How Public R&D Funding Can Be Profitable In Europe

University of Belgrade Economics Faculty - PhD Research Project Abroad Erasmus + as PhD visiting. Paper for the International Conference in Public Funds. I start to define that Public funding is the tool with which the State helps the production system make the necessary investments for the development of new products / services and for the improvement of the company performance and despite the existence of these funds, we must say that there is no finance law facilitated that provides coverage of the entire financial needs.

Francesco Di Tommaso born in Rome on 26 March 1985 and Graduated Bachelor Decree in Economics and Management and Magistral Degree in English in Business and Administration with 108/110 grade on University of Rome Tor Vergata and PhD student in Economics and Finance at University of Rome La Sapienza.

978-620-2-08531-1

Francesco Di Tommaso

How Public R&D Funding Can Be Profitable In Europe

edizioni accademiche italiane

Francesco Di Tommaso

How Public R&D Funding Can Be Profitable In Europe

Francesco Di Tommaso

How Public R&D Funding Can Be Profitable In Europe

Edizioni Accademiche Italiane

Imprint
Any brand names and product names mentioned in this book are subject to trademark, brand or patent protection and are trademarks or registered trademarks of their respective holders. The use of brand names, product names, common names, trade names, product descriptions etc. even without a particular marking in this work is in no way to be construed to mean that such names may be regarded as unrestricted in respect of trademark and brand protection legislation and could thus be used by anyone.

Cover image: www.ingimage.com

Publisher:
Edizioni Accademiche Italiane
is a trademark of
International Book Market Service Ltd., member of OmniScriptum Publishing Group
17 Meldrum Street, Beau Bassin 71504, Mauritius

Printed at: see last page
ISBN: 978-620-2-08531-1

Zugl. / Approved by: University of Belgrade Economics Faculty

Tables of contens

Introduction

I start to define that Public funding is the tool with which the State helps the production system make the necessary investments for the development of new products / services and for the improvement of the company performance.

Despite the existence of these funds, we must say that there is no finance law facilitated that provides coverage of the entire financial needs; this means that if you want to open a restaurant, a computer company, a company that produces mechanical components or a company that makes glass processing or any other business, you can not think that money puts them only the state in the form of contributions or loans; a part of the investment must also cover it with your money. This is something that we must specify because there are so many aspiring entrepreneurs (above all) that a little "claim" that the State or whoever takes over the entire entrepreneurial risk from the financial point of view: that is, they imagine that to put the money it must be someone else ... But such an idea is contrary to the concept of business risk, which is (and remains) of the entrepreneur.

How To Achieve In The Public Funds In Italy?

In Italy depending on the type of contribution and the Region where you intend to start the activities, the amount of contributions and subsidized loans varies. If, for example, the estimated investment to open a business is 150,000 euros, government grants can range from 25-30% up to 50-60% of the entire investment depending on the place where you intend to start the business. Obviously, this disparity in the granting of contributions is directly dependent on the economic development conditions of the Region in which you have to make the investment: the more a region is developed from an economic point of view, the less are the contributions granted by the State and, on the contrary, the less the Region is developed and the contributions are greater.

So if you open an activity in Northern Italy (where the regions are more developed from an economic point of view) the contributions granted are around 20-30%; this means that the State finances approximately 40,000 euros for the opening of the activity; the remaining € 110,000 must be put to you by recourse or by your own money (the so-called own capital) or by borrowing from banks, other financial institutions or some other lender (even private).

On the other hand, if you plan to open the business in Sardinia or in the Southern regions (less developed from an economic point of view) then the public contribution can cover up to 60-70% of the investment and then the State gets to grant contributions up to at 100,000 euros. And you have to put the remaining money on it.

So if you intend to make use of public facilities you can access it only if you think you can make available part of the amount of the investment: the possibility of obtaining public funding, in this way, increase the use of these public incentives go to integrate the financial resources that you too must invest in your business idea. Please also note that these contributions, most of the time, are provided to S.A.L. (that is to STATE WORKING ADVANCEMENT) that is, in times following the moment in which you have made the investment. This is undoubtedly a limitation of these incentives because these long times contrast with the liquidity needs that the entrepreneur has to carry out his activity.

To access these forms of facilitation you can contact these subjects: the State, the Regions, the Provinces, the Municipalities, the Chambers of Commerce, the European Union (through the Direct and Indirect European Funds).

Depending on the law to which they refer, these facilities may relate to and support the development of particular sectors of the economy, or the development of specific entrepreneurial figures, or certain types of companies, or particular geographical are.

Public Funds: Empirical Analysis

The phenomenon of subsidies is a phenomenon ancient and always widespread, not only in Italy, but in most states.

Traditionally, the doctrine has examined this phenomenon in relation to its ability to manage economy. In fact, grants come used to encourage economic initiative private and direct it towards social welfare purposes: i aids are therefore a very important tool useful to control and, together, direct the initiative private economy, an instrument that is in a certain way alternative, but also complementary, to the authorizing measures.

The traditional doctrine that dealt with the phenomenon of subsidies, trying to identify the their exact location in the entirety of the acts administrative authorities, has encountered numerous difficulties. The reasons for this difficulty, as evidenced by the same doctrine, are multiple and also derive from the fact that the same phenomenon is differently reconstructed a according to the different objectives that those have set themselves who analyzed it.

Some authors have considered that the difficulty of to legally frame the subsidies depended on from the lack of a unique terminology:

the existence of various terms ("grant, contribution, means of financial aid, tools of incentive ... ") to indicate the same phenomenon has determined a substantial "equivocality of the language". Other authors have, however, considered that the lack of a univocal definition of the phenomenon derived from the fact that its economic importance is social make it easily identifiable even in absence of precise terminological indications, and that, of consequently, this phenomenon should be found in "every benefit that is granted by the state or other public legal person, or in public hands, and lead to the growth of a subject's assets stranger ", without having to reunite all the different ones case in a unique terminology. To this doctrine are opposed, however, those who have highlighted the importance of documenting the relief financial and social significance of this phenomenon, identifying it within a legal typology well determined. The financial importance of subsidies derives, in fact, both from the strong diffusion of aid measures and, consequently, from the strong impact on public spending of the same activity of incentive, both from the progressive increase of the use of these tools that has occurred during the course of the years and that was determined by them fungibility. The grant instruments, in fact, serve "to the state leadership of the economic initiative private "- so much so that Pototschnig called it subsidy as "a means of guaranteeing the initiative private economy "- and allow" directing and drive private economic initiative ". Through the of subsidies it is possible to succeed in addressing the economic initiative of individuals without recourse necessarily to coercive measures: by granting one subsidy, one is proposed to the private entrepreneur preferential choice for certain initiatives, those precisely encouraged, maintaining, however, unchanged its effective freedom of decision. In turn, however, precisely the power to direct the choices of individuals inherent in the instrument of the grant ha determined some differences of opinion, finding the doctrine divided between those who believed that it was an instrument for the management of the alternative economy al authoritative power, and how many, however, have highlighted the coercive factual value of the aid tool To access these forms of facilitation you can contact these subjects: the State, the Regions, the Provinces, the Municipalities, the Chambers of Commerce, the European Union (through the Direct and Indirect European Funds).

Depending on the law to which they refer, these facilities may relate to and support the development of particular sectors of the economy, or the development of specific entrepreneurial figures, or certain types of companies, or particular geographical areas.

To access these contributions and obtain public funding as a result, you must meet the requirements that are:

- the size of the company: for each subsidy it is established whether the grants are granted to micro-enterprises, or to small businesses, medium-sized companies or large companies;
- the location of the company: the amount and amount of subsidized loans also depends on the place where the company carries out its business; the laws of facilitated finance are addressed to the whole national territory but also and above all to geographical areas "depressed" and disadvantaged from an economic and social point of view. Frequently the laws of facilitated finance are aimed at the geographical areas defined as "Objective 1", which are the areas in which, in the last 3 years, a per capita GDP of less than 75% of the European average has been recorded. At the moment the Italian regions that fall within this Objective 1 are: Calabria, Basilicata, Puglia, Sicily, Sardinia and Molise (with a temporary aid scheme).

The companies operating in the "Objective 2" geographical areas, ie those areas in which there is a strong industrial decline marked by a high unemployment rate, can also benefit from government grants. Italian areas that fall within this Objective 2 are some areas of Abruzzo, Emilia Romagna, Friuli Venezia Giulia, Lazio, Liguria, Lombardy, Marche, Piedmont, Tuscany, Trentino Alto Adige, Umbria, Valle d'Aosta and Veneto); the sector of activity: facilities are provided for specific sectors of the economy such as crafts, commerce, tourism, research, agriculture, etc .; the social structure: some contributions are destined to certain subjects: young people, women, etc; the business plan (or business project) of support: it must be attached to the request for the contribution. It is the document in which the productive, organizational, marketing, financial and economic aspects of the company must be highlighted; the form of subsidization: contributions can be granted in the form of subsidized loans; of contribution in c / exercise; of contribution in c / capital; of facilitated mortgages; Eligible expenses: only expenses directly and exclusively related to the business project are eligible for contributions; the submission of the application: is subject to the opening of the national call, or regional, or provincial, or municipal. When submitting the application, it is necessary to respect the conditions for participation in the call for proposals which are territoriality, the size of the company, the economic sector, the company structure, the amount of available funds and eligible expenses; Public funding is certainly useful and convenient for entrepreneurs. However, we advise you to make a "correct" use and not consider them as your only source of financing because they have a limited duration and at the end of their payment, your company must still be able to self-sustain from an economic-financial point of view. to last over time. fulfill social security tasks - they were typical purposes of the "social state", the science of administrative law was formed in a context totally different social, that of the State of right, within which these tools do not they were considered of the same importance. Pericu highlighted that the non-communicability between science administrative law and the aid measures derived from the fact that the science of administrative law in the Rule of law is aimed at finding instruments suitable for get a balance between the two positions pposites of authority and freedom, and instead, in the performance activity does not highlight the moment authoritative of the State as opposed to positions of freedom of the citizen. Pericu observed as in cultural context of the rule of law, not there was still room to examine institutions that they seemed not to contain the possibility of affecting on individual freedom and private property and from this caused the impossibility to place such tools in the schemes developed within the framework of the rule of law; in reality, however, Pericu himself it then exceeded these historical-cultural limits, admitting that the social state did not pose itself in antithesis with the rule of law, but that it was necessary only find the right balance between these two forms of state organization.

In this research work and surpassing the uncertainties caused by the lack of a clear one terminological definition of the phenomenon, Pericu in primis and in its continuation the doctrine have however carried out, over the years, a thorough analysis of the phenomenon, trying to reach a qualification typological of the different manifestations of the activity of subsidy, to the identification of the position legal status of the holders of a claim to the grant of the grant itself and to a correct one framing of this instrument in its purpose of economic direction. And it is precisely the role of the economic direction of the various measures of subsidy what is most relevant to the moment current: this study, in fact, is directed to examine mainly this role, also in order to verify if it still exists and, therefore, if a speech with regard to aid measures can be said again current and useful.

As already seen, in fact, subsidies, agreements in their broadest sense, or as the granting of a benefit from a State or another public legal entity, or in the hand public administration, which leads to the growth of the patrimony of a foreign subject, constitute an instrument of management of the economy that has been widely used by the States and which has been growing over the years years; however, it is a practice that clashes with the prohibition of state aid enshrined in the European Treaty ed it is precisely because of this contrast that there is proposes to check whether there is still an interest legal action against this instrument of action.

What we want to ascertain is precisely if, in presence of this prohibition, and of the necessary finalization of the policies of the States with the objective unique to realize and maintain an economy of open market and free competition that derives from simple belonging to the European Union, either still a discourse on the phenomenon of the "Subsidies" on "state aid" and if this instrument economic planning still exists, and both feasible. The traditional doctrine that over the years has dealt with the phenomenon of subsidies it is collided with the lack of precise indications a regulatory level, but it managed anyway to elaborate a theory about it and rebuild it guidelines on which to identify the rules action. At the present time, however, the analysis principal is aimed at verifying whether it exists still some use to analyze the phenomenon of the provision of aid measures or if the speech it must be considered completely obsolete and devoid of any practical relevance. The doubt about the existence or not of a practical utility in an analysis of the phenomenon of grants at the present time stems from the fact that the States that want to put in place today a measure of help in order to entice in a certain direction the choices of the companies operating in their field geographic are faced with a twofold constraint: in primis the direct link, which derives from the prohibition of aid of State enshrined in Articles 87 et seq Treaty; secondly a different constraint, but equally incisive, which derives from the strong limits of budget which are imposed on States as a result of their membership of the European Union. Following the creation of the European Union the Market has taken on a priority role, too compared to the same States, and has become itself the main end, which conditions and limits policies national, which are no longer free, but must necessarily take place in accordance with the principle of an open and free market economy competition. Membership of the European Union, beyond impose on States a first limit, which derives directly from the prohibition of state aid, determines a further limit, which is in turn twofold and which consists of a double budget constraint. States for effect of belonging to the European Union are subject to a double budget constraint, which derives both from the creation of a monetary union, and from the necessary price parity.

Economic and monetary union, with the introduction of the fixed parity between the currencies introduced starting from 1 January 1999 and with the release of the euro from 1 January 2002, determined by the States members, the loss of their powers in this area monetary policy, to transfer them to the Community bodies. This has the impossibility for States to affect the currency balance, to solve some problems of the trade balance. Traditionally, in fact, the States could alternatively affect the scale commercial and foreign exchange and thus managed to remedy one's crises by making them fall back on the other against which directly acted; this was possible because the modification of one it can also have effects in the other: a strong one economic devaluation, for example, can produce significant economic benefits for production, in how much ends up facilitating exports and reducing them imports, and can, therefore, help reduce debt public. With the creation of the Economic Union e monetary, however, states have lost the chance to affect the currency balance and use the latter to increase the national economy where there is a moment of crisis.

To this first constraint on the intervention policy of the States another one is added, which conditions the exercise of the political power of states, and in reason of the existence of which it seems right to ask oneself if a speech on state aid is still current, such constraint is determined by the debt limit public, which is not explicitly enshrined in the Treaty but it is the consequence of the imperative limits in the management of the budget which are imposed on States by due to market protection.

The link between budgetary constraints and aid of State may not be immediate, and it is necessary, therefore, analyze the former, not so much on a theoretical level how much in their impact on reality, for understand to what extent they condition the same existence of aid.

The Member States of the European Union, though having remained theoretically free in the management of their budgets and in identifying the instruments of taxation and economic direction, dispose of, in reality, a very limited discretion, provided that it is tightened by strict restrictions on public debt total and annual indebtedness imposed from the European Union. The limits on public debt ed annual indebtedness - respectively equal to 60% and 3% of GDP - put a double constraint on the political power of the individual States and, consequently, to the possibility for States to use the provision of aid as a form of economic direction: they limit it either directly or indirectly. They limit directly political power, placing a bond of budget, and limit it indirectly, because they pose a quantitative "ceiling" to sustainable global spending from each state, limit whose incidence is directly proportional to the incidence of public debt. If considers the level of average public indebtedness of States belonging to the European Community at current moment, it will be understood as the constraint of budget has such an impact on political power States to be doubted about the possibility of itself use the aid tool. This derives from the fact that if the public debt of a state exceeds 60% of GDP, or 3% annual debt, it is not free to use their own resources: belonging in fact, the European Community requires him to do yes that debt and annual debt are maintained at below the pre-established limits, for which the State does not he will be able to use his own means freely but he will have to prioritization of resources in quantity necessary for the payment of interest on the accumulated debt, in order to prevent it from growing further, and only later, with any resources remained able to provide for the needs of the economy.

It is evident, however, that since the resources available they are fixed, if they are needed to pay interest on excess debt and / or to limit debt, they will necessarily be subtracted from the needs of the States and, therefore, can not be used for stimulate production, to stimulate projects, to help companies in difficulty.

The budget constraints imposed by membership to the European Community therefore produce one compression of the political power of states to do to doubt that the instruments of intervention in the economy they still exist. Every time the public debt is very high (or that it is the same, or even higher, at the limit of 60% - which happens at the moment current for the majority of Member States -) yes determines the disappearance of financial instruments necessary to exercise the power of direction economy.

While depriving the national political power of his main instruments of economic direction, i budgetary constraints imposed by the Community do not deprive the states of their discretion in weighting of the needs of the community, do not impose constraints resource allocation and leave individual states free to move their resources according to their own evaluations, choosing to address certain sectors economy rather than others; certainly you can not not to consider that, in fact, the budget constraints imposed by the Community make almost nothing discretion of States because they set a limit to the total volume of usable resources, a limit that has such an impact to leave to the States less resources than would be necessary for meet the basic needs of society.

In practice, the budget constraints imposed on States, despite being indirect constraints, they end up limiting the power to grant aid more than it does the prohibition expressly sanctioned by the Treaty: the In fact, the Treaty prohibits the provision of one only specific type of aid, while budgetary constraints limit the entire power of state intervention economy. The Treaty prohibits the provision of only one specific type of aid: prohibits the provision of those State measures having a specific character and bring an economic advantage to a company, impacting trade between Member States. The prohibition State aid, as set out in Articles 87 et seq Treaty therefore prevents the grant exclusively those measures that respond to the predetermined characteristics that alter the competition, while the budget constraint prevents the provision of any aid measure, because determines the disappearance of the financial instrument, of the economic resources that are indispensable for implement any aid measure. It is precisely the existence of this double bond to the discretion of states that raise doubt if a speech on state aid can be considered still current: the Treaty has banned the disbursement of those measures that are incompatible with the protection of the Market, because they are capable of altering competition; budgetary constraints have affected discretion States to prevent the use of measures of help as tools for economic management, for lack of those resources that are indispensable for put in place an economic planning and for entice companies in a certain direction, so I ask whether the subsidies in reality can still be to exist.

This study presents itself precisely this objective: in the light of what was reconstructed by the doctrine about the concept of subsidy and in light of the limits sanctioned specifically by the Treaty - which prohibits aid incompatible with the protection of the market - and in general from membership in the European Community - in terms of budgetary constraints - it is necessary to verify whether the non-state have more discretion and, consequently, a speech on state aid is no longer relevant, for the impossibility of individual States to put in place one any economic and / or planning policy incentive, or if, instead, this analysis is still useful and current, and can serve to rebuild the spaces of residual discretion and, perhaps, to identify in how the delivery of aid measures can still be done constitute an instrument for the management of the economy of development.

State Funds - Grants for public intervention in economics e in the social sector

The notion of "state aid" is not of easy and immediate definition, as it is not outlined by any normative source. It follows that while state aid can take innumerable and disparate forms, the only definition legislation from which the notion of "State aid" can be found in the description in Article 87 et seq. of the EC Treaty, which, however, reality, refers only to a part of them, that is only to state aid prohibited by legislation Community, because they are incompatible with the market common.

First of all, therefore, we must try to identify what "state aid" consists of: the meaning can be rebuilt through an analysis of the their forms of explanation, interventions, implemented and feasible, with regard to these measures and consequences related both to their institution and to the their suspension. to construct the characterizing elements of the measures of help, identify the interests related to them, understand what the positive and negative effects are they can be traced back. Such an analysis will allow reconstruct what the methods of intervention against the aid considered negative, ed together what are the reasons for which they are determined forms of aid should be considered useful and they should therefore be stimulated rather than prohibited. Secondly of all, it will be necessary to establish gods general criteria by which to identify those measures that can actually be called "aid" State "and clarify the scope and effects; you will have to, however, however, carry out an analysis on a case by case basis, in as, as claimed by much of the doctrine1, it can not be said "to exist a notion legal and objective aid ", but every measure can be defined as such only after an analysis carried out on a case-by-case basis and in concrete, on the basis of sufficiently certain and clearly applicable criteria, in how much they are founded on parameters, juridical and economic, objectives, which alone provide that certainty of a right that is indispensable in order to allow the public authorities and private operators to carry out conscious choices.

The interests that flow into it

The problematic nature of the state aid discipline derives from various and different reasons, among which the most important ones undoubtedly derive from the convergence of heterogeneous and often opposed interests into them. These interests can be identified essentially in four groups: the Community interest, aimed at the protection of the common market, the interest of the individual Member States, which grant aid, the interests of companies or associations of undertakings receiving aid and finally, the interest of the companies or associations of companies competing with the beneficiaries.

The intrinsic contrasts between the various "subjects" involved appear evident and immediately we perceive how the discipline on state aid sees two opposing policies clash: the liberal policies of the European Community, which looks with confidence to the Market, and those of the Member States, whereas, instead, they observe the market failures, which they would like to remedy precisely through the provision of aid to their companies, which directly suffer the "inefficiencies" of the market.

In addition to the aforementioned "policy contrast", there are contrasts between the various positions of the companies: on the one hand, the beneficiaries of the aid measures consider them legitimate and request their disbursement; on the other hand, the competing companies point to the intrinsic injustice present. in the aid itself and would demand its elimination. The former believe that the aid belongs to them, due to their disadvantaged situation, while the others believe that this measure, if granted, would cause distortions in the market and, above all, would alter the equilibrium of the market itself, creating inequalities rather than resolving them, and placing the companies that are not addressed to them in a disadvantaged situation compared to the beneficiary companies.

The composition of different interests and purposes that are part of the same notion of aid determines that the judgment on the compatibility or otherwise of each measure can not be formulated in relation to a single objective (such as, for example, the creation of the common market and / or of a perfect competition regime) but it must be carried out in relation to a set of objectives which, both individually and jointly considered, all contribute to determining the notion of common interest relevant for aid policy purposes.3. This is evident when the Commission, by granting the derogations, authorizes aid, which in itself would be incompatible, using the counterpart criterion, according to which "the distortions of competition caused by the aid are counterbalanced by the benefits received by the internal market as a whole "and, therefore, must still be accepted.

The interest of the Communities

The interest of the Community which is relevant in the field of State aid is in favor and protection of competition, given that "the main aim of competition policy is ... the realization of the single market, which is outlined as a primary interest of the Community in turn functional to the realization of other purposes ".

The competition policy pursued by the European Community is therefore aimed at achieving a single European market, for which it is necessary for companies to find themselves in conditions that are as homogeneous as possible: that is why the Community interest goes to to oppose the payment of any form of State aid5, to the extent that the provision of such measures could alter the equilibrium and the rules of the market. Furthermore, the Community's opposition to aid measures is fully understandable if it reflects on the fact that, as has been observed by authoritative doctrines, "the customs union itself would collapse if the Member States could free themselves the balance of the market itself, creating inequalities rather than solving them, and placing the companies that do not they are addressees in a disadvantaged situation compared to beneficiary companies. The composition of interests and purposes different from the same notion of help determines that the judgment on the compatibility or not of each measure can not be formulated in relation to a single objective (such as, for example, implementation of the common market and / or a scheme of perfect competition) but must be carried out in relation to a set of objectives that are considered individually, be considered jointly, all they contribute to determine the notion of interest common relevance for aid policy.3. This becomes apparent when the Commission, granting exemptions, authorize aid, which in itself would be incompatible, using the criterion of counterpart, according to which "the distortions to competition caused by the aid are counterbalanced by benefits received by the internal market as a whole "and, therefore, must still be accepted.

Questions for reflection and discussion

1 How the Public Fund they can be issued?

2 Which project cab be supported by public funds_ which mechanism do you consider is the most important?

3 Summarize the Public Funds problems in Europe. Do you think they are all of equal importance? If not, which Public Funds problem do you feel contributed the most to the social development?

4 To what extent do you think a Public Funds in Europe is likely to occur?

Basic Concepts, Ties and Aspects Public finance

As a concept may be understood on two levels – 1) as a practical activity of all components of public administration and 2) as a theoretical area. The term "public finance" may be **defined** as the identification of specific financial relationships and functions running between public administration bodies and institutions (i.e. public sector entities – the state) as one party and in mutual interaction with other entities of the economic system as the other party (i.e. private entities – households and companies).

These relationships and functions may be considered special as they include:

- **Procuring public goods** (production and provision);
- **arranging and funding** various **transfers** (particularly in the social area);
- **directing entities** existing in the economy towards **socially desirable behaviours;** for instance through taxes, penalties, subsidies and other stimuli and charges. In order to arrange the funding of the above-mentioned areas, there is a **fiscal system (public budgeting system)** whose aim is to collect the required amount of **public revenue**. Public

revenue serves, at various levels of public budgets (governmental, regional and local), to fund **public expenditures**. **Public expenditures**, **public revenue** and particularly **taxes** may be considered to be the fundamental elements of public finance. Important terms derived from these three elements include **deficit**, **public debt**, **budgetary policy and fiscal policy**. The development of public finance is connected with economic mechanisms that should ideally lead to the effective and fair allocation of limited resources. Historically, allocation issues were dealt with through various allocation mechanisms. **Cultural traditions and customs** may be classified as initial allocation mechanisms. Later, with the advent of social and economic development, the role of customs and traditions was taken over by the **state**. It contributed to making the allocation of limited resources effective and fair. Approximately since the 1930s, the state's role in the economy has been noticeably gaining in importance; therefore the traditional functions of the state (legislative, social, security, etc.) have been supplemented with the **economic function** (sometimes called the **fiscal function** or the **public finance function**). This function includes **allocation**, **redistribution** and **stabilization** activities. The state uses legislative and executive powers, as well as its own public administration bodies and institutions (centralized and decentralized) to perform them. The state is also a special economic entity because of its enforcement powers. Not only does it determine rules, but it may also enforce their observance through the tools at its disposal. The state's economic function has become predominant particularly in the school, health care, social services and social security sectors. With regards to the role of the state in the economy, two approaches have emerged:

1) State interventions are undesirable for the economy; therefore they are rejected (individualistic views).
2) State interventions are advocated (collectivist views).

Linkages to Economy of Public Sector

Whereas public finance relates to financial operations, relationships and tools for implementing the provision of public goods, transfers and the stimulation of economic entities to follow a certain behaviour, the term **public sector** means a specific part of the national economy.

The institutions and organizations of the public sector are in whole or in part funded by public funds and are connected with the fiscal system. Other specific characteristics include their ownership, management system, provision of their products to consumers, etc. The public sector fills the gap unoccupied, for various reasons, by private companies within their business activities.

The public sector is a part of society that is in the public's ownership, in which decisions are made by public choice, is under continuous public control, and exists for the purpose of public interest fulfilment and common affair administration. The sector that is entirely or predominantly funded with private money and performs functions similar to those of the private sector is called the **non-profit non-governmental sector**.

In pluralistic democracies, the public sector coexists with the private sector. These two sectors permanently influence each other with respect to both size and activity. The state strongly influences the private sector through various restrictive measures. One of its control tools is **public finance**. Therefore, the public finance measures must be analysed and examined, including how impact the private sector.

Public Finance – Causes of Development

The reason for developing public funding is the state intention to soften the drawbacks resulting from economic decisions made by individual entities (households and companies). It uses fiscal tools (public revenue and expenditure) to accomplish this.

Certain behaviour is classified as the “quasi-fiscal funding principle”, where public- law goods are funded from off-budgetary resources (e.g. the public-law television in the Czech Republic is funded from television licence fees).

Another important term that relates to public finance, and that is also a strong argument for its development, is **market failure**.

The market system follows supply and demand through the price mechanism. It is a system that has developed itself, and that has strongties with the interactions between people and companies. All these entities strive to maximize their benefit (welfare). The greatest benefit is strongly interconnected with reaching the economic optimum condition. A system that reaches the optimum is considered, in the neoclassical economics concept, to be **efficient**, **fair** and **stable**. The ideal condition is called the **Pareto optimum**. This exists in an economy when none of the involved entities can improve its position without worsening another entity’s position. If any of the entities intends to improve its position, it is possible for it to do so only to the detriment of another entity. The existence of **perfect competition** is a necessary requirement for reaching the optimum.

The three above-mentioned elements (efficiency, stability and fairness) are **connected withmicroeconomics** from the viewpoint of **efficiency**, connected **with macroeconomics** from the viewpoint of **stability,** and connected with **sciences outside economics** from the viewpoint of **fairness**. The perception of fairness is investigated by other social sciences, and is closely linked to ethics, etc.

If no conditions exist for reaching a market-efficient solution, or the conditions are simply violated for any reason, **market failure** will ensue. It consists of the following:

- the allocation of resources is not efficient,
- the economy in the area of macroeconomics indicators oscillates around the desired values and
- the distribution of wealth and income may diverge from the consensus on fairness. It is then up to the state to perform its fiscal function (the public finance function) in those three areas in order to preferably eliminate or at least reduce market failure. Specifically, those are microeconomic failures from the allocation function perspective, macroeconomic failures from the stabilization function perspective, and the redistribution function then falls into the area of market failure caused by outside economies. If the conditions for perfect competition are not met, a malfunction in the price mechanism will arise, which disturbs the allocation mechanism. Some failures can be eliminated without public finance intervention through auto-regulation (the internalization of externalities). However, others are part of the government's allocation function and its fiscal tools (taxes and governmental purchases or transfers). **Macroeconomic failure** is indicated by instability in the economic system that usually suffers from cyclical inflation, a high rate of unemployment, low or even negative growth of production or problems in the foreign trade balance, etc. The above-mentioned macroeconomic cases of instability are why governments perform **the state stabilization functions (stabilization fiscal functions)**. The state uses several tools to perform the stabilization function. The basic classification is a division into **monetary** and **fiscal** tools. The monetary tools include open market operations, the setting of basic interest rates, determining the level of mandatory minimum reserves, etc. Fiscal tools may include public expenditure, public revenue and ways of funding deficits. The **causes** of market failure **outside the economy** relate to reaching fairness in society through the distribution of wealth and income. With the distribution of wealth, the market does not practically perceive fairness. In this case, the state performs a redistributive role with 5h3 principles of solidarity, social

conscience, charity, etc. based on the social consensus. The state performs the redistribution function through two basic categories of tools. The first includes **revenue (tax)** and the other **expenditures** (transfers, grants and subsidies). First, a tax transfer mechanism may be implemented through a combination of progressive taxation of high incomes and transfers (subsidies) in favour of low- income households. Secondly, this can occur through the taxation of luxury goods combined with subsidies on goods for the low-income population.

Three principles that public finance is based on are:

1) Non-optional – Economic entities are forced by law to contribute to the joint budget of national or local authorities. Although the entities must contribute, they are not guaranteed a sufficient amount of public goods.
2) Non-refundable – The "quid pro quo" relationship in other finance or trade transactions does not apply. It is not certain that the expended means will be returned to the entities at the expected amount.
3) Non-equivalent – Although the entities contribute to a joint fund, the benefit from the means expended by them is not equivalent (adequate) in view of the amount of expended means. Simply put, poor households contribute little, but the goods provided for them by the public sector are relatively large. With regards to rich households, the situation is reverse.

Government failure is a specific risk regarding public funding. The government usually fails in the following items:

- The impact of measures taken by the government is often very difficult to assess (the problem of time and implementation lag).
- Auditing the consequences of taken measures is limited.
- Government decisions are actually implemented by clerks who may have their own preferences.
- Political processes are special and may diverge from economic theories and needs. **1.4 Development of Fiscal Theory** With regards to terminology, at the beginning of the 20th century, public finance was often

called "state" or "municipal" or even "local" finance. Thanks to the transfer of powers from the state to autonomous regions, *state administration* and *local administration* may be understood as two different spheres. They fall under the combined overall title of *public administration.* It is then possible to call financial operations and relationships between the components of public administration and their surroundings "*public finance"*. From the public finance concept perspective, a shift from the **normative** approach to the **positive** approach exists. The normative approach is based more on the deduction method, and it tries to define a system of unquestionable bases for governmental policy from the public finance perspective and the public sector (which means defining an axiomatic system). The positive approach mainly uses the induction method when analysing the impacts of governmental measures on various economic entities. The foundations of the public sector economy based on a neoclassical economy are, by their nature, microeconomic. Since the Great Depression at the end of the 1920s, the macroeconomic approach was more common, especially beginning in the 1930s (functional – Keynesian finance). The situation lasted until about the 1970s, when the contemporary crisis moved theoretical approaches again back to microeconomics.

Economic Analysis of Public Goods

Aim of this book

- to get acquainted with characteristics of public goods;
- to understand the division of public goods;
- to be aware of the difficulties in effective ensuring of public goods. **Key words** Public good, collective consumption, free goods, economic goods, private goods, divisibility, rivalry in consumption, free rider, consumer community, externalities, effect of overloading. **Required entry skills** Terminology, tools and graphical analysis of

Microeconomics (preferably master level). Entry knowledge of public finance.

Economic Specifics and Characteristics of Public Goods

Microeconomics theory states that the existence of public (goods of collective consumption) is one of the causes of market failure. To eliminate this failure, a fiscal allocation function should be implemented. A public goods analysis was performed by Paul Samuelson in 1954 with a specific focus on consumption. Public goods are not called public because of the way they are financed, i.e., they are paid for and distributed through public finances, but because they are consumed in a very specific way. A public good does not have to be provided by public finances, even if this definition is what first comes to people's minds.

Division of goods

Some goods have mass availability for their consumers and they are neither produced nor distributed. Their market price, naturally, is zero. Those are known as **free goods** (e.g. the air). This does not apply to most goods. The majority of goods have to be concerned with allocation, production and distribution. These goods are called **economic**.

They can be divided into **private goods** and **public goods**. For private goods, their important characteristics are their **divisibility of consumption (consumer rivalry)** and **exclusion from consumption.** Public goods are characterized by their indivisibility of consumption, zero marginal costs of consumption for each consumer and their non-exclusion from consumption. Assuming the above to be true, we differentiate between two marginal types of goods – **pure private and pure public.** **For more information, see subsection 1.2.**

Divisibility

A very important attribute of economic goods is their **divisibility** among individuals. Some of them are divisible by both quantity and quality. However, not all goods are divisible. Goods that have indivisibility of consumption share the following characteristics:

- they are consumed by all consumers together,
- if they are only consumed by one entity, the consumption of other consumers is not reduced. Divisibility (quantitative and qualitative) can be defined as follows:

= ∑ , (1) x_{ki} = consumption of a good *k* by a consumer *i.*

The total consumption of good *k* equals the sum of partial consumption by all *i*-individuals.

There are many fully-divisible goods in everyday (food, clothes, cars, electronics, etc.)

where: y_k = total consumption of a good *k*,

On the other hand, full indivisibility means that every consumer consumes the same amount. Whereas total consumption does not equal the sum of their partial consumptions, as is the case for divisible goods, it equals partial consumptions. The relationship between total consumption and the consumption of particular users can be defined as follows:

= +⋯+ +⋯+ , (2)

where: y_g = total consumption of fully indivisible good *g*, x_{g1} = consumption of a good *g* by a consumer *1,* x_{gi} = consumption of a good *g* by a consumer *i,* x_{gn} = consumption of a good *g* by a consumer *n.*

This is true for goods such as defence, security, street lighting, etc.

Divisibility and indivisibility result in some microeconomic conclusions that are important for public finance. With regard to **full divisibility,** the following is important: Under the conditions of partial and general balance, it is possible to achieve the economically optimal state. For each pair of goods and pair of economic subjects, the following rule applies:

MRSC $_{,}$ = = MRPT $_{,}$ (3)

where: X a Y are two goods, P_X a P_Y are market prices of these two goods, $MRSC_{X,Y}$ is a marginal rate of substitution in consumption of the goods X a Y, $MRPT_{X,Y}$ je is a marginal rate of transformation of the goods X a Y.

Because of the **full divisibility** of goods, the following applies:

- **The allocation of resources** for producing goods may be **effective** with the help of the system of prices.
- There is a **competition** among individual consumers. They cannot consume one good together which reveals their preferences at the same time. This means that at the same price, they will consume different amounts (the marginal utility *MU* from the last consumed unit by consumers A and B will equal the marginal costs *MC* for this unit of production, which will conveyed by the price of this unit – market demand is defined as the horizontal sum of partial demands. The price mechanism then causes exclusion from the consumption of these fully-divisible goods. MU =MU = MC (4) With **fully indivisible** goods, the consumption of other consumers is not decreased by the consumption of one consumer and the following applies:

Consumption is **non-rivalry**; consumers do not reveal their preferences of their own accord (a **free rider** suppresses his or her preferences on purpose).

It is either difficult or **impossible to make an effective allocation decision** through the price mechanism. Nevertheless, balance exists when the totals of the marginal utility of consumers A and B, MU_A and $MU_{B,}$ from the consumption of a public good, equals the marginal costs *MC* of its production (demand for a public good is defined by its vertical sum of partial demands).

MU + MU = MC (5) From this relationship, it is obvious that unlike fully-divisible goods, the utility from consuming fully-indivisible goods by consumers A and B does not have to be the same.
If it is not possible to make a consumer reveal their preferences (their *MU*) through prices, then it is not possible to exclude those consumers who are not willing to "pay" for this public good from consumption. This is an example of the **free rider** problem.
Problems connected to this reality can be found on two basic levels. One of them is the **theoretical level,** which looks at the failure of market mechanisms in connection with the **non-effective** allocation of public goods due to a functionless price mechanism. The second level is **practical problems,** which are reflected in questions surrounding the proper amount and structure of public goods and next in questions concerning the allocation of production costs among all relevant consumers.

Another characteristic of public goods is their selection and consumption in particular **consumer communities**. This concerns various principles, i.e., **geographical** (the utility is for people in a particular area), **technical** (the good is used for a specific technology – e.g. TV signals, Wi-Fi net), **legal** (the public good is, under certain conditions, only available for some people who belong to a particular group).

Public goods and externalities

Pure public goods, which are indivisible in consumption, are in fact externalities. An externality is an internal relationship between two parties that unintentionally influences the utility of a third part – an uninvolved subject.

The Classification of Public Goods

There were two previously mentioned marginal types of goods from the point of view of their divisibility – **pure private goods** and **pure public goods**. But these two types are rather hypothetical examples. There are many goods that only somewhat meet these definitions. Such goods are called **mixed**. For example, the **effect of overloading** one consumer causes a decrease in consumption by the second consumer (e.g. the use of surface communications – overloading causes a decrease of travelling speed and safety).

The following two pictures demonstrate the division of goods into pure private, pure public and mixed goods with regard to consumption rivalry and exclusion from consumption (see Fig. 1). Second picture

Three principles that public finance is based on are:

1) Non-optional – Economic entities are forced by law to contribute to the joint budget of national or local authorities. Although the entities must contribute, they are not guaranteed a sufficient amount of public goods.
2) Non-refundable – The "quid pro quo" relationship in other finance or trade transactions does not apply. It is not certain that the expended means will be returned to the entities at the expected amount.
3) Non-equivalent – Although the entities contribute to a joint fund, the benefit from the means expended by them is not equivalent (adequate) in view of the amount of expended means. Simply put, poor households contribute little, but the goods provided for them by the public sector are relatively large. With regards to rich households, the situation is reverse.
Government failure is a specific risk regarding public funding. The government usually fails in the following items:

- The impact of measures taken by the government is often very difficult to assess (the problem of time and implementation lag).
- Auditing the consequences of taken measures is limited.
- Government decisions are actually implemented by clerks who may

have their own preferences.

- Political processes are special and may diverge from economic theories and needs. **1.4 Development of Fiscal Theory** With regards to terminology, at the beginning of the 20th century, public finance was often called "state" or "municipal" or even "local" finance. Thanks to the transfer of powers from the state to autonomous regions, *state administration* and *local administration* may be understood as two different spheres. They fall under the combined overall title of *public administration.* It is then possible to call financial operations and relationships between the components of public administration and their surroundings "*public finance"*. From the public finance concept perspective, a shift from the **normative** approach to the **positive** approach exists. The normative approach is based more on the deduction method, and it tries to define a system of unquestionable bases for governmental policy from the public finance perspective and the public sector (which means defining an axiomatic system). The positive approach mainly uses the induction method when analysing the impacts of governmental measures on various economic entities. The foundations of the public sector economy based on a neoclassical economy are, by their nature, microeconomic. Since the Great Depression at the end of the 1920s, the macroeconomic approach was more common, especially beginning in the 1930s (functional – Keynesian finance). The situation lasted until about the 1970s, when the contemporary crisis moved theoretical approaches again back to microeconomics.

Economic Analysis of Public Goods

Aim of this chapter

- to get acquainted with characteristics of public goods;
- to understand the division of public goods;
- to be aware of the difficulties in effective ensuring of public goods. **Key words** Public good, collective consumption, free goods, economic goods, private goods, divisibility, rivalry in consumption, free rider, consumer community, externalities, effect of overloading. **Required entry skills** Terminology, tools and graphical analysis of Microeconomics (preferably master level). Entry knowledge of public finance.

Economic Specifics and Characteristics of Public Goods

Microeconomics theory states that the existence of public (goods of collective consumption) is one of the causes of market failure. To eliminate this failure, a fiscal allocation function should be implemented. A public goods analysis was performed by Paul Samuelson in 1954 with a specific focus on consumption. Public goods are not called public because of the way they are financed, i.e., they are paid for and distributed through public finances, but because they are consumed in a very specific way. A public good does not have to be provided by public finances, even if this definition is what first comes to people's minds.

Division of goods

Some goods have mass availability for their consumers and they are neither produced nor distributed. Their market price, naturally, is zero. Those are known as **free goods** (e.g. the air). This does not apply to most goods. The majority of goods have to be concerned with allocation, production and distribution. These goods are called **economic**.

They can be divided into **private goods** and **public goods**. For private goods, their important characteristics are their **divisibility of consumption (consumer rivalry)** and **exclusion from consumption.** Public goods are characterized by their indivisibility of consumption, zero marginal costs of consumption for each consumer and their non-exclusion from consumption. Assuming the above to be true, we differentiate between two marginal types of goods – **pure private and pure public. For more information, see subsection 1.2.**

Divisibility

A very important attribute of economic goods is their **divisibility** among individuals. Some of them are divisible by both quantity and quality. However, not all goods are divisible. Goods that have indivisibility of consumption share the following characteristics:

- they are consumed by all consumers together,
- if they are only consumed by one entity, the consumption of other consumers is not reduced. Divisibility (quantitative and qualitative) can be defined as follows:

= ∑ , (1) x_{ki} = consumption of a good *k* by a consumer *i*.

The total consumption of good *k* equals the sum of partial consumption by all *i*-individuals.

There are many fully-divisible goods in everyday (food, clothes, cars, electronics, etc.)

where: y_k = total consumption of a good *k*,

On the other hand, full indivisibility means that every consumer consumes the same amount. Whereas total consumption does not equal the sum of their partial consumptions, as is the case for divisible goods, it equals partial consumptions. The relationship between total consumption and the consumption of particular users can be defined as follows:

where: y_g = total consumption of fully indivisible good g, x_{g1} = consumption of a good g by a consumer *1*, x_{gi} = consumption of a good g by a consumer *i*, x_{gn} = consumption of a good g by a consumer *n*.

This is true for goods such as defence, security, street lighting, etc. Divisibility and indivisibility result in some microeconomic conclusions that are important for public finance. With regard to **full divisibility,** the following is important: Under the conditions of partial and general balance, it is possible to achieve the economically optimal state. For each pair of goods and pair of economic subjects, the following rule applies:

MRSC $_{,}$ = = MRPT $_{,}$

where: X a Y are two goods, P_X a P_Y are market prices of these two goods, $MRSC_{X,Y}$ is a marginal rate of substitution in consumption of the goods X a Y, $MRPT_{X,Y}$ je is a marginal rate of transformation of the goods X a Y.

Because of the **full divisibility** of goods, the following applies:

- **The allocation of resources** for producing goods may be **effective** with the help of the system of prices.
- There is a **competition** among individual consumers. They cannot consume one good together which reveals their preferences at the same time. This means that at the same price, they will consume different amounts (the marginal utility *MU* from the last consumed unit by consumers A and B will equal the marginal costs *MC* for this unit of production, which will conveyed by the price of this unit – market demand is defined as the horizontal sum of partial demands. The price mechanism then causes exclusion from the consumption of these fully-divisible goods.

MU =MU = MC (4) With **fully indivisible** goods, the consumption of other consumers is not decreased by the consumption of one consumer and the following applies:

Consumption is **non-rivalry**; consumers do not reveal their preferences of their own accord (a **free rider** suppresses his or her preferences on purpose).

It is either difficult or **impossible to make an effective allocation decision** through the price mechanism. Nevertheless, balance exists when the totals of the marginal utility of consumers A and B, MU_A and $MU_{B,}$ from the consumption of a public good, equals the marginal costs *MC* of its production (demand for a public good is defined by its vertical sum of partial demands).

MU + MU = MC (5) From this relationship, it is obvious that unlike fully-divisible goods, the utility from consuming fully-indivisible goods by consumers A and B does not have to be the same.

If it is not possible to make a consumer reveal their preferences (their *MU*) through prices, then it is not possible to exclude those consumers who are not willing to "pay" for this public good from consumption. This is an example of the **free rider** problem.

Problems connected to this reality can be found on two basic levels. One of them is the **theoretical level,** which looks at the failure of market mechanisms in connection with the **non-effective** allocation of public goods due to a functionless price mechanism. The second level is **practical problems,** which are reflected in questions surrounding the proper amount and structure of public goods and next in questions concerning the allocation of production costs among all relevant consumers.

Another characteristic of public goods is their selection and consumption in particular **consumer communities**. This concerns various principles, i.e., **geographical** (the utility is for people in a particular area), **technical** (the good is used for a specific technology – e.g. TV signals, Wi-Fi net), **legal** (the public good is, under certain conditions, only available for some people who belong to a particular group).

Public goods and externalities

Pure public goods, which are indivisible in consumption, are in fact externalities. An externality is an internal relationship between two parties that unintentionally influences the utility of a third part – an uninvolved subject.

The Classification of Public Goods

There were two previously mentioned marginal types of goods from the point of view of their divisibility – **pure private goods** and **pure public goods**. But these two types are rather hypothetical examples. There are many goods that only somewhat meet these definitions. Such goods are called **mixed**. For example, the **effect of overloading** one consumer causes a decrease in consumption by the second consumer (e.g. the use of surface communications – overloading causes a decrease of travelling speed and safety).

The following two pictures demonstrate the division of goods into pure private, pure public and mixed goods with regard to consumption rivalry and exclusion from consumption (see Fig. 1). Second picture

Introduction to Tax Theory

Aim of this chapter

- to get acquainted with the taxation principles;
- to understand the content of tax justice;
- to be aware of efficiency issues related to imposition and collection of a

tax;

- to become familiar with tax shift and tax impact. **Key words** Taxation principles, principle of justice, principle of effectiveness, principle of benefit, principle of financial solvency, horizontal and vertical justice, tax effectiveness, administrative costs, excessive tax burden (deadweight loss), negative deadweight loss, direct and indirect administrative costs of taxation, relationship between justice and effectiveness, Laffer curve, tax shift and impact, forwards shift, backwards shift, proportional, progressive and regressive impact. **Required entry skills** To be familiar with the content of the first chapter. Knowledge of macro and microeconomic analysis. Basic tax terminology

Taxation Principles

Taxation principles are both a set of claims for "correct" tax system as a whole and a claim for individual taxes in this system. Well-known principles are **Adam Smith's Canons of Taxation**. Smith's timeless tax principles include principles "to tax according to solvency", "to tax with accuracy (according to clear rules)", "to tax with a merit of reimbursement (when it is most suitable for a taxpayer)" and "to tax with minimal costs of administration".

Understanding taxation theories lead to the development of several **principles**. One of them is the principle of effectiveness, justice, tax utilization, flexibility, simplicity of choice, stability of the tax law (tax bond), harmonization (the Czech situation with the European Union), etc. One of the most important requirements for a modern tax system is that taxes must be applied generally – taxes should be paid by all members of society no matter what their social status is.

Two principles are commonly agreed upon by experts:

- **the principle of justice,**

- **the principle of effectiveness.** There is also agreement as to how to levy taxes so that they are politically transparent and legitimate. It should be obvious who pays what taxes and these taxes should be specified in law. Other taxation principles more or less arise from the two previously-mentioned principles. **7.2 Tax Justice** It can generally be claimed that taxes are considered fair when they correspond with the populous' idea of the division of the tax burden among individual tax subjects. When this exists, the redistribution of social utility is considered fair. There are two claims for the principle of justice:
- **The principle of benefit** – is fulfilled when the personal burden of a taxpayer caused by taxes is balanced by the utility gained from public goods that are financed by these taxes; the change of total utility is zero. The question is whether the rich or the poor receive greater benefit from government spending. The poor derive benefit both from the security that cannot be provided by themselves and from various social services that they could hardly afford. The rich derive relatively more benefit from tax bonds because they help them to protect their property. The principle of benefit fails. The tax most commonly associated with this principle is the real estate tax. Paid real estate taxes should be used for improving the environment where the real estate is located. This should assure a fair increase in the value of the real estate or at least it should maintain its attractiveness.
- **The principle of financial solvency** – every taxpayer should pay taxes in the amount that they are able to pay. In connection with this principle, there are two conditions of justice that have to be satisfied: **horizontal** and **vertical**. Horizontal justice is fulfilled when taxpayers with the same standard of living pay the same level of taxes. Vertical justice is fulfilled when one with a higher standard of living pays more taxes. Because the state has no idea of individual levels of utility for every single citizen, it makes do with their level of income, property, consumption, etc.

Tax Efficiency

The tax efficiency is the taxation system with the lowest costs. They existence of taxation system involves two types of costs:

- **administrative costs**
- **excessive tax burden** (also called deadweight loss). These two groups mean that except for the financing of public goods, a certain portion of the revenue goes to costs connected with the functioning of the taxation system. Administrative costs are part of the public sector; however excessive tax burden means a loss both for the private and the public sector. **Excessive Tax Burden** The term excessive tax burden is connected with the development of taxes and their types. In medieval England, taxes were raised according to the number of glass windows in each house. A glass window was a symbol of financial solvency because they were not cheap. As a result, people started to brick in their windows to avoid paying taxes. It meant a detriment to their personal utility. On the other hand, the state lost a part of its tax yield. In connection with this, the term **excessive tax burden** (deadweight loss) started to be used. We talk about the excessive tax burden when there is a change of price and level of demand as a result of price distortion caused by taxes. Levied taxes raise a seller's costs and cause higher costs to produce goods. A consumer will react by reducing their consumption of this good and they will substitute part of their consumption. The subjects will achieve a new balance at higher price and lower amount.

Tax revenue for the government

In this case, it is the manufacturer's obligation to pay the tax while a specific tax is levied on the product. As a result of a tax being assessed, the supply will move from S_0 to S_T. Consumers will look for a new optimum at a higher price and it means lower consumption Q_T. The total tax yield of the state is represented by the grey area ($P_T E_T A P_N$). The upper section of this grey area demonstrates the consumers' reduced utility in favour of public goods. The lower section demonstrates the loss sustained by the private sector (producers) in favour of the public sector. The crosshatched area represents deadweight costs. A similar situation exists when a tax is imposed on consumers. The demand curve stays the same, but the supply curve moves to down and to the left. A new balance would be achieved at the amount of Q_T, but at price P_N. The actual price paid by a consumer would be increased by the subsequent state tax levied to the level P_T, no matter where the tax was assessed.

At a lower tax rate, the amount of excessive tax burden is defined by the triangle AE_0E_TO. At a higher tax rate, it is defined by the triangle BE_0E_TO. When assessing taxes, the state has to take into account the fact that excessive tax burdens increase faster than taxes. From the point of view of deadweight costs, fewer lower taxes are less effective than one high tax. On the other hand, this means that increasing the number of taxes brings higher administrative costs.

The amount of excessive tax burden and how high the utility detriment consumers or the producers of the taxed good it cause will depend on the elasticity of the curves of supply and demand. When the elasticity of supply or demand is zero, then the excessive tax burden also equals zero.

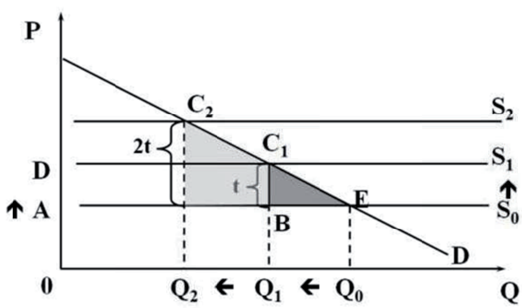


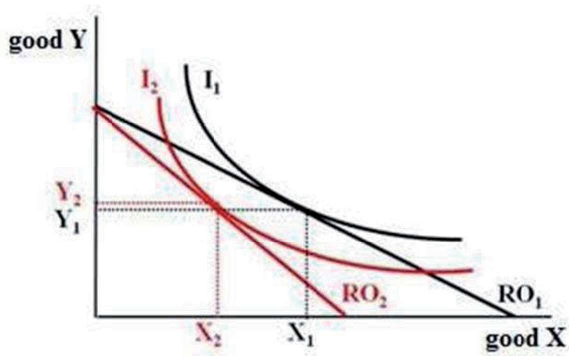
Fig. 3: Excessive tax burden (deadweight loss – DWL) – different elasticity of supply

In the figure (Fig. 3) on the left, the elasticity of supply equals infinity. When taxes increase, the excessive tax burden also increases. The supply on the right part of figure 3 is perfectly inelastic. Even taxes assessed at amount *t* will not cause the formation of a tax burden.

An excessive tax burden is formed because consumers try to avoid taxes. Tax assessment not only prevents consumer to consume invariable amounts of taxed goods, but it also stimulates consumers to substitute them with some other goods. Tax assessments result in the **substitution** and **income effects.**

Fig. 4 demonstrates the situation when good X has a tax levied against it. As a result, there is a change in the budget constraint from RO_1 to RO_2. It enables consumers to consume less of good X and they can also partially substitute it with good Y.

Fig. 4: Substitution and Income effect emerging because of taxation



The impact of certain types of taxes

So far, we have demonstrated the impacts of selective tax assessments. It is irrelevant whether the tax was paid by a producer or a customer, it resulted in a shift of the relevant curve. With the **ad valorem** tax, there is only a slight bending of the curve.

Fig. 5 shows this graphically.

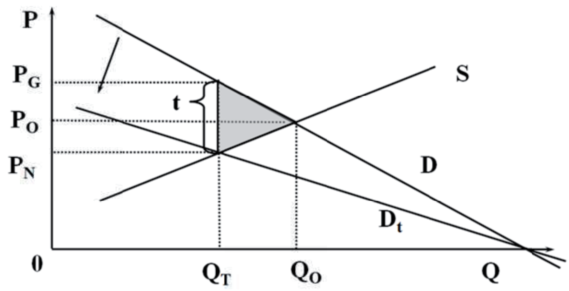


Fig. 5: Tax imposition – “ad valorem”

If the price was zero, then the paid ad valorem tax was also zero. The higher the price that is paid for goods, the higher the tax that should be paid. That is why the supply curve turned around the point where the supply curve intersects the horizontal axis. Overall, it descends at a slower pace than the original supply curve D. A new balance happens at the amount Q_T, when the price including the tax for a paid good is P_G. The amount of P_GP_N is the amount of tax. Deadweight costs are represented by the grey triangle.

Negative Deadweight Loss

Sometimes, state intervention is necessary so that a situation similar to excessive tax burden is eliminated. This is especially true in the case of market failure when there is a higher production of some goods than is desirable (e.g. pollution). Or, on the contrary, there could be decreased production of a good (research projects). In such cases, an assessed tax / subsidy can help to increase efficiency. These policies also give rise to **negative deadweight loss.**

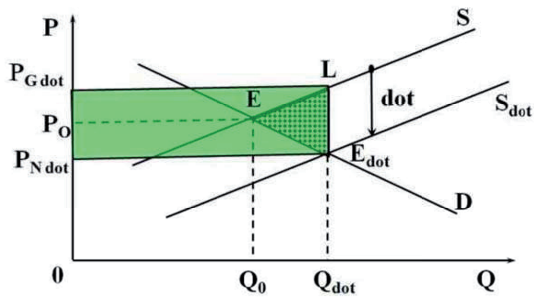


Fig. 6: Negative excessive tax burden (negative deadweight loss) **Source:** own based on Hamerníková, 2010

The left section of Fig.6 demonstrates the situation when because of market failure, there was too high production of a good. Taxation limited the production because it increased the producer's costs and the supply was decreased from S_0 to S_T. The demanded amount has adapted to the new situation on the market and there is a new balance at amount Q_T and price P_T. Negative deadweight loss is given by the triangle E_0

LE_T. On the right side is a similar situation with the difference that the market failure causes a lower production of a good. Then the state starts to subsidize this good's production. The amount of the subsidy is demonstrated by the colour green. Because of the subsidy, there will be amount Q_{dot} at price P_{Ndot} or rather P_{Gdot} produced and demanded. In this case, the negative deadweight loss is given by the triangle $E_{dot}LE$.

The Administrative Costs of Taxation

The administrative costs of taxation are the second largest group of costs connected to taxation and its subsequent collection after deadweight costs. Based on who carries the administrative costs, these costs can be divided into **direct** and **indirect.**

Direct administrative costs affect the public sector. There are classified various costs for administration connected to taxes and their collection (from the creation of laws to statistical monitoring, etc.)

Indirect costs concern taxpayers. These include the costs connected with tax consultants, accounting management (profits or expenses) for purposes of filing tax returns and administration connected with the filing of tax returns.