

## Economic Importance Of Road Networks In The Republic Of Moldova

Oboroceanu ALIONA<sup>1</sup>

<sup>1</sup>Doctoral School of Economic and Demographic Sciences, National Institute for Economic Research,

E-mail: andriana74@gmail.com

**Abstract:** The article represents a research on the current situation regarding the significance of roads in economic activity. In this regard, the author conducted a concrete analysis of some indicators that influence economic development and growth by using roads for both passenger traffic and freight traffic in the Republic of Moldova. The factor that generates economic growth and emancipation for the development of a society consists in the existence of modern road networks, able to ensure trade links at national level between various regions, but also internationally, thus contributing to intensifying relations between states, connecting localities to the national transport network, thus facilitating the free movement of citizens and increasing mobility. In order to ensure economic cohesion and competitiveness, smooth connections with the Member States of the European Union are also needed. Roads play a significant role in this regard, as road transport is the most widely used transport solution in the Republic of Moldova, namely the transport of goods and passengers. Placements in transport networks increase the invested capital compared to the realized one in other fields of activity, based on direct and indirect effects, which result from saving costs and time by attracting the necessary resources to build modern road infrastructure. The scientific methods used are: analysis and synthesis, induction and deduction, critical analysis of materials, etc. The main results obtained from the investigations refer to the analysis of indicators on the transport of goods and passengers on roads in the Republic of Moldova in terms of providing field practices, for the users' access to qualitative public roads.

**Keywords:** passenger transport, transport networks, public roads, land communication, modern infrastructure.

**Jel:** H54, H83

### The topicality and significance of the researched problem

The domain of road infrastructure has an important role to play in the process of economic development of any country. This is also explained by the fact that achieving economic growth and reducing poverty requires access to resources and markets, but also access to employment, services, housing and education. There is a direct link between new investment in road construction on the one hand and economic growth on the other. New roads mean better communications, easier access to markets and new business opportunities. Roads represent terrestrial networks specially designed for vehicles and pedestrians. The purpose of road administration is the design, construction, modernization, rehabilitation, repair and maintenance of roadways. Thus, the efficient management of the financial means used in the process of administration of public roads represents an important role in obtaining the result indicators oriented towards the modernization of the quality transport networks in the Republic of Moldova with the insurance of road safety in traffic.

Therefore, an adequate and high-quality public road infrastructure expresses the level of development of the country worldwide by ensuring a functioning economy.

### 1. The interdependence of the capital flow included in the Gross Domestic Product related to the financial investments made for the modernization of the transport networks.

Investments in transport networks ensure the increase of invested capital based on direct and indirect effects, which result in cost and time savings, by attracting the necessary resources to build modern transport infrastructure.

Road infrastructure influences the economic development of a state through its contribution to the increase of mobility and life quality, by expanding facilities and ensuring goods, cohesion and traffic safety.

At present, the Republic of Moldova is provided with a sufficient transport infrastructure of 10.635 km of roads, related to the area and the number of the population. At the same time, in some areas with

economic potential, road infrastructure could be expanded according to traffic requirements. Insufficient funds available for road infrastructure rehabilitation have highlighted the low level of quality required for their users.

In the Republic of Moldova, investments in the field of road infrastructure with the participation of the private sector accounted for 3.1% of the gross private fixed capital formation in 2010. In the context of the analysis of the indicator “gross capital formation”, its dynamic change was appreciated by the progressive accumulation until 2019, registering 53.7 billion lei, which is about 3 times higher than in 2011. Due to the influence of some external factors explored in 2020, the mentioned indicator expressed the decrease by 0.6 billion lei compared to the similar period of 2019. However, the economy of the Republic of Moldova in 2020, affected by pandemic and severe drought, contracted in a rigid manner, the Gross Domestic Product decreasing by about 2 percent compared to 2019. The main factors that have determined this decline of the Gross Domestic Product were the investments and stocks which also decreased by about 2 percent followed by the consumption of the population. In 2021, the economy gradually began to recover, but most short-term indicators still remain in the negative zone.

Regarding the contributing level of the indicator “gross capital formation” on the increase or decrease of the Gross Domestic Product, a diminishing influence was highlighted for 2016, registering the decrease of GDP by 0.7% and in 2015 by 0.3%. The low level of contribution was also adjusted by the insufficiency of financial resources for road rehabilitation, which in 2015 amounted to 1.5 billion lei or 1.7 billion lei less than the similar period of 2014. The dynamics of indicators on the correlation of the financial means used for roads for the years 2011-2020 is presented in Table no.1.

Tab. 1. Dynamics of the indicators regarding the correlation of the financial means used for roads on the gross fixed capital formation for the years 2011-2020

Nr d/o	Indicators	Unit of measure	Years									
			2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	A	B	1	2	3	4	5	6	7	8	9	10
1.	Gross domestic Product, including	Billion Lei	82,2	87,8	99,9	111,5	121,8	134,5	150,4	190,1	210,1	206,4
	Gross Fixed Capital Formation, current prices	Billion Lei	19,1	20,5	22,5	27,4	29,5	30,1	32,8	46,2	53,7	53,1
2.	Contribution to GDP formation	%	23,2	23,4	22,5	24,6	24,2	22,3	21,8	24,3	25,6	25,7
	Contribution to GDP growth / decline	%	2,4	0,1	0,8	2,3	-0,3	-0,7	1,2	3,1	3,1	-0,5
3.	Financial means for roads	Billion Lei	-	1,6	1,7	3,2	1,5	1,6	2,3	2,7	3,8	4,8

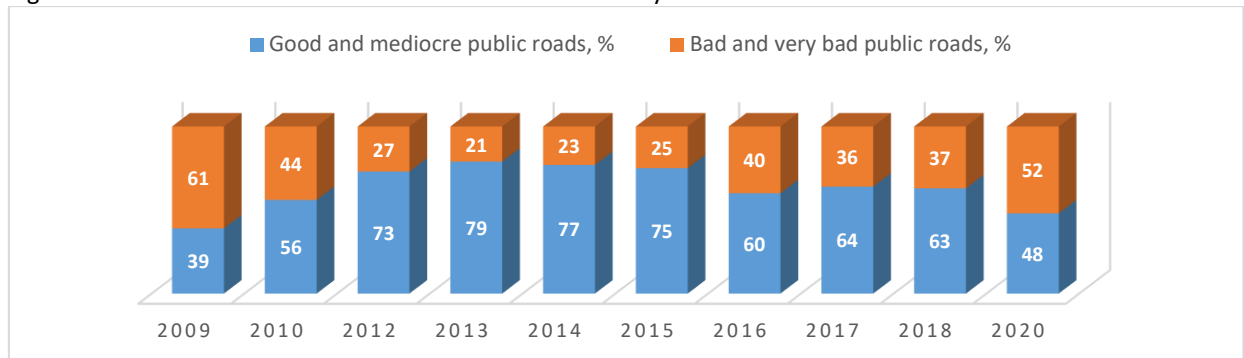
**Source:** Analysis performed on the basis of official statistical data placed on the page of the National Bureau of Statistics.

The non-realization of capital investments has persisted over the last decade, and if these resources had been successfully invested, the annual public investment of the Republic of Moldova would have register 3.9 percent of the Gross Domestic Product, the value which is equal to the national average of the European countries with which it compares. The state of the road network essentially influences the cost of car transport and the travel time of traffic participants. The poor condition of the road network also negatively affects the environment and traffic safety.

According to the data summarized for 2017, about 18% of national roads were in good condition, 23% in poor condition and about 13% in very poor condition. The results of the inspection, in 2017, indicate that

about 31% prevail, the access roads with a *mediocre* condition, meaning between good and bad condition of the road surface (IRI 4-6). The evolution of the state of the national public roads for the years 2009-2020 are shown schematically in Figure no.1.

Figure no.1. Evolution of the state of national roads for the years 2009-2020.



Source: Data reported by the State Company „ASD” in the Report on the Road Use.

The data show that, if until 2014, the increase of public roads in good and mediocre condition persisted, then in 2015 the trend began to decline, one of the influential factors representing the decrease in the road networks’ level of financing. For 2020, the indicator “bad and very bad road conditions” was increased due to the reform of the public road network, which was mainly influenced by the state of regional roads, which registered 63%, and for republican roads and expressly registered the index of 47%.

Road financing is a major problem in all countries, and regardless of the financing system used, it has major implications for both the road network and government decision-making. For all countries, regardless of the level of development, the issue of road finance is an important one.

## 2. Analysis of the road transport situation associated with road infrastructure.

Road transport is a mode of transport intended mainly for semi-finished and finished products and has focused on high value goods. It is especially preferred for short distance travel. An advantage of road transport is availability or accessibility. Almost any point of origin or destination is accessible due to the network of roads and highways. Transit time is a notable advantage of road transport as well as product safety.

Transport is a critical and very important sector of the economy, as it comprises a complex network of private and public enterprises that provide goods and services to the citizens and companies of the European Union and its trading partners. It also ensures the mobility of European citizens, thus making a significant contribution to the free movement of people within the Union's internal market.

The vision of the Republic of Moldova in the field of transport networks is presented in the Transport and Logistics Strategy for 2013-2022. The specific objectives of this Strategy are: (i) creating a legal, institutional and adequate environment for the transport and logistics sector to facilitate the sustainable economic development of the Republic of Moldova; (ii) ensuring a framework that would allow each type of transport to contribute to the economic development of the Republic of Moldova, oriented towards the development of foreign trade; (iii) ensuring the transparency of decisions on infrastructure investments and expenditures, and establishing the basis for concluding agreements with external partners of the Republic of Moldova, such as international financial institutions and the donor community.

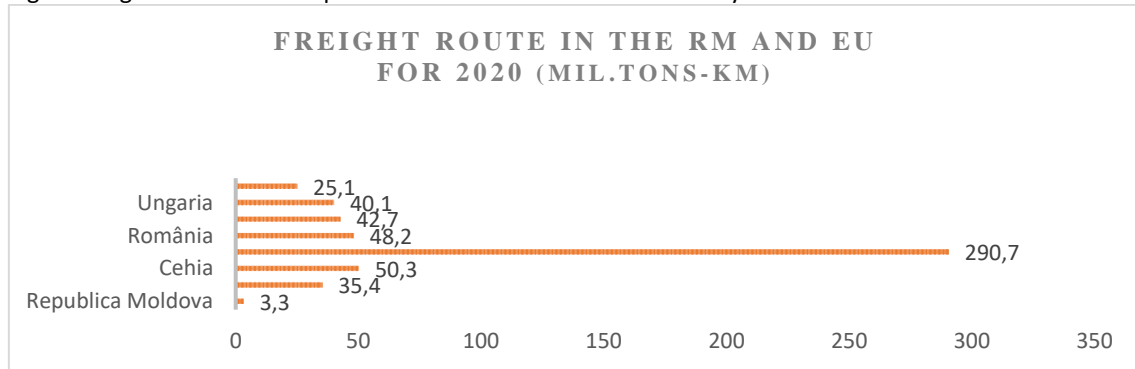
The Republic of Moldova, as a transit country for goods and passengers, is highlighted by the dominant level of road operation, which indirectly influences the capitalization of investment potential. In 2020, the “passenger traffic” indicator was oscillating, decreasing by 18.3 percentage points compared to 2010, while the similar “passenger traffic” indicator showed an oscillating trend, decreasing by 6.7% in 2015, and subsequently increasing by 144.6% in 2020.

In the Republic of Moldova, the long-distance transport of goods prevails, compared to that of passengers, respectively also showing the preponderant increase in the volume of goods transported / delivered by

economic agents, which in 2018 amounted to 1,178.7 thou. tons, which is by 116.6% higher than in 2017. In this context, the volume of goods transported increased about 3 times compared to the distance traveled by them, which highlights the consistent appropriation of public roads by carriers.

Compared to some countries of the European Union, the appreciation of the indicator “the course of car goods” supposes a minimized level of the Republic of Moldova in terms of transportation of goods, a situation shown schematically for 2020 in Figure no.2.

Fig. 2. Freight route in the Republic of Moldova and the EU for the year 2020.



Source: Official statistical data placed on the EUROSTAT page

The attested situation emphasizes the importance of perfection and maintenance of quality public roads per republic, so the efficient use of resources for roads aims to be the primary premise for the favorable attractiveness of the Republic of Moldova in Europe.

The national transport system is a fundamental component of society through at least two valences: economic and social ones. The development of a transport system that meets the needs of the economy is a strategic priority and must be linked to the need for regional and national integration of communities. The components of the national transport system must be approached with an integrated vision, which supports the mobility of people and goods and which is correlated with the development strategy of the Republic of Moldova, sectoral strategies, urban development strategies and plans, European strategies and actions to reduce the effects on the environment.

The mode of road transport is a fundamental component of the national transport system through the share of road transport and the challenges posed by it. The two constituent elements of this mode, infrastructure and vehicles, must be addressed in an integrated way and the development of this mode must be achieved through the unitary approach of the infrastructure-vehicle system.

The vast majority of goods in the proportion of 88% are transported by road, ensuring a maximum demand for national and local roads. Increasing the demand for car transport infrastructure is also a qualitative argument for increasing the road degradation factor. In conclusion, we can mention a double increase in the number of vehicles for the transport of goods, trailers and semi-trailers, a 50% increase in the volume of goods transported by road with a degree of demand for car transport infrastructure of 88%.

The situation on the journey of goods and passengers for the years 2010-2020 is presented in Table no.2.

Tab. 2. Evolution of freight and passenger route indicators

No	Indicator	Measure unit	Years										
			2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	A	B	1	2	3	4	5	6	7	8	9	10	11
Passenger journey		Thou. passengers	202	238	234	244	229	241	257	278	294	279	165
		-km	643,2	917,3	151,7	948,1	042,6	427,5	074,3	573,3	434,8	850,7	691,5
Goods journey		Thou. tons-km	265	275	288	351	304	279	330	380	371	351	384
			565,6	185,9	673,0	656,4	162,3	809,6	560,2	211,6	737,0	437,9	101,3

Source: Analysis performed based on official statistical data placed on the page of the National Bureau of Statistics.

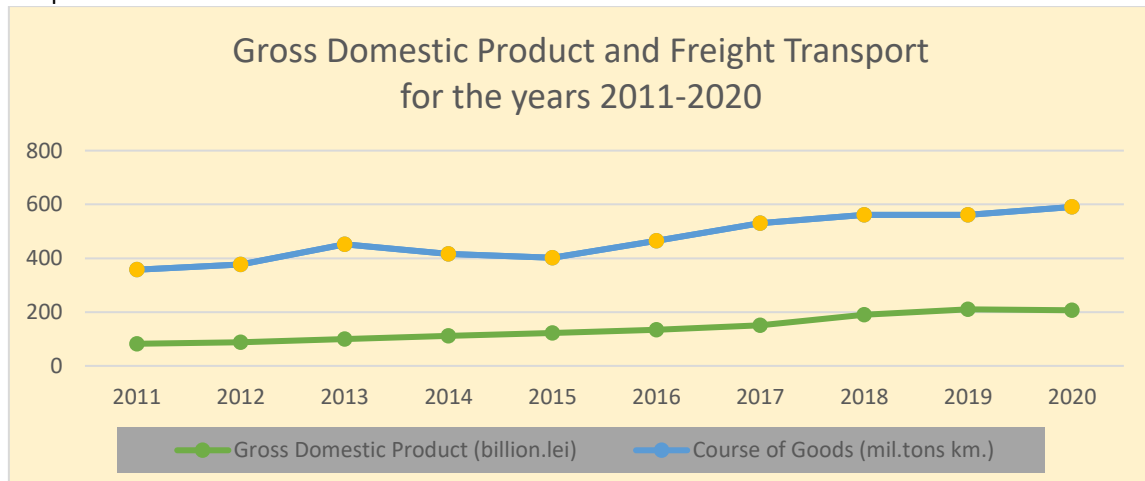
In recent years there has been an increase in transport activity. Thus, the transport of goods increased by about 45% in 2020 compared to 2010. Road transport remains the main mode of transport in the Republic of Moldova, accounting for about 84% of the total route of goods transported. Passenger transport has evolved more significantly, with 42% increase in passenger transport. Passenger traffic increased in 2019 by about 38% compared to 2010. Economic crisis conditions affected the passenger route for 2020, which decreased by about 40 percent compared to 2019. About half of the volume of passengers is achieved by road transport.

According to Eurostat, in 2017, a share of 76.7%, in tons-kilometers, of all domestic transport of goods in the European Union, took place by road. The importance of roads is even greater for passenger traffic: in 2017, cars accounted for 83.3%, in passenger-kilometers, of domestic passenger transport in the European Union, while coaches, buses and trolleybuses accounted for another percentage of 8.8%.

Freight transport is generally dependent on the development of the economy as a whole, and it can be seen internationally that transport (measured in thousands of tons-kilometers) is directly proportional to the increase in Gross Domestic Product.

The overlap of the mentioned indicators, namely the Gross Domestic Product and the thousands of tons of kilometers traveled for the transport of goods is presented in Figure no.3.

Fig. 3. Evolution of GDP indicators and Freight transport in tons-kilometers in the Republic of Moldova for the period 2011-2020.



Source: Official statistics

If we consider the year 2013 as the reference year for assessing the evolution of transport and the economy of the Republic of Moldova in general, we can see that the economy became slightly oscillating until 2015, when we can say that it was transported the least, the year after which we have to deal with a recovery - recovery also manifested in the increase of the Gross Domestic Product. A correlation can be clearly observed between the change in Gross Domestic Product and freight transport expressed in millions of tons-kilometers.

## Conclusions

It is concluded that in the Republic of Moldova the challenge is to create the right conditions for private capital participation in infrastructure development and to attract foreign investors to participate in Public Private Partnerships in road infrastructure, in order to develop road infrastructure, which still needs considerable improvements and need of certain investments.

In this way, a solution would be a combination of public and private investment to provide the capital needed to achieve meaningful results. Given the limitations of domestic private capital, some of the private investment will have to come from abroad. However, comparisons with other countries in the region have shown that more investment in the desired areas can be attracted through the

implementation of complex reform programs and large-scale investment promotion campaigns. This would help to achieve significant investment opportunities in road infrastructure.

Macroeconomic studies have shown that investments in transport networks increase the capital invested compared to that provided by other sectors of activity, based on direct or indirect effects. This results in cost and time savings by improving transport, as well as providing the resources needed to build modern transport infrastructure. Efficient passenger and freight transport services are necessary for economic development, being a complex process of capitalizing on a country's natural resources and talents. The comparison of physical indicators by types of route also shows some trends that characterize the evolution of the transport activity, which in principle will continue to manifest itself in the coming years, even if the amplitude will be different.

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