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The Rationality of Defense Finance Management in NATO Countries in the Face of the Russia-Ukraine War

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"Spend more, spend better, spend European."
"Wars are not fought by armed forces, wars are fought by states, because war is a system."

Abstract:

Purpose: *The aim of the article was to assess the rationality of national defense expenditure in NATO countries in the period 2014–2023 in accordance with the models of capitalism concept drawn from New Institutional Economics.*
Design/Methodology Approach: *Models of capitalism are understood as systems of complementary institutions characterized by internal similarities in fundamental institutional solutions in the countries representing them. The analyzed group of NATO countries was divided into six models: continental, Mediterranean, Nordic, Anglo-Saxon, patchwork. The United States served as a specific point of reference for all models. The period of analysis covers the years 2014-2023.*
Practical Implications: *The results obtained revealed a peculiar paradox. Countries with a* ***patchwork*** *model make enormous efforts in national defense, but this does not translate into high rationality of these expenditures. Defense can only truly develop if it benefits from a steady source of investment over many years and decades. Starting a proper industrial cycle in the field of defense in Central and Eastern European countries requires long-term planning and investment.*
Originality value: *The results presented in this study open a discussion on the direction of national defense spending and fit into the broader context of research on the effectiveness of such spending. The level of national defense spending should be assessed in the context of the restrictions imposed by EU fiscal rules and the overarching objective of the state, which is stable, balanced and sustainable economic growth.*
Originality value: *In countries with a patchwork model, the situation in terms of defense spending differs from the pattern characteristic of the US, the UK and countries with a Nordic and continental model. Analytical studies have confirmed that it will become increasingly difficult for individual nations to develop their own national, stand-alone defense systems. The costs are high for Europeans because individual national development programmes face strong international competition and cannot fully exploit economies of scale.*

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1. Introduction

The current turbulent situation on the international stage forces us to pay special attention to national security. The recent armed conflict in Ukraine, which broke the Cold War order, showed, on the one hand, that one can never be complacent about one's own sovereignty and, on the other hand, that defense capabilities should be constantly developed.

Expenditures on national defense incurred in times of peace have, in essence, one goal: to ensure the external security of the state by deterring potential aggressors, increasing — from their point of view — the cost of a possible conflict, expressed in terms of both human losses and financial and material expenditures. These funds are crucial for the proper functioning of the state's defense system, because without reaching their critical mass, it is not possible to implement a systemic approach to financing the armed forces.

Thus, a necessary but insufficient condition for achieving the above-mentioned goal is an adequate level of absolute expenditure on national defense within the public finance sector. This means that countries with lower GDP will be forced to spend a much larger percentage of their gross domestic product on financing their armed forces than rich countries. However, this is where the first "trade-off" choice arises.

The percentage of GDP that can be allocated to national defense is a combination of social, political, economic, and potential threat factors. If society fails to establish the belief that spending on the armed forces is necessary, it will always be given low priority, losing out to internal competition with healthcare, education, administration, and social transfers.

However, the amount of spending alone does not guarantee that a potential aggressor will be deterred; it is also necessary to have an appropriate structure for this spending, which balances the maintenance of a "peacetime army" (i.e., maintaining adequate army personnel levels, comprehensive training, financing infrastructure in the form of barracks, training grounds, and expenditures on pensions for former soldiers and civilian employees of the armed forces) with preparing the potential for its rapid transformation into a "wartime army" (expenditure on equipping soldiers

with appropriate weapons, the training process, continuous modernization of both equipment and military doctrine), as well as financing civil defense (shelter system)[3].

Thus, a second "trade-off" choice arises. If, despite high opportunity costs, it is possible to ensure high levels of national defense funding in both relative and absolute terms, the question remains of how to properly allocate funds to specific areas. Abstract figures, such as the relative value of military spending, conceal many complexities that are difficult to interpret.

The data presented by NATO countries hide differences within them in terms of the fundamental areas of expenditure: military equipment, infrastructure, military operations, or personnel. Belgium, Bulgaria, Croatia, Greece, Italy, and Portugal allocate 50% or more of their total expenditure to personnel.

In contrast, most of the spending in Estonia, Finland, Hungary, and Luxembourg is allocated to military operations. This means that it is just as important to compare the areas to which these expenditures are directed as it is to compare relative and absolute national defense expenditures, and thus to assess primarily the quality, not just the value, of defense expenditures in Europe.

An analysis of the level of national defense spending in European North Atlantic Treaty Organization countries leaves no doubt that Russia's war with Ukraine has led to a radical change in the way Europeans perceive defense.

For more than three decades, European countries have neglected key investments in military capabilities (Pugnet, 2024). In doing so, they have at least indirectly accepted a decline in the research, development, and production potential of the defense industry, which, due to a lack of demand from households and the business sector, can only operate effectively thanks to the prospect of long-term, stable domestic and foreign orders. This factor undoubtedly provides an important context for examining the structure of national defense spending.

The aim of this article is to conduct a comparative analysis of the structure of defense spending and its rationality in NATO countries in 2014-2023, in accordance with the concept of models of capitalism drawn from New Institutional Economics (Rapacki *et al.,* 2019). The article is a continuation of research conducted by the same authors in 2025.

2. Research Methodology and Sources of Research Material

For the purposes of the analysis, the group of NATO countries for which comparable data exists was divided into six models: *Continental* (Belgium, Germany, France,

[3] *Act of 20215 (Journal of Laws of 2025, item 117).*

Luxembourg, Netherlands), *Mediterranean* (Portugal, Spain, Italy, Greece), *Nordic* (Finland, Denmark, Norway), *Anglo-Saxon* (United Kingdom), *Patchwork* (Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, Slovenia, and Croatia), and *EU Aspirant countries* from the former "Eastern" bloc (Albania, Montenegro, and North Macedonia).

The United States served as a specific point of reference for all models. The analysis covers the period 2014-2023, with an emphasis on changes in the values of individual variables that occurred during the analyzed period. The values for each model are average weighted (by the share of the population of a given country in the population of all countries in a given model). The article aims to answer the following research questions:

- Does the rapid, unprecedented increase in the relative value of national defense spending (measured by the share of this spending in GDP) in countries representing the patchwork model translate into increasing expenditure on equipment, military hardware, ammunition, and improving the combat readiness of soldiers (i.e., preparing to transform a "peacetime army" into a "wartime army"), and to what extent into increased spending on infrastructure and personnel?
- Is the way in which resources are allocated in the group of countries being considered rational?
- What factors determine that in patchwork model countries the situation in the area of national defense spending is so different from the pattern characteristic of the US, the UK, and the Nordic and continental model countries?

The data presented in the Tables below are our own compilation based on data provided by DG ECFIN (Directorate-General for Economic and Financial Affairs of the European Commission) and the OECD (Organisation for Economic Co-operation and Development).

Due to differences between sources and GDP forecasts in individual countries, as well as between NATO's definition of defense spending and national definitions, the data presented in the report may differ significantly from those reported by the media or contained in national budgets.

3. Defense Spending Policy

From the point of view of public choice theory, the need to maintain constant national defense spending that allows for the maintenance of deterrence potential is not a simple decision, especially since, as is the case in healthcare, for example, continuous technological progress (the use of combat drones, AI tools used to increase battlefield awareness among soldiers, the introduction of new generations of

military technology—aircraft, tanks, combat vehicles, and ships) forces a constant increase not only in the amount of this spending itself, but also in its share of GDP[4].

As part of the budgetary constraints faced by the public sector, the central authorities responsible for military spending must constantly decide how much of the funds collected through taxes levied on the economy and debt incurred should be allocated to defense, compared to civil infrastructure, health, education, social transfers, and other areas of state activity.

In a reality where citizens do not perceive military threats as significant, but demand continuous improvement in the quality of public services, education, and healthcare, the state, especially a relatively poor state (as is the case in countries characterized by a patchwork model of capitalism), cannot afford to finance national defense adequately.

Analyzing possible ways of shaping the structure of national defense spending, the European Defense Agency (EDA, 2022) has set four benchmarks for investment needs:

1. 20% of total national defense spending should be directed towards the purchase of equipment (this part also finances expenditure on research and development (R&D) and research and technology (R&T));
2. 2% of total defense spending on research and technology (R&T);
3. 35% of total expenditure on joint European equipment purchases;
4. 20% of total expenditure on joint European defense research (R&T).

However, it should be noted that the guidelines on national defense spending in NATO and the EU may be nothing more than an abstract exercise aimed at providing a generalized overview of member states' commitment in this area. Even abstract guidelines are important, however, because they allow political leaders to exert pressure on each other regarding defense spending.

The list of factors that are necessary to ensure that Europe rebuilds its technological and industrial base in the field of defense after years of neglect is quite long. One of the most important is the need to attract and retain valuable human capital in industrial production processes in the field of defense and critical raw materials. The issue of the growing structural gap in the necessary qualifications and defense

[4] *An extremely interesting issue, albeit one that falls outside the scope of this article, is the rent of backwardness, which can be particularly high in the area of national defense. If the armed forces are to have the most modern weapons, the possibility of "bypassing" individual stages of their development, thereby reducing long-term expenditure, seems very profitable. However, the key decision remains when to abandon the approach of exploiting the international "free rider effect" (let our allies, who will bear the burden of deterrence within the defense alliance, arm themselves) and begin the process of preparing the armed forces for a possible conflict.*

investment has become an even more visible challenge since the start of the war in Ukraine. Efficient technologies and management processes are needed so that Europe can produce military equipment in a timely and efficient manner.

This clearly means the need for intensive and sustained long-term investment in both human and physical capital in the military equipment manufacturing industries (Fiott, 2022) . Given that starting a proper industrial cycle in the field of defense requires long-term planning and investment, defense capability, understood as the ability to sustain a war effort at the onset of an armed conflict, can only be built if it benefits from a steady source of investment over many years and decades.

Defense innovation requires the development and testing of technologies integrated with existing systems in different countries (Fiott, 2019). The development of the systems themselves can take many decades. However, for quite high number of items of defense equipment, European countries continue to plan their needs for the next two years, rather than developing a multi-year approach to procurement and investment (Aries *et al.,* 2023).

Analytical studies have confirmed that it will become increasingly difficult for individual countries to develop their own national defense systems. The costs are high for Europeans, as individual national development programs face strong international competition.

The logic of economies of scale is inexorable in this case: creating several independent defense systems within European NATO countries will always be more expensive than creating a single system shared by all interested countries. Given these circumstances, it should be emphasized that the outbreak of armed conflict in Ukraine has changed the previous suboptimal approach.

Currently, EU countries that are members of NATO make decisions in the area of defense based on the logic that it is better to invest European defense budgets in European platforms, equipment, and cooperation technologies. In this way, Europeans are investing in their own technological base and defense industry, which will enable the cost-effective production of autonomous systems (Briani, 2013; Bellais and Fiott, 2022).

The only problem remains the time frame in which defense capabilities must be ready. As already emphasized above, the change in attitude of European NATO countries is obviously a favorable factor, but reaching an agreement, starting research and development, implementing technology, expanding manufacturing capacity, and finally starting production requires a period measured not in years, but in decades.

If the threat of armed conflict is real within quite high number of years, there is no other way to increase defense capabilities than to purchase ready-made equipment or

to manufacture it under license. However, this would undermine the logic of European investment, because once the necessary modernization has been conducted, there will again be no demand for the purchase of domestic military equipment for the next 10-15 years.

There is a strong path dependency here: the decisions made after the end of the Cold War, i.e., the drastic reduction in national defense spending after 1989, have now created a kind of "vicious circle." European countries are aware of the need to expand their national scientific, technical, industrial, and human resources base. However, this process requires a fairly long period of time. In turn, the immediate need to increase defense capabilities forces import and license purchases, which effectively precludes the necessary expansion of industrial capacity.

EU institutions are aware of the need to develop the industrial and defense capabilities of member states, but at the same time, the EU as a collection of institutions recognizes that it has limited political power to compel individual governments to do what remains their sovereign decision.

Therefore, the phrase ("spend more, spend better, spend Europeanly") (European Commission, 2024), often repeated like a mantra, remains a dead slogan in the context of the structural constraints facing the European defense sector.

As the new European Defense Industry Strategy points out, joint procurement "will help to accelerate the cooperative adaptation of industry to structural changes" (European Commission/High Representative of the Union for Foreign Affairs and Security Policy, 2024, p. 9).

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However, in addition to this drive to strengthen joint defense development and procurement, many existing sources of EU defense spending are not included in national, EU, or NATO reports on defense spending. In total, around €30 billion from EU-level funding sources supports defense, but none of this is considered part of Europe's defense contribution (including Europe's contribution to NATO burden-sharing).

It is true that, at this point, €30 billion would be a small amount of the EU's overall contribution to defense investment. However, the EU is becoming increasingly involved in defense. Under the SAFE long-term loan mechanism, the European Commission allocated €150 billion for armaments at the beginning of August 2025. Nineteen countries participated in the program. The EU Commissioner for Budget emphasized that the program is focused on countries bordering Belarus and Ukraine.

Among the largest beneficiaries, apart from Poland, which received €43.7 billion, were Romania (over €16.6 billion), France (€16.2 billion), and Italy (€14.9 billion). The Baltic states also received proportionally significant support. The main criterion for the allocation of funds was the willingness of countries to implement investments financed under SAFE.

5. Comparative Analysis of the Structure of National Defense Spending in NATO Countries in 2014-2023.

National defense spending in NATO countries can be divided into four groups, considering the areas of expenditure (personnel, equipment, infrastructure, and other). Taking into account countries representing the patchwork model, the highest percentage of funds is allocated to personnel expenses, which in the analyzed period ranged from approximately 60% in 2014 to less than 39% in 2023. Detailed information on the share of personnel expenses in the total funds allocated to national defense is provided in Table 1.

The clear decline in the share of expenditure on the costs of employing armed forces personnel and paying their pensions (both military and civilian), as can be seen from the data in Table 1, should definitely be considered positive.

This is one of the most important symptoms of the transformation of the armed forces of post-socialist countries that have joined the EU from "peacetime armies" (which consume funds primarily for salaries) into "wartime armies," in which salaries are no longer the most important area of funding.

The decline in the percentage of funds allocated to salaries was characteristic of all NATO countries, but it was most pronounced in the patchwork model countries (by 21.4 percentage points, from as much as 60.2% in 2014 to 38.7% in 2023). During the same period, the percentage of funds allocated to salaries and pensions in Poland fell by 24 p.p. to 27.5% in 2023 (almost identical to the US – 27% in 2023).

However, in 2023, the share of military personnel expenditures in the patchwork model countries was still higher than the corresponding percentage in the Nordic model countries (27.9% in 2023 and a decrease of over 16 p.p. in the analyzed period) or the United Kingdom (30.4% in 2023 and a decrease of 6.2% in 2014-2023). The highest share of expenditure on salaries and pensions for armed forces personnel was characteristic of Mediterranean model countries (nearly 56% in 2023) and EU aspirant countries (less than 45% in 2023).

In this context, the question remains open as to what extent the decline in the share of expenditure on armed forces personnel in 2014-2023 was due solely to a statistical effect (it had to decrease as a result of a very sharp increase in funds allocated to the purchase of military equipment) and to what extent it is a sign of a profound change (reform?) in the approach to the armed forces.

Table 1. *Percentage of total defence expenditures on personnel*

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Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 (preliminary estimate)	Change between 2014 and 2023 (in p.p.)
Belgium	77.8%	77.2%	76.8%	75.2%	70.7%	68.4%	63.6%	56.8%	49.9%	49.9%	-27.9
Bulgaria	72.8%	73.7%	65.6%	68.4%	63.0%	29.4%	63.8%	65.6%	57.8%	52.7%	-20.2
Czechia	61.4%	55.3%	62.0%	56.1%	54.6%	51.8%	49.7%	44.7%	42.8%	39.2%	-22.2
Denmark	51.3%	52.0%	49.5%	47.0%	49.9%	48.3%	46.1%	48.3%	40.9%	29.9%	-21.4
Germany	50.7%	49.9%	48.4%	49.0%	48.0%	45.3%	42.2%	42.3%	39.3%	36.7%	-13.9
Estonia	38.6%	39.6%	38.7%	34.9%	33.8%	34.2%	32.7%	33.6%	29.5%	22.9%	-15.7
Greece	77.2%	72.1%	73.1%	76.6%	78.8%	77.1%	74.6%	53.8%	45.9%	54.9%	-22.2
Spain	67.3%	65.2%	72.6%	61.6%	59.6%	61.9%	62.5%	58.7%	52.7%	48.1%	-19.3
France	48.6%	47.8%	47.9%	47.8%	46.9%	45.6%	44.0%	43.0%	42.3%	41.7%	-6.9
Croatia	76.6%	72.3%	75.4%	71.7%	77.0%	73.7%	76.2%	56.7%	55.4%	56.8%	-19.7
Italy	76.4%	77.6%	70.8%	60.6%	68.2%	70.2%	67.5%	63.7%	63.7%	62.0%	-14.4
Latvia	53.0%	50.1%	43.9%	38.6%	34.3%	33.5%	37.2%	37.2%	36.5%	37.0%	-15.9
Lithuania	57.5%	48.5%	45.5%	40.8%	37.5%	40.0%	41.3%	42.6%	33.2%	33.4%	-24.1
Luxembourg	49.3%	42.8%	45.6%	34.4%	33.4%	30.8%	30.1%	34.6%	28.8%	21.9%	-27.4
Hungary	49.8%	48.2%	49.7%	37.1%	42.3%	35.4%	27.2%	38.7%	31.4%	25.0%	-24.8
the Netherlands	56.5%	55.5%	51.8%	52.2%	51.2%	49.3%	48.5%	47.9%	47.0%	42.6%	-13.9
Norway	40.6%	40.0%	38.6%	37.1%	36.4%	34.8%	34.5%	34.2%	34.2%	34.2%	-6.4
Poland	51.5%	42.0%	47.2%	50.0%	46.2%	46.9%	44.7%	43.6%	42.7%	27.5%	-24.0
Portugal	81.3%	81.9%	81.4%	80.2%	74.8%	70.5%	71.2%	63.3%	62.1%	57.7%	-23.6
Romania	71.2%	63.3%	65.0%	54.7%	54.5%	57.9%	59.2%	57.8%	55.0%	59.7%	-11.5
Slovenia	82.3%	82.2%	76.0%	75.0%	72.4%	69.1%	72.8%	62.0%	53.8%	49.0%	-33.4
Slovakia	69.1%	56.2%	58.7%	58.2%	54.7%	40.8%	42.3%	46.6%	42.8%	37.5%	-31.7
Finland	40.2%	37.9%	38.9%	40.5%	39.0%	34.5%	33.8%	35.4%	28.6%	19.5%	-20.8
United States	35.5%	36.6%	45.0%	41.5%	39.7%	38.7%	38.5%	28.3%	29.3%	27.0%	-8.5
Turkey	56.9%	56.8%	57.6%	51.0%	45.2%	48.4%	50.6%	47.9%	45.3%	38.2%	-18.7
Albania	68.1%	78.2%	68.1%	68.2%	70.7%	62.9%	64.4%	63.6%	60.1%	39.5%	-28.5
Montenegro	78.5%	78.0%	75.3%	80.9%	73.5%	71.4%	64.7%	59.9%	61.1%	58.4%	-20.1
North Macedonia	72.5%	71.0%	71.3%	75.3%	71.5%	61.9%	63.3%	51.0%	42.8%	47.7%	-24.8
United Kingdom	36.6%	36.8%	35.3%	34.5%	33.8%	34.1%	33.8%	31.5%	29.7%	30.4%	-6.2
Patchwork	**60.2%**	**53.3%**	**55.7%**	**52.7%**	**51.0%**	**47.8%**	**48.9%**	**48.2%**	**45.2%**	**38.7%**	**-21.4**
Continental	**52.2%**	**51.3%**	**50.3%**	**50.4%**	**49.3%**	**47.2%**	**44.8%**	**44.0%**	**41.8%**	**40.0%**	**-12.2**
Mediterranean	**73.6%**	**73.0%**	**72.5%**	**63.9%**	**66.5%**	**67.7%**	**66.6%**	**61.0%**	**58.0%**	**55.8%**	**-17.6**
Nordic	**44.2%**	**43.4%**	**42.5%**	**41.7%**	**41.9%**	**39.4%**	**38.3%**	**39.5%**	**34.7%**	**27.9%**	**-16.4**
Aspiring to the EU	**70.9%**	**75.5%**	**70.1%**	**72.2%**	**71.3%**	**63.5%**	**64.0%**	**58.5%**	**53.7%**	**44.7%**	**-26.2**
Anglo-saxon	**36.6%**	**36.8%**	**35.3%**	**34.5%**	**33.8%**	**34.1%**	**33.8%**	**31.5%**	**29.7%**	**30.4%**	**-6.2**

Averages for the entire period	
Patchwork	50.2%
Continental	47.1%
Mediterranean	65.9%
Nordic	39.3%
Aspiring to the EU	64.4%
Anglo-saxon	33.6%
United States	36.0%

Source: *Own calculations based on DG ECFIN and OECD data.*

Moreover, such a sharp decline in the share of spending on salaries and pensions (which does not necessarily have to be accompanied by a decrease in absolute terms) may also be a sign of problems in attracting potential soldiers to the armed forces. However important the purchase of equipment may be, someone has to operate the weapons and other equipment that has been purchased. Given the increasing "technicization" of the modern battlefield, these must be people with the qualifications to operate complex equipment, and they will require relatively high salaries in line with those on the civilian labor market.

In turn, the share of expenditure on equipment (i.e., primarily military equipment, but also R&D) illustrated in Table 2 increased in countries representing the patchwork model by 23.5 percentage points, from 13.1% in 2014 to 36.6% in 2023.

Table 2. *Percentage of total defence expenditure on equipment*

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Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 (preliminary estimate)	Change between 2014 and 2023 (in p.p.)
Belgium	3.5%	3.4%	4.7%	6.5%	10.2%	11.1%	13.9%	19.5%	20.4%	20.2%	16.7
Bulgaria	1.0%	3.5%	9.2%	8.1%	9.7%	59.7%	8.4%	11.1%	15.7%	29.3%	28.3
Czechia	6.5%	11.8%	6.7%	11.6%	11.2%	16.4%	17.3%	20.5%	24.7%	25.8%	19.3
Denmark	11.0%	11.5%	13.7%	10.4%	11.7%	16.2%	17.7%	17.2%	18.7%	13.4%	2.4
Germany	12.9%	11.9%	12.2%	11.8%	12.4%	14.7%	17.5%	16.7%	17.2%	23.9%	11.0
Estonia	22.2%	12.8%	17.9%	19.2%	16.5%	15.5%	23.0%	23.2%	20.1%	29.3%	7.2
Greece	8.2%	10.4%	13.5%	11.3%	11.0%	11.6%	10.7%	37.2%	42.3%	35.6%	27.4
Spain	13.5%	14.8%	6.7%	20.4%	21.8%	21.0%	19.4%	22.5%	20.9%	28.1%	14.6
France	24.6%	25.0%	24.4%	24.2%	23.7%	24.5%	26.6%	27.9%	28.6%	28.2%	3.6
Croatia	5.6%	8.0%	7.5%	5.7%	3.4%	6.6%	9.1%	30.0%	31.2%	23.9%	18.4
Italy	10.9%	9.7%	19.1%	20.7%	19.1%	17.0%	18.6%	23.2%	22.8%	20.5%	9.5
Latvia	7.6%	13.6%	19.1%	15.0%	31.9%	21.7%	20.5%	22.1%	24.7%	26.3%	18.8
Lithuania	14.1%	21.6%	30.1%	31.6%	37.0%	37.6%	33.7%	22.3%	36.6%	23.1%	9.0
Luxembourg	22.6%	33.3%	30.1%	42.1%	45.2%	49.7%	50.2%	39.6%	45.1%	41.4%	18.8
Hungary	7.8%	9.8%	13.4%	18.5%	12.6%	36.5%	45.5%	36.4%	47.6%	39.2%	31.5
the Netherlands	10.7%	11.2%	14.1%	14.8%	16.4%	20.3%	22.1%	23.9%	14.8%	25.5%	14.8
Norway	20.4%	21.8%	23.4%	24.6%	25.6%	28.8%	28.4%	29.2%	28.4%	28.3%	7.8
Poland	18.8%	33.2%	21.6%	22.0%	27.5%	23.4%	29.3%	33.9%	32.4%	53.6%	34.7
Portugal	8.4%	8.7%	10.0%	11.4%	15.5%	16.6%	17.4%	16.5%	18.0%	22.1%	13.6
Romania	15.8%	19.7%	20.4%	33.3%	33.5%	25.6%	23.1%	21.6%	25.5%	21.9%	6.2
Slovenia	0.7%	1.9%	1.0%	4.0%	6.0%	7.1%	5.7%	14.6%	22.4%	24.1%	23.4
Slovakia	11.1%	18.3%	15.3%	17.7%	22.3%	40.1%	31.8%	32.3%	36.5%	24.3%	13.1
Finland	13.7%	14.2%	14.0%	13.4%	13.6%	21.1%	21.6%	19.9%	33.5%	50.8%	37.1
Turkey	25.1%	25.1%	25.6%	30.3%	37.6%	34.3%	30.7%	29.3%	28.4%	28.8%	3.7
Albania	16.7%	8.9%	8.0%	7.0%	9.4%	14.6%	15.0%	15.1%	17.1%	25.2%	8.5
Montenegro	7.5%	5.4%	4.5%	5.0%	11.1%	15.0%	21.0%	20.5%	22.9%	24.0%	16.5
North Macedonia	5.9%	11.1%	8.4%	6.5%	11.1%	13.8%	11.5%	21.8%	24.1%	34.2%	28.3
United States	26.0%	25.4%	25.1%	25.7%	27.1%	29.1%	29.7%	28.7%	27.9%	28.8%	2.8
United Kingdom	22.8%	21.8%	21.2%	22.3%	22.3%	22.9%	23.8%	29.5%	31.4%	33.4%	10.6
Patchwork	**13.1%**	**20.7%**	**17.0%**	**20.7%**	**22.8%**	**26.9%**	**25.7%**	**27.6%**	**30.4%**	**36.6%**	**23.5**
Continental	**16.6%**	**16.3%**	**16.6%**	**16.5%**	**16.9%**	**18.8%**	**21.2%**	**21.8%**	**21.6%**	**25.5%**	**8.9**
Mediterranean	**11.4%**	**11.5%**	**13.4%**	**19.0%**	**19.1%**	**18.0%**	**18.1%**	**23.6%**	**23.3%**	**24.7%**	**13.2**
Nordic	**14.9%**	**15.7%**	**16.9%**	**15.9%**	**16.8%**	**21.9%**	**22.4%**	**22.0%**	**26.7%**	**30.4%**	**15.6**
Aspiring to the EU	**11.6%**	**9.4%**	**7.7%**	**6.6%**	**10.2%**	**14.4%**	**14.4%**	**18.2%**	**20.3%**	**28.4%**	**16.8**
Anglo-saxon	**22.8%**	**21.8%**	**21.2%**	**22.3%**	**22.3%**	**22.9%**	**23.8%**	**29.5%**	**31.4%**	**33.4%**	**10.6**

Averages for the entire period	
Patchwork	24.2%
Continental	19.2%
Mediterranean	18.2%
Nordic	20.4%
Aspiring to the EU	14.1%
Anglo-saxon	25.1%
United States	27.3%

Source: *Own calculations based on DG ECFIN and OECD data.*

At the same time, this percentage increased in Poland from 18.8% to 53.6%, which is the largest increase among all the countries analyzed (only in Hungary, Bulgaria, Greece, and North Macedonia was the increase similar to that observed in Poland, but it was still 3 to 6 percentage points lower).

However, it should be noted that between 2022 and 2023, the share of equipment expenditure in total national defense expenditure increased in Poland by more than

20 percentage points, which may mean that such a high percentage was incidental. The average share of equipment expenditure in Poland in the analyzed period was 30%, which is approximately 2.5 percentage points higher than the ten-year average in the United States. In none of the interesting countries the share of equipment expenditure has decreased during the period analyzed.

An increase in the share of expenditure on equipment was characteristic of all the models analyzed, but its scale was significantly lower compared to the patchwork model, ranging from a 16.8 percentage point increase in EU aspirant countries (from 11.6% in 2014 to 28.4% in 2023) to 8.9 percentage points in the continental model countries.

The highest share of expenditure on equipment, apart from the patchwork model, was recorded in 2023 by the Nordic model countries, at 30.4%. For comparison, in the US, equipment expenditure accounted for 28.8% of total expenditure in 2023 (an increase of 2.8 p.p. compared to 2014), and in the UK, 33.4% (an increase of 10.6 p.p.).

Once again, the question arises as to what extent such a rapid increase in the share of expenditure on equipment (which translates into an increased value of funds allocated to arms purchases) can be implemented in an effective and rational manner, and whether it is possible to reduce long-term neglect in the short term, especially in a situation where demand for military equipment is growing rapidly (the share of expenditure on equipment is growing in all countries analyzed), and, consequently, the prices of armaments are also rising.

The share of military infrastructure spending shown in Table 3 remained relatively stable in all the models analyzed, with the exception of EU aspirant countries, where the share of this type of spending in total defense spending increased by more than 10 percentage points, from 1% in 2014 to 11.1% in 2023.

In the other models of capitalism, the scale of growth ranged from 1.5 percentage points for the Mediterranean model (an increase from 1% in 2014 to 2.5% in 2023) to 0.4 percentage points for the continental model.

In patchwork model countries, it was 4.1% of total expenditure in 2023 and 3% in 2014, while for Poland the percentage was 4% (2013) and 5.5% (2014), respectively. This means that despite the increase in the share of infrastructure expenditure at the level of each of the analyzed models, the pattern for Poland deviated from this regularity.

A similar situation occurred in the Czech Republic, Germany, Estonia, Greece, Latvia, the Netherlands, and, interestingly, the US, where the share of infrastructure expenditure remained at the lowest level (alongside Finland, Greece, and Bulgaria) in the entire group of countries analyzed.

Table 3. *Percentage of total defence expenditure on infrastructure*

Table 3. Percentage of total defence expenditure on infrastructure

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 (preliminary estimate)	Change between 2014 and 2023 (in p.p.)
Belgium	1.8%	0.9%	1.0%	1.1%	1.4%	1.2%	1.0%	0.8%	2.7%	3.6%	1.8
Bulgaria	0.6%	1.3%	0.6%	0.8%	2.6%	1.1%	7.7%	4.9%	7.0%	1.4%	0.7
Czechia	2.3%	3.3%	3.9%	4.0%	5.3%	5.3%	7.4%	6.2%	4.3%	2.1%	-0.3
Denmark	1.0%	1.1%	2.2%	2.0%	1.5%	1.9%	1.8%	4.1%	3.1%	2.4%	1.5
Germany	3.8%	3.6%	3.4%	4.1%	4.2%	4.0%	3.8%	3.7%	3.5%	3.5%	-0.3
Estonia	8.2%	8.5%	12.2%	11.3%	8.5%	6.1%	6.7%	5.6%	8.0%	7.0%	-1.2
Greece	1.1%	0.7%	0.6%	0.8%	0.6%	0.2%	0.2%	0.3%	0.3%	0.5%	-0.6
Spain	0.7%	1.0%	1.0%	0.7%	0.6%	1.0%	1.1%	1.1%	0.8%	1.7%	1.0
France	2.3%	2.8%	2.7%	2.9%	3.5%	3.1%	2.9%	3.0%	3.0%	3.6%	1.3
Croatia	1.2%	2.0%	1.3%	3.6%	1.0%	1.4%	1.5%	0.6%	0.7%	4.2%	3.0
Italy	1.4%	1.3%	0.7%	0.9%	1.3%	0.7%	1.0%	1.5%	2.0%	3.1%	1.7
Latvia	8.9%	6.6%	12.8%	15.0%	6.5%	10.3%	11.6%	5.3%	4.3%	6.9%	-2.0
Lithuania	2.2%	2.2%	3.6%	3.9%	2.2%	2.4%	1.3%	2.5%	4.5%	13.4%	11.2
Luxembourg	10.3%	7.8%	6.6%	4.6%	5.1%	3.2%	3.4%	7.3%	5.0%	13.9%	3.6
Hungary	1.1%	1.2%	1.1%	1.3%	1.7%	2.6%	1.4%	9.2%	2.2%	4.2%	3.1
the Netherlands	4.8%	3.2%	3.9%	3.0%	3.5%	3.3%	3.1%	3.0%	3.3%	4.6%	-0.2
Norway	5.7%	5.3%	6.6%	6.9%	6.7%	5.9%	6.6%	6.5%	5.6%	5.8%	0.1
Poland	5.5%	4.7%	4.6%	4.2%	3.5%	4.8%	4.3%	3.7%	4.1%	4.0%	-1.5
Portugal	0.1%	0.3%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	5.0%	4.9
Romania	1.1%	1.3%	2.8%	2.1%	1.5%	3.5%	4.3%	7.1%	4.2%	4.5%	3.4
Slovenia	0.7%	0.6%	1.1%	0.5%	1.4%	0.6%	1.1%	1.3%	1.9%	7.4%	6.7
Slovakia	0.6%	2.0%	3.8%	3.0%	2.0%	1.2%	5.2%	1.5%	2.6%	2.9%	2.3
Finland	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.4%	0.6%	0.5%	0.4%	0.4
United States	1.7%	1.5%	1.2%	1.2%	1.2%	1.4%	1.3%	1.3%	1.3%	1.5%	-0.2
Turkey	2.8%	2.6%	2.4%	3.0%	2.5%	2.3%	2.2%	7.5%	7.6%	22.5%	19.8
Albania	0.9%	1.4%	1.4%	0.9%	1.1%	1.6%	1.4%	3.6%	5.1%	19.2%	18.4
Montenegro	1.0%	2.5%	2.4%	0.9%	1.9%	1.5%	1.3%	5.3%	0.5%	5.2%	4.2
North Macedonia	1.2%	1.7%	1.3%	1.0%	1.0%	3.9%	2.8%	3.1%	3.1%	1.6%	0.4
United Kingdom	2.0%	1.6%	1.9%	2.3%	3.0%	2.1%	1.7%	1.7%	2.9%	2.6%	0.6
Patchwork	**3.0%**	**3.0%**	**3.6%**	**3.4%**	**2.9%**	**3.8%**	**4.5%**	**4.9%**	**4.0%**	**4.1%**	**1.1**
Continental	**3.2%**	**3.1%**	**3.0%**	**3.3%**	**3.7%**	**3.4%**	**3.2%**	**3.2%**	**3.3%**	**3.7%**	**0.4**
Mediterranean	**1.0%**	**1.0%**	**0.7%**	**0.8%**	**0.9%**	**0.7%**	**0.9%**	**1.1%**	**1.2%**	**2.5%**	**1.5**
Nordic	**2.1%**	**2.1%**	**2.8%**	**2.9%**	**2.7%**	**2.6%**	**2.9%**	**3.7%**	**3.1%**	**2.9%**	**0.7**
Aspiring to the EU	**1.0%**	**1.6%**	**1.5%**	**0.9%**	**1.1%**	**2.5%**	**1.9%**	**3.6%**	**3.8%**	**11.1%**	**10.1**
Anglo-saxon	**2.0%**	**1.6%**	**1.9%**	**2.3%**	**3.0%**	**2.1%**	**1.7%**	**1.7%**	**2.9%**	**2.6%**	**0.6**

Averages for the entire period	
Patchwork	3.7%
Continental	3.3%
Mediterranean	1.1%
Nordic	2.8%
Aspiring to the EU	2.9%
Anglo-saxon	2.2%
United States	1.4%

Source: *Own calculations based on DG ECFIN and OECD data.*

Infrastructure spending in patchwork model countries remains relatively low, although one might expect a fairly sharp increase in spending on, for example, permanent or field fortifications. The situation in the Baltic states is interesting, as in Lithuania, infrastructure spending in 2023 exceeded 13% (an increase of as much as 11 percentage points compared to 2014), while in Latvia and Estonia it was only about 7% (and both countries reduced their share of infrastructure spending between 2014 and 2023). Similarly, in Finland, which also has a land border with Russia, the share of infrastructure spending in total national defense spending was exceptionally low, at only 0.4% in 2023.

Finally, the share of spending on other categories (Table 4) in various models of capitalism can also be seen as a negative phenomenon from the point of view of both the patchwork model and Poland. According to statistical convention, this category includes spending on ammunition and explosives, as well as fuel consumed by the armed forces.

While the percentage of funds allocated to these purposes and classified as "other categories" (and therefore also for military maneuvers and exercises) increased between 2014 and 2023 in both Mediterranean model countries (by 3.2 percentage points to 17.4%), continental countries (by 2.8 percentage points to 30.9% in 2023) and Nordic countries (symbolically, by 0.1 percentage points, but to as much as 38.8% in 2023), while for patchwork model countries it decreased by nearly 4 percentage points to 19.9% in 2023.

For Poland, this was a drop of more than 9 p.p. to only 15% in 2023. The scale of the decline in the analyzed period was comparable only in Hungary (by nearly 10 percentage points), Bulgaria (ca. 9 percentage points), and Finland (by nearly 17 percentage points, but still at a satisfactory level of ca. 30% of total expenditure in 2023). The only small consolation is the even lower (and also declining) share of spending on other categories in EU aspirant countries (15.8% in 2023 and a decrease of 0.7 p.p. compared to 2014).

In this context, the share of spending on other categories in the US is interesting, as it remains at a very high level throughout the analyzed period, i.e., 36.9% in 2014 and 42.8% in 2023, with only Denmark recording higher values (54.4% in 2023).

In the United Kingdom, on the other hand, the share of expenditure on purchases including ammunition, explosives, and fuel in total national defense expenditure remained on average even higher than in the US for the entire period analyzed (39.1% in compared to 35.3%), although in the United Kingdom, the share of expenditure on the "other" category fell by 5 percentage points in 2023 compared to 2014 (33.6% vs. 38.6%, respectively).

Once again, the question arises as to why, in patchwork model countries, the situation regarding the share of other categories in total national defense spending differs so greatly from the pattern characteristic of the US, the United Kingdom, and the Nordic and continental model countries (which can be considered a kind of reference point when looking for a model structure for national defense spending)?

Is the similarity to Mediterranean model countries and EU aspirant countries solely due to a similar level of development (poor countries do not have the money for maneuvers and exercises, and therefore spend relatively little on ammunition, explosives, and propellants), or deeper institutional conditions related to national defense financing?

Table 4. *Percentage of total defence expenditure on other*

Table 4. Percentage of total defence expenditure on other

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 (preliminary estimate)	Change between 2014 and 2023 (in p.p.)
Belgium	16.8%	17.4%	17.5%	17.2%	17.7%	19.4%	21.5%	22.9%	27.1%	26.3%	9.4
Bulgaria	25.5%	21.6%	24.6%	22.7%	24.7%	9.7%	20.1%	18.4%	19.5%	16.7%	-8.8
Czechia	29.7%	29.7%	27.5%	28.4%	29.0%	26.5%	25.6%	28.6%	28.2%	25.9%	-3.9
Denmark	36.8%	35.4%	34.7%	40.7%	37.0%	33.7%	34.4%	30.4%	37.3%	54.4%	17.6
Germany	32.6%	34.6%	36.1%	35.2%	35.5%	36.1%	36.6%	37.3%	40.0%	35.9%	3.3
Estonia	31.0%	39.2%	31.3%	34.6%	41.1%	44.2%	37.7%	37.7%	42.4%	40.7%	9.7
Greece	13.6%	16.9%	12.8%	11.4%	9.6%	11.2%	14.6%	8.7%	11.5%	9.0%	-4.6
Spain	18.5%	19.0%	19.8%	17.3%	17.9%	16.1%	17.0%	17.8%	25.7%	22.2%	3.7
France	24.4%	24.4%	24.9%	25.0%	25.9%	26.7%	26.5%	26.1%	26.0%	26.5%	2.0
Croatia	16.7%	17.7%	15.8%	19.0%	18.7%	18.3%	13.3%	12.7%	12.7%	15.1%	-1.6
Italy	11.3%	11.4%	9.4%	10.8%	11.4%	12.1%	13.0%	11.6%	11.6%	14.4%	3.1
Latvia	30.6%	29.7%	24.3%	31.4%	27.4%	34.5%	30.5%	35.4%	34.5%	29.7%	-0.9
Lithuania	26.2%	27.8%	20.9%	23.7%	23.3%	20.0%	23.7%	32.6%	25.6%	30.1%	3.9
Luxembourg	17.8%	16.1%	17.7%	18.9%	16.4%	16.4%	16.3%	18.6%	21.2%	22.8%	5.0
Hungary	41.4%	40.8%	35.8%	43.0%	43.4%	25.5%	25.8%	15.7%	18.8%	31.6%	-9.8
the Netherlands	28.1%	30.1%	30.2%	30.0%	29.0%	27.1%	26.2%	25.3%	34.9%	27.3%	-0.8
Norway	33.2%	32.9%	31.5%	31.4%	31.3%	30.6%	30.5%	30.2%	31.8%	31.7%	-1.5
Poland	24.2%	20.1%	26.6%	23.7%	22.9%	25.0%	21.7%	18.9%	20.7%	15.0%	-9.3
Portugal	10.2%	9.2%	8.6%	8.4%	9.7%	12.8%	11.4%	20.0%	19.8%	20.2%	10.0
Romania	12.0%	15.8%	11.8%	9.9%	10.5%	13.0%	13.4%	13.6%	15.3%	13.9%	1.9
Slovenia	16.4%	15.3%	21.8%	20.5%	20.2%	23.3%	20.5%	22.1%	21.9%	19.6%	3.3
Slovakia	19.2%	23.5%	22.2%	21.1%	21.0%	18.0%	20.6%	19.6%	18.1%	35.4%	16.2
Finland	46.1%	48.0%	47.1%	46.1%	47.5%	44.1%	44.2%	44.1%	37.3%	29.3%	-16.8
United States	36.9%	36.5%	28.7%	31.5%	32.0%	30.8%	30.5%	41.7%	41.6%	42.8%	5.9
Turkey	15.3%	15.5%	14.4%	15.7%	14.7%	15.0%	16.4%	15.3%	18.7%	10.6%	-4.7
Albania	14.4%	11.5%	22.6%	23.9%	18.8%	20.9%	19.2%	17.7%	17.8%	16.0%	1.6
Montenegro	13.1%	14.1%	17.8%	13.3%	13.5%	12.2%	13.1%	14.3%	15.5%	12.4%	-0.6
North Macedonia	20.3%	16.3%	19.1%	17.3%	16.4%	20.4%	22.4%	24.1%	30.0%	16.5%	-3.9
United Kingdom	38.6%	39.8%	41.6%	40.9%	41.0%	41.0%	40.7%	37.3%	36.0%	33.6%	-5.0
Patchwork	**23.7%**	**23.0%**	**23.7%**	**23.2%**	**23.2%**	**21.5%**	**20.8%**	**19.3%**	**20.5%**	**19.9%**	**-3.9**
Continental	**28.0%**	**29.2%**	**30.1%**	**29.7%**	**30.1%**	**30.6%**	**30.8%**	**31.0%**	**33.3%**	**30.9%**	**2.8**
Mediterranean	**14.0%**	**14.5%**	**13.4%**	**13.0%**	**13.5%**	**13.6%**	**14.4%**	**14.3%**	**17.5%**	**17.4%**	**3.2**
Nordic	**38.8%**	**38.8%**	**37.8%**	**39.5%**	**38.6%**	**36.1%**	**36.4%**	**34.8%**	**35.5%**	**38.8%**	**0.1**
Aspiring to the EU	**16.5%**	**13.6%**	**20.7%**	**20.3%**	**17.3%**	**19.7%**	**19.7%**	**19.7%**	**22.1%**	**15.8%**	**-0.7**
Anglo-saxon	**38.6%**	**39.8%**	**41.6%**	**40.9%**	**41.0%**	**41.0%**	**40.7%**	**37.3%**	**36.0%**	**33.6%**	**-5.0**

Averages for the entire period	
Patchwork	**21.9%**
Continental	**30.4%**
Mediterranean	**14.6%**
Nordic	**37.5%**
Aspiring to the EU	**18.5%**
Anglo-saxon	**39.1%**
United States	**35.3%**

Source: *Own calculations based on DG ECFIN and OECD data.*

6. Summary and Conclusions

Assuming that the arrangement of complementary institutions, referred to in the literature as the model of capitalism, directly influences the functioning of both the economy and the public sector of a given country, the ability of models of capitalism to generate a positive impact on the effectiveness and efficiency of the state in achieving its objectives (i.e., in the context of this article, primarily deterring potential aggressors and reducing the likelihood of armed conflict) is based in the medium and long term primarily on:

- the ability to adapt to changing development conditions, i.e., the so-called "reactivity" of a country or model of capitalism to emerging threats (ex post);
- the ability to initiate changes in the development model, i.e., the ability of the institutional system to "anticipate" development opportunities (ex ante);
- the system's ability to learn and self-correct (institutional memory).

Therefore, when analyzing the relative level of national defense spending in patchwork model countries compared to other NATO countries, we can point to a relatively favorable situation in terms of the reactivity of this model (as indicated by the rapid increase in national defense spending, including, above all, an increase in the relative share of spending on equipment and a decrease in the relative level of spending on personnel), and, at the same time, a low capacity to initiate changes in behavior patterns in the area of national defense, i.e., a low capacity to "anticipate" challenges in an area as crucial to the state as national defense (still too low a share of spending on military training, exercises, maneuvers, etc., which is included in the category of "other expenditures" compared to the structure of expenditures in the US or in the Nordic model countries).

What is more, the problem of, for example, the construction of permanent and field fortifications after the outbreak of armed conflict in Ukraine (when the importance of this type of infrastructure became extremely clear) confirms the findings regarding the patchwork model formulated on the basis of investment activity or the strictly economic sphere.

The institutional system in patchwork model countries is almost devoid of the ability to learn and self-correct. In our opinion, this is determined in particular by three structural features of this model of capitalism, namely: weakness (low effectiveness of state institutions), resulting in considerable scope for spontaneous, grassroots entrepreneurship (which, however, does not apply in the area of national defense) and the open nature of this socio-economic order, which allows for the widespread import of institutional solutions in the area of the armed forces, with little control by the governments of countries classified in this model, and a fragmented approach to the purchase of combat systems (e.g., no decision to purchase a single tank model).

While countries representing the patchwork model are capable of a sharp increase in spending on the purchase of new weapons, the growing flow of funding is directed outside the country and does not translate into an increase in production capacity, and they are unable to prepare and implement a long-term strategy that would enable the transformation of the "peacetime army" into a "wartime army" (very low percentage of spending on preparing the armed forces for combat).

This clearly indicates an inability to deal with the problem of maximizing long-term goals over short-term ones, which confirms the system's low capacity to anticipate development opportunities and its lack of learning and self-correction capabilities.

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