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TARIFF AS A TOOL FOR FINANCING PUBLIC TRANSPORT IN CITIES

The aim of the article is to present the role of public transport and its financing methods, with particular emphasis on the role of transport tariffs in Poland. Tariffs in collective transport, in addition to financing functions, i.e. covering costs of services, are increasingly fulfilling the functions of shaping the attractiveness of public transport, thereby supporting the city's competitiveness as a whole, both in relation to its residents and people who have jobs in the city or they are guests / tourists. The article hypothesizes that third generation tariffs are a financial tool that allows cities to manage local finance more effectively and affect the competitiveness and attractiveness of public transport. The research process used methods of critical analysis of literature, induction and deduction, logical inference and economic and financial analysis.

Keywords: tariff, local finance, public transport, public transport.

1. INTRODUCTION

Contemporary agglomerations compete with each other, and one of the scopes of competitiveness is the quality of life of citizens. By creating competitiveness in this area, urban organisms not only satisfy the current inhabitants but are also able to attract others who, via the current system of generating communal income, contribute directly or indirectly to municipal budgets.

One of the essential tools for shaping the competitive advantage of cities is the public transport tariff system. However, taking into account the complementarity of activities implemented under the adopted transport policy in the city, tariff solutions are considered and should be in conjunction with other systems operating in agglomeration / metropolitan areas, e.g. urban bike systems or Paid Parking Zone. Additionally, it is extremely important to include key future investments in the area of public transport in the city and agglomeration.

The introduction of free public transport, on the one hand, seems to be an attractive solution, however, it also brings threats not only to increase the burden of city budgets

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introducing such a solution, but also by getting rid of tools by managers of a number of city policies. An additional argument of using the tariff as a tool for creating the social and economic policy of the commune is the fact that the development of techniques and technologies as well as knowledge opens new possibilities in this area.

The attractiveness of urban collective public transport, understood as high functionality and affordability, is becoming a determinant of shaping the competitiveness / attractiveness of the city and agglomeration as a whole. This entails an increasing share of public funds / city budgets involving in financing public transportation. Some cities offer free public transport, accepting 100% of self-governments' budget, however, a number of cities try to finance the costs of functioning of public transportation based on tickets' income.

The purpose of the article is to present the role of public transport and its financing sources, with particular emphasis on the role of tariffs in Poland.

The paper is organized as follows: an introduction has been presented in Section I. Section II discusses the literature review, Section III presents methodological framework and the empirical results, Section IV includes conclusion.

2. TRANSPORT TARIFF AS A TOOL TO ACHIEVE THE CITY'S GOALS

Etymologically, the word 'tariff' derives from Arabic, in which the word 'tariff' means an announcement. The concept of tariff methodically identifies systematic lists of prices for goods and services. The tariff definition describes it as a price list for services, including the terms of applying these prices, given in a suitable form to public knowledge (Grzywacz, 1985). The tariff tool is often used to calculate prices for services such as telecommunications, electricity supply, gas supply and a range of other services, including transport services.

Tariff systems are often internal in nature, due to the lack of necessity for them to be confirmed by the competent state authority. The necessity of approving selected tariffs is, in turn, one of the tools of the socio-economic policy of the state. Regarding public transport in cities and agglomerations, shaping prices for public mass communication services is a part of the city's policy by authorized bodies (Takahashi, 2014).

The concept of transport tariff has practically a different interpretative range, from very narrow to very wide (Hamacher, Schobel, 2004). In terms of narrow transport, tariff is identified with the table of charges for transport services (Grzywacz, 1985). In the broader sense "(...) by the transport tariff is understood as an official list of fees (unit prices) for the performance of specific transport services (transport and special), as well as a set of regulations specifying the conditions of applying these rates and the manner calculating the fees for individual transport services according to them" (Grzywacz, 1985).

In sum, the transport tariff is understood not only as a table of fees along with the rules for calculating fees but also a set of rules and regulations defining the conditions for the performance of specific transport services (transport and forwarding) (Jackiewicz, Czech, Barcik, 2010). The scope of the tariffs currently in force has been influenced by the regulation of civil law relations and the association of economic turnover, as regards the provision of transport services or, more generally, transport and logistics services, including insurance services. Thus, the concept of tariff is very often understood in very narrow and colloquial terms – identified with the price list itself (Kozlak, 2007).

A high multiplicity of tariff solutions characterizes the modern market of passenger mass transport in urban areas; their goal is to try to satisfy the expectations of as many

customers as possible optimally. Due to the period of application of individual tariff systems/tariffs and the scope of their application, we can distinguish three consecutive generations (Pietrzak, 2017) (Figure 1).

Public transport organizers were forced to replace the standard forms of travel settlement – single-pass tickets (enabling one-way travel only), which give the ability to travel in a more flexible way, owing to changes in the needs and requirements of customers, as well as their more frequent choice of means of individual transport. To meet clients' needs, the tariff based on travel settlement centered on its duration was becoming more and more popular in cities. Time tariff is usually built on the principle of creating several time windows (e.g., 20, 40 and 60 minutes) and using different ticket denominations for them.

For obvious reasons, this accounting system is accepted primarily by those groups of customers who, while making their journey, make maximum use of the time provided for the selected ticket. The remaining groups are forced to buy a ticket that exceeds their real-time need to complete the journey. Carriers, realizing that the indicated ticket was not used often, even stipulated in the rules of carriage that it was not possible to transfer such a ticket, still active temporarily, to another user.

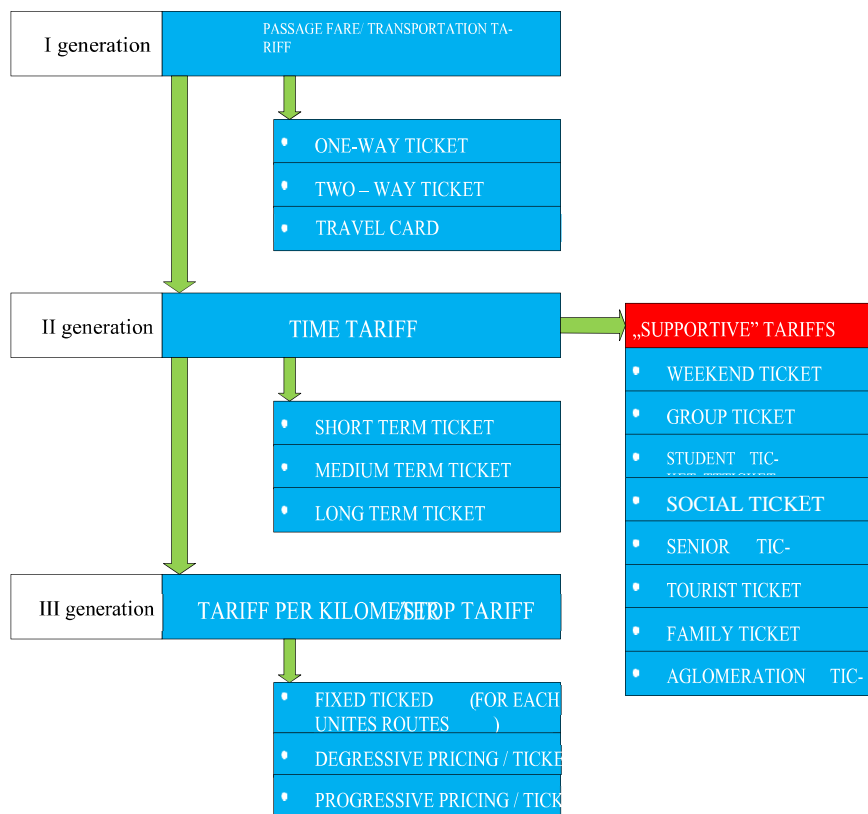


Fig. 1. Tariffs generations used in public mass transport

Source: (Pietrzak [ed.] 2017).

Table 1. Selected features of individual types of ticket tariffs in public transport

FEATURES	PASSAGE FARE	TIME TARIFF	STOP TARIFF	KILOMETRE TARIFF
TICKET KIND	<ul style="list-style-type: none"> • simple and clear tariff • only one denomination available – a ticket for one journey • the possibility of using a paper ticket • no need to introduce tele-format tools – an electronic ticket is not required 	<ul style="list-style-type: none"> • availability of tickets with various denominations • the occurrence of different tickets requires that you read the timetable and fit the appropriate ticket until the journey provided for in the break-down • possible use of an electronic ticket 	<ul style="list-style-type: none"> • lack of unambiguously defined tickets – a system based on calculating travel distance is used (usually based on the number of kilometers traveled) • the need to use an electronic ticket 	<ul style="list-style-type: none"> • lack of clearly defined tickets – a system based on calculating travel distance is used (usually based on the number of kilometers traveled) • the need to use an e-ticket
TICKET PRICE	<ul style="list-style-type: none"> • the fixed fee charged for the journey is independent of the length of the journey (ticket valid to the end stop of the given route) • a solution that is beneficial for passengers who make long journeys with one means of transport, an unfavorable solution for passengers making short trips one means of transport 	<ul style="list-style-type: none"> • toll depending on travel time • availability of tickets with various denominations allows selection of the most suited to the needs • a solution that is beneficial for passengers making long journeys – usually a digressive tariff is used when creating new "time windows" • the use of specific "time windows" of specific tickets, usually with the adoption of a certain minimum value (e.g. 10 or 15 minutes), is not beneficial for passengers making very short trips 	<ul style="list-style-type: none"> • toll depending on the number of stops • a solution beneficial for passengers making short trips (they apply a reduced fee accordingly), as well as for long trips (usually a digressive tariff is used for settlement) 	<ul style="list-style-type: none"> • a toll depending on the number of kilometers driven • a solution that is beneficial for both passengers who travel short distances (they use a correspondingly reduced fee), as well as long travels (usually a digressive tariff is used for settlement)

Table 1 (cont.). Selected features of individual types of ticket tariffs in public transport

FEATURES	PASSAGE FARE	TIME TARIFF	STOP TARIFF	KILOMETRE TARIFF
IMPACT OF ENVIRONMENT	<ul style="list-style-type: none"> no influence of the number and density of stops on the validity of the ticket no impact of the travel time of the means of transport (planned in the timetable and real) on the validity of the ticket 	<ul style="list-style-type: none"> significant impact of the number and density of stops and estimated travel time of the means of transport on timetable design – and thus the validity of the ticket, significant impact of road conditions, congestion, failure on the validity of the ticket, disputable issues regarding ticket control when its validity is exceeded 	<ul style="list-style-type: none"> no impact of the travel time of the means of transport (planned in the timetable and actual) on the validity of the ticket noticeable influence of the density of stops on a given line on the potential range "distance" ticket 	<ul style="list-style-type: none"> no impact of the number and density of stops, as well as the travel time of the means of transport (planned in the distribution and the actual one) on the validity of the ticket
MULTIMODAL TRAVEL	<ul style="list-style-type: none"> no possibility to use the ticket in the next means of transport the need to purchase a new ticket for the next means of transport as part of a multimodal journey 	<ul style="list-style-type: none"> connecting transfer limited only by the period of validity of the ticket during the multimodal journey, the validity period of the ticket expires also during the waiting period for the next means of transport delay of one means of transport limits the possibility of continuing the multimodal journey within one ticket 	<ul style="list-style-type: none"> possibility of changing between one journey (if the organizer does not exceed the maximum time allowed between leaving the first means of transport and starting to use the next one – usually 10-15 minutes) the delay of one means of transport does not affect the final price of the journey as part of one multimodal journey 	<ul style="list-style-type: none"> possibility of transferring as part of one journey (if the organizer does not exceed the maximum time between leaving the first means of transport and starting to use the next one – usually 10-15 minutes) the delay of one means of transport does not affect the final price of the journey as part of a single multimodal journey

Table 1 (cont.). Selected features of individual types of ticket tariffs in public transport

FEATURES	PASSAGE FARE	TIME TARIFF	STOP TARIFF	KILOMETRE TARIFF
OTHER	<ul style="list-style-type: none"> the possibility of extending the planned journey by successive stops on a given line without the necessity of incurring additional costs 	<ul style="list-style-type: none"> significantly shorter "distance" of time ticket in city centers – the client of municipal public transport, consciously taking action to minimize congestion – paradoxically – is burdened with its consequences, starting next stops on a given line may cause the customer to move to another, more expensive "time window" 	<ul style="list-style-type: none"> significantly shorter "distance" of the stop ticket in city centers the higher density of stops in selected locations starting next stops on a given line causes an increase in the fee that the client must incur when completing his journey (while maintaining an unchanged travel distance) 	<ul style="list-style-type: none"> the system of records of kilometers traveled by the passenger must take into account the problems resulting from: the need to correct the calculation of the kilometers traveled during a multimodal journey (changes) on the need to correct the calculation of kilometers traveled during detours / one-off route changes
IMPLEMENTATION/ USAGE	<ul style="list-style-type: none"> due to the adaptation of the ticket for only one trip, the solution indicated for use mainly in small cities with a small number of lines 	<ul style="list-style-type: none"> solution recommended for use mainly in large cities with a dense network of lines well integrated temporarily 	<ul style="list-style-type: none"> solution indicated for use mainly in urban areas, with evenly spaced public transport stops 	<ul style="list-style-type: none"> solution indicated for use in large cities, metropolitan areas, metropolitan areas, where there is a great opportunity to choose different public transport means, including means of railway transport (urban, agglomeration and metro railways)

Source: (Pietrzak [ed.] 2017).

Such carrier practices also met with the reaction of the Office of Competition and Consumer Protection, which called in some instances for "discontinuation of activities that could constitute practices infringing collective consumer interests". The introduction of the time tariff (Table 1) in place of (or as an additional form) single-trip ticket was theoretically a significant "nod" by the public transport organizer towards new customer requirements; Customers who wanted to travel by only one means of transport on a fairly short distance or making their trip required using more vehicles (multimodal travel/broken journey).

A very important aspect of the time tariff is the impact of traffic on the network and the density of stops on the varied distance range of the ticket. Individual customers, when purchasing a time ticket with the same denomination, due to the diverse nature of the network, have a significantly opposing buying power of such a ticket (in terms of its potential for servicing a specific travel distance expressed in kilometers possible to travel). In addition, due to the differences between the time-table and the actual travel time, resulting from delays in public transport, there is a discrepancy in the interpretation at which moment the time ticket expires – whether after the actual time provided for its denomination, or after reaching the place chosen by the customer, which according to the timetable falls within the time value provided for the given ticket. Organizers of public transport, observing changes in the preferences and needs of customers, as well as the process of the annual decrease in the number of purchased tickets in most urban areas began in recent years to implement the process of broadly understood changes in the construction of a transport tariff. They aimed to create such a tariff that would contribute to increasing interest in public transport.

The new, emerging tariff solutions, generally defined as the third-generation tariff group, are intended to allow the application of different rates depending on the length of the journey, while providing, within the purchased ticket, the possibility of changing modes or transport modes (broken and multimodal transport). The implementation of the indicated solutions is currently facilitated mainly due to the highly developed ICT tools system. One example is the so-called stop tariff and kilometer tariff (Table 1).

3. ANALYSIS OF BUDGETS OF SELECTED POLISH CITIES IN THE SCOPE OF CO-FINANCING OF PUBLIC TRANSPORT

Municipal tasks execution in the field of local public transport requires securing sources of financing, as fees charged pursuant to the Act of 16th December 2010 on public collective transport, in connection with the provision of public transport services, do not cover the entire expenditures spending by municipalities or their organizational units. The amount of expenses related to the local collective transport varies depending on the municipality and the urban public transport system. The shape of the urban local transport system and its organization are mainly determined by the size of the commune, usually measured by population and area.

3.1. Methodology and research sample

When selecting cities for analysis, it should be borne in mind that not all small urban centers have urban public transport systems; in large and major cities, however, these systems are an inseparable part of them (Dydkowski, 2014). Considering the parameter, which is the size of the unit, for the purpose of analyzing and examining budgets in terms of financing local public transport by municipalities, the study selected cities on the rights of

the poviat over 200,000 inhabitants (the exception is Sopot, which was considered due to its transport connections within the Tri-City).

The purpose of the analysis of municipal budgets (cities with poviat rights) was to assess the total expenditure borne by municipalities for financing local public transport and to determine the number of subsidies that these municipalities incur in connection with the implementation of tasks related to local public transport. The analysis allowed us to make a diagnosis, and, in particular, to study the amount of expenditure and the amount of subsidies realized by selected cities in 2007–2017, with data for 2017 being the forecasted figures. The analysis covered 11 cities which were considered comparable due to the specificity of local public transport, including: Szczecin, Poznan, Wroclaw, Warsaw, Krakow, Torun, Bydgoszcz, Gdansk, Gdynia, Sopot and Lodz.

For the purpose of budget analysis and analysis, data from public statistics available in the Public Information Bulletin (BIP) were used. For the analysis of communal expenditure incurred in connection with the implementation of the task defined as local collective transport, financial data from budget classification 6004 was used. Local collective transport including current and property expenditure departments, own income, whereby the category of own income corresponds to that defined by the Act of 13th November 2003 on the income of local self-government units by LGU revenues. Data on the population of individual cities come from the Local and Regional Data Bank. The number of subsidies to the public collective transport port was calculated as the amount of current expenditure on local public transport reduced by revenues from public transport tickets.

The research of budgets of selected cities was carried out in terms of diagnosing the amount of co-financing of public transport in the overall budget structure and as a subsidy per capita. Overall, Warsaw and Sopot stand out clearly in terms of the highest and lowest data volumes respectively; however, these differences are not so significant for both cities in the per capita ranking. Warsaw is a specific unit, both because of its functions as the capital, but also because of its central location, which determines its communication with the surroundings. Warsaw is also the city with the largest population, area, population density and the largest number of entities and jobs in Poland (Dydkowski, 2014). Sopot, in turn, in the subsequent years covered by the analysis was the leader in the ranking. Analysis of budgets of selected cities in terms of the amount of expenses incurred in connection with the implementation of local public transport services in 2007–2017 showed that among the surveyed units, Warsaw had the highest spending level in the analyzed period, while the lowest level of expenditure was shown by Sopot (Table 2).

On average, in the analyzed period of the city covered by the analysis, they spent PLN 470 million on purposes related to urban transport, the minimum expenditure amounted to PLN 2.6 million, and the maximum was PLN 4 097 million. Detailed data is presented in Table 2.

Analyzing the budget data of cities, the crisis of 2008+ should be taken into account, which impact on the budgets of local government units in Poland was directed both to the income side and the expenditure side of budgets. In particular, the impact of the crisis was manifested by a decrease in revenues from local government taxes and income from local government shares in taxes: income from individuals and from legal persons. On the expenditure side, on the other hand, self-governments reduced expenses or postponed investment acquisitions by making financial restructuring.

Table 2. Expenditure on local public transport (6004) in the examined cities of Poland in the years 2007–2017 [PLN]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BYDGOSZCZ	139 906 983,09	167 317 676,27	165 419 625,82	175 502 795,03	215 201 817,00	224 112 992,21	190 381 673,57	223 597 680,21	215 152 696,15	209 808 939,62	258 119 269,00
GDAŃSK	274 334 240,00	211 682 777,00	217 234 502,00	289 039 217,00	252 303 821,00	322 726 350,00	304 700 192,00	373 401 344,00	311 584 802,35	312 601 901,00	341 179 614,00
GDYNIA	112 862 123,00	130 548 149,00	158 018 426,00	165 159 855,00	169 346 831,00	166 963 701,00	162 132 044,00	163 244 388,00	160 238 834,00	191 697 165,00	166 365 242,00
POZNAŃ	133 883 649,00	162 990 995,08	355 769 051,47	376 330 141,14	642 932 762,20	625 361 371,40	559 767 408,43	460 243 607,60	497 792 126,41	485 160 155,55	550 005 640,00
KRAKÓW	292 829 050,00	341 479 362,00	351 500 000,00	364 284 660,00	333 355 491,00	450 461 818,00	548 560 465,00	518 178 040,00	515 499 549,00	507 095 803,00	468 098 550,00
ŁÓDŹ	269 191 055,77	306 126 307,00	334 251 263,68	336 952 179,33	353 682 074,00	368 617 082,00	379 542 834,00	331 353 003,00	349 797 265,00	377 457 032,00	410 692 818,00
SOPÓT	2 564 584,73	3 057 518,23	3 343 542,00	7 351 500,00	6 263 100,00	3 960 534,99	4 280 482,08	4 358 237,04	4 411 920,00	4 382 723,89	4 201 500,00
SZCZECIN	78 984 225,00	107 523 300	183 781 563,00	129 809 786,00	100 727 942,00	210 293 553,00	213 472 200,00	300 784 633,00	614 634 860,00	242 291 554,00	236 187 299,00
TORUŃ	12 499 461,00	12 884 244,00	13 599 143,00	16 871 105,00	24 212 058,00	62 612 932,00	67 814 889,00	78 634 007,00	71 787 587,00	72 673 853,00	81 335 000,00
WARSZAWA	1 283 813 252,00	1 868 492 556,08	1 737 522 647,18	2 030 390 185,72	2 796 942 663,27	3 543 903 919,73	3 416 400 977,30	4 096 535 448,72	2 801 899 049,46	2 939 691 133,83	3 331 335 659,00
WROCLAW	289 631 962,44	313 162 830,51	322 696 800,60	325 464 309,49	312 451 387,96	330 603 369,40	329 740 377,64	349 439 215,57	349 874 150,15	370 578 950,63	373 967 850,00

Source: own elaboration based on BIP.

The impact of the crisis was mitigated by the availability of EU funds from the financial perspective 2007–2013, which selected local governments who spent on investments in the field of local transport. After 2014, one should also bear in mind the amount of investment expenditure incurred by local governments with the participation of EU funds from programmes financed under the 2014–2020 financial perspective. An important analysis is provided by the analysis of expenditure on local public transport in selected cities per capita.

Two cities, Warsaw and Poznan, stand out, and in 2015 also Szczecin, which has spent additional funds (PLN 399.5 million) on investment and investment purchases. Taking into account the ratio of expenditures incurred from the budgets of the analyzed cities to local collective transport in relation to their total revenues, local transports are issued by individual cities: Warsaw – on average 22%, Poznan – 16%, Bydgoszcz – 15%, Gdynia – 14%, Gdansk – 13%, Torun – 13%, Szczecin – 13%, Krakow – 12%, Lodz – 11%, Wroclaw – 10%, Torun – 5%, Sopot – 1%. In addition to investment costs, such as exchange and modernization of rolling stock, the parameter explaining the sum of costs incurred is saturation with communication services and transport performance, which in the capital is at the highest level compared to the analyzed cities (230 million per kilometer according to 2016 data).

When comparing the total expenditure incurred for communication with the number of carriages taken, then for Warsaw (PLN 10.17 for one wzkm) there are successively: Poznan (PLN 6.96), Olsztyn (PLN 6.16), Gdansk (5, PLN 90), Gdynia (PLN 5.25), Szczecin (PLN 4.87), Bydgoszcz (PLN 4.75), Krakow (PLN 4.33), KZK GOP (PLN 4.26), Wroclaw (4.21) PLN), Lublin and Rzeszow (PLN 3.97 each), Bialystok (PLN 3.83), Lodz (PLN 3.62), Kielce (PLN 3.05) and Opole (PLN 2.88) (Wroński, 2016). The analysis of co-financing of public transport costs in individual cities was based on current expenditures incurred by individual units for this purpose. The amount of current expenditure on local collective transport is presented in Table 3.

Analysis of current expenditure per capita incurred on local collective transport in cities confirms similar trends that occurred in the analysis of total public transport expenditure. The largest number of local congregational transport per capita is generated by Warsaw, Poznan, Gdynia and Gdansk; the lowest expenditure level is found in Sopot and Torun. An analysis of the level of co-financing of public transport in individual cities showed that only in three of them Krakow, Szczecin and Torun in the selected years, the receipts from communication tickets were dominated by the value of current expenditure incurred, and these cities thus obtained a surplus. In Table 4 these periods have been marked with the number 0.

In period of 2007–2017, Warsaw (PLN 872), Bydgoszcz (PLN 673), Poznan (PLN 396), Gdynia (PLN 338), Gdansk (PLN 320), Wroclaw (PLN 297), Lodz (PLN 292) paid the most for public transport. PLN), Krakow (PLN 219), Szczecin (PLN 169), Torun (PLN 70) and Sopot (PLN 55). The volume of financing of public transport in total in individual cities is presented in Table 5.

An analysis of city budgets in terms of spending on public transport financing in 2007–2017 showed that these expenditures represent a significant burden on city budgets, and the revenues from public transport tickets do not ensure their full financing (on average they cover 40% of the demand for funding). Both on the side of current expenditure (the cost of providing services) and property expenses (including investment costs) allocated for financing urban transport, an upward trend is visible.

Table 3. Current expenditure on local public transport (6004) in the analyzed cities of Poland in the years 2007–2017 [PLN per capita]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BYDGOSZCZ	359,21	411,62	427,63	445,52	462,07	487,02	4 884,73	589,32	585,40	492,66	509,78
GDĄŃSK	493,44	386,49	460,18	485,41	484,15	626,13	588,09	641,41	651,75	641,72	645,65
GDYŃIA	438,26	518,14	600,16	619,07	642,67	655,67	640,47	625,33	623,94	635,36	665,11
POZNĄŃ	238,68	292,48	641,93	624,26	648,48	669,36	706,17	743,19	780,82	772,91	881,28
KRAKÓW	387,04	452,52	465,56	480,75	439,12	594,02	722,75	680,14	677,34	662,59	611,64
ŁÓDŹ	357,40	409,72	450,24	461,18	487,80	512,71	533,57	469,34	499,01	541,93	589,65
SOPÓT	65,50	78,76	86,94	156,64	97,53	103,63	112,93	115,74	118,50	118,94	114,02
SZCZECIN	131,38	159,34	203,73	195,40	215,72	500,31	505,70	517,43	547,68	542,65	571,89
TORUŃ	24,90	38,44	38,61	45,53	88,13	283,57	304,69	329,87	335,63	345,56	349,03
WARSZAWA	729,49	835,02	986,14	1 110,97	1 277,00	1 433,17	1 345,97	1 648,18	1 513,20	1 663,75	1 682,48
WROCLAW	457,61	495,38	510,48	516,04	494,98	523,78	521,69	550,74	550,33	581,13	586,45

Source: own elaboration based on BIP.

Table 4. Co-financing of local public transport per capita in the examined cities of Poland in the years 2007–2017 [PLN]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BYDGOSZCZ	170,66	214,22	235,79	244,02	264,07	280,77	4 677,19	372,24	373,64	281,46	288,81
GDĄSK	293,08	162,39	234,97	255,77	265,26	407,20	370,77	413,88	309,30	411,38	406,08
GDYNIA	181,62	257,23	347,35	368,41	372,01	381,95	364,90	349,07	350,89	363,80	380,67
POZNĄ	238,68	292,48	395,76	378,06	394,68	385,53	395,57	417,94	455,88	453,42	552,35
KRAKÓW	94,02	146,07	138,82	196,11	0,00	272,73	372,47	329,30	321,02	296,30	252,22
ŁÓDŹ	183,88	248,46	291,45	291,46	308,50	315,20	336,69	264,14	301,58	338,54	336,67
SOPÓT	31,16	42,13	40,94	112,90	41,56	48,83	53,14	59,89	60,08	61,40	59,63
SZCZECIN	0,00	0,00	0,00	0,00	17,72	269,09	274,70	293,55	325,62	330,64	357,01
TORUŃ	0,00	0,00	0,00	0,00	0,00	92,94	99,55	131,44	144,09	152,85	157,44
WARSZAWA	449,59	501,17	626,46	739,62	835,36	969,14	902,71	1 187,52	1 026,08	1 177,51	1 181,99
WROCLAW	271,04	311,36	332,79	325,20	290,84	275,98	261,26	286,70	284,37	310,51	317,91

Source: own elaboration based on BIP.

Table 5. Co-financing of local public transport in the analyzed cities of Poland in the years 2007–2017 [PLN]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BYDGOSZCZ	61 647 299,23	76 890 365,64	84 329 712,55	88 930 522,80	95 863 015,88	101 428 773,74	168 112 452,73	133 133 369,28	132 884 000,52	99 619 169,03	102 222 173,00
GDAŃSK	133 563 148,00	73 980 110,00	107 284 202,00	117 784 524,00	122 157 039,00	187 486 854,00	171 122 061,00	191 002 075,00	142 972 097,00	190 777 731,00	188 322 010,00
GDYNIA	45 449 564,00	64 115 890,00	86 093 144,00	91 905 052,00	92 608 892,00	95 000 489,00	90 511 056,00	86 507 383,00	86 837 088,00	89 855 843,00	94 023 165,00
POZNAŃ	133 883 649,00	162 990 995,08	219 339 284,78	210 054 144,71	218 479 876,15	212 329 972,64	216 781 577,80	228 062 673,36	247 244 717,59	245 012 899,57	298 471 774,00
KRAKÓW	71 136 351,00	110 226 160,00	104 812 300,00	148 598 660,00	0,00	206 820 166,00	282 699 621,00	250 888 003,00	244 318 674,00	226 766 889,00	193 029 550,00
ŁÓDŹ	138 499 683,71	185 634 703,40	216 366 275,59	212 952 179,33	223 682 074,00	226 617 082,00	239 497 417,65	186 484 774,64	211 400 916,63	235 795 854,71	234 492 818,00
SOPÓT	1 219 852,53	1 635 383,60	1 574 621,91	4 387 103,40	1 603 518,64	1 865 947,95	2 014 330,64	2 255 007,75	2 237 005,11	2 262 529,45	2 197 250,00
SZCZECIN	0,00	0,00	0,00	0,00	7 257 908,00	110 034 733,00	112 126 585,00	119 528 814,00	132 090 150,00	133 868 169,00	144 544 957,00
TORUŃ	0,00	0,00	0,00	0,00	0,00	18 987 699,00	20 253 172,00	26 703 412,00	29 206 467,00	30 954 343,00	31 885 000,00
WARSZAWA	767 287 378,00	856 889 516,76	1 074 034 175,54	1 257 442 303,30	1 427 212 014,28	1 662 582 972,48	1 556 644 190,00	2 060 880 447,00	1 789 846 312,00	2 065 324 318,00	2 073 182 959,00
WROCLAW	171 552 405,59	196 828 631,32	210 374 460,88	205 103 166,06	183 591 036,84	174 198 145,19	165 136 111,54	181 909 628,53	180 789 650,38	198 008 353,99	202 727 850,00

Source: own elaboration based on BIP.

This is determined by various factors, including the need to provide transport services for residents of developing and growing cities, the growing rate of individual motorization, the degree of amortization of fixed assets, changed consumption patterns, growing customer requirements and undertaken investments (Abrate, Piacenza, Vannoni, 2007). It should be expected that this trend will continue in the coming years, which will force changes in the method of calculating tariffs, as well as the model of providing public transport services by municipalities.

4. CONCLUSIONS

The impact on the attractiveness and competitiveness of public transport in relation to individual motorization is not only related to environmental protection issues, i.e., reduction of green gas emissions, but is a part of widely defined goals of sustainable development and a modern image of the city.

Some cities offer free public transport, however, a number of cities try to cover the costs of public transport collecting ticket revenues, and using the tariff as a marketing tool and achieving other goals included in the city/metropolis strategy. An illustration of such goals is, for example, senior policy (e.g., free communication for seniors), pro-family policy (e.g., monthly tickets for 1 PLN for children from the so-called large family). Thus, the designing of the tariff system is the result of a bundle of goals from which the income function does not have to be the most important. This is reflected in the course of increasing the share of public finances (budget) in financing public transport.

The implementation of costless communication is a significant limitation and deprivation of the city/metropolitan authorities of the possibility of affecting selected areas of social policy by means of a transport tariff. In the case of free public transport, costs are borne by the city/and the beneficiaries are not always residents of the commune. Very often, the beneficiaries may become residents of neighboring communes, which municipalities are leading an aggressive policy towards the municipality center by charging both residents and other sources of communal income (e.g., investors etc.). Each of the analyzed tariffs has specific features that clearly indicate its applicability.

Transport operators, choosing individual ones, should be aware of the wide spectrum of individual solutions, as well as the local specificity of the transport system. A tariff that works efficiently in another area does not always have a chance of full implementation in the home area. It is also important that in planning the implementation of new tariff solutions, it is worth keeping in mind any changes which are planned in the forthcoming years in the public transport system of the area - for example, the introduction of new branches of transport (subway, city rail, etc.). Additionally, it should be emphasized that the tariff system of public mass communication also becomes a tool for implementing city/agglomeration policy and shows a certain modernity of solutions adopted and openness to the needs of residents who increasingly contribute to the costs of maintaining this system. That is why, increasingly, public budgets of cities are a source of financing the functioning of collective public transport, i.e., their share in financing total costs are increasing.

Metropolises and large urban agglomerations in Poland need to take into account the development of telecommunications and IT technologies both in the collection and charging of charges for mass transit services, that strongly affects the construction of tariffs. The solutions adopted are strongly determined by the share of public transport costs in the city budget. A small share of costs in the self-government entities' budget as well as a small

share of covering these costs with receipts from tickets creates greater inclination of decision-makers to introduce free public transport.

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LEGAL ACTS

- Ustawa z dnia 16 grudnia 2010 r. o publicznym transporcie zbiorowym (tekst jedn. Dz.U. z 2018 r., poz. 2016).
- Obwieszczenie Marszałka Sejmu Rzeczypospolitej Polskiej z dnia 17 marca 2016 r. w sprawie ogłoszenia jednolitego tekstu ustawy o samorządzie gminnym (Dz.U. z 2016 r., poz. 446).
- Obwieszczenie Marszałka Sejmu Rzeczypospolitej Polskiej z dnia 28 kwietnia 2010 r. w sprawie ogłoszenia jednolitego tekstu ustawy o dochodach jednostek samorządu terytorialnego (Dz.U. z 2010 r., nr 80, poz. 526).

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