarvis. 2019.** An exploratory spatial analysis of access to physical and digital retail banking channels in the UK. Technical report (<https://www.thinkforwardinitiative.com/research/exploratory-spatial-analysis-of-access-to-physical-and-digital-retail-banking-channels-in-the-uk>).
- Sokol, M. 2017.** Financialisation, financial chains and uneven geographical development in Europe: Towards a research agenda. In: Research in International Business and Finance (RIBAF) 39(B). 678–685.
- SOU. 2018.** Tryggad tillgång till kontanter (Interim report on cash – Secure access to cash), SOU 2018:42 (<https://www.regeringen.se/49cf6d/contentassets/79026c9e608946bdbfa60067ddae0c0d/tryggad-tillgang-till-kontanter-sou-201842.pdf>).
- Stix, H. 2020.** A spatial analysis of access to ATMs in Austria. In: Monetary Policy & the Economy Q3/20. OeNB. Forthcoming.

## Annex

### Data sources

We have made use of the following data sources:

- Bank addresses: Oesterreichische Nationalbank (<https://www.oenb.at/Statistik/Klassifikationen/Bankstellenverzeichnis.html>)
- Municipality boundaries: Classification of Austria by municipalities, historicized since 2011 (“Gliederung Österreichs in Gemeinden, historisiert seit 2011”) by Statistics Austria ([http://data.statistik.gov.at/web/meta.jsp?dataset=OGDEXT\\_GEM\\_1](http://data.statistik.gov.at/web/meta.jsp?dataset=OGDEXT_GEM_1)). These data are provided under CC BY 4.0 (<https://creativecommons.org/licenses/by/4.0/>).
- Population by grid cells: Statistics Austria.

### Computation of routes

In the following, we provide a very brief description of the computation of routes. A more detailed account is provided in the paper analyzing access to ATMs (Stix, 2020).

The computation of routes is based on a network analysis of a geographical information system which allows to compute travel distances with varying modes of transport. To account for the differences in how people move in cities and in rural areas, travel times and distances were calculated both for walking and driving. For each transport mode, the network analysis was conducted on the basis of the fastest route. It should be noted that the fastest route is not always the shortest

route, in particular when driving by car. For each starting address, the route to the nearest bank branch has been computed.

The distances that are reported in this paper always refer to the shortest driving or walking distance.

The starting points for route calculations are taken from a 100 m by 100 m geographical grid of Austria. Specifically, we used the midpoints of those 580,995 grid cells of 100 m by 100 m which were populated on January 1, 2019 (main residence). The network analysis was carried out by an external GIS company, which used the street graph from TomTom (©).

For each grid cell we observe the number of persons who had their main residence in this cell on January 1, 2019 (in total 8,858,775 inhabitants). This allows us to compute population-weighted summary statistics for different levels of agglomerations (like municipalities or Austrian provinces).