ECONOMIC IMPACT OF THE ZARAGOZA LOGISTICS PLATFORM (PLAZA)

2010

ECONOMIC IMPACT OF PLAZA

The economic impact technique makes it possible to determine the importance that a transport infrastructure has on its area of influence. The application of this methodology for the first time to a logistics platform is demonstrated herein. The fact that this work has been done with the largest logistics platform in Europe - the Zaragoza Logistics Platform (PLAZA) is particularly relevant. The economic impact of PLAZA on the economy of the Autonomous Region of Aragon in the year 2005 is explained below.

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1.- INTRODUCTION

This dossier presents the contribution of PLAZA operations to regional economic growth. It is worth emphasizing that what is assessed are the impacts of operating the logistics platform in the sense that it is the reason why many companies relocate there and use its services - not the primary effects deriving from the actual construction of PLAZA. More specifically, using Leontief's demand model (1973), a series of assumptions will be established enabling an estimate of the impacts that the production of PLAZA-based companies generate on the various lines of regional business. Based on these companies' production, another series of macroeconomic variables will be calculated such as turnover, employment, salaries and wages, the gross operating surplus (GOS) and gross value added (GVA) so as to complete the assessment of the wealth contributed by the aforementioned platform.

It must be noted that despite the fact that this impact calculation methodology was first put into practice in the 60's and has been applied to ports in more than 200 studies conducted in the United States and Europe, it has been scarcely used for other logistics infrastructures. Any prior papers studying the impacts of a logistics platform, goods exchange center or transportation center, among others, have not been found. Moreover, these types of logistics infrastructures are proving to be of great importance to the development of the regions where they are situated and, at least in Spain, they have only been operating for 10-15 years.

In order to calculate the impact of PLAZA on the Autonomous Region of Aragon, the direct, indirect and induced impacts of the companies physically located at the logistics platform as well as PLAZA users must be obtained.

Direct impacts include all of the activities that are necessary for the platform to operate. On the other hand, indirect and induced impacts - also known as secondary effects - refer to the business that is developed in the spatial hinterland of the platform and depends on the direct activity. If broken down, indirect impacts refer to all economic activity in the region that is dependent on the primary activities through the buying and selling of goods and/or services. Induced impacts are the consumer expenditures made with the salaries and wages paid to the people directly or indirectly employed by some type of PLAZA-related activity.

2.- SPECIAL RELEVANCE OF THE STUDY

The importance of the study presented herein can be seen from two points of view. The first would refer to the geo-strategic situation of the Autonomous Region of Aragon, particularly in Spain, and also with respect to its relationship to the European continent and the Iberian Peninsula. The second point of interest has to do with the very infrastructure under study - the Zaragoza Logistics Platform (PLAZA) - given its special relevance.

With respect to the geographic situation, the Autonomous Region of Aragon is situated in the most industrialized quadrant of Spain and strategically positioned at the crossroads of the major transportation routes on the Iberian Peninsula: Madrid-Barcelona, Atlantic-Mediterranean corridor, connection to France. This means that it is less than 2 hours and 30 minutes from the cities that produce 60% of Spain's GDP with a hinterland of 25 million people.

FIGURE 1. STRATEGIC SITUATION OF THE AUTONOMOUS REGION OF ARAGON

SOURCE: ARAGÓN EXTERIOR

The Zaragoza Logistics Platform (PLAZA) occupies 12,826,898 m^2 and is the largest logistics site on the European continent. The construction of PLAZA began in 2003 and operations began in 2004. Various economic activities are developed at PLAZA and it features the necessary collective equipment for transportation and logistics activities as well as a range of services shared by the companies that have set up there. One of its most important characteristics is its location - right on the southern vertex of the trans-European corridor: northern Europe, central Pyrenees, Mediterranean southeast; and connecting the Mediterranean arc to the Atlantic arc by means of the Ebro axis. PLAZA is at an equal distance from the major Spanish ports of the Levante (Barcelona, Tarragona and Valencia) and the Cantabrian (Santander, Bilbao and Pasajes).

As has been mentioned, PLAZA is the largest logistics platform in Europe. As opposed to its 1,200 hectares, the GVZ platform in Germany lies on 340 hectares; the French Eurocentre, 300 hectares; the Turin platform, 280 hectares; the CET in Coslada (Madrid), 100 hectares; and ZAL in Barcelona, only 67.

3.- ECONOMIC IMPACT OF PLAZA ON THE AUTONOMOUS REGION OF ARAGON.

3.1. DIRECT IMPACT

To determine the direct impact of PLAZA, information was gathered from the 129 companies based at PLAZA in 2005. This information comes from the databases owned by SABI[1]. The information available on firms in the SABI include: the balance sheets (liabilities and assets), profit and loss accounts and European ratios for each company. A series of personal interviews with company executives were conducted in order to complete the information. Thus, the values corresponding to the following variables for the year 2005 were obtained for each company:

- Wages: Wages and salaries + social benefits (indicated in the P/L account)
- Jobs: Meaning salaried personnel, permanent or otherwise.
- Total turnover: Net turnover + work done by the company that has added to its fixed assets + other operating income.
- Gross operating surplus (GOS): Before-tax profits (or, with a negative sign, before-tax losses) – Capital subsidies transferred to the fiscal year profit/loss + Allowance for depreciation of fixed assets + Financial and similar expenditures + Changes in provisions for intangible assets and controlling interests.
- Net Taxes: Taxes – Subsidies
- Gross value added (GVA): GOS + Wages
- Line of activity
- Percentage of operations conducted at PLAZA.

Therefore, the total direct impact is obtained by adding each variable for all the firms that are part of this infrastructure - the sum of wages, jobs, total turnover, GOS, taxes and GVA. If compared with the regional magnitude of these variables, the direct impact the infrastructure studied has on the region can be obtained.

Table 1 shows the values of the economic magnitudes broken down by activity corresponding to the total for PLAZA industries. The total direct impact is shown at the end of the table as well as the percentage of the total direct impact on the variables for the Region of Aragon.

Table 1.- Direct impact of PLAZA by line of activity in 2005

	WAGES AND SALARIES	EMPLOYEES	GROSS OPERATING SURPLUS	GVABP	TOTAL TURNOVER

[1] SABI (Bureau van Dijk), a firm that compiles accounting information on Spanish and Portuguese companies.

1	Agriculture and Fishing	0	0	0	0	0
2	Mining Industry	0	0	0	0	0
3	Food, Beverage and Tobacco	0	0	0	0	0
4	Chemical Industry	299.199	12	518.684	817.883	1.434.060
5	Other Non-Metal Mineral Products	25.823	3	-21.040	4.783	15.863
6	Metalworking and Metal Products	4.969.447	155	2.907.862	7.877.309	24.433.965
7	Steel Transformation Industry	39.440.113	974	23.217.092	62.657.204	164.445.456
8	Other Manufacturing Industries	12.446.213	709	3.870.317	16.316.530	32.380.903
9	Electricity, Gas and Water	0	0	0	0	0
10	Construction	25.408.667	733	35.074.741	60.483.407	190.821.853
11	Commerce and Repairs	58.300.543	2.531	31.476.941	89.777.485	535.658.059
12	Hotel and Restaurant Business	0	0	0	0	0
13	Transportation and Communications	16.001.474	528	10.268.695	26.270.169	168.604.484
14	Financial and Business Services	6.464.433	209	17.435.203	23.899.636	36.082.249
15	Education, Healthcare and Social Services	0	0	0	0	0
16	Other Services	319.760	12	113.988	433.748	918.373
	TOTAL	***163.675.672***	***5.865***	***124.862.482***	***288.538.155***	***1.154.795.266***
	ARAGON	*12.474.772.000*	*551.140*	*11.667.035.000*	*24.279.434.000*	*51.645.652.000*
	% PLAZA	1,31	1,06	1,07	1,19	2,24

Source: Own work. (Values in € except for jobs which is a number)

The results in Table 1 show that 1.31% of the salaries paid, 1.06% of employees, 1.07% of the GOS, 1.19% of the GVA and 2.24% of total turnover in the Autonomous Region of Aragon in 2005 directly depended on the firms located at PLAZA in 2005.

3.2. INDIRECT AND INDUCED IMPACT

The Input-Output Tables for the Autonomous Region of Aragon (IOTA), which were last updated in 2005, were used as a reference. Furthermore, information from the Regional Accounting Firm of Spain (CRE as it is known in Spanish) along with the information on the PLAZA-based companies related to procurement and investment and consumer expenditure from the direct or indirect wages and salaries of the individuals that work at PLAZA was utilized.

In order to calculate the indirect and induced impacts, the final demand (D) indices were first determined and later, the input-output methodology was applied which made it possible to determine the production (P) indices and then, all of the other magnitudes. To simplify the calculations and the interpretation, the original IOTA was reduced to one of 16 lines of activity following the criteria established by the Regional Accounting Firm of Spain.

Then, the Leontief model was applied to the interior demand index (D_I) to obtain the sum of the most indirect direct effects. Since the first ones were already determined in the previous stage, the indirect impact index was calculated using the difference.

Once this index was available and after having determined the ratios for wages and salaries, jobs, GOS and GVA in relation to the production of each line of activity, the indirect effects were revealed in terms of these variables.

		WAGES AND SALARIES	EMPLOYEES	GROSS OPERATING SURPLUS	GVABP	TOTAL TURNOVER
1	Agriculture and Fishing	1,099,795	281	9,967,626	10,514,873	22,014,249
2	Mining Industry	362,094	12	572,538	913,892	1,963,435
3	Food, Beverage and Tobacco	662,306	28	545,473	1,170,575	5,567,288
4	Chemical Industry	549,127	16	448,385	1,003,592	3,660,484
5	Other Non-Metal Mineral Products	1,247,189	42	1,041,558	2,301,223	6,759,565
6	Metalworking and Metal Products	2,556,430	93	1,401,919	3,967,206	11,388,037
7	Steel Transformation Industry	2,295,563	71	1,311,684	3,614,043	17,938,114
8	Other Manufacturing Industries	3,416,815	137	2,471,032	5,899,538	18,619,453
9	Electricity, Gas and Water	1,344,305	23	5,418,272	6,972,599	14,129,809
10	Construction	23,752,609	904	16,290,420	40,573,338	29,168,380
11	Commerce and Repairs	11,409,056	875	13,867,406	25,276,951	43,474,654
12	Hotel and Restaurant Business	741,101	42	942,308	1,683,594	3,026,638
13	Transportation and Communications	7,714,007	436	10,089,451	17,422,442	42,130,453
14	Financial and Business Services	13,740,962	518	30,448,746	45,568,828	64,967,778
15	Education, Healthcare and Social	3,599,774	116	337,425	3,943,202	5,614,571

	Services					
16	Other Services	1,211,046	51	-91,738	1,124,078	2,884,737
	TOTAL	***75,702,180***	***3,643***	***95,062,504***	***171,949,974***	***293,307,644***
	ARAGON	*12,474,772,000*	*551,140,000*	*11,667,035,000*	*24,279,434,000*	*51,645,652,000*
	% PLAZA	0.61	0.66	0.81	0.71	0.57

Table 2 shows the indirect impacts of PLAZA by line of activity. The total indirect impact is shown at the end of the table as well as the percentage of the total indirect impact on the variables for the Region of Aragon.

Table 2.- Indirect impact of PLAZA by line of activity in 2005

Source: Own work. (Values in € except for jobs which is a number)

		WAGES AND SALARIES	EMPLOYEES	GROSS OPERATING SURPLUS	GVABP	TOTAL TURNOVER
1	Agriculture and Fishing	92,273.3	23.6	836,288.7	882,202.9	1,847,006.1
2	Mining Industry	34,175.5	1.1	54,037.9	86,256.0	185,315.1
3	Food, Beverage and Tobacco	327,276.2	13.8	269,543.2	578,435.0	2,751,053.5
4	Chemical Industry	18,429.3	0.5	15,048.3	33,681.7	122,850.1
5	Other Non-Metal Mineral Products	42,502.7	1.4	35,495.0	78,422.9	230,357.7
6	Metalworking and Metal Products	64,391.2	2.3	35,311.4	99,925.7	286,841.1
7	Steel Transformation Industry	43,618.9	1.3	24,923.8	68,671.8	340,848.9
8	Other Manufacturing Industries	214,506.1	8.6	155,130.3	370,370.3	1,168,920.6
9	Electricity, Gas and Water	240,052.1	4.1	967,539.2	1,245,094.8	2,523,155.6
10	Construction	3,087,376.7	117.4	2,117,437.4	5,273,743.8	3,791,321.4
11	Commerce and Repairs	2,312,345.7	177.3	2,810,595.0	5,123,039.8	8,811,283.5
12	Hotel and Restaurant Business	1,734,289.1	99.0	2,205,143.1	3,939,865.0	7,082,789.0
13	Transportation and Communications	852,836.1	48.2	1,115,457.7	1,926,169.9	4,657,809.2
14	Financial and Business Services	4,522,497.2	170.4	10,021,449.8	14,997,850.0	21,382,533.6

15	Education, Healthcare and Social Services	1,448,587.1	46.8	135,783.5	1,586,786.0	2,259,362.8
16	Other Services	2,066,377.4	87.0	- 156,531.1	1,917,987.3	4,922,154.7
	TOTAL	**17,101,534.6**	**802.9**	**20,642,653.1**	**38,208,503.0**	**62,363,603.0**
	ARAGON	12,474,772,000	551,140,000	11,667,035,000	24,279,434,000	51,645,652,000
	% PLAZA	0.14	0.15	0.18	0.16	0.12

The total indirect impact can be observed in the last row. Table 2 also shows the percentage that the indirect impacts of PLAZA represent out of the total for the Region of Aragon. Thus, 0.61% of wages and salaries, 0.66% of all jobs, 0.81% of the GOS, 0.71% of the GVA and 0.57% of total turnover in the Autonomous Region of Aragon in 2005 were due to the indirect impacts of the Zaragoza Logistics Platform.

To calculate the induced impacts, the personal consumption generated by the direct and indirect salaries and wages of the individuals who work in PLAZA-related activities was broken down in order to obtain the personal consumption expenditure or PCE.

Once this index is available, the same steps are taken as when calculating the indirect impacts.

Table 3 shows the induced impacts of PLAZA by line of activity. The total induced impact is shown at the end of the table as well as the percentage of the total induced impact on the variables for the Region of Aragon.

Table 3.- Induced impact of PLAZA by line of activity in 2005

Source: Own work. (Values in € except for jobs which is a number)

3.3. TOTAL IMPACT

The total impact of PLAZA on the Autonomous Region of Aragon is calculated by adding the direct, indirect and induced impacts.

Table 4.- Total impact of PLAZA by line of activity in 2005

		WAGES AND SALARIES	EMPLOYEES	GROSS OPERATING SURPLUS	GVABP	TOTAL TURNOVER
1	Agriculture and Fishing	1,192,068.3	304.4	10,803,915.0	11,397,076.0	23,861,255.0
2	Mining Industry	396,269.4	12.9	626,576.2	1,000,148.3	2,148,750.6
3	Food, Beverage and Tobacco	989,582.7	41.7	815,015.7	1,749,009.8	8,318,341.1
4	Chemical Industry	866,755.5	28.3	982,117.1	1,855,156.3	5,217,394.6
5	Other Non-Metal Mineral Products	1,315,514.7	46.6	1,056,012.6	2,384,429.3	7,005,786.1
6	Metalworking and Metal Products	7,590,268.4	249.5	4,345,092.6	11,944,441.4	36,108,843.9
7	Steel Transformation Industry	41,779,293.9	1,045.8	24,553,699.8	66,339,919.2	182,724,418.9
8	Other Manufacturing Industries	16,077,534.1	854.5	6,496,479.4	22,586,438.1	52,169,276.3
9	Electricity, Gas and Water	1,584,357.2	27.2	6,385,811.2	8,217,693.7	16,652,964.2
10	Construction	52,248,652.6	1,754.2	53,482,598.0	106,330,488.7	223,781,553.9
11	Commerce and Repairs	72,021,945.3	3,582.9	48,154,942.2	120,177,475.0	587,943,996.4
12	Hotel and Restaurant Business	2,475,390.4	141.2	3,147,451.1	5,623,459.3	10,109,426.5
13	Transportation and Communications	24,568,317.1	1,011.8	21,473,603.4	45,618,781.0	215,392,746.2
14	Financial and Business Services	24,727,893.1	896.9	57,905,398.2	84,466,314.2	122,432,561.1
15	Education, Healthcare and Social Services	5,048,361.1	163.1	473,208.8	5,529,987.6	7,873,933.8
16	Other Services	3,597,183.1	150.1	- 134,281.6	3,475,813.8	8,725,264.3
	TOTAL	***256,479,386.8***	***10,311.1***	***240,567,639.6***	***498,696,632***	***1,510,466,513***
	ARAGON	*12,474,772,000*	*551,140,000*	*11,667,035,000*	*24,279,434,000*	*51,645,652,000*
	% PLAZA	2.06	1.87	2.06	2.05	2.92

Source: Own work. (Values in € except for jobs which is a number)

The following table shows the results obtained in comparison with the findings from other studies conducted for other transport infrastructures.

Table 5.- Total Impact of PLAZA, the Port of Santander, and the Port of Gijón on their respective Autonomous Regions

	% JOBS IN THE AUTONOMOUS REGION	% GVA IN THE AUTONOMOUS REGION
Impact of PLAZA	1.87	2.05
Impact of the Port of Santander	4.50%	6.10%
Impact of the Port of Gijón	6.12%	10.16%

Source: Own work.

4.- SUMMARY AND CONCLUSIONS

Thus, 2.06% of all wages and salaries paid in Aragon are due to PLAZA which represents 1.87% of all jobs, 2.06% of the GOS, 2.05% of the GVA and 2.92% of total turnover in Aragon.

It is also important to underline in these conclusions that, despite the fact that the results are very positive, we believe the calculated impact is under-estimated because of the following:

- The economic impact calculated only takes into consideration the impacts produced on the economy of Aragon when, given its strategic location, PLAZA would produce major impacts on the hinterland which stretches beyond the borders of Aragon.
- The values were calculated for the year 2005 since that was the year for which the most recent I-O tables for Aragon are available. In 2005, PLAZA was clearly in a growth stage meaning that if these calculations were done for 2010, the impacts would be greater.

These results make it possible to envision how in a region like Aragon, where the geographic situation does not allow for a logistics infrastructure such as a port, investment in logistics platforms can be of high value to the economy.

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