A first exploratory analysis of the regional economic impact of COVID-19 in Argentina¹

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Abstract

In this article, we present a first exploratory analysis of the regional economic impact that COVID-19 pandemic and lockdown measures adopted in Argentina could have had during the last weeks of March and the month of April, the period of greatest economic impact, when restrictions were mainly raised at the sectoral level, without taking into account any regional criteria. To this end, we built an index of territorial economic impact by COVID-19 (ITEI-COVID), which takes into account, on the one hand, the regional production structure in terms of formal private employment, and on the other hand, the operational level of each sector. Results show that the regional impact of COVID-19 on private economic activity in Argentina was highly heterogeneous and that these unequal effects were largely related to the degree of productive diversity or the type of regional specialization. All these results are relatively stable and robust when comparing different geographical units of analysis, when changing the period chosen to define the private production structure, or when considering the informality and self-employment in addition to formal salaried employment.

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1. Introduction

Both the analysis and measure of the economic impact of the COVID-19 pandemic necessarily require taking into account a regional perspective, not only to fully understand and manage the unequal impacts of the pandemic and isolation measures but also because the economic problems that arise tend to be region-specific (Bailey et al., 2020). The marked heterogeneity in the territorial distribution of economic activities, production, and employment in Argentina, which is expressed in different regional specializations, allows us to anticipate an unequal impact of the pandemic and the lockdown measures (named as Preventive and Compulsory Social Isolation or ASPO in Spanish). In this article, we present a first exploratory analysis of the regional economic impact that the pandemic and ASPO could have had during the last weeks of March and the month of April, when lockdown restrictions and exceptions were mainly raised at the level of sectors or economic activities, without taking into account any regional criteria. In this way, we aim to provide a territorial view of the heterogeneous impact that the pandemic and lockdown measures had on private economic activity in different geographical units of analysis: Provinces, Local Labor Markets (LLMs), and Urban Agglomerates¹.

At the beginning of the ASPO (last weeks of March and the month of April), while excepted or essential activities continued relatively normal (e.g. food and beverage processing, health services), many others faced a significant reduction in their operational level (transport) or even a complete and indefinitely lockdown (tourism, leisure, and cultural services). Despite mobility restrictions, some activities were able to adapt to working from home (various professional services, education), but others that naturally require the physical presence in the workplace (manufacturing, construction) have been much more affected (Albrieu, 2020; Bonavida Foschiatti and Gasparini, 2020; Delaporte and Peña, 2020; Dingel and Neiman, 2020; Hatayama et al., 2020; Saltiel, 2020).

To analyze the regional economic impact of the pandemic and ASPO, we built an index of territorial economic impact by COVID-19 (ITEI-COVID). This index takes into account, on the one hand, the regional production structure in terms of formal private employment, and on the other hand, the operational level of each sector. Although this is a relatively simple exercise, similar analyzes can be found, for example, for the United States (Muro et al.,

¹ The 24 Argentine provinces represent the main subnational political level in the country, and generally the territorial level for which more data is available. However, the provinces in Argentina are considerably larger than in some developed countries. For example, the size of the province of Buenos Aires is similar to Poland or Italy. In this sense, having reliable information about different geographical units within the provinces is particularly useful for territorial analysis in Argentina. The LLMs are formed by a central city or node and a set of other cities based on the daily movements of workers between their workplace and their home (Borello, 2002; Rotondo et al., 2016). As a whole, the main 85 LLMs defined in Argentina account for 86% of total population (and 95% of registered employment in private companies), while the 32 urban agglomerates surveyed by the National Household Survey (NHS) barely exceed the 60% of total population.

2020), different countries or regions in Europe (Bachtrögler et al., 2020; Kitsos, 2020; González Laxe et al., 2020; Pérez and Maudos, 2020; Prades Illanes and Tello Casas, 2020), Colombia and Brazil (Bonet-Morón et al., 2020; Haddad et al., 2020), or the municipalities of Buenos Aires Province, in Argentina (Lódola and Picón, 2020).

After this introduction, in section 2 we contextualize the period under analysis in terms of the evolution of the COVID-19 pandemic and lockdown measures adopted in Argentina. In section 3, we present the index of territorial economic impact by COVID-19 and discuss some issues about the available databases and their respective limitations. Then, in section 4 we show and discuss de ITEI results according to the different geographical units of analysis. Finally, we close with some conclusions.

2. The COVID-19 pandemic and lockdown measures in Argentina

The first imported case of COVID-19 in Argentina was confirmed on March 3th. A few days later, the national government established a mandatory guarantine for travelers entering or returning to the country (and then the closure of national borders), the suspension of all artistic and sports shows, as well as classes at all educational levels. On March 19th, when confirmed cases in the country were barely 130 and there were still no signs of community circulation (80% of cases were imported and the remaining 20% were close contacts, see Figure 1), the President announced the beginning of a strict and mandatory guarantine for the entire population (the so-called ASPO), with the exception of those activities and workers that were considered essential (e.g. medical services and supplies, security personnel, food production, pharmacies, local food and cleaning supplies stores, public services, public transportation for essential workers, fuel dispensing, among others). It is worth noting that on the day of the announcement, about half of the 24 provinces of the country had not yet registered positive cases. Moreover, in more than half of the provinces with cases, there were only one or two infected people. In the vast majority of cities in the country, there were no confirmed cases for several weeks. However, during this first phase of strict quarantine and isolation, no territorial differences were recognized. It was not until May 11th, when phase 2 (administrative isolation) began, that the government began to take into account the context and the epidemiological evolution of each province and city. The latter was deepened on May 27th with the passage to phase 3, of geographical segmentation.

Figure 1. COVID-19 daily cases, deaths, and percentage of cases by community spread in Argentina (7-day moving average)



Source: Authors' calculation based on data reported by the Ministry of Health and compiled by Jorge Aliaga.

The economic downturn in the last weeks of March was practically total. For example, according to Google's mobility index, the presence at the workplace in Argentina fell 83 points from Wednesday March 11th (previous to any measures) to Wednesday March 25th. In the provinces, the decrease was about 86 points on average, with a minimum drop of 77 and a maximum of 100. According to a survey carried out in the first days of April to 1,000 companies distributed throughout the country, only 10% of them were fully operational, while more than half were completely non-operational. Around two-thirds of manufacturing and commercial companies and three-quarters of construction companies were non-operational (FOP, 2020a).

Throughout April, some sectors began to resume their activities, either because: a) the first essential activities managed to adapt their labor and transport protocols for their workers, b) some new sectors were excepted during the month (for example, primary activities, such as forestry or mining, or industrial continuous processes), or c) remote working conditions were established when possible (mainly in service activities). However, official statistics show a historical decline in this month, of which there are practically no similar records. According to the National Institute of Statistics and Censuses (INDEC in Spanish), the monthly economic activity estimator registered a fall of more than 26% compared to April 2019, while the contraction registered in March (the whole month) had been 11.5%, compared to the same

month of 2019. The industrial manufacturing production index (IMPI), showed a year-on-year fall of almost 17% in March and of more than 33% in April.

As we mentioned before, during this first stage, the restrictions and exceptions to the economic activity were raised at the level of sectors or branches, without taking into account any territorial criteria. However, as we will show in this article, given the differences in regional production structures, there were naturally regions more and less affected by the economic downturn. For example, according to another survey of FOP (2020b), carried out between May 7th and 12th (end of the strictest phase of quarantine), the Patagonia (South) region showed the highest percentage of non-operational firms, in contrast to the North of the country. Regarding sectoral differences, while a quarter of all surveyed companies were not operational, this percentage reached only 7% in the agricultural and natural resources sectors and between 30% and 40% in manufacturing and construction.

From then on, the restrictions on different economic activities were gradually eliminated, taking into account the epidemiological evolution of each province and city. The economic rebound compared to the worst month in history was not long in coming (see Figure 2) and the seasonally adjusted series of the IMPI showed a recovery of 9% in May (in comparison to April 2020) and 14% in June (in comparison to May). On the other hand, the psychosocial and economic exhaustion generated by a long and sustained quarantine (phase 5, of social distancing or new normality, would only begin in June just in some regions) was reflected in mobility indices, which demonstrated a marked distance between *de jure* quarantine and *the facto* isolation (Levy Yeyati and Sartorio, 2020). This not only accounts for the gradual reduction in the effectiveness of quarantine measures but also the real impossibility of sustaining or restoring strict restrictions, even when the epidemiological situation has been worsened markedly. At the beginning of August, Argentina overcame the barrier of 200,000 confirmed cases, with an average of around 5,500 new cases per day and about 60% by community circulation (Figure 1).



Figure 2. Manufacturing activity (year-on-year change, 14-day moving average)

Source: Own translation of CEPXXI (2020).

Although the early and strict quarantine had a considerable popular and political support, since it allowed the government to buy time to develop protocols and expand the capacity of intensive care beds, a retrospective look and the current results invite at least to discuss part of the proposed strategy. In particular, the first phase of the ASPO, between the end of March and the first days of May, predictably coincided with the greatest economic impact of the pandemic and quarantine measures in Argentina. However, as we will see in this article, along with the absence of territorial criteria, the regional economic impact was also highly heterogeneous.

3. Calculation and scope of the index of territorial economic impact by COVID-19

The ITEI-COVID in region j is calculated as:

$$ITEIj = 100 - \sum_{i=1}^{n} Sij * OPi$$

Where Sij is the weight of sector i in region j and OPi is the operational level of sector i in the country. The ITEI-COVID should be interpreted as a negative index, since it takes higher values (near 100) if the economic activity has been severely affected (non-operational) by the pandemic and ASPO, and vice versa.

Since in Argentina we do not have complete, homogeneous and updated sectoral valueadded statistics at the territorial level, to define the sectoral weights we use data on total salaried employment registered in the private sector, from the provincial and LLM databases of the Employment and Business Dynamics Observatory (EBDO), under the Ministry of Labor, Employment, and Social Security. In particular, in the case of the LLMs, we use average employment data from the 2016-2018 period -which in other working paper allowed us to describe the regional production structure before the pandemic (Niembro et al., 2020)and we calculated the weight of formal private employment in each sector (ISIC at 2 digits) over the total formal private employment of each LLM. In the case of the provinces, we carry out the same calculation both for the 2016-2018 period and the second quarter of 2019, which includes the month of April.

It is worth noting that data on formal salaried employment in the private sector -provided by the EBDO both for provinces and LLMs- cover the entire universe, since they are based on administrative records of the Argentine Integrated Social Security System (SIPA in Spanish) and the Federal Public Revenue Administration (AFIP). In other words, they are not estimates or projections based on sample data -as occurs, for example, with the National Household Survey (NHS) of INDEC-. Obviously, the main limitation of these databases to describe the regional (private) production structure is that they leave aside informal employment and self-employed². For this reason, we also use data of the NHS, from the second quarter of 2019, to calculate the sectoral weights not only for formal salaried employment but also for informal employment and self-employed. In section 4.3 we show that, although some changes occur when incorporating data on informality and self-employment, the territorial patterns remain quite similar.

The operational level of each sector ranges from a maximum of 100 (complete) to a minimum of 0 (null), going through intermediate values of 75 (high), 50 (medium), and 25 (low). In order to carry out a simple sensitivity analysis, we define for each sector a hypothesis of minimum operational level and another of maximum level, based on the search and interpretation of secondary information, such as recent statistics published by INDEC and other official agencies, reports from consultants and research centers, and information from various surveys and sectoral chambers. Annex 1 presents the list of the sectors considered, the two hypotheses defined, and the sources reviewed in each case. It is worth mentioning that the definition of an operational or vulnerability level for each sector has also been a common step in other recent studies (Bachtrögler et al., 2020; Bonet-Morón et al., 2020; González Laxe et al., 2020; Lódola and Picón, 2020; Pérez and Maudos, 2020; Prades Illanes and Tello Casas, 2020).

It is important to highlight that the ITEI does not intend to account for the changes in formal salaried employment in the private sector in each region during the pandemic and ASPO. Instead, the index is based on the production structure, approximated by previous data on

² Employment in the public sector is also not taken into account, but it is not the purpose of this article to analyze the impact of the pandemic or ASPO on the production of services in the public sector.

formal private employment, with the aim to analyze the heterogeneous impact that the quarantine could have had on the private economic activity at the territorial level in Argentina. Taking into account that the government established different restrictions on firing formal workers, as well as some important support measures, such as the Emergency Assistance Program for Work and Production³, it is expected that, at least for a while, formal employment could be dissociated from the effective level of production and sales. According to the Ministry of Labor, Employment, and Social Security, although there was a drop in jobs in April, other adjustments during this month took the form of suspensions and wage reductions, along with a significant drop in hiring.

Finally, It should be noted that the impact on private economic activity may be due to the restrictions (and exceptions) imposed by the ASPO and the feasibility (or not) of working from home in the activities that were not excepted, as well as to the decrease in domestic or external demand and other logistic complications, all factors that may be associated in one way or another with the pandemic. For these reasons, and as with any other index, the ITEI should be interpreted with some caution, prioritizing a relative comparison between regions and not an interpretation of the absolute values in each case.

4. Results according to the different geographical units of analysis

4.1. ITEI-COVID results for the main 85 Local Labor Markets

Figure 3 shows the average, lower, and upper value of the index for the main 85 LLMs of the country. In a simple robustness analysis, we observe that the main results at the extremes of the distribution do not change even if, on the one hand, we bring the operational level closer to its maximum hypothesis for the most affected LLMs, and on the other hand, we bring the operational hypothesis towards the minimum for the least affected LLMs. The *ITEI-Lower* for the 8 most affected LLMs is on average 43.5, while the *ITEI-Upper* for the 10 least affected LLMs is on average 42.2.

³ For example, one of the main contributions of this program was paying up to 50% of the salaries of formal workers, depending on the type of company, its economic situation, and salary levels.



Figure 3. ITEI for LLMs: average, upper, and lower limits

Source: Own elaboration.

Table 1 groups the LLMs according to the economic impact they face (the most affected ones are shown in shades of red and the least affected ones in shades of green) and their type of production pattern (or type of specialization), based on the typology elaborated by Niembro et al. (2020). Among the most affected regions, predictably, we observe LLMs specialized in tourism -like Campos-Vazquez and Esquivel (2020) for Mexican regions- and in some industries that were highly restricted (non-operational) in the first stage of the quarantine. Some of these LLMs are also specialized in the extraction or exploitation of natural resources, such as oil and minerals, activities that have been limited both by the pandemic and by the sectoral crisis in the case of hydrocarbons. At the other extreme, among the most intense greens, we note that specialization in agricultural and food sectors has been essential to minimize the impacts of the pandemic and ASPO. In general, the production pattern of the most and least affected LLMs shows relatively low levels of diversification, with a type of specialization that leans towards more and less affected (non-operational) sectors, respectively.

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POSADAS 34.7 47.2 68.7 16 ESQUEL 34.4 46.9 58.4 20 TRELEW-RAWSON 33.5 46.9 58.4 20 RELEW-RAWSON 33.5 46.9 58.4 20 ATTO-ALLECRIO NEGRO 33.4 46.9 58.7 20 ATTO-ALLECRIO NEGRO 32.3 46.7 57.7 22 CHILLOY 32.7 44.2 56.7 37 MACCOS LUAREZ 30.1 42.6 55.7 55 ESCOBAR 23.8 45.1 57.6 31 PLAR 29.9 42.4 53.7 53 ELDORADO 28.9 41.4 53.9 49 Hich specialization in light industry and services RAMSIRONO 28.8 41.3 58.8 51 Hich specialization in inst industry ARA DEL PATA 31.8 44.3 56.4 30 31 ARA DEL PATA 31.6 44.1 53.8 51 Hich specialization in toutist	SAN JUAN	32.8	45.3	57.8	28	Textile industry and various activities	
ESUCIE. 34.4 46.9 59.4 20 RELEW RWSON 33.5 46.0 58.4 23 KONGALLEROS 33.4 45.6 58.1 23 KONGALLEROS 33.4 45.6 58.1 23 KATAL 57.2 32 46.7 77.2 32 RAFAEL 20.1 42.6 65.1 43.0 Agriculture, support industries and urban services ROTERCERO 28.7 41.2 53.7 53 services NECOCHEA 27.9 40.4 63.2 55 45 PLAR 29.9 42.4 54.9 44 Heav industry, light industry and services EUDORADO 28.9 41.4 53.8 51 High specialization in inst industry ARIK BLANCA 31.8 44.3 56.8 36 KIS and heavy industry ARIK BLANCA 31.4 43.9 56.4 411 53.8 50 ARIK BLANCA 31.4 43.9 56.4 411	POSADAS	34.7	47.2	59.7	16		
Display Display <t< td=""><td>ESQUEL TRELEW-RAWSON</td><td>34.4</td><td>46.9</td><td>59.4</td><td>20</td><td></td></t<>	ESQUEL TRELEW-RAWSON	34.4	46.9	59.4	20		
SANTA ROSA 33.1 45.6 68.1 27 ALTO VALLE DEL RIO NEGRO 32.8 46.3 57.8 28 RAFAELA 32.2 44.7 57.2 32 RAFAELA 32.2 44.7 57.2 32 RAFAELA 30.1 42.6 65.1 43 NECOCHEA 27.9 40.4 62.9 55.4 NECOCHEA 22.9 42.4 54.9 44.4 PLAR 29.9 42.4 54.9 44.4 RARSTRONG 28.8 41.3 53.8 51 High specialization in light industry and services ELOORADO 28.9 41.4 53.8 35.1 High specialization in machinery ARM BLANCA 31.8 44.3 56.8 35.6 36.1 ANTA FE - PARAN 28.9 41.4 53.9 50.0 20.44.5 57.0 34 CATAMARCA 31.4 43.9 56.4 431 45.1 45.1 45.1 45.1	RIO GALLEGOS	33.4	40.0	58.4	23	Urban and related services	
ALTO VALLE DEL RIO NEGRO 32.8 45.3 57.8 29 CHIVILCOY 31.7 44.2 56.7 32 CHIVILCOY 31.7 44.2 56.7 37 MARCOS JUAREZ 30.1 42.6 55.1 43 RO TERCERO 28.7 41.2 53.7 53 RO TERCERO 28.7 41.2 53.7 63 RECOCHEA 27.9 40.4 52.9 55 ESCOBAR 32.6 45.1 57.6 31 HEIDRADO 28.9 41.4 53.9 44 High specialization in fight industry ARMSTRONC 28.6 41.3 56.8 30 ARMSTRONC 28.9 41.4 53.9 40 High specialization in extinactive activities ARMSTRONC 28.6 41.3 56.8 30 50 ARM STRONC 29.1 41.6 57.1 33 50 CUARARA 32.0 44.3 56.8 30 50	SANTA ROSA	33.1	45.6	58.1	27		
RAFAELA 32.2 44.7 57.2 32 MARCOS JUAREZ 30.1 42.6 55.1 43 MARCOS JUAREZ 30.1 42.6 55.1 43 ROTERCERON 28.7 41.2 53.7 553 SECCOLFA 27.9 40.4 52.9 55 ESCOBAR 32.6 45.1 57.6 31 MARCOS JUAREZ 32.0 44.1 53.9 44 FLDARA 29.9 41.4 53.9 44 Hay Specialization in light industry 44.4 53.8 51 High specialization in machinery 44.3 56.8 35 SATIA FE - PARANA 28.9 41.4 53.9 50 CLAVARRIA 30.4 43.5 56.0 40 SATA FE - PARANA 28.9 41.4 53.9 50 CLAYARRIA 30.4 43.5 56.0 40 CATAMARCA 31.4 43.5 54.5 45.5 MECODEDS	ALTO VALLE DEL RIO NEGRO	32.8	45.3	57.8	29		
CHIVLOOY 31.7 44.2 66.7 67.7 Agriculture, support industries and urban MARCOS JUREZ Agriculture, support industries and urban Services RIO TERCERO 28.7 41.2 65.7 63.7 65.3 services ESCOBAR 22.6 45.1 57.6 31 Heavy industry, light industry and services ELDORADO 28.9 41.4 53.9 49 High specialization in Inght industry MAR DEL PLATA 31.8 44.3 56.8 36 56 ARMISTRONG 28.8 41.3 53.8 56 High specialization in machinery MAR DEL PLATA 31.8 44.3 56.8 36 56 SANTA FE - PARANA 28.9 41.4 53.9 50 COLAVARIA 32.0 44.5 57.0 34 Specialization in tourism ASATA 30.0 43.5 56.0 40 Specialization in tourism Specialization in tourism CATAMARCA 31.4 43.9 56.4 39 Specialization in agri-food ULJAN </td <td>RAFAELA</td> <td>32.2</td> <td>44.7</td> <td>57.2</td> <td>32</td> <td></td>	RAFAELA	32.2	44.7	57.2	32		
Mink Column 30.1 42.6 30.1 43.5 services NECCOPEA 27.9 40.4 62.9 63 SECOBAR 32.6 45.1 57.6 31 Heavy industry, light industry and services PLAR 28.9 42.4 54.8 44.4 54.9 44.4 BCOCHEA 28.9 41.4 53.8 49.4 High specialization in light industry ARMSTRONG 28.8 41.4 53.8 51 High specialization in machinery ARNOLLANCA 31.8 44.3 56.6 35 56 ARNOLLANCA 31.4 44.5 56.0 36 59 ARNOLLANCA 31.4 44.5 56.0 36 59 ARNOLLANCA 31.4 44.5 56.0 36 59 ARNOLLANCA 31.4 44.6 57.0 40 59 59 ARNOL 29.1 41.6 64.1 40 59 50 50 ARECPEN <td< td=""><td></td><td>31.7</td><td>44.2</td><td>56.7</td><td>37</td><td>Agriculture, support industries and urban</td></td<>		31.7	44.2	56.7	37	Agriculture, support industries and urban	
International and the second	RIO TERCERO	28.7	42.6	53.7	43 53	services	
ESCOBAR 32.6 45.1 57.6 31 Heavy industry, light industry and services ELDCRADO 28.9 41.4 53.9 49 High specialization in light industry ARMSTRONG 28.8 41.3 53.8 51 High specialization in machinery MAR DEL PLATA 32.1 44.6 57.1 33 SATIA BLANCA 31.8 44.3 566.8 36 SATIA FE - PARANA 28.0 41.4 53.9 50 CLAVARRIA 30.0 44.5 57.0 34 Specialization in extractive activities FASO E LOS LIBRES 31.0 43.5 56.0 40 Specialization in tourism CATAMARCA 31.4 43.9 66.4 39 Specialization in tourism CATAMARCA 29.1 41.6 54.1 46 47.1 48 MECONDUISTA 28.8 41.3 55.3 42 Urban and related services WEODA 27.3 39.8 52.3 57 58 54 41 </td <td>NECOCHEA</td> <td>27.9</td> <td>40.4</td> <td>52.9</td> <td>55</td> <td></td>	NECOCHEA	27.9	40.4	52.9	55		
PILAR 29.9 42.4 54.9 44 Tready and services ELDORADO 28.9 41.4 63.9 49 High specialization in light industry. ARM STRONG 28.8 41.3 53.8 51 High specialization in light industry. ARM STRONG 28.8 41.3 56.8 36 SAPIA BLANCA 31.8 44.3 56.8 36 SATIA FE - PARANA 28.9 41.4 53.9 50 CLAVARRIA 32.0 44.5 57.0 34 SATA FE - PARANA 28.9 41.4 65.4 40 LA FALDA 29.1 41.6 54.1 47 CATAMARCA 31.4 43.9 56.4 39 ULJAN 29.5 42.0 54.5 45 CATAMARCA 31.6 44.1 56.6 38 VEDMA 31.6 44.1 56.6 38 SALTA 30.3 42.8 55.3 42 VENADO TUERTO	ESCOBAR	32.6	45.1	57.6	31	Hoow industry, light industry and conjuga	
ELDORADO 28.9 41.4 53.9 49 High specialization in light industry MAR DEL PLATA 32.1 44.6 57.1 33 ARMSTRONG 28.8 44.3 56.8 35 BAHIA BLANCA 31.8 44.3 56.8 36 SANTA FE - PARANA 28.9 41.4 53.9 40 SANTA FE - PARANA 28.9 41.4 53.9 50 OLAVARRIA 32.0 44.5 57.0 34 SANTA FE - PARANA 28.9 41.4 56.1 40 SANTA FE - PARANA 28.9 41.4 56.4 49 CATAMARCA 31.4 43.9 56.4 49 CATAMARCA 31.4 41.6 54.1 46 REOCES 29.1 41.6 54.1 46 REOCONQUISTA 28.6 41.3 53.8 52 54 REOCONCUSTA 28.0 40.5 53.0 42 Urban and related services VIEDMA	PILAR	29.9	42.4	54.9	44	Heavy industry, light industry and services	
ARMS INCUNS 28.6 41.3 53.8 51 High specialization in machinery MAR DEL PLATA 32.1 44.6 57.1 33 LA PLATA 31.8 44.3 56.8 35 SANTA FE - PARANA 28.9 41.4 55.4 41 SANTA FE - PARANA 28.9 41.4 55.9 500 CLAVARRIA 22.0 44.5 57.0 34 Specialization in extractive activities PASO DE LOS LIBRES 31.0 43.5 56.0 40 Specialization in tourism CATAMARCA 29.1 41.6 54.1 47 Specialization in tourism CATAMARCA 29.1 41.6 54.1 48 Specialization in tourism RECORQUETA 28.6 41.3 53.8 52.3 Specialization in tourism SALTA 30.3 42.8 55.3 54 Urban and related services WEDMA 31.6 44.1 56.6 38 53.0 54 RECONQUARTA 28.0 <	ELDORADO	28.9	41.4	53.9	49	High specialization in light industry	
NUMENT DATA 31.8 44.3 56.8 33 BAHIA BLANCA 31.8 44.3 56.8 36 SANTA RADIL 30.4 42.9 55.4 41.4 SANTA FE - PARANA 22.0 44.5 57.0 34 SANTA FE - PARANA 29.1 41.6 54.1 47 SAENZPENA 29.1 41.6 54.1 46 CATMARCA 31.4 43.9 56.4 39 ULUAN 29.5 42.0 54.5 43.5 SAENZPENA 29.1 41.6 54.1 48 RECONUISTA 28.8 41.3 53.8 52 VIEDMA 31.6 44.1 56.6 38 Urban and related services Micoutor 27.3 39.8 52.3		28.8	41.3	53.8	23	High specialization in machinery	
BATHA BLANCA 31 8 44 3 56 8 36 KIS ANDIL 30 4 42 9 55 4 41 SANTA FE - PARANA 28 9 41.4 53.9 50 OLAVARRIA 32.0 44.5 57.0 34 Specialization in extractive activities PASO DE LOS LIBRES 31.0 44.6 57.0 34 Specialization in tourism CATAMARCA 29.1 41.6 54.1 47 Specialization in tourism CATAMARCA 29.1 41.6 54.1 46 44 Specialization in tourism CATAMARCA 29.1 41.6 54.1 46 46 39 LUJAN 29.5 42.0 54.5 45 45 38 52 Textile industry and various activities RECONDUISTA 28.8 41.3 56.8 38 52.3 57 VENADO TUERTO 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.8 52.3 57 50.4 64		31.8	44.3	56.8	35		
TANDIL 30.4 42.9 55.4 41 SANTA FE PARANA 28.9 41.4 53.9 50 OLAVARRIA 32.0 44.5 57.0 34 Specialization in extractive activities PASO DE LOS LIBRES 31.0 43.5 56.0 40 Specialization in tourism AFALDA 29.1 41.6 54.1 47 Specialization in tourism CATAMARCA 31.4 43.9 56.4 39 Specialization in tourism CATAMARCA 31.4 43.9 56.4 43 Textile industry and various activities MERCEDES 29.1 41.6 54.1 46 48 RECONDUISTA 28.8 41.3 53.8 52 46 MENDOZA 28.0 40.5 53.0 54 Urban and related services MENDOZA 28.0 39.8 52.3 58 51.9 60 SAN FRANCISCO 27.2 39.7 50.2 66 90 50.4 64 90 <	BAHIA BLANCA	31.8	44.3	56.8	36	KIS and heavy industry	
SANTA FE - PARANA 28.9 41.4 53.9 50 DAVARRA 32.0 44.5 57.0 34 Specialization in extractive activities PASO DE LOS LIBRES 31.0 43.5 65.0 40 Specialization in extractive activities CATAMARCA 29.1 41.6 54.1 47 Specialization in extractive activities CATAMARCA 29.1 41.6 54.1 46 48 49 MERCEDES 29.1 41.6 54.1 46 38 52 VIEDMA 31.6 44.1 56.6 38 52 54 MENDOZA 28.0 40.5 53.0 54 14 45.6 38 RIC CUARTO 27.3 39.8 52.3 57 54 14.0 56.4 36 VILAD TUERTO 27.3 39.8 52.3 57 54 55.2 56 55 54 37.9 50.4 64 55 54 54 37.9 50.4 65	TANDIL	30.4	42.9	55.4	41		
ULAVARKIA 32.0 44.5 57.0 34 Specialization in extractive activities PASO DE LOS LIBRES 31.0 43.5 56.0 40 Specialization in extractive activities CATAMARCA 29.1 41.6 54.1 47 Specialization in tourism CATAMARCA 29.1 41.6 54.1 46 Specialization in tourism CATAMARCA 29.5 42.0 54.5 46 Specialization in tourism MERCEDES 29.1 41.6 54.1 46 Feature Textile industry and various activities WEEMA 31.6 44.1 55.3 42 Urban and related services WEEMA 30.3 42.8 55.3 42 Urban and related services RO CUARTO 27.3 39.8 52.3 57 Specialization Services SAN FRANCISCO 27.2 39.7 50.2 66 Specialization services UNLA MARIA 25.4 37.9 50.4 68 90 Specialization serv	SANTA FE - PARANA	28.9	41.4	53.9	50		
Find Die Los Lakels 31.0 41.6 54.1 47 Specialization in tourism CATAMARCA 31.4 43.9 56.4 39 FatLos Specialization in tourism CATAMARCA 29.1 41.6 54.1 46 Specialization in tourism SAENZ PENA 29.1 41.6 54.1 46 Specialization in tourism MERCEDES 29.1 41.6 54.1 46 Specialization in tourism RECONCUISTA 28.8 41.3 53.8 52 Specialization in tourism VIEDMA 31.6 44.1 56.6 38 Specialization in tourism SALTA 30.3 42.8 55.3 42 Urban and related services KIO CUARTO 27.3 39.8 52.3 58 Specialization in agri-food GENERAL PICO 26.9 39.4 51.9 60 Specialization in agri-food JUNIN 24.0 36.5 49.0 69 Specialization in agri-food GALAJARI 25.4 37.9		32.0	44.5	57.0	34	Specialization in extractive activities	
CATAMARCA 31.4 43.9 56.4 39 LUJAN 29.5 42.0 54.5 45 SAENZ PENA 29.1 41.6 54.1 46 MERCEDES 29.1 41.6 54.1 46 MERCONOUISTA 28.8 41.3 53.8 52 VIEDMA 31.6 44.1 56.6 38 VIEDMA 30.3 42.8 55.3 42 Wenkort 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.4 51.9 60 GOLARICO 26.9 39.4 51.3 62 JUNIN 24.0 36.6 49.1 67 CONCEPCION DEL URUGUAY 26.3 38.	LA FALDA	29.1	43.5	56.0 54 1	40	Specialization in tourism	
LUJAN 29.5 42.0 54.5 445. SAENZ PENA 29.1 41.6 54.1 46. MERCEDES 29.1 41.6 54.1 48. RECONQUISTA 28.8 41.3 55.3 52. VIEDMA 31.6 44.1 56.6 38. WENDOZA 28.0 40.5 53.0 54.7 RIO CUARTO 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.8 52.3 57 VILLA MARIA 26.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 3UNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 GUALE GUAYCHU 24.1 36.6 49.1 67 CHAJARI 25.4 37.9 50.4 65 SAN PERNC JULVUW 24.1 36.6 49.1 67 CHAJARI	CATAMARCA	31.4	43.9	56.4	39		
SAERX PENA 29.1 41.6 54.1 46 MERCEDES 29.1 41.6 54.1 48 RECONQUISTA 28.8 41.3 53.8 52 VIEDMA 31.6 44.1 56.6 38 SALTA 30.3 42.8 55.3 42 WENDOZA 28.0 40.5 53.0 54 RO CUARTO 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.8 52.3 59 GENERAL PICO 26.9 39.4 51.9 600 VILLA MARIA 25.4 37.9 50.4 64 9 DEJUIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 GUALEGUAYCHU 24.1 36.6 49.1 67 GHARAL 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN AFAFAEL 23.9	LUJAN	29.5	42.0	54.5	45		
MERCEORQUISTA 29.1 41.6 54.1 48 RECONQUISTA 28.8 41.3 53.8 52 VIEDMA 31.6 44.1 56.6 38 SALTA 30.3 42.8 55.3 42 MENDOZA 28.0 40.5 53.0 54 RIO CUARTO 27.3 39.8 52.3 57 VENADO TUERTO 27.2 39.7 52.2 59 GENERAL PICO 26.9 39.4 51.9 60 VILLA MARIA 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN FRAFAEL 25.4 37.9 50.4 65 GUALEGUAYCHU 24.1 36.6 49.1 67 CHAJARI 23.9 36.4 48.9 700 PERGAMINO 27.5 40.0 52.5 56 SAN SALVADOR DE JUJUY 26.9 </td <td>SAENZ PEÑA</td> <td>29.1</td> <td>41.6</td> <td>54.1</td> <td>46</td> <td>Textile industry and various activities</td>	SAENZ PEÑA	29.1	41.6	54.1	46	Textile industry and various activities	
NLCONDUCTA 28.3 41.3 33.3 32.5 VEIDMA 31.6 44.1 56.6 38 SALTA 30.3 42.8 55.3 42 WENDOZA 28.0 40.5 55.3 42 RIO CUARTO 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.8 52.2 59 GENERAL PICO 26.9 33.4 51.9 60 VILLA MARIA 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RAFAEL 25.4 37.9 50.4 66 GUALEGUAYCHU 24.1 36.6 49.1 67 CHAJAR 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN SALVADOR DE JUJUY		29.1	41.6	54.1	48		
SALTA 30.3 42.8 56.3 42 MENDOZA 28.0 40.5 53.0 54 MENDOZA 28.0 40.5 53.0 54 RO CUARTO 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.8 52.3 58 SAN FRANCISCO 27.2 39.7 52.2 59 GENERAL PICO 26.9 39.4 51.9 60 VILLA MARIA 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RAFAEL 25.4 37.9 50.4 66 66 GUALE GUAYCHU 24.1 36.6 49.1 67 Textile industry and various activities SAN SALVADOR DE JUJUY 26.9 39.4 51.9 63 Urban and related services TRES ARROYOS	VIEDMA	31.6	41.3	56.6	38		
MENDOZA 28.0 40.5 53.0 54 RIO CUARTO 27.3 39.8 52.3 58 SAN FRANCISCO 27.2 39.7 52.2 59 GENERAL PICO 26.9 39.4 51.9 60 VILLA MARIA 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 UNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN FRANCI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 GAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 Urban and related services 15.7 71 Agriculture, support industries and urban services SAN PEDRO 24.1 36.6 49.1 68 49.1 SAN MIGUEL DE TUCUMAN 26.0 38.5	SALTA	30.3	42.8	55.3	42	Urban and related services	
RIO CUARTO 27.3 39.8 52.3 57 VENADO TUERTO 27.3 39.8 52.3 58 SAN FRANCISCO 27.2 39.7 52.2 59 GENERAL PICO 26.9 39.4 51.9 60 VILLA MARIA 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 666 JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RAFAEL 25.4 37.9 50.4 65 GUALEGUAYCHU 24.1 36.6 49.1 67 SAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 SAN MGUEL DE TUCUMAN 26.0 38.5 51.0 63 SUNCHALES 15.7 28.2 40.7 83 SUNCHALEGUAY 21.6 34.1 46.6 72	MENDOZA	28.0	40.5	53.0	54		
VENADO IDERTO 27.3 39.8 52.3 58 SAN FRANCISCO 27.2 39.7 52.2 59 GENERAL PICO 26.9 39.4 51.9 60 VILLA MARIA 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RARAEL 25.4 37.9 50.4 65 GUALE GUAYCHU 24.1 36.6 49.1 67 CHAJARI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 Urban and related services 15.7 28.2 40.7 83 SAR PEDRO 21.6 34.1 46.6 72	RIO CUARTO	27.3	39.8	52.3	57		
SAN FRANCISCO 27.2 39.7 32.2 393 Agriculture, support industries and urban services GENERAL PICO 26.9 39.4 51.9 60 services VILLA MARIA 25.4 37.9 50.4 64 services 9 DEJULIO 25.2 37.7 50.2 66 services CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 Specialization in agri-food CMALEGUAYCHU 24.1 36.6 49.1 67 Specialization in agri-food CHAJAR 23.9 36.4 48.9 70 Textile industry and various activities SAN PEDRO 24.1 36.6 49.1 68 Specialization in agri-food SAN PEDRO 24.1 36.6 49.1 68 Urban and related services SAN SALVADOR DE JUJUY 26.9 38.5 51.0 63 Urban and related services SAN PEDRO 21.4 33.6 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1	VENADO IUERIO	27.3	39.8	52.3	58		
Clink Marka 25.4 37.9 50.4 64 9 DEJULIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RAFAEL 25.4 37.9 50.4 65 GUALEGUAYCHU 24.1 36.6 49.1 67 CHAJARI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN PEDRO 24.1 36.6 49.1 68 Urban and related services SAN MIGUE DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SAN MIGUE DE TUCUMAN 26.0 38.5 41.0 79 High specialization in machinery SUNCHALES 15.7 28.2 40.7 83 46.4 73 GUALEGUAY 21.6 33.1 46.6 72 High specialization in machinery GUALEGUAY 20.6	GENERAL PICO	27.2	39.7	52.2	59 60	Agriculture, support industries and urban	
9 DEJULIO 25.2 37.7 50.2 66 JUNIN 24.0 36.5 49.0 69 SAN RAFAEL 25.4 37.9 50.4 65 GUALEGUAYCHU 24.1 36.6 49.1 67 CHAJARI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN RAFAEL 26.0 38.8 51.9 61 VERGAMINO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 Urban and related services SAN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SUNCHALES 15.7 28.2 40.7 83 services ARROYTO 19.0 31.5 44.0 79 High specialization in machinery VILLAGUAY 20.6 33.1 46.6 72 GONCORDIA 21.4 33.9 46.4 73 OBERA <td>VILLA MARIA</td> <td>25.4</td> <td>37.9</td> <td>50.4</td> <td>64</td> <td>services</td>	VILLA MARIA	25.4	37.9	50.4	64	services	
JUNIN 24.0 36.5 49.0 69 CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RAFAEL 25.4 37.9 50.4 65 GUALEGUAYCHU 24.1 36.6 49.1 67 CHAJARI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 Urban and related services 38.5 51.0 63 Urban and related services SAN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SUNCHALES 15.7 28.2 40.7 83 services ARROYTO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 Specialization in agri-food VILLAGUAY 20.6 33.1 <td< td=""><td>9 DEJULIO</td><td>25.2</td><td>37.7</td><td>50.2</td><td>66</td><td></td></td<>	9 DEJULIO	25.2	37.7	50.2	66		
CONCEPCION DEL URUGUAY 26.3 38.8 51.3 62 SAN RAFAEL 25.4 37.9 50.4 65 GUALEGUAYCHU 24.1 36.6 49.1 67 CHAJARI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 SAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 Urban and related services 35.0 47.5 71 Agriculture, support industries and urban services SUNCHALES 15.7 28.2 40.7 83 services ARROYTO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 CONCORDIA 21.4 33.9 46.4 73 TRENQUE LAUQUEN 21.3 33.8 46.3 74 Specialization in agri-food GOBS 20.0 32.5 45.0 78 Spe	JUNIN	24.0	36.5	49.0	69		
SAN RAFAEL 25.4 37.9 50.4 65 Specialization in agri-food CHALARI 23.9 36.4 48.9 70 PERGAMINO 27.5 40.0 52.5 56 Textile industry and various activities SAN RAFAEL 23.9 36.4 48.9 70 Textile industry and various activities SAN PEDRO 24.1 36.6 49.1 68 Textile industry and various activities SAN NGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SAN MIQUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SUNCHALES 15.7 28.2 40.7 83 services SARROYITO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 GUALEGUAY 20.6 33.1 45.6 76 OBERA 20.3 32.8 45.3 74 VILLAGUAY 20.6		26.3	38.8	51.3	62		
CONCLUSION Control 24.1 30.0 40.1 01 PERGAMINO 27.5 40.0 52.5 56 SAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 SAN MEDE DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SAN MEDEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SUNCHALES 15.7 28.2 40.7 83 services SUNCHALES 15.7 28.2 40.7 83 services GUALEGUAY 21.6 34.1 46.6 72 CONCORDIA 21.4 33.9 46.4 73 TRENQUE LAUQUEN 21.3 33.8 46.3 74 Specialization in machinery VILLAGUAY 20.6 33.1 45.6 76 Specialization in agri-food OBAN 17.5 30.0 42.5 80 Specialization in agri-food GOBERNAD		25.4	37.9	50.4 49.1	67 67	Specialization in agri-food	
PERGAMINO 27.5 40.0 52.5 56 SAN PEDRO 24.1 36.6 49.1 68 SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 SAN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services TRES ARROYOS 22.5 35.0 47.5 71 Agriculture, support industries and urban services SUNCHALES 15.7 28.2 40.7 83 services ARROYITO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 33.1 46.6 72 74 CONCORDIA 21.4 33.9 46.4 73 74 VILLAGUAY 20.6 33.1 45.6 76 76 OBERA 20.3 32.8 45.3 77 74 LBOS 20.0 32.5 45.0 78 78 GOBERNADOR VIRASORO 16.6 29.1 41.6 81	CHAJARI	23.9	36.4	48.9	70		
SAN PEDRO 24.1 36.6 49.1 68 Textile industry and various activities SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 Urban and related services SAN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SIN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services SUNCHALES 22.5 35.0 47.5 71 Agriculture, support industries and urban services SUNCHALES 15.7 28.2 40.7 83 services ARROYITO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 74 VILLAGUAY 20.6 33.1 45.6 76 76 OBERA 20.3 32.8 45.3 77 77 LOBOS 20.0 32.5 45.0 78 78 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 75	PERGAMINO	27.5	40.0	52.5	56	Tautila industry and prizzy activities	
SAN SALVADOR DE JUJUY 26.9 39.4 51.9 61 SAN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Urban and related services RES ARROYOS 22.5 35.0 47.5 71 Agriculture, support industries and urban services SUNCHALES 15.7 28.2 40.7 83 services ARROYITO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 High specialization in machinery GUALEGUAY 21.4 33.9 46.3 74 High specialization in machinery VILLAGUAY 20.6 33.1 45.6 76 GBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 Specialization in agri-food GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 <td< td=""><td>SAN PEDRO</td><td>24.1</td><td>36.6</td><td>49.1</td><td>68</td><td>Textile industry and various activities</td></td<>	SAN PEDRO	24.1	36.6	49.1	68	Textile industry and various activities	
SAN MIGUEL DE TUCUMAN 26.0 38.5 51.0 63 Extension and the second of the seco		26.9	39.4	51.9	61	Urban and related services	
Intel S Ankor 000 22.3 33.0 47.3 11 Agricultule, support industries and dual SUNCHALES 15.7 28.2 40.7 83 services ARROYITO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 CONCORDIA 21.4 33.9 46.4 73 TRENQUE LAUQUEN 21.3 33.8 46.3 74 VILLAGUAY 20.6 33.1 45.6 76 OBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	TRES ARROVOS	20.0	38.5	51.0	03 71	Agriculture, curport inductrics and urban	
ARROYITO 19.0 31.5 44.0 79 High specialization in machinery GUALEGUAY 21.6 34.1 46.6 72 CONCORDIA 21.4 33.9 46.4 73 TRENQUE LAUQUEN 21.3 33.8 46.3 74 VILLAGUAY 20.6 33.1 45.6 76 OBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	SUNCHALES	15.7	28.2	40.7	83	Agriculture, support industries and urban	
GUALEGUAY 21.6 34.1 46.6 72 CONCORDIA 21.4 33.9 46.4 73 TRENQUE LAUQUEN 21.3 33.8 46.3 74 VILLAGUAY 20.6 33.1 45.6 76 OBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	ARROYITO	19.0	31.5	44.0	79	High specialization in machinery	
CONCORDIA 21.4 33.9 46.4 73 TRENQUE LAUQUEN 21.3 33.8 46.3 74 VILLAGUAY 20.6 33.1 45.6 76 OBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	GUALEGUAY	21.6	34.1	46.6	72		
Internaçõe 21.3 33.8 46.3 74 VILLAGUAY 20.6 33.1 45.6 76 ØBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ÁRECO 21.3 33.8 46.3 75 Textile industry and various activities		21.4	33.9	46.4	73		
VILLOUGH 20.0 33.1 43.0 70 OBERA 20.3 32.8 45.3 77 LOBOS 20.0 32.5 45.0 78 ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities		21.3	33.8	46.3	74		
LOBOS 20.0 32.5 45.0 78 ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	OBERA	20.0	32.8	45.0 45.3	70		
ORAN 17.5 30.0 42.5 80 GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	LOBOS	20.0	32.5	45.0	78	Specialization in agri-food	
GOBERNADOR VIRASORO 16.6 29.1 41.6 81 SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	ORAN	17.5	30.0	42.5	80		
SAN PEDRO DE JUJUY 15.9 28.4 40.9 82 METAN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	GOBERNADOR VIRASORO	16.6	29.1	41.6	81		
INIE IAIN 15.5 28.0 40.5 84 LIBERTADOR GENERAL SAN MARTIN 10.6 23.1 35.6 85 SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	SAN PEDRO DE JUJUY	15.9	28.4	40.9	82		
SAN ANTONIO DE ARECO 21.3 33.8 46.3 75 Textile industry and various activities	INETAN LIBERTADOR GENERAL SAN MARTIN	10.5	28.U 23.1	40.5	85		
	SAN ANTONIO DE ARECO	21.3	33.8	46.3	75	Textile industry and various activities	

Table 1. LLMs according to ITEI and type of specialization

Source: Authors' calculation.

On the other hand, those LLMs with more diversified production patterns are generally located in intermediate positions, leaning towards one side or the other of the distribution depending on the relative weight of more and less affected activities. It seems that productive diversity may have diversified the risk of negative economic impacts among more activities, and thus, it reduced the chances of falling into the most unfavorable scenarios. For example, in the middle of the table (yellow color), we find some LLMs with diversified production patterns, where the pandemic and ASPO probably impacted in some sectors but not in others.

Figure 4 shows the different LLMs, throughout the Argentine provinces, according to the initial impact of the pandemic and ASPO. We observe that the economic impact was relatively low in the LLMs of some provinces, such as Jujuy and Entre Ríos, while the Patagonian (Southern) LLMs are usually among the most affected ones. The heterogeneity within provinces such as Buenos Aires, Córdoba, or Misiones is also clearly appreciated. The latter invites to relativize, to some extent, the provincial results that are presented in the following section.

4.2. ITEI-COVID results for Argentine provinces

One of the limitations that we are not able to overcome with the LLM database (average of the years 2016-2018) is the possible seasonality of some activities, such as those related to tourism. Probably, in some tourist cities where the economic activity and employment have maximum peaks in very specific months (such as the summer season in Pinamar and Villa Gesell), the use of annualized data implies a certain degree of overestimation of the impact of the ASPO during the mid-low season (end of March and April). Obviously, this restriction is more limited for destinations that receive a more stable flow of tourists throughout the year (such as Iguazú) or that have different seasons (winter and summer, such as Bariloche), since the winter season is lost. However, it is expected that the impact of COVID-19 will be much longer and sustained on tourism (e.g. there is uncertainty about the next summer season), even when other activities are gradually returning to a new normality.



Figure 4. LLMs according to ITEI

Source: Authors. Note: the map shows the location of the central city or node of each LLM, but not all its geographical scope.

Based on the data published by EBDO on formal salaried employment in the private sector at the provincial level⁷, we calculate the ITEI for Argentine provinces both for the 2016-2018 period and the second quarter of 2019. Thus, we can also account for the impact of the pandemic and ASPO by considering a production structure that could be more similar in terms of seasonality (same period of the previous year).

Figure 5 shows the ITEI by province. Firstly, we see that most of the Patagonian provinces (Tierra del Fuego, Neuquén, Santa Cruz and Chubut) are among the most affected ones, while agrifood-based provinces (such as Tucumán, Entre Ríos, and Jujuy) are the least affected. Precisely, the exception in Patagonia is Río Negro, the province in the region with the highest agri-food profile and the lowest weight of hydrocarbons. The strongest impact among Patagonian provinces has been pointed out in other studies (Day, 2020; FOP, 2020b), due to the relative weight of hydrocarbon production and tourism -and we should add the initial restrictions in electronic production in Tierra del Fuego-.

Secondly, it can be seen that ITEI values are very similar if we use annual data (2016-2018) or data from the second quarter of 2019. The changes in the ranking of provinces are also very limited (Table 2). In other words, the effect of seasonality on the regional production structure does not seem to be very relevant, at least at the provincial level, which to some extent supports the use of data from the 2016-2018 period for the case of LLMs. Except for Jujuy, the effect of seasonality, when observed, seems to decrease the impact of the pandemic and ASPO at the provincial level, especially in the cases of Formosa, Catamarca, Chaco, La Rioja, Misiones, and Tucumán.

⁷ In this database, Buenos Aires province is divided into two parts (Greater Buenos Aires and the rest of the province). Therefore, besides calculating the provincial aggregate, we show the ITEI results for both divisions.



Figure 5. ITEI for Argentine provinces: sectoral weights according to 2016-2018 average or second guarter of 2019

Source: Authors' calculation.

Results at the level of LLMs and provinces are complementary and can help to understand some particularities behind both territorial units. Although the LLMs usually allow us to distinguish different situations within the same province, the analysis of the provincial database published by EBDO also allows us to identify some LLMs with special characteristics. For example, we can see that the LLM that includes both the autonomous city of Buenos Aires (CABA in Spanish) and Greater Buenos Aires municipalities encompasses heterogeneous realities within it. Greater Buenos Aires (which is part of Buenos Aires province) seems to be more affected by the pandemic and ASPO than the city of Buenos Aires, according to these data. The rest of Buenos Aires province appears below, in a better relative position. On the other hand, the LLM called *Alto Valle del Río Negro* includes several cities of Río Negro province with an agricultural profile (and therefore less affected), as well as the capital city and other cities of Neuquén province that are much more specialized in hydrocarbon production (and therefore more affected).

	Average 2	016-2018	2nd. Quarter 2019		
	ITEI-Average	Ranking	ITEI-Average	Ranking	
Tierra del Fuego	57.31	1	55.61	1	
Neuquén	52.84	2	53.38	2	
Santa Cruz	51.77	3	51.06	3	
Formosa	51.16	4	48.07	5	
Chubut	49.34	5	49.02	4	
Santiago del Estero	46.84	6	46.31	6	
San Juan	46.59	7	45.87	7	
Greater Buenos Aires	46.36		45.85		
Catamarca	45.64	8	43.42	13	
San Luis	45.60	9	45.12	9	
САВА	45.48	10	45.16	8	
Buenos Aires	45.34	11	44.83	10	
Chaco	44.91	12	42.42	15	
Corrientes	44.46	13	43.73	12	
Córdoba	44.36	14	43.77	11	
Rest of BA Province	43.96		43.46		
Santa Fe	43.71	15	43.15	14	
La Pampa	42.97	16	41.86	16	
La Rioja	42.92	17	40.01	20	
Misiones	42.06	18	39.21	22	
Río Negro	41.21	19	40.94	17	
Mendoza	40.33	20	40.34	18	
Salta	40.14	21	40.24	19	
Tucumán	38.05	22	35.67	24	
Entre Ríos	37.53	23	36.91	23	
Jujuy	37.04	24	39.45	21	

Table 2. Comparison between rankings of provinces

Source: Own elaboration.

4.3. A look at the Urban Agglomerates in Argentina

So far, we have described the regional (private) production structure based on data of formal salaried employment. As it could be a limitation, we repeat the analysis at the level of urban agglomerates by using data from the NHS corresponding to the second quarter of 2019. In this way, we can compare the results of the ITEI when adding the informal wage earners and self-employed in the definition of the sectoral weights (Sij). Annex 2 presents the list of the sectors considered (CAES at 2 digits), together with the hypotheses of minimum and maximum operational level.

Although some modifications occur when incorporating informality and self-employment, the most notable aspect in both Figure 6 and Table 3 is that the territorial patterns remain quite

similar. In general, the results for urban agglomerates are consistent with previous sections, but we can also suggest that the economic impact of the pandemic and ASPO could be greater when adding informality and self-employment (note the change in scale between the axes). However, the ITEI for urban agglomerates should only be taken as indicative, since the NHS only surveys a sample of the population of these agglomerates and the degree of detail requested to the data (formal, informal, and independent workers in sectors at 2 digits) may lead to high margins of statistical error.

Figure 6. ITEI for urban agglomerates: sectoral weights according to the type of occupational category



Source: Own elaboration.

	Registered wage earners	Registered and informal wage earners	Wage earners and self- emploved
Ushuaia - Río Grande	1	5	5
S.del Estero - La Banda	2	1	1
Greater Catamarca	3	2	2
Formosa	4	3	3
San Nicolás – Villa Constitución	5	13	15
Santa Rosa - Toay	6	4	9
Río Gallegos	7	10	19
Neuquén – Plottier	8	8	11
Greater Mendoza	9	6	6
Cdro. Rivadavia - R.Tilly	10	19	16
Greater San Juan	11	14	13
Concordia	12	17	18
Jujuy - Palpalá	13	7	8
Viedma – Carmen de Patagones	14	9	4
Bahía Blanca - Cerri	15	28	28
Greater La Plata	16	20	24
La Rioja	17	11	7
Greater Paraná	18	27	20
Rawson – Trelew	19	26	21
Corrientes	20	16	14
Posadas	21	15	17
Greater Buenos Aires (Municipalities)	22	24	23
Salta	23	12	10
Greater Santa Fe	24	22	12
Greater Rosario	25	23	25
Greater Córdoba	26	25	27
Río Cuarto	27	31	31
Greater Tucumán - T. Viejo	28	18	22
Mar del Plata - Batán	29	29	30
Greater Resistencia	30	21	26
Buenos Aires City	31	32	32
San Luis - El Chorrillo	32	30	29

 Table 3. Comparison between ITEI rankings of urban agglomerates according to the type of occupational category

Source: Own elaboration.

5. Final comments

Throughout this article, we have explored the heterogeneous impact on the economic private activity that the COVID-19 pandemic and lockdown measures in Argentina may have had in territorial terms. We have particularly focused on the first stage of the quarantine (last weeks

of March and April), the period of greatest economic impact, when restrictions were mainly raised at the sectoral level, without taking into account any regional criteria. We conclude that results are relatively stable and robust when comparing different geographical units of analysis, when changing the period chosen to define the regional production structure (2016-2018 average or second quarter of 2019), or when considering the informality and self-employment in addition to formal salaried employment. the salaried registered employment, as well as the informality and self-employment.

Regarding the results, in line with other recent studies, we observe that most of the Patagonian provinces and LLMs have been among the most affected regions, while in other provinces, such as Jujuy, Entre Ríos, or Tucumán, the initial impact of the quarantine would have been substantially smaller. Additionally, the greater analytical richness of studying the national territory at the level of LLMs allows us to highlight the heterogeneity within large and diverse provinces, such as Buenos Aires and Córdoba, and even in smaller ones such as Misiones.

Finally, it is worth noting that, like other recent studies that measure the regional economic impact of COVID-19, in this article we have calculated a relatively simple index. In further studies, we will try to propose more complex methodologies, taking into account that, from May onwards, there have been different dynamics of flexibilization of the quarantine at the sectoral level but also at the territorial level. This implies the need to consider the regional production structure, as well as other characteristics of the regions, such as their size, population density, quantity, frequency and speed of cases, mobility indexes and isolation compliance, among others. Other issues that could be relevant for future analysis are the role of productive diversity and the degree and type of commercial orientation (domestic versus foreign market) in regional recovery after the crisis.

References

- Albrieu, R. (April 2020). "Evaluando las oportunidades y los límites del teletrabajo en Argentina en tiempos del COVID-19". Buenos Aires: CIPPEC.
- Bachtrögler, J., Firgo, M., Fritz, O., Klien, M., Mayerhofer, P., Piribauer, P. and Streicher, G. (April 2020). "Regional differences in the economic vulnerability to the current COVID-19 crisis in Austria". Viena: WIFO-Austrian Institute of Economic Research.
- Bailey, D., Clark, J., Colombelli, A., Corradini, C., De Propris, L., Derudder, B., Fratesi, U.,
 Fritsch, M., Harrison, J., Hatfield, M., Kemeny, T., Kogler, D.F. Lagendijk, A., Lawton,
 P., Ortega-Argilés, R., Iglesias Otero, C. and Usai, S. (August 2020). Regions in a time of pandemic. *Regional Studies*. https://doi.org/10.1080/00343404.2020.1798611

- Bonavida Foschiatti, C. and Gasparini, L. (April 2020). "El impacto asimétrico de la cuarentena". Working Paper No. 261. La Plata: CEDLAS-Universidad Nacional de La Plata.
- Bonet-Morón, J., Ricciulli-Marín, D., Pérez-Valbuena, G., Galvis-Aponte, L., Haddad, E., Araújo, I. and Perobelli, F. (July 2020). "Regional economic impact of COVID-19 in Colombia: An input-output approach". *Regional Science Policy & Practice*. https://doi.org/ 10.1111/rsp3.12320.
- Borello, J. (2002). "Áreas Económicas Locales: Criterios para su definición en la Argentina". Proyect Report No. ITA/99/145. ECLAC, United Nations.
- Campos-Vazquez, R. and Esquivel, G. (July 2020). "Consumption and geographic mobility in pandemic times: Evidence from Mexico". *COVID Economics*, Issue 38 16 July 2020, pp. 218-252,
- CEPXXI (August 2020). "Informe de panorama productivo Agosto 2020". Buenos Aires: Centro de Estudios para la Producción (CEPXXI).
- Day, J. (March 2020). "Coronavirus y su impacto en las regiones argentinas". *Informe de Coyuntura del IERAL*, Year 29, Issue 1261.
- Delaporte, I. and Peña, W. (May 2020). "Working from home under Covid-19: Who is affected? Evidence from Latin American and Caribbean countries". *COVID Economics*, Issue 14 6 May 2020, pp. 200-229.
- Dingel, J. and Neiman, B. (April 2020). "How many jobs can be done at home?". *COVID Economics*, Issue 1 3 April 2020, pp. 16-24.
- FOP (April 2020a). "Coronavirus II: Capital de trabajo y costo diario de la inactividad MiPyME. Medidas del Gobierno y flexibilización de la cuarentena". Fundación Observatorio Pyme (FOP).
- FOP (May 2020b). "Coronavirus IV: Acciones empresariales para enfrentar la crisis y riesgo ocupacional". Fundación Observatorio Pyme (FOP).
- González Laxe, F., Armesto Pina, J.F., Lago-Peñas, S. and Sanchez-Fernandez, P. (April 2020). "Impacto económico del COVID19 en una economía regional. El caso del confinamiento para Galicia". MPRA Paper No. 100002. Munich Personal RePEc Archive.

- Haddad, E., Perobelli, F. and Araújo, I. (April 2020). "Custos econômicos de medidas de isolamento e distanciamento social". Webconference: Impactos Regionais da Pandemia COVID-19.
- Hatayama, M., Viollaz, M. and Winkler H. (May 2020). "Jobs' amenability to working from home: Evidence from skills surveys for 53 countries". *COVID Economics*, Issue 19 18 May 2020, pp. 211-240.
- Kitsos, T. (April 2020). "The uneven spatial footprint of the COVID-19 shutdown". City-REDI, University of Birmingham.
- Levy Yeyati, E. and Sartorio, L. (July 2020). "Take me out: De facto limits on strict lockdowns in developing countries". *COVID Economics*, Issue 39 23 July 2020, pp. 59-71.
- Lódola, A. and Picón, N. (May 2020). "Impacto sectorial y regional del COVID19 en la producción de la provincia de Buenos Aires". LAB DOC No. 09. La Plata: Laboratorio de Desarrollo Sectorial y Territorial-Universidad Nacional de La Plata.
- Muro, M., Maxim, R. and Whiton, J. (March 2020). "The places a COVID-19 recession will likely hit hardest". Metropolitan Policy Program The Brookings Institution.
- Niembro, A., Calá, C.D. and Belmartino, A. (May 2020). "Una tipología de las áreas económicas locales de Argentina en base a perfiles sectoriales de coaglomeración territorial (2011-2018)". Working Paper.
- Pérez, F. and Maudos, J. (March 2020). "Impacto económico del coronavirus en el PIB y el empleo de la economía española y valenciana". Valencia: Instituto Valenciano de Investigaciones Económicas (Ivie).
- Prades Illanes, E. and Tello Casas, P. (May 2020). "Heterogeneidad en el impacto económico del COVID-19 entre regiones y países del área del Euro". Boletín Económico No. 2/2020. Banco de España.
- Rotondo, S., Calá, C.D. and Llorente, L. (2016). "Evolución de la diversidad productiva en Argentina: análisis comparativo a nivel de áreas económicas locales entre 1996 y 2015". Anales de la LI Reunión Anual de la Asociación Argentina de Economía Política (AAEP), San Miguel de Tucumán.
- Saltiel, F. (April 2020). "Who can work from home in developing countries?". COVID *Economics*, Issue 6 17 April 2020, pp. 104-118.

Annex 1. Sectoral operational hypotheses applied to EBDO data (ISIC)

Classifi	Classification of economic activities used by EBDO (ISIC)		l hypothesis	Based on statistics, surveys or reports from chambers, centers or
2 digit	Activities	Minimum	Maximum	organizations:
1	Agriculture, livestock farming, hunting and related service activities	75	100	INDEC-ICA: CONINAGRO: Fund, Observ, PYME (FOP): CENE-UB
2	Forestry, wood extraction and related service activities	50	75	
			10	INDEC ICA: Subseer de Besse y Aquiquiture: Internémeres de la Ind
5	Fishing and fishing-related activities	50	75	Posquoro
	Extraction of anuda ail and natural goas activities related to ail and goa			resqueia
11	Extraction of crude of and hardraf gas, activities related to of and gas	25	50	Secr. de Energía; CEPH; CEIPA; Ecolatina; Revista Trama
40	Extraction, except prospecting activities.	05	50	
13	Extraction of metalliferous minerals	25	50	INDEC-ICA; CAEM
14	Exploitation of other mines and quarries	25	50	INDEC-ICA; CAEM
15	Foods	75	100	INDEC-IPIM; CAME; FIEL; FOP; UIA
16	Tobacco	25	50	INDEC-IPIM; CIT; FIEL; UIA
17	Textile products	25	50	INDEC-IPIM; CAME; FIEL; UIA
18	Confections	0	25	INDEC-IPIM: CAME: CIAI: FIEL: UIA
19	Leather	0	25	INDEC-IPIM CAME FIEL LIIA
20	Wood	50	75	
20	Bapar	75	100	
21		75	100	
22	Edition	75	100	
23	Petroleum products	50	75	INDEC-IPIM; FIEL; UIA
24	Chemical products	75	100	INDEC-IPIM; CAME; FIEL; UIA
25	Rubber and plastic products	50	75	INDEC-IPIM; CAME; UIA
26	Other non-metallic minerals	25	50	INDEC-IPIM; INDEC-ISAC; FIEL; UIA
27	Common metals	25	50	INDEC-IPIM: CAA: FIEL: UIA
28	Other metal products	25	50	INDEC-IPIM ADIMRA FIEL UIA
20	Machinery and equipment	50	75	
20			25	
30		0	20	
31	Electric appliances	U	25	
32	Radio and television	0	25	INDEC-IPIM; CAME; UIA
33	Medical instruments	50	75	INDEC-IPIM; ADIMRA; UIA
34	Automotive	0	25	INDEC-IPIM; ADEFA; FIEL; UIA
35	Other transport equipment	0	25	INDEC-IPIM; UIA
36	Furniture	25	50	INDEC-IPIM: ASORA: CAME: FAIMA
37	Waste and scrap recycling	50	75	INDEC-IPIM
40	Fleetricity, gas and water	75	100	Soor do Energía: ENARCAS: CAMMESA: Povisto Trama
40	Collection, gas and water	75	100	NDEC (CCD: Castalatina
41	Collection, publication and distribution of water	/5	100	
45		0	25	INDEC-ISAC; CAMARCO; FOP
	Sale, maintenance and repair of motor vehicles and their parts, pieces and			
50	accessories. sale, maintenance and repair of motorcycles and their parts,	25	50	ACARA; CECHA
	pieces and accessories. retail sale of fuel for motor vehicles and motorcycles.			
51	Wholesale trade	25	50	CAC; CADAM
52	Retail trade and repair of personal and household goods	25	50	CAC; CACE; FOP
55	Hotel and restaurant services	0	25	INDEC-EOH: INDEC-ETI: FEHGRA: INPROTUR
60	Rail automotive and nineline transportation service	50	75	
61	Ran, automotive and pipeline transportation service	50	75	
01		50	75	
62	Air transport service for cargo and passengers	0	25	ANAC
	Cargo handling, storage and warehousing services. complementary services for			
63	transportation travel agency services and other complementary tourist support	50	75	INDEC-ISSP
	activities, management and logistics services for the transport of goods	00		
	activities. Inallagement and logistics services for the transport of goods			
64	Postal and telecommunications services	75	100	INDEC-ISSP; Ecolatina; Lódola & Picón (2020)
				ADEBA: Albrieu (2020): Bonavida Foschiatti & Gasparini (2020):
65	Financial intermediation and other financial services	75	100	Lódola & Picón (2020)
				CENE LIP: Albriau (2020): Repovide Ecception & Casporini (2020):
66	Insurance services. retirement and pension fund management services	75	100	CENE-OB, Albheu (2020), Bohawaa Poschiatti & Gaspanni (2020),
				Lodola & Picon (2020)
67	Auxiliary services to financial activity, except insurance and pension fund	75	100	CENE-UB; Albrieu (2020); Bonavida Foschiatti & Gasparini (2020);
	management services			Lódola & Picón (2020)
70	Real estate services	0	25	CECBA; CIA; Reporte Inmobiliario; Lódola & Picón (2020)
74	Rental of transport equipment and machinery and equipment n.c.p. rental of	0	05	
71	personal and household goods n.c.p.	0	25	CENE-UB; Lodola & Picon (2020)
	Computer activities Consultant services data processing maintenance and			CAC: CESSI: CENE-LIB: EOP: Albrieu (2020): Bonavida Eoschiatti &
72	repair of office, accounting and computer machinery	50	75	Gosparini (2020), Donavida i Osciniati d
	Personal of once, accounting and computer machinery			CASPAIIII (2020)
73	Research and experimental development in the field of engineering and of the	75	100	CAC, CENE-OB, FOP, Albheu (2020), Bohawua Foschiatti & Gaspanni
	exact and natural sciences and of the social sciences and numarities			(2020)
	Legal and accounting, bookkeeping and auditing services; tax advice; market			
74	research and public opinion polls; business and management advice.	50	75	CAC; CENE-UB; FOP; Albrieu (2020); Bonavida Foschiatti & Gasparini
	architectural and engineering services and technical services n.c.p. advertising			(2020)
	services. business services n.e.c.			
75	Temporary employment agencies	0	25	CENE-UB
	Teaching, initial, primary, secondary, higher and postgraduate training, adult			Ecolatina: FOP: Albrieu (2020): Bonavida Foschiatti & Gasparini
80	education and educational services n e c	75	100	(2020): Lódola & Picón (2020)
95	encial and Health Sanices	75	100	
00	Nonte and equate dispanal contestion and similar and the	75	100	
90	vvaste and sewage disposal, sanitation and similar services	/5	100	
91	Services of business, professional and employers organizations. union services.	75	100	CAC; CENE-UB; FOP; Bonavida Foschiatti & Gasparini (2020)
L	association services n.c.p.	<u> </u>		
	Cinematography, radio and television services and entertainment and artistic			
02	entertainment services n.e.c. news agency services. library, archive and	0	25	
92	museum services and cultural services n.c.p. services for sports and	U	20	SIGA, GEINE-UD
	entertainment practice n.e.c.			
93	Services n.c.p.	0	25	CENE-UB: Bonavida Foschiatti & Gasparini (2020)
		. ~		

Annex 2. Sectoral operational hypotheses applied to NHS data (CAES)

Classifi	cation of economic activities used by NHS-INDEC (CAES)	Operational	hypothesis
2 digit	Activities	Minimum	Maximum
1	Agriculture, Livestock farming, Hunting and Support Activities	75	100
2	Forestry, Wood Extraction and Support Activities	50	75
3	Fishing, Aquaculture and Support Activities	50	75
5	Coal and Lightle Extraction	25	50
6 7		25	50
8	Exploitation of other Mines and Quarries	25	50
9	Support Activities for Mining and Quarrying	25	50
10	Preparation of Food Products	75	100
11	Preparation of Beverages	75	100
12	Manufacture of Tobacco Products	25	50
13	Manufacture of Textile Products, except Garments	25	50
14	Manufacture of Garments, Finishing and Dyeing of Fur	0	25
15	Manufacture of Leather and Related Products	0	25
16	Production of Wood and Wood and Cork Products, except Furniture; Straw Articles and Braiding Materials	50	75
17	Manufacturing of Paper and Paper Products	75	100
18	Printing Activities and Support Services, Playback of Recordings	75	100
20	Manufacture of Chemical Substances and Products		100
20	Manufacture of Chemical Substances and Floducts	75	100
22	Manufacture of Rubber and Plastic Products	50	75
23	Non-Metallic Mineral Product Manifacturing	25	50
24	Metal Manufacturing	25	50
25	Manufacture of Fabricated Metal Products and Metalworking Services, except Machinery and Equipment	25	50
26	Manufacture of Computer, Electronic and Optical Equipment	0	25
27	Manufacture of Machinery and Electrical Equipment	25	50
28	Manufacture of Machinery and Equipment n.c.p.	50	75
29	Manufacture of Motor Vehicles, Trailers and Semi-trailers	0	25
30	Manufacture of Other Transportation Equipment n.c.p.	0	25
31	Furniture and Mattress Manutacturing	25	50
32	Manufacturing Industries n.c.p.	0	25
33	Maintenance, Repair and Installation of Machines and Equipment	0	25
35	Electricity, Gas, Steam and Air Conditioning Water Calloction: Tractment and Supply	75	100
30	Valer Conection, realment and Supply	75	100
38	Collection Treatment and Disposal of Waste: Recovery of Materials	75	100
39	Sanitation Activities and other Waster Management Services	75	100
40		0	25
45	Trade and Repair of Motor Vehicles and Motorcycles	0	25
48	Trade, Except Motor Vehicles and Motorcycles	25	50
49	Land and Pipeline Transportation	50	75
50	Transportation by Waterway	50	75
51	Air Transport	0	25
52	Storage and Auxiliary Transport Activities	50	75
53	Mail and Messaging Services	75	100
55	Accommodation Services in Hotels, Camps and other types of Temporary Accommodation	0	25
56	Food and Beverage Services	0	25
50	Publishing of books, newspapers and other Publications, even integrated to Priming	30	75
59 60	Cinematographic Activities, Production of Videos and Television Programs, Sound Recording and Music Editing	25 75	100
61	Talecommunications	75	100
62	Computer Programming and Consulting Activities and other Related Activities	50	75
63	Information Services Activities	50	75
64	Financial Intermediation and Other Financial Services, except Insurance and Retirement and Pension Funds	75	100
65	Insurance, Reinsurance and Pension Funds, except Compulsory Membership Social Security Plans	75	100
66	Auxiliary Activities to Financial Services and Insurance	75	100
68	Real estate activities	0	25
69	Legal and Accounting Activities	50	75
70	Business Management Consulting Service Activities	50	75
/1	Architecture and Engineering Services; Technical Tests and Analysis	50	/5
72	Advertising and Market Desearch	10	100
7/	Advertising and Market Assertion	50	75
75	Veterinary Activities	25	50
77	Rental and Leasing Activities, except Real Estate, and Management of Non-Financial Intangible Assets	0	25
78	Activities Related to the Supply of Employment	Ő	25
79	Travel Agencies, Tour Operators and Related Activities	0	25
80	Investigation and Security Activities	25	50
81	Building Support Services and Cleaning Activities in General; Landscaping and Gardening Services	50	75
82	Administrative Activities of Offices and other Auxiliary Activities of Companies	75	100
84	Public Administration and Defense; Mandatory Social Security Plans	75	100
85	Leaching	75	100
86	Human Health Care Activities	75	100
87	Social Assistance Related to Health Care	/5	100
88	Sucial Services Without Accommodation	50	/5 25
90	Libraries archives museums and other cultural activities	0	20
92	Gambling and betting Activities	0	25
93	Sports and Entertainment Activities	0	25
94	Association Activities	75	100
95	Computer and Communication Equipment Repair; Effects of personal and domestic use	0	25
96	Other Personal Service Activities	0	25
97	Household Activities as Employers of Domestic Personnel	0	25
99	Activities of Extraterritorial Organizations and Agencies	50	75