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SPESA PUBBLICA

Analisi storica della sua evoluzione e dei determinanti

PUBLIC SPENDING

A historical analysis of the evolution and its determinants

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Lo scopo di questo paper è quello di effettuare un'analisi storica ed economica della spesa pubblica: l'evoluzione, la crescita e i possibili determinanti. Nell'ultima sezione ho condotto uno studio dei dati storici degli ultimi 50-60 anni nei paesi OECD utilizzando variabili demografiche ed economiche. La spesa sociale rappresenta la componente più importante e rappresentativa dell'andamento della spesa totale e sembra avere una relazione non lineare ad U rovesciata con il PIL pro capite, confermando una "legge di Wagner" in chiave moderna. L'ipotesi di Rodrik è verificata per la spesa sociale. Anche altre categorie di spesa come la sanità e l'educazione sono correlate con alcune variabili demografiche e di globalizzazione. La disoccupazione in particolare risulta positiva e significativa per tutte le categorie di spesa.

The aim of this paper is to conduct an economic historical analysis on public spending: the evolution, growth and possible determinants. In the last chapter I studied the historical data for the last 50-60 years in the OECD countries, using demographic and economic variables. Social spending is the most important and representative component of total expenditure and it appears to be in a non-linear inverse U-shaped relationship with the per capita GDP, confirming a modern "Wagner's law". Rodrik's hypothesis is verified for social spending. At the same time other expenditure categories like health and education are correlated with demographic and globalization variables. Unemployment in particular is positive and significant for all categories.

INTRODUCTION

Unlike other economic issues, public spending is a central argument of discussion among citizens. We hear about it every day in the news and we believe that the government should finance a certain activity or should not engage in others. Even if most of the expenses are difficult to dismiss or reorient in the short and medium term, a certain degree of discretion is possible for politicians. Therefore, based on

the different political agendas, we vote, hoping that the elected government will lower taxes, or increase the subsidies or disengage from a particular activity. In fact, we need to be informed and to be involved, at least with the democratic voting system, in the decisions on public spending, because government expenditures impact our life as citizens. Since this is probably one of the most discussed and controversial argument in economics, I decided to write a research paper on it. In this work the reader will not find a receipt on how governments should spend their resources, nor how much spending is optimally needed. I will leave this topic to politicians and bureaucrats. This paper is intended to present public spending from a historical perspective: why it is needed, how it evolved over time and the main theories attempting to explain what determines its growth or decline. In the first two chapters, starting from the role of the state as an institution and the economic interventions that it is supposed to implement, I will report the historical evolution of public spending, with a focus on the last 150 years. In the third chapter I will discuss the main theories on the determinants of these outlays. The different hypotheses are sometimes conflicting and they will be reported and commented. Thus, it will be possible for the reader to make an opinion on which are the most convincing theories. Finally, in the fourth chapter I am going to analyze historical data for the most recent period (from the second half of the 20th century up to today) and present the results that I obtained. I will give personal explanations, in part based on the theories commented in the

previous sections. I will find confirmation of some notorious hypotheses and provide some meaningful insight on the evolution of public spending in the last 50-70 years.

CHAPTER 1 - INSTITUTIONS

Institutions are “human devised constraints” (formal and informal) that structure political, social and economic interaction (North 1991). They evolve along with society and shape the economic outlook. From an economic history point of view institutions were born to create order and reduce uncertainty in exchanges, that in turn would produce a favorable environment for economy with increasing productivity and reduced transaction costs. Transaction costs in this meaning are all the explicit and implicit costs of exchanges among agents, so that improved mobility of capital, better contract enforcement, reduced information costs, reduced risk are all examples of the evolution that accompanied the development of modern societies. Gauging and defining the power of the institutions and how it is built is therefore the starting point of any economic history historical analysis.

In this work, the object of my observation is the **state**. The role of the state is at the core of the economic discussion about its size, in fact what the societies believe the state should do is the justification of its expenses and interventions.

In the distant past when individuals started to gather into groups there was little need for a government in today’s sense of the word. With the passing of time the first governments were created, but their scope and thus their use of resources was limited to **defense, police and administration**. With the development of

civilization institutions changed, but it was only in recent centuries that the so-called democratic states started to appear. With the spread of political and human rights in the societies the role of the state and its presence in the economy started to be questioned. In the 19th century classical economists generally advocated a state with minimal economic functions. The scope of the state was essentially limited to the defense of individual rights, in this regard the millennia old functions of the state were still the only to be considered as acceptable, with the notable exception of **public education**. At that time classical economists believed that government should be small and limited to the allocation of resources and their protection.

Many models have been formulated about the role of the state and its relationship with government size, however, as we will see in the third chapter, no single theory alone is capable of explaining the growth of public sector over a long period of time. Thus, I found interesting to report an abstract from a contribution by Myhrman (1985) that summarizes some theories about the role of the state in the economy. In the following paragraph I will review its observations on how the role of the state enters economic models and whether it is successful or not in describing the growth of government.

The first modern economic model is the **neoclassical** one, that started to be popular among economists in the 19th century. In the original formulation

institutions are completely excluded. However, in following developments a few circumstances where state intervention is needed are introduced. These circumstances are what economists generally refer to when talking about **"market failures"**: essentially the problem of the provision of **public goods** (that in a pure market equilibrium are underproduced) and the presence of **externalities**. Externalities are effects of an activity that fall onto subjects different from the operator of the activity itself; these effects can be positive or negative (e.g. pollution), but their characteristic is that they are not payed for or compensated. The result is that a deviation from efficiency occurs, since there are costs or benefits that are born but not compensated. These conditions prevent the possibility of an efficient equilibrium in the model with a free market solution. Therefore, with the presence of these "failures", the state is needed to guide the economy to an efficient equilibrium. **Redistribution** is added to these arguments as a reason for government intervention.

With this approach the government has no autonomous behavior, but its only goal is to correct market failures. In order to do so, it needs **perfect information** about the structure of the private economy (costs, preferences, utilities…). With these assumptions the government is similar to a firm in the hypothesis of perfect competition: it sells all the quantity demanded at the cost of production. In this case the state is a monopolist, but it can not sell the monopoly quantity at a higher

price, reaping the extra profit. In this scenario it is as if the voters/consumers produced the government output themselves and charged the marginal cost of production. Another difference with the private market is that here the consumers can not decide the quantity of the good purchased, but they all must participate to the public good in order to avoid the free-riding problem. In the neoclassical theory these public goods are the institutions necessary for the functioning of the state (defense, legal system, political system…). This model is therefore called the **minimal state**. If the system is financed through a lump-sum (fixed) non-distortionary tax, the interference of the state in the activities of private citizens is minimal, creating what is defined a laissez-faire economy.

In parallel to the literature on market failures, there are theories of **government failures**. I will not treat them extensively in this paper, but they are considered the main reason why the state does not engage completely in the economic activities of a country and provides all the goods and services demanded. In fact, interventions of the state in the economy (such as taxes or regulations) can hinder the efficiency of the free market solution. Not only taxes could have this distortionary outcome, but also public financing can discourage and substitute private investment (the phenomenon of the "crowding out"). On top of that corruption of the politicians and bureaucrats can result in economic inefficiencies, as well as in illegal activities. Having pointed out that the presence of the state can

be seen as a trade off between market and government failures I continue with the historical model.

With the development of taxation technology (e.g. income taxes) and the enlargement of the voter base, the **median voter theory** was introduced in the model. The median voter is the decisive voter in a democratic system, so the government elected by the median voter preference will implement policies in favor of its electors. Thus, a redistribution of income towards the median earners will take place. With all these assumptions the neoclassical model with perfect information is built, a model that explains government size as a function of the demand for public goods and the median voter demand for redistribution. Unsurprisingly, with all these ideal conditions, the theory is not capable of explaining the observed government expenditures.

Further contributions to the neoclassical model included information costs and transaction costs, moving the assumptions closer to a real economy, but this theory alone, again, was not satisfactory in explaining the differences among governments. Therefore, to formulate a more appropriate model, something must be changed. The next step is to introduce a **preference function also for the politicians**. In fact, the people in charge of running the state do not maximize the utility of the voters, but the maximize their own utility taking into account different factors (among them is the preference of the median voter that is their

electoral base). In this approach the politician is similar to an executive director of a large company and the voters are the owners, opening space for agency problems. The politicians then will try to maximize their utility by obtaining benefits and influence. This search for influence united with the difficulty of control over politicians by the voters (high information costs, diverse preferences), especially for large communities, leads to a complicated system, in which different interest groups pressure politicians to act according to their preferences. To add even more complexity to the analysis, preferences change over time and so ideology and culture assume a fundamental role in shaping decisions and behaviors, therefore contributing to define government size. The conclusion of Myhrman is that if one wants to investigate on government involvement in the economy and consequently its size, he must consider how the principal agent problem translates into an implementation of policies by the state. In other words, it is necessary to understand the dynamics of special interest groups and voters and how they influence the behavior of politicians through the institutional system.

Having discussed the role of the state and how the most important modern institution intervenes in the economy, it is now important to assess what are the processes that create a stronger presence of the state. In the next section I will define the concept of state capacity and how it is involved in the discussion about

the size of government. After reviewing the history of the evolution of government size in the second chapter I will report the main theories about its growth in the third chapter.

1.2 STATE CAPACITY

The role of the state, and consequently its size, are directly linked to its ability to implement policies and rule the society: this characteristic is called **state capacity**. State capacity is a concept that comprehends different measures of state power. According to Cingolani (2013) these are: coercive, fiscal, administrative, transformative, relational, legal, political. In the following section I will provide a brief introduction to the topic and report theories about the historical development of state capacity.

Coercive capacity is the most basic attribute of a state and it is the ability to monopolize the administration of coercive power. This characteristic allows to discourage internal conflict and protect external borders. This is crucial from an economic point of view, because the effectiveness of this power is a necessary requirement to secure property rights and allow executive constraints.

Fiscal capacity is fundamental for the growth of government, since it is the ability to extract resources from the society. These revenues represent the main source of income for the state and they are at the base of the budgeting process. Therefore,

the ability to spend is heavily dependent on revenues and ultimately on the fiscal capacity.

The implementation or **administrative** capacity is the existence of a professional and insulated bureaucracy that allows the impersonal implementation of policies. **Transformative** capacity is the dimension that measures the ability to intervene in a productive system and shape the economy. **Relational** capacity is the extent to which the state permeates the society and is able to internalize social interactions within its actions. It is more of a political and sociological indicator rather than an economic one and it is not easily captured by statistics.

Legal capacity, together with coercive and fiscal ones, is another key determinant of the prosperity of the economy in a country. It entails the existence of a stable legal system that limits the intervention of the state, thus enabling credible commitments and contract enforcement.

Political capacity is the ability of elected leaders to enforce their policy priorities across different institutional players. All these dimensions occur to be part of the process of state building and by shaping the role of the state and its power, they contribute to determine government size.

In historical terms, the emergence of a well-functioning state is a relatively recent phenomenon, in fact the word “state” in its modern meaning only appeared in the

end of the 16th century. Historically the two major components of state capacity are **legal and fiscal capacity**, in other words, the ability to enforce rules (deeply connected with coercive capacity at an initial stage) and to collect tax revenues to implement policies. According to the available data (Johnson, Koyama 2016) figures suggest that fiscal revenues in European countries (England, Spain, Prussia, France, Austria) increased equally during the period 1500-1900. However, it is important to distinguish between patterns of similar growth in different countries, since they experienced different political histories.

England is considered by historians as one of the most successful countries in state capacity building, where in the 18th century already had high fiscal capacity and constraints to the power of the sovereign together with some sort of rule of law. England had a long tradition of political integration and effective centralized rules and was able to implement a precocious centralization of fiscal and legal institutions. The rise of the parliamentary supremacy after the Glorious Revolution contributed to the increase in state capacity leading to a military state with high fiscal power. Johnson and Koyama argue that it was due to the low heterogeneity of population and geography, that the kingdom of England was able to successfully centralize institutions before the other monarchies. With a more efficient taxation system, it switched away from tax farming (the involvement of intermediary figures in the collection of taxes) before other countries, and military

competition that provided incentive to invest in state capacity, England had a more efficient and centralized state in comparison to the European countries.

The French experience of state building was different from the English one, in fact central authority coexisted with local power holders. During the 17th century France witnessed a considerable increase in State capacity, but it was only after the revolution that the legally and fiscally fragmented system started to be unitary.

Russia and Prussia followed a coercive path to state formation, in fact they both relied on mandatory conscription to increase the power and control of the authority and achieve unity, however Prussia could build a more efficient bureaucracy due to the smaller size of its population and territory. Also Austria had to face the same barriers in building state capacity. The heterogeneity of a vast empire with numerous ethnicities made it difficult for the Habsburg dynasty to unite the legal and fiscal system and establish an efficient unitary bureaucracy. However, by the end of the 18th century all these countries had made considerable improvement in state capacity and could be considered as states in the modern meaning.

In contrast, Spain was less successful in building a centralized state. The plethora of local elites, city republics and landholders contributed to the failure in establishing a unified fiscal apparatus. Even with the Bourbon dynasty in the 18th century the attempt to impose a common tax on the entire country failed.

Therefore, even with important differences in the internal process of state building of the single countries, Europeans were able to build modern states and increase state capacity during an arch of three centuries.

In recent years, a vast literature on state capacity has risen. The majority of the studies concerns the historical determinants and the relationship that state capacity has with economic growth and the development of a country. While the outcomes of state building and its implications for the national economy are not of my concern in this work, I will report briefly about the possible causes of state capacity. The main literature regarding the determinants of state capacity considers three different thematic areas: the role of conflicts, the incentives to invest in state capacity and the political, administrative and behavioral environment.

One of the most accurate and extensive works on analyzing the determinants was done by Besley and Persson (2009). The two authors contend that legal and fiscal capacity are complementary in the process of state building and that they share common factors that shape the decisions of investing in state capacity. The ability to **enforce contracts and collect taxes** are, in fact, key aspects of development. The main determinants that shape the cost of investments, define political institutions and entail interest in financing public goods are historical incidence of war, parliamentary democracy and German and Scandinavian legal origins.

External conflicts as opposed to internal ones (that create instability and division, wreak havoc in infrastructures and undermine the ability to provide public goods) help the state to centralize power, reinforce revenue extraction, create unity and cooperation, raise the demand for public goods. Parliamentary democracy on the other hand is considered the most representative democratic system that often entails higher levels of public spending. Finally, according to Besley and Persson, another common aspect that shapes the environment towards greater fiscal and legal capacity are the origins of the legal system. They found that German and Scandinavian legal systems have somehow affected the ease with which contracts can be done and taxes can be collected with respects to other systems, this characteristic led to higher investments in both dimensions of state capacity.

CHAPTER 2 - GOVERNMENT SIZE

After discussing the role of the state, in this chapter I enter the central argument in the economic debate and one of the most important issues in political economy. Public opinion and specialist's view of the role of government in the economy has changed during the years and so have done the institutions, with consequences on revenues and expenditures. To be able to measure the importance and the presence of the state in the economy, it is necessary to define the object of the analysis: economists usually take **expenditures** of the state as an approximation of its size. Even if a raw economic indicator can not fully capture the importance of such a complex institution, gauging expenditures is better than using revenues, because the two items are not always balanced, in fact fiscal deficits and surpluses occur often. Therefore, the impact of the state can be represented by its spending, that is the component that might be problematic when it is not balanced by revenues.

Government expenditure takes mostly place via the budgets of different levels of government. These outlays, that can be called **public spending** and can be classified into different **functional and economic categories**, generally define what is known as **government size**. During the last century government size has grown to levels that were unimaginable just a few decades before, raising up the question whether this new order is justified and efficient. In the following sections

I will give an historical overview of the growth of government size and the evolution of the different components of expenditure.

2.2 PUBLIC SPENDING GROWTH

Data about public finances are available up to the beginning of 19th century for some developed economies, but it is only from the second half of the century (around 1870) that we have information for more countries (Tab. 2.1).

At that time public expenditure was **limited** and averaged around 11% of GDP, with differences between countries: Australia and Switzerland above 15%, Norway, Sweden and US below 8%. Until WWI state outlays did not change much in relative terms, in fact in 1913 the average was only 13%. The **war** was the cause of a considerable increase of public spending raising the average up to 19%. The countries that were most affected by the conflict (France, Germany, Italy, UK) saw their expenses exceed the 25% level. After the war **general attitude** towards the government and its role started to change (as suggested by Keynes's 1926 book *"The end of laissez-faire"*). The scope of the government widened and consequently by the end of the 20s many European countries had introduced rudimentary social security systems. The Great Depression contributed to the expansion of public spending to tackle unemployment and recover from one of the most impactful market failures of the century. By 1937 the average public spending had more than doubled (23%) the 1870 level reflecting this new

expansionary wave and the armament of European states in anticipation of the growing menace of a conflict. However, it must be mentioned that part of the increase of the relative expenditure on GDP was due to the fall in GDP subsequent the Depression rather than a real increase in government size. After the war public spending increased moderately on average, but with differences among countries with some of them at a level below 20% and other over 30%, thus in 1960 the average government size was 28% of GDP.

The following period (1960-80) is called the **"golden age"** of public sector intervention. These years saw an unprecedent enthusiasm for activist expenditure policies coupled with **rapid growth** of government involvement in the economy. Keynes's thoughts started to become popular among economists and socialism was appealing western countries after the war. The change in attitude towards the government led the societies to demand more state intervention and increased public spending. This intellectual belief of a **positive role of the state**, accompanied to a greater effort in guaranteeing human rights contributed to the erosion of legal-institutional constraints on fiscal deficits. Welfare rights became viewed as constitutional in many European countries and the legal framework started to change to permit expansionary interventionist policies. In only two decades average expenditure grew by 15 points, reaching 43%. Some countries even surpassed the 50% level, with Sweden topping the list at 60%. In 1980 all

the developed economies governments spent at least the equivalent one third of their GDP.

The biggest difference with earlier peacetime periods was not only the growth of spending, but the **misalignment between revenues and outlays**, leading to persistent deficits and growing interest expenditures. Most countries thus saw their public debt growing and for some of them interest related expenditures became a serious burden for public finances. It was also due to growing public debt and to the failure of government policies to allocate resources efficiently that in the 70s the attitude towards state intervention started to change and the belief that government had grown beyond its justified role became widespread. In the following decades policies slowed down the processes of the previous years and some countries even reduced their spending. On average in 2000 the level of public expenditure was not different from 1980.

The following years were characterized by a further increase in government size, partly due to the revival of Keynesian policies, partly to the global financial crisis. Savings reforms were accompanied by a rapid, but temporary growth in expenditure ratio (after the crisis less affected countries experienced a 4% growth, while it was by 11% for the most affected ones). Therefore in 2017 average public spending was 43.9%, a small growth if compared to the 42.7% of 2000. However, this increase is understated by the decline in interest spending that followed the

after-crisis policies. In fact, primary expenditure (total minus debt service) grew by 3 points. In this environment of high level of public expenditure and significant debt, the COVID-19 pandemic is expected to at least temporary further increase government size.

Tab. 2.1

Total Expenditure by General Government (% of GDP)

	About 1870	About 1913	About 1920	About 1937	1960	1980	2000	2017
Euro area								
Austria	10.5	17.0	14.7	20.6	35.7	50.0	51.0	49.1
Belgium 1/	..	13.8	22.1	21.8	30.3	54.9	49.1	52.2
Finland	..	..	..	..	..	40.0	48.0	53.7
France	12.6	17.0	27.6	29.0	34.6	46.3	51.4	56.5
Germany	10.0	14.8	25.0	34.1	32.9	46.9	44.7	43.9
Greece	..	..	..	..	..	..	46.4	48.0
Ireland 2/	..	..	18.8	25.5	28.0	48.9	30.9	26.1
Italy	13.7	17.1	30.1	31.1	30.1	40.6	46.6	48.9
Netherlands 1/	9.1	9.0	13.5	19.0	33.7	55.2	41.8	42.6
Portugal	..	..	..	..	..	32.3	42.6	45.9
Spain 1/	..	11.0	8.3	13.2	18.8	32.2	39.2	41.0
Other EU								
Denmark	..	..	..	..	..	52.7	52.7	51.9
Sweden	5.7	10.4	10.9	16.5	31.0	60.1	53.4	49.1
UK	9.4	12.7	26.2	30.0	32.2	47.6	35.4	41.1
Other advanced economies								
Australia	18.3	16.5	19.3	14.8	22.2	33.6	36.4	36.4
Canada	..	..	16.7	25.0	28.6	41.6	41.4	41.1
Japan	8.8	8.3	14.8	25.4	17.5	32.0	38.0	39.2
Korea	..	..	..	..	..	23.0	24.7	32.4
New Zealand	..	..	24.6	25.3	26.9	38.1	37.5	38.7
Singapore	..	..	..	..	..	..	19.6	..
Switzerland	16.5	14.0	17.0	24.1	17.2	32.8	33.8	34.7
US	7.3	7.5	12.1	19.7	27.0	34.9	33.7	37.8
Average 3/	11.1	13.0	18.9	23.4	27.9	43.2	42.7	43.9

Sources: Schuknecht (2020), based on OECD, Ameco, WEO, Tanzi and Schuknecht (2000). Year indicated or nearest year available.
1/ Central government until 1937.
2/ When taking GNP instead of GDP for Ireland, the ratios for 2000 and 2017 are 35.5% and 32.9% respectively.
3/ Unweighted, excluding SGP (Singapore) and KOR (South Korea).

Although there is debate whether for high levels of intervention an increase in public spending contributes to an improvement of the welfare, it is undoubtful that in some countries current expenditure programs represent a menace to the future finances. Some categories like health and pensions, that already represent a large portion of public spending, are expected to grow to even higher levels in the next decades. This casts serious doubt on the **sustainability** of current policies and causes concern among economists.

For these reasons some of them advocate a leaner role of the state and theorize a government that intervenes less and leaves more space to the markets. Economists like Tanzi and Schuknecht maintain that the state should disengage from the production of goods that can be provided by the public sector, in fact almost all the state monopolies of the past are now unjustified and the government should leave space to the market intervention. In a globalized world (with an ideally functioning market) the state should aid those in need and produce basic welfare for everyone, but beside that it should only assume a regulatory function.

Nonetheless there are economists like Acemoglu, Robinson and Verdier (2017) who believe that it is possible to have a world with an asymmetric equilibrium in which technology and innovation leaders with higher levels of inequality coexist with countries with greater welfare state and the same economic growth. While the first countries would be richer the others would have higher standard of living

due to the policies of welfare and redistribution. The model theorized by these authors brings the conclusion that not all the countries can afford to be in the second group, because there is the need of a leader that supports the other economies with positive externalities such as knowledge spillovers. This model explains, at least partially, why there are countries like US, economic leader with lower level of public spending and greater inequality than European nations, and other like the Scandinavian ones, with high levels of welfare and low inequality.

In conclusion while theories about the optimal government size and the engagements of the state can differ in outcomes, the data show that developed countries can have quite pronounced differences in the expenditures of the government and still have competitive and well-functioning economies.

2.3 COMPOSITION OF PUBLIC SPENDING

When we analyze government size, we are considering an **aggregate measure**. Expenditures can be classified according to their **economic reason** (consumption, investment, interest payments, subsidies and transfers), to their **function** (defense, education, health, pensions, etc.) and to their **level** (central government, federal state, local government). The first two classification are the most insightful when trying to understand how the government grows and identify areas of intervention and possible inefficiencies. The territorial division of public expenditure is usually not considered, since the object of the analysis is total expenditures, however in

some cases (for example when data about total expenditure are missing) central government is used as an approximation of total expenses.

The growth of government during the last 150 years has been accompanied by changes in the composition of public spending, this reflected the changes in public opinion and schools of thought about what government should do. In the 19th century spending was mostly limited to law and order, defense and some services and investments. Subsequently the provision of goods and services was extended considerably. In recent decades real expenditure (consumption) has not grown as much as transfers to the point that nowadays in advanced countries these two components represent the 90% of total spending. The growth of social benefits up to over 50% of total spending in advanced economies is the result of the evolution of views about the role of the state and the consequent policies during the past century as well as the ageing of population and the subsequent increase of people in need of assistance (pension, health, etc.).

Historically, from an economic point of view the most important component is **real expenditure**, also called consumption. This category comprehends wages, salaries and materials and supply purchased by the government. Consumption grew from an average 4.6% of GDP in the second half of 19th century to around 18% in 1980 (Tab. 2.2). In the last decades it has not changed significantly and it represents between one third and half of total spending as in 1870. Inside this

category the change of composition since the end WWI is evident: defense was the first voice of expenditure absorbing more than half of the resources, but during the years it became less important in favor of public employment (wages) and expenditure programs such as health and education. Today public employment alone accounts for 60% of real expenditure, roughly 10% of GDP.

The other economic category that saw a dramatic rise during the 20th century is **transfers** (and subsidies), that is the result of increasing government involvement in social area. The emerging of social security systems in the first half of the century caused the transfers to increase up to almost 10% of GDP, but it was in the second half of the century, with the advent of the so called welfare state, that transfers became the first voice of spending. After 1980 the expansionary trend continued at a slower pace, driven by demographics and other factors.

The other two categories have less impact in advanced countries. **Investments**, that have been declining as a share of GDP since the 19th century with the other voices of expenditure becoming more important, account now for less than 4% in most economies. **Interest payments** represent around 1% of GDP in developed economies, and they are contained by a low interest rate, however for some countries debt service can be an economic burden, due to the high level of public debt.

From a functional perspective the classic public goods (education, health, defense, law and order) do not absorb a large share of public resources. In advanced countries **education**, that has been growing since the 19th century, is at 5% of GDP, while **defense** expenditure, that has been declining after the end of the World Wars, together with public order accounts for another 3%.

Health provision deserves a separate mention because it represents a larger share and it falls under the category of social expenditure. **Social expenditure** is the most important voice in functional public spending and includes socially related subsidies and transfers together with other kind of expenditure for social purposes: its main components are **health, pensions, long term care, family and child benefits and unemployment**. 1960 is the first year for which comparable data about social expenditure are available for OECD countries: at that time, it accounted for one third of total spending, roughly 10% of GDP, but it has grown ever since. That value almost doubled during the 1960-80 period and had a rather constant growth since the 80s, the result was that in 2016 it was 24.1% of GDP (Tab. 2.3), more than half of total government spending. No single program implemented by governments is responsible of the dramatic increase in welfare spending in the last century, but all of them combined represent a large share of expenditure.

The two prominent sectors in this category are **health** and **pensions**. Public health insurance was first introduced in a few countries even before 1900, but it was only in the following century that it became widespread. Nonetheless in 1960, health expenditure in developed economies averaged 2.4% of GDP. In 30 years, outlays in this sector more than doubled, due to the extension of benefits, the ageing of population (and the raising of life expectancy) and the increasing costs of health services. In the last decades spending did not grow much in share, remaining between 6 and 7 percentage points of GDP, reflecting the effort of governments to limit the use of resources and control costs, however this category is under constant pressure due to the factors mentioned before.

Pensions followed a path similar to that of health, but they represent a larger share of resources and they have to sustain even heavier pressure due to the adverse demographics of the last decades. The period of the "takeoff" is the same even for this category: 1960-80. During these years increased eligibility, higher benefits, population ageing and unemployment contributed to drive up the cost of pensions. Today pensions absorb around 8% of GDP in advanced economies (OECD), but with significant differences among countries (more than 15% in Italy). However, this component is of serious concern, especially where pension system is a public pay-as-you-go (a system in which pensions are payed by the contributions of

current workers), in fact the demographics change is exercising pressure and less workers must sustain the economic weight of an increasing share of retired.

Tab. 2.2

Public Expenditure Composition, General Government, 2018 or latest available year (% of GDP)

a. Economic classification

Country groups	Total spending	Public consumption	Compensation of employees	Government investment	Net interest payments	Transfers
OECD	41.5	16.6	9.9	3.3	1.2	19.7
Advanced	42.0	16.7	9.9	3.3	1.1	21.4
Emerging & Developing	31.3	16.9	8.1	3.1	2.2	9.9
Africa	27.3	NA	7.6	2.8	3.0	8.5
Latin and North America	36.6	16.8	9.5	2.6	2.5	13.2
Asia/Oceania	30.6	13.8	6.9	4.2	1.0	12.6
Europe	44.3	17.7	10.6	3.2	1.2	23.0

Note: Group averages are simple averages of the countries included for each region.
Source: OECD, IMF, BCG, 2018 or latest available year. See Annex for detailed notes.

b. Functional classification

Country groups	Education	Health	Defense	Public order and safety	Environmental protection	Social Protection
OECD	5.0	6.6	1.4	1.6	0.7	15.6
Advanced	5.0	6.7	1.5	1.6	0.7	15.9
Emerging & Developing	3.4	2.3	1.2	1.6	0.2	6.0
Africa	3.6	1.5	1.2	1.5	0.2	2.9
Latin and North America	3.9	4.4	1.3	1.7	0.2	7.7
Asia/Oceania	3.7	3.8	1.6	1.4	0.6	7.0
Europe	4.9	6.4	1.3	1.6	0.7	17.8

Note: Group averages are simple averages of the countries included for each region.
Source: OECD, IMF, BCG, 2018 or latest available year. See Annex for detailed notes.

Tab. 2.3

Social Expenditure (% of GDP)

	1960	1980	1990	1999	2007	2009	2016
Euro area							
Austria	15.0	22.0	23.2	25.8	25.1	27.5	27.8
Belgium	11.4	23.1	24.4	24.6	24.9	28.6	29.0
Finland	8.2	17.7	23.3	23.8	22.9	26.9	30.8
France	12.0	20.2	24.3	28.6	28.0	30.5	31.5
Germany	15.4	21.8	21.4	25.5	24.1	26.7	25.3
Greece	3.3	9.9	15.7	18.0	20.6	23.7	27.0
Ireland 1	7.1	15.7	16.8	13.7	15.8	22.2	16.1
Italy	10.7	17.4	20.7	22.8	24.7	27.7	28.9
Netherlands	9.6	23.3	24.0	19.1	19.9	21.6	22.0
Portugal	..	9.5	12.2	17.2	21.8	24.6	24.1
Spain	..	15.0	19.2	19.8	20.8	25.4	24.6
Other EU							
Denmark	..	20.3	22.0	24.5	25.0	28.3	28.7
Sweden	12.6	24.8	27.2	28.0	25.5	27.7	27.1
UK	9.7	15.6	15.2	17.7	19.5	23.0	21.5
Other advanced economies							
Australia	5.9	10.3	13.1	17.3	15.9	17.0	19.1
Canada	8.1	13.3	17.5	16.0	16.2	18.0	17.2
Japan	3.5	10.2	11.1	16.0	18.5	21.9	23.1
Korea	..	..	2.7	5.8	7.1	8.5	10.4
New Zealand	11.4	16.7	20.5	18.7	18.1	20.4	19.7
Singapore							
Switzerland	4.2	12.8	12.1	17.0	16.8	18.6	19.7
US	7.0	12.8	13.2	14.2	15.9	18.6	19.3
Average 2/	9.1	16.6	18.9	20.4	21.0	23.9	24.1

Source: Schuknecht, 2020 based on OECD, Social Expenditure.
1/ When taking GNP instead of GDP for Ireland, the ratios for 2000 & 2017 are 15.8% and 19.6%.
2/ Unweighted, excl. KOR and SGP.

2.4 PENSIONS

Pensions deserve a separate mention since it is the most troublesome category of expenditure in advanced economies (for a detailed picture of the current situation

in OECD countries check the table on spending on old-age and survivors benefits at the end of the chapter) (Tab. 2.4). Due to the ongoing ageing process in developed countries social expenditures, notably pensions along with health and long-term care, are likely to create budgetary problems in the future. The first country to introduce old age benefits was Germany in 1889, when the first pension insurance was introduced. In a few decades other European countries followed the example and by the mid-20s they had rudimentary retirement programs. Between the 20s and the 60s insurance coverage in advanced European countries increased so that if in 1910 only 20% of the labour force was covered by the programs, in 1935 it had grown to 56% and in 1975 almost all the working population, 93%, had access to the insurance. Also benefit levels increased, especially in the post-war period. The share of wages replaced by pension at retirement - the replacement ratio – increased from about 15% in 1939 to 51% in 1959 and to 62% in 1980. As noted before the period of greatest increase in pensions spending was the "60-80 golden era", with increased benefits and larger eligibility. These reforms were considered sustainable in a relatively young population, but in the following decades the ageing of advanced countries further contributed to raise old age-related outlays. During the 90s some countries managed to reduce the level of spending by the implementation of reforms like Netherlands and New Zealand, while others with more adverse demographics dynamics like Germany, Italy and Japan saw the voice pensions becoming heavier

on public finances. However due to the ageing of population more retired will have to be sustained by fewer workers, opening a gap between present value of future pension obligations and present value of future workers contributions, in this scenario many advanced economies will have to face the problem of increasing liabilities. Studies have been carried out about the implicit liabilities that will arise on the long run with current policies. The long-term nature of these studies makes them differ substantially in their estimations, but what we can learn from these researches is that the magnitude of these figures is of dozens of percentage points even in the most optimistic projections. Therefore, politicians can consider these estimations as a worrying signal that should push their agendas towards reforms in the pension system.

Problems arise both in the definition of benefits and in the scheme of financing. Not surprisingly, many OECD countries have been implementing pension **reforms** during the last decades. In the last years especially, there has been an effort to raise the age threshold for pension eligibility and to tighten the link between pension entitlements to lifetime earnings. In many countries, like Italy, there has been a shift from a **defined benefit** plan (in which pensions are fixed and depend on a number of factors such as years of contributions, accrual rates and individual earnings) to a more sustainable **defined contribution** plan (in which the pension depends on contributions), both public or private. While the

systems differ among countries, it is important to introduce elements of sustainability, either by differentiating the financing of benefits into various sources (public minimum pensions, public defined benefits or contributions, private) or by the introduction of tighter criteria for eligibility.

Reforms in this field are not easily accepted by the population, since they may affect directly the income (current or future) of taxpayers. They can also be costly in terms of shift from a system of financing to another. For example during the transition from a public **pay-as-you-go** scheme, in which benefits are sustained by contributions of current workers, to a **pre-funded** (or funded) scheme, in which the pension is paid by contributions that were invested in advance into pension funds, the finances must be large enough to cover both the benefits currently payed that were accrued with the old system and finance the entitlements of the new system. Usually public pensions are financed by a pay-as-you-go system, but in the future the ageing of population will require a mixed system with public or private funded schemes.

Having discussed the possible reforms in this category of expenditure I conclude the chapter on the historical evolution of public spending. In the following sections I am going to present the literature on the determinants of expenditure and conduct an empirical analysis on historical data.

Tab. 2.4

OLD-AGE AND SURVIVORS BENEFITS

	Level (% of total government spending)		Level (% of GDP)				
	2000	2015	1990	2000	2005	2010	2015
Australia	11.4	11.4	3.1	4.7	3.7	3.8	4.3
Austria	23.3	26.1	11.3	11.9	11.9	13.0	13.3
Belgium	17.8	19.9	8.9	8.8	8.9	9.8	10.7
Canada	10.1	11.5	4.2	4.2	4.0	4.3	4.7
Chile			8.0	5.0	3.7	3.4	2.9
Czech Republic	16.8	19.4	5.6	6.9	6.7	8.1	8.1
Denmark	12.0	14.8	6.1	6.3	6.5	7.2	8.1
Estonia	16.5	17.4		6.0	5.3	7.6	7.0
Finland	15.5	20.0	7.2	7.4	8.1	9.8	11.4
France	22.2	24.4	10.4	11.4	12.0	13.2	13.9
Germany	24.2	23.1	9.5	10.8	11.1	10.6	10.1
Greece	21.9	31.3	9.5	10.2	11.4	14.2	16.9
Hungary	15.8	18.4		7.4	8.3	9.6	9.2
Iceland	5.1	4.9	2.2	2.1	1.9	1.6	2.1
Ireland	9.5	12.4	4.8	2.9	3.2	4.9	3.6
Israel	9.4	12.0		4.5	4.7	4.8	4.8
Italy	28.9	32.2	11.4	13.5	13.7	15.4	16.2
Japan		23.9	4.7	7.0	8.1	9.6	9.4
Korea	5.4	9.0	0.7	1.3	1.5	2.1	2.9
Latvia	23.2	18.4		8.7	5.5	9.3	7.0
Lithuania	17.9	19.2		7.1	5.7	7.7	6.7
Luxembourg	18.8	20.1	7.8	7.1	7.8	8.0	8.4
Mexico		7.9	0.4	0.8	1.0	1.6	2.2
Netherlands	11.2	12.0	6.3	4.7	4.7	5.0	5.4
New Zealand	13.0	12.7	7.2	4.8	4.2	4.6	4.9
Norway	11.2	13.5	5.5	4.7	4.8	5.2	6.6
Poland	24.9	26.4	5.0	10.5	11.3	11.1	11.1
Portugal	18.3	27.7	4.8	7.8	10.0	12.0	13.3
Slovak Republic	12.0	16.2		6.3	6.0	6.8	7.3
Slovenia	22.4	23.3		10.3	9.7	11.0	11.1
Spain	21.5	25.2	7.7	8.4	7.9	9.1	11.0
Sweden	12.9	14.4	7.3	6.9	7.2	7.3	7.2
Switzerland	17.8	19.1	5.1	6.0	6.2	6.1	6.5
Turkey		21.4	0.7	1.8	6.0	7.4	7.1
United Kingdom	13.4	14.8	4.5	4.8	5.0	6.3	6.2
United States	16.7	18.7	5.8	5.6	5.7	6.6	7.1
OECD	**16.3**	**18.4**	**6.3**	**6.6**	**6.8**	**7.7**	**8.0**

Note: See Adema, W. and M. Ladaique (2009), "How Expensive is the Welfare State? Gross and Net Indicators in the OECD Social Expenditure Database (SOCX)", *OECD Social, Employment and Migration Working Paper*, No. 92, OECD, Paris, *http://dx.doi.org/10.1787/220615515052* for more details on the data, sources and methodology. Source: OECD Social Expenditures Database (SOCX); OECD Main Economic Indicators Database.

CHAPTER 3 – DETERMINANTS OF GOVERNMENT SIZE

So far, I have introduced the concept of the role of the state and its implications for the economy. Then I presented the evolution of government size in advanced countries during the last 150 years. But the bulk of economic literature on public expenditures is on the causes of its growth. Many studies have been carried out since the German economist **Adolph Wagner** (1835-1917) enunciated a law of "increasing state activity" in a number of subsequent publications starting in the second half of the 19th century. However, it is only after the Second World War, with the rapid expansion of government activities, that the literature on the determinants of the size of public spending flourished. Explanations on why government grows can focus on the so called **"demand side"** (external factors that influence the demand for government intervention) or the **"supply side"** (characteristics of the institutions that from the inside determine growth). During the last decades a wide range of models with the latest econometric techniques have been tested, nonetheless there is no single theory that alone is capable of explaining the evolution of the phenomenon on the long run. It is rather a combination of different approaches that can describe the changes in the trend of government size. For these reasons in this chapter I will review some theories and explanations about the determinants of public spending growth.

3.2 WAGNER'S LAW

Every study that has the purpose to analyze the phenomenon of the growth of government size and review the literature on the subject must mention the theory that "started it all". As I already introduced before, in 1883 Adolph Wagner formulated what successively became the **"Wagner's law"**. In subsequent publications he made references to his theory, so that what we consider the law is the result of his observations during the years 1883-1911. W. law is generally referred to (sometimes in a simplistic way) as a model in which public spending of a country grows with **GDP**, more than proportionally. In other words, to an increase of the GDP should correspond a larger increase of the amount of resources that are spent by the state.

Wagner had detected "regularities" in the data about the growth of government (with government he intended a definition comprehensive of central and local authority as well as public enterprises). Thus, its formulation started from the observation of an empirical regularity. He claimed that "there is both an absolute and relative expansion of the public sector within the national economy, particularly of government services for communal purposes and at the cost of the growth in the private sector" (Wagner, 1911). The growth could be different in the categories of expenditure but would include both the traditional ones (law and order, defense…) and the new functions that would arise from the growth of education, welfare and the changes in the structure of the economy. However, it

was not specified whether this growth was referring to only to a particular period (19th century) or could extend indefinitely. There are hints that Wagner considered the expansion continuous as long as there was "cultural and economic progress", with an undefined upper limit represented by the resistance of the taxpayers to heavier burdens.

Since the formulation is not precise and is far from being a law in the rigorous meaning, Peacock and Scott (2000) warn us not to misinterpret his findings and to be careful when building models based on his expositions. In fact, Wagner did not present an articulated model of the process of growth, while sometimes economists tend to use overly sophisticated constructions in the attempt to test his theory. He believed that there was **complementarity between industrial economy expansion and the demand for public services** such as transports, communications and waste disposal. At the same time, he postulated that the social problems associated with the process of industrialization and population concentration would require a greater and more uniform provision of welfare. In conclusion the reasons for state expansion were **pragmatic** and not descending from an absolute principle or from a general law. Notwithstanding the shortcomings of such a theory, many economists tried to specify the famous law, with different results. Even when not explicitly addressing to Wagner's work, almost every contribution to the research on government size includes GDP

among the factors that influence (or are influenced by) public spending. Having in mind the warning of Peacock and Scott, I will present a few studies that investigated specifically on Wagner's law (or Wagner's suggestion).

In the years after the Second World War, government expenditures saw a period of unprecedent increase. Parallel to this rise, economic literature about public spending flourished and many studies were carried out to identify the determinants of the phenomenon. W. law was one of the most recurring theories tested in the researches. Although econometric techniques were not advanced, the results of those decades were similar to today's findings. For example, Wagner and Weber in 1977 tested W. law on a set of countries for the period 1950-72. The model was simple and included different measures of government size (expenditures, consumption) and different measures of output (GNP, NNP) in absolute terms or relative to population, with the addition of a time trend that would capture variations of government size due to factors different from the output. The conclusions of Wagner and Weber are that W. law does not hold for too many countries to be considered a general rule and it is **hardly an empirical regularity**. The authors suggested not to look at the amount of data in the attempt to find universal laws, but rather to treat them as ingredients for a theory of **governmental behavior**. Economists should then include institutional changes in their researches and how politicians and bureaucrats implement these changes.

That would be the starting point of an analysis purporting to develop a theory of government growth.

With the development of econometric techniques, the univocal causal relationship between government size and GDP started to be challenged, to the point that nowadays many models use **co-integration analysis**, a model in which the variables influence each other without specifying a priori a causal direction. Investigating on the relationship between these two variables leads to the question whether there is an optimal level of public spending, since one can influence the other. In this regard Facchini and Melki (2013) tried to ask the question whether there is an optimal government size and gauge it. The starting idea is simple: government has benefits and costs. The provision of public goods, the resolution of the problem of externalities, social justice, regulation, welfare on one side; excessive burden of taxation, rent seeking, principal-agent problem on the other side. This suggests that there could be an equilibrium in which the benefits are maximized. This also hints that a linear relationship between the two variables can be an oversimplification, in fact linear studies have been inconclusive and suggested that in recent times, differently from the previous decades, there was a negative relationship between GDP and government size, especially for high income countries. These lead the literature into two directions: disaggregating public expenditures into components in the attempt to find different paths of

evolution or testing for **nonlinear relationships**. The study by Facchini and Melki follows this second approach. The model uses a co-integration method to explain GDP with a non-monotonic function that includes government size, squared government size and some control variables (economic openness, population size, share of taxes in GDP). The analysis focuses on a single country (France) over a long period of time (1896-2008), with two breaks in coincidence with WWs. The results, compared to other studies, are that there is indeed an optimal government size, but it appears to be different among countries due the institutional and cultural peculiarities of the nation observed. In France it is calculated at 30% (10 points higher than the estimates for the US) of GDP, leading to the conclusion that since the 50s optimal level has been constantly surpassed, causing inefficiencies. This confirms the theory of Tanzi and Schuknecht (2000) that in the second half of the 20th century the benefits of expansions of public spending in high income European states have been lower than the costs. This study exemplifies how GDP is a fundamental variable in the research and it is always included in public spending determinants, even when not explicitly referring to W. law.

A recent attempt to verify the validity of W. law that follows a different path (**disaggregation** of government spending) is in a contribution by Afonso and Alves (2016). The idea is to test for the elasticity of different categories of public expenditures with respect to GDP. If elasticity is greater than one, that entails a

growth of spending more than proportional than national income growth and W. law is confirmed, if it is below one or even negative, other explanations can be advanced. These alternative explanations are the **Counter-cyclicality hypothesis** and the **Budget stickiness hypothesis**. The first one supports the idea that governments tend to reduce expenses in favorable times and increase them during below average growth times in order to contrast the effects of business cycles. The other theory claims that public spending policies are targeted on the long run and significant variations are not easily implemented, so that budget is rigid to change. Thus, short run economic fluctuations should not influence government size. The authors use a sample of 14 European countries for the period 1996-2013. The results are consistent with the literature that tried to find a confirmation of W. law: there is no regularity among countries and the coefficients, when significant, support the hypothesis only in some cases. In conclusion they did not find evidence of a general W. law because only some categories of expenditure in a few countries presented elasticities greater than one (e.g. environmental protection in the Netherlands or housing and community amenities in France). Conversely, they found evidence of counter-cyclicality, with negative elasticities, suggesting that the analysis of public spending must be more complex and GDP should only be one part of a more articulated theory focusing on government behavior.

3.3 DISPLACEMENT EFFECT

In 1961, when the research on public spending was still at an embryonic stage, Peacock and Wiseman questioned the generality of W. law and introduced the **displacement effect** hypothesis to explain the growth of government in democratic countries. The fundamentals of their thesis are that decisions about public expenditures are taken **politically**, and so can be **influenced** by the pressure that citizens exercise on politicians. At the same time governments have their own objectives and utility in spending resources, so that their choices can be substantially different from the choices made through the market system. In their view, in stable times individual preferences about tolerable taxation are stable and citizens would not easily accept a raise of public spending, that would require a heavier tax burden. In this scenario it is imaginable a connection between government size and output, but a large growth of the size of public expenditures relative to GDP is unlikely. In fact, the influence of the tolerable tax level is greater than the desire to increase spending. The situation changes when **major disturbances** such as wars or crises shift public revenues and outlays to different levels. In this case new ideas about desirable taxation arise and a new plateau of public spending can be reached, with the population that can bear a heavier taxation and a broadened government intervention. This scenario is, again, stable until a new deviation occurs. In their theory, in times of crisis individuals are willing to accept methods of raising revenues that were intolerable before. This acceptance does not disappear after the disturbance is over, permitting a higher

level of public spending, previously impossible to implement. At the same time obligations of governments change persistently, as the result of new social ideas.

Alongside the displacement effect the authors identified another feature, continuously ongoing, but of particular intensity during displacement times: the **concentration process**. Peacock and Wiseman viewed these periods as lowering barriers that protect local autonomy and concentrating power over expenditures in the hand of central government. The two economists tested their hypothesis on British data over the period of the two wars, finding that government size growth in those years could be attributed to a displacement effect. While the validity of this theory can not be assessed continuously over time, but can only be considered in specific unstable periods, their contribution opens a new debate. It is, in fact, unavoidable to take into account the displacement effect when discussing on the determinants of government growth.

Following the idea of a historical path dependence of government size, Robert Higgs (1985) tried to explain what he called a **"ratchet phenomenon"** (the term ratchet effect was first introduced by Bird in 1971). When analyzing the evolution of government spending in the 20th century United States, Higgs found three regularities: the expansion did not involve public spending only, but an extension of government's effective authority over economic decision making; this expansion occurred largely during periods of societal crisis; parallel to this a

change in prevailing ideology of the society took place. The model he hypothesized (a descriptive model rather than a rigorous one) entails a constant growth of public spending interrupted by a sudden increase during the disturbance period, followed by a short plateau and a decline to a stage higher than the level that would be reached by the constant rate of growth. Thus, he is describing a **persistent shift in the economic scope and authority of the government**. His explanation on how democracies manage to increase their influence and expand the scope of their activities relies on the fact that politicians tend to conceal the true costs borne by the population. During a crisis, citizens want the state to "do something", but at the same time they would not accept a complete market solution, with all the costs clearly revealed. In this sense ideology contributes to extend the tolerance level of the voters to higher pecuniary and non-pecuniary burdens. In the following stage government size does not recede to the pre-crisis level, in Higgs opinion this is due to a persistent **change in the knowledge of the public**. Knowledge here is intended both as technology and ideology, two dimensions that change during the period and contribute to shape citizens orientation towards a broader scope of government. Therefore, the lesson that we can learn from Higgs contribution is that the study of the evolution of public spending can not be separated from the institutional and ideological analysis of the society.

Two of the major theories that intend to explain the long run growth of government spending are W. law and the displacement effect. On one side the absolute and relative growth of public expenditure due to the increasing complexity of society, to the urbanization and technological progress and to the income-elastic nature of some components of public spending. On the other side the hypothesis by Peacock and Wiseman of periods of upheaval in which tolerable taxation and the desire of government intervention come closer, opening the possibility of expanded scope and activity of the state in the economy. This second theory was further developed by many other economists, starting with Bird (1971,1972) that introduced the concept of "ratchet effect": he believed that upward shifts of government expenditure occurred more often than suggested by P. and W., in fact economic downturns tend to affect GDP more than public spending (that is more difficult to cut down), this resulted in a rise of government size in relative terms. Buchanan and Wagner (1978) hypothesized that this ratchet effect could be due to **countercyclical fiscal policies**. In their view democratic politics tend to give rise to secular budget deficits in absence of binding fiscal constitution, to the point that public spending rises (at least relatively to GDP) in recessions and do not decrease in expansions, resulting in an upward ratchet effect.

These two theories, a demand side explanation (W. law) and a mixed demand and supply side explanation (displacement/ratchet effect), have been largely tested (especially the first) during the 20th century, but there is a lack of studies that consider very long time spans. In this sense Durevall and Henrekson (2011) propose a study that differs from the previous ones. They analyzed rare data from the early 19th century (1800/1830) to 2006 for two advanced yet different European economies: Sweden and UK. In their analysis of W. law, they included dependency ratio (people younger than 20 and older than 65 over the rest of the population) as a possible factor influencing public spending rather than GDP by itself. The idea is that this category of people requires public assistance (child support, schooling, pensions and healthcare among others) and that the age structure of the population is heavily influenced by GDP, according to the demographic transition theory (in short developed economies tend to be older). In theory income growth would produce an older society and, in turn, larger government expenditures. Regarding displacement and ratchet effect, they consider the second as a generalization of the first and try to find support of this explanation by looking for persistent changes in public spending resulting from asymmetric response to economic recessions and expansions. The results are that they **do not find general evidence** of neither of the two theories. While W. law can be consistent only in some periods, there could be different and more complex explanations of the linkage between GDP and government size. Apart from the

dependency ratio, in the periods in which the relationship is present (40/50 years before WWI and 30/35 years after WWII) other processes were in action.

In the end, both the two approaches (W. law and ratchet effect) fail to support the empirical evolution of government size on the long run. While it is evident that periods of modernization of the society entailed greater spending in the 20th century, it is not the case of the last decades. Therefore, the authors suggest that more complex and integrated explanations should be formulated in the analysis of government growth taking into account the diversity of countries and the historical period. In fact, they put forward some additional hypotheses. Among them we can find the one from Meltzer and Richard (1983) and Lindert (1994,2004), that government grows in periods of **political enfranchisement**, in which more people under the median income can vote and **redistribution** takes place. The end of the 19th century was, in fact, a period of unprecedent political empowerment for lower classes. This theory could be enlarged to societies with unequal income distribution to explain greater redistribution pressure. Other explanations claim that reinforced tax collection (with new methods or the enlargement of tax base) enhances the government potential to spend or that different institutional arrangements shape how government spending is financed and provided, thus affecting in different ways countries with dissimilar systems like Sweden and UK.

3.4 TRADE OPENNESS

David Cameron in 1978 published a study claiming that the best single predictor of the increase in an OECD government's tax revenue as a share of GDP in the period 1960-75 was the **economy's openness** in 1960, measured as the sum of exports plus imports divided by GDP. The idea of Cameron was that more open economies tend to have higher industrialization, that entails higher unionization, that in turn leads to higher demand for government transfers that mitigate risks (social security, pensions, unemployment, training…). While his analysis was limited in time and variety of countries examined, and the role he attributed to labor organizations was too relevant in affecting public spending of developed countries, his hypothesis gave the input to the literature on the implications of economic openness on government size.

One of the most important theories that directly followed Cameron's findings is by **Dani Rodrik** (1996,1998), that continued the path of the risk mitigating role of government spending. In Rodrik's view more open societies are exposed to **higher external risk** and as a consequence they demand **higher government insurance** against it. In his regression Rodrik included two interaction terms to the openness factor: the volatility of the terms of trade and the product concentration of exports. He found that they are strongly significant, while the coefficient of openness becomes insignificant, supporting the theory that trade

openness influences government size through the risk mitigation channel. From this finding he draws the conclusions that, with a causal relationship, higher risk of trade leads to higher volatility in domestic income, that in turn is mitigated by greater public spending (both consumption and transfers). While for advanced economies, that can rely on more efficient institutions and a well-established welfare system, this risk mitigation is evident especially in transfer spending (social security, welfare), in developing countries the effect is translated through government consumption (mainly public employment). The importance of Rodrik's hypothesis is that it served as a starting point in the literature on the linkage between trade openness and government size. While his results have been discussed and sometimes questioned, it is undeniable that, contrary to the classical view of markets and governments as substitutes, there is a degree of complementarity (supported by empirical evidence) between them.

A different view on openness as a determinant of government size was proposed by Alesina and Wacziarg (1997). They put forward two hypothesis: country size emerges from a trade-off between the economy of scale of public goods and the costs of population heterogeneity, that is associated to larger countries; since market size influences productivity, large countries can afford to be closed to external trade, while small ones need to be open in order to reap the benefits of a bigger market. The first hypothesis suggests that **large countries** should be more

efficient when it comes to public good provision, thus they should have **smaller government consumption** as a share of GDP. The second one points that **country size should be negatively related to trade openness**. These two ideas put together imply that government **size and openness are positively correlated**, therefore this is an alternative explanation to that of Rodrik on the empirical positive association between the two factors. Even if their hypothesis puts the two measures in an indirect correlation (mediated by the country size), they do find evidence of a direct positive correlation between government transfers and trade openness. The results of their analysis confirmed the expectations, so they concluded that country size is negatively correlated with government spending and negatively correlated with trade openness. Therefore, there is a positive relationship between public spending and openness, although it is mediated by the country size factor. The consumption component of government outlays fits this explanation, while the transfers component can have a direct connection with trade, supporting the theory of Rodrik.

The hypothesis of a direct positive correlation between trade openness and government size finds some empirical evidence, nonetheless further studies on this topic casted doubts on the reliability of the results obtained in the past. In 2011 Benarroch and Pandey **challenged** Rodrik's findings claiming that there was no evidence of this correlation. They justified the novelty of their results with the

use of a dynamic model, instead of a static one, with country-specific fixed effects. The authors conducted the analysis with aggregated and disaggregated measures of public spending over different groups of countries (high income, low income). It appeared that when using a dynamic model and controlling for country-specific fixed effects and other control variables (GDP per capita, population, urbanization, dependency ratio), there is no evidence of a causal relationship between openness and government size, with the exception of education expenditure in low income economies. They instead found that for some high-income countries the relationship is negative, suggesting that openness may have reduced government size in some cases. Other tests for robustness of their results included dividing countries based on their polity (democratic and non-democratic) or using a different measure of openness (financial openness). In any case their conclusions ruled out Rodrik's compensation hypothesis and supported only in part Alesina and Wacziarg. In fact, while government transfers seemed unrelated to openness, they found support for a correlation between country size and public spending.

The two major theories on the empirical association between trade openness and government size has attracted both criticism and support during the years. While Benarroch and Pandey rejected Rodrik's hypothesis in 2011, two years earlier another study by Rati Ram had confirmed the validity of Rodrik's results against

Alesina and Wacziarg theory. In this regard a recent publication by Jetter and Parmeter (2014) can be explicative of the different conclusions obtained by diverse economists. Jetter and Parmeter continued Ram's work by replicating his results. They were successful in obtaining the same outcome: the two findings of A. and W. are rejected (country size is not negatively correlated with government size and trade openness) and Rodrik's proposition is verified (direct correlation between public spending and trade). But when they extended the model proposed by Ram to other datasets and prolonged the time periods the conclusions were not confirmed, if not completely reversed. The models proposed by Ram to support one theory against the other led to unclear conclusions. The choice of dataset, time period, sample countries and measurement of the variables are crucial for the validity of his analysis. The study by J. and P. did not conclude that Ram's findings were biased, but that A. and W. theory can not be rejected and the relationship between government size and trade openness is yet to be explained.

The lesson learned from this paper is that analysis on public spending determinants is a **complex** subject. The models proposed are various and even when testing the same one, using different datasets, or referring to different periods of time can alter the outcome significantly. A study purporting to discover the relationship between determinants or to test an already established model

should always take into account these implications in order to obtain **robust results**.

3.5 IDEOLOGY AND INSTITUTIONS

Until now this chapter has focused mainly on demand side explanations, neglecting the principal responsible of public spending growth: the government. In this section I will report some theories that found in the behavior of government and bureaucrats one of the causes of public spending growth.

A few decades ago, Borcherding (1985), cautious in ascribing the validity of his model to US only, tried to explain government growth in America during the 20th century. He was conscious that the state of the art of the research on public spending determinants was at an initial stage. His work considered not only demand side factors that influence the provision of public goods such as income effects (W. law) and population effects, but he also included supply side determinants such as price effects (cost differentials between public and private sector, that leads to higher public expenditure, also known as Baumol's disease) and political and social variables. The first set of determinants, that he called **a-institutional**, accounted for around 40% of public spending growth according to his calculations. The second group, the **institutional** components, also had significant impact on government size, but he did not measure the magnitude of its influence. He did not distinguish between the different effects and in its model

he included a generic variable that included political and social factors. However, he believed that the analysis should consider a model with both demand side and supply side factors. Among the features that influence government behavior, and thus its size were the pressure for redistribution, the incentives of bureaucracy to enlarge its power, the information asymmetry on taxes and a characteristic of federal states that acts as a sort of redistribution that is the intergovernmental aid.

A key factor in shaping the decisions of government is the **ideology** of the executive. Instead of focusing on the material causes of the behavior of politicians (rent seeking, redistribution pressure…), ideology identifies the origin of budget decisions at a more general level. Here the government reflects the prevailing beliefs of society and the outlays depend on whether the political orientation of the executive justifies more or less intervention of the state in the economy. According to Pickering and Rockey (2009) ideology is the **preference for public goods over private consumption** (where public goods are a luxury good and consumption is a necessity), typical of a leftist orientation, on the contrary a right-wing orientation tolerates less taxes and thus a lower level of public goods provision. In their study P. and R. investigated on the effect of ideology and income on government size. They integrated the theory of public goods preferences in W. law with the ideological preferences. So that government size is determined not only by the income of the citizens, but also by their beliefs. They

analyzed the **divergence** in the growth of government among developed countries after 1960. According to their model the impact of ideology on public spending grows with income (for low income households, the burden of taxation is higher than the benefits of public goods), that would explain the divergence between countries with comparable GDP per capita but different political orientation (e.g. Scandinavian vs Anglo-Saxon). At the same time income itself has a positive impact on government size and depends on ideology, but it is diminishing in economic development. The results of their study confirmed the expectations. At the beginning of the sample the effect of income on preferences was stronger than in the end, when economic development was higher. Conversely ideology played a growing role during the years, ending in divergence of expenditures among OECD countries.

Ideology is a characteristic of the government that is supposed to influence its behavior. Since it is a supply side determinant it could be meaningful to analyze its interaction with other demand side factors. The rationale would be to study to which extent an "external" cause impacts the ability of an "internal" one to influence public spending, or vice versa. In this sense Potrafke (2009) investigated the effect of globalization on partisan politics (measured by an indicator of government ideology), and ultimately on government size. Partisan politics are the expression of the ideology (leftist or rightwing) of the parties that form the

government. While historically leftist policies have been expansionary and welfare enhancing (and thus increasing public spending) compared to rightwing ones, in the last decades it appears that the distinction between ideological currents has become less important. To the point that political science empirical literature questions whether modern parties are ideological (in the historical meaning) at all. Some globalization theories pointed that this phenomenon would dampen the ability of governments to implement economic policies, leading to a world in which differences between parties are not relevant. However, the empirical evidence seems to contradict this hypothesis and in the last decades different studies have been carried out to explore the causes of public spending growth in a globalized world (e.g. Rodrik's compensation hypothesis).

Potrafke model included an ideology indicator that measured the different orientations in the government and parliament, a globalization index that includes 23 variables (KOF index) and their interaction, as well as some controls on economic development, unemployment and demographics, with the dependent variable being social expenditures. The effect of globalization and ideology was weak on average in the period examined (1980-2003). But if one considers the effect at low levels and high levels of globalization, a faster integration changed radically the effect of partisan policies. With a slow globalization, rightwing policies entailed higher social expenditures, while it is the contrary for periods of

fast integration. The author proceeded to distinguish between subperiods of analysis in the attempt to find differences. Not surprisingly he found that in the 80s leftist governments increased social expenditures more than rightwing governments, but globalization did not seem to have a significant impact in the period. In the 90s leftist governments did not increase spending at an average level of globalization, but only when it deepened significantly. These findings support the fact that in the last decades **party polarization has diminished along with electoral cohesion**, leading to reduced differences in economic policies of opposing fronts. However, **globalization has not reduced the ability of politicians to implement the desired social policies**. The results from this research suggest that it is difficult to establish a general rule for different countries over periods of time longer than 10 years, especially if the object of analysis are political preferences and ever-changing processes like globalization. In my view if one wants to investigate on such peculiar characteristics of a country, involving social and political evolution, it is necessary to focus only on one nation and consider the fundamental changes that have taken place and shaped the economic and social environment.

3.6 TESTING A SET OF HYPOTHESES

As I pointed out at the beginning of the chapter the phenomenon of the growth of government size is complex and a large number of explanations tried to describe

its evolution. Starting from demand side causes like W. law or trade openness, to supply side factors shaping the cost of public goods or the influencing the behavior of politicians. From general rules like the displacement effect to niche explanations like the corruption of bureaucrats (Acemoglu and Verdier 2000). All these theories purport to describe, at least partially, the growth of public spending that has taken place during the last century. Nonetheless, if taken alone they all fail to explain the phenomenon over the long run for a group of developed countries. In this section I will present a few studies carried out in different times and with different econometric techniques and knowledge of the subject. However, what they have in common is that they try to give an organic view of the causes of the growth of government and use different theories, separately or simultaneously, to investigate and give a satisfactory explanation.

A primitive research in this regard is provided by Berry and Lowery (1983). Their idea was to test the validity of some of the major theories regarding government size determinants applied to a period of unprecedent growth of government in the US, the post-World War II years. To do so they extracted nine explanations from the literature, not necessarily competing between them, and tested them separately. The authors divided the explanations into two categories: **responsive government** and **excessive government**. The first group comprehends five theories and they are all characterized by a "neutral government", whose actions

only reflect the market conditions. The first of the five theories is the famous **W. law**, here formalized as a function that puts expenditures in a positive correlation with industrialization, income, population size, urbanization and dependency ratio. The second one is the **trade openness** theory proposed by Cameron in 1978, with expenditures as a positive function of imports and exports. The third is simply called "supply side explanation" and is taken by Kau and Rubin (1981). According to them government will increase spending because of the enhanced **ability to collect taxes**. This new capacity is a function of the decrease of self-employment and farm employment and increase of female labor and revenues from corporate organizations. These conditions all contribute to the transparency of work and ease the collection of taxes. The fourth explanation is the **"party control"**, that claims that a shift from a conservative congress and president to a liberal one will positively impact the existing budget. Although I would not call this a "neutral government" explanation, the authors view it as a mere response to the public preferences and an attempt to satisfy the will of the median voter. The last hypothesis is the **demonstration effect**, a theory according to which citizens are not completely informed about inequalities in the society. Greater public information would entail pressure for redistribution leading to a bigger government. In this model information is represented by the level of diffusion of mass communication and urban riots are a signal of awareness of inequality, thus both of these variables would have a positive coefficient. The second set of

explanations are the excessive government ones. Here the institutions autonomously expand their scope and activity beyond the size demanded by the public. The first theory is the **fiscal illusion**, through which the true costs borne by society are disguised, thus citizens will require more public goods than they would if they had complete knowledge of the taxes and other costs they pay. In this direction go all the characteristics that contribute to conceal the true costs like the complexity of the tax system, the amount of indirect taxes and contributions collected through withholding or the amount of debt financed fiscal expansions. A second explanation comes from the power of **public employees**, here viewed as an indistinct group of pressure, so that the share of public employees on total population should be positively correlated with government expenditures. In my view this explanation is obviously biased by the fact that a larger number of public employees would necessarily entail bigger government, at least for the consumption category of expenditure. The third one hypothesizes that a higher degree of **institutional centralization** would entail smaller government, thus revenues of the central government should have a negative coefficient while intergovernmental aids a positive one. The last model proposed has **political competition** as a determinant of public spending: the tougher the interparty competition and the closer the elections, the larger the policies implemented to appeal the electorate. After testing for these nine different explanations, Berry and Lowery did not find support for neither of the theories. The evidence was overall

weak, when the coefficients were not the opposite of the predictions. The only model that held in part was W. law, but again the results were not convincing. The authors, conscious of the limitations of their research, advanced several possible causes for the failure of all the theories. And even a point that in their opinion was a strength of their study in comparison with other contemporary analysis could have been a source of bias. In fact, they used as a measure of government size the public spending as a share of GDP multiplied by the deflator of the price of GDP and divided by that of government. By doing this they believed they had eliminated the different growth through which public and private prices undergo (known as Baumol's disease), obtaining a more truthful indicator of government size. However, they could as well have eliminated some effect that was vehiculated through the price differential. In conclusion their failed attempt to obtain support for at least some theories warns the researcher that a single explanation, tested separately from the others, on a single measure of public spending, is unlikely to collect robust evidence from the analysis.

In the last years, literature on government size has evolved and the quality of the research has made considerable advances. In 2007 Shelton proposed a study on the most prominent theories on public spending determinants. Since many variables included in different theories are correlated with one another and demand and supply side explanations frequently influence each other (e.g. richer

countries have better political representation and more rights, trade is more important in percentage in smaller economies…), Shelton tested all the hypothesis jointly in the same model in order to avoid omitted variables bias. Moreover, he broke down the expenditures into different categories both for government level (central, local) and function (defense, education, social expenditure…). With this expedient he could have a greater insight of the true effect of many variables, not observable only using total outlays. The analysis was conducted over a large set of countries for the period 1970-2000. The theories utilized in the model are nine and cover both the demand and supply side of public spending. Regarding the demand side explanations, I already treated some of them in this work: **Rodrik's compensation hypothesis**, Alesina and Wacziarg theories on **country size** and **Wagner's law**. Another theory that like A. and W. considers **heterogeneity** as a cause of reduction of government spending was proposed by Easterly and Levine (1997): in this case they contended that ethnic fractionalization means higher heterogeneity of preferences and utility over public goods and expenditures, leading to changes in the expenditure categories. The last demand side explanation is from Meltzer and Richard (as I mentioned in 3.3) and focuses on the demand of the electorate for **redistribution**. One of the supply side explanations starts from the median voter theory of M. and R. and identifies in the **political rights** a determinant of public spending growth through the enfranchisement of the electorate. The other theories analyzed the structure of the

political system in the attempt to measure changes in categories of expenditure or in total outlays: majoritarian vs proportional system, presidential vs parliamentary democracy, presence of a federal state.

The results offered an interesting insight on what could be the factors underlying the government growth and through which channels they influence public spending. Trade openness is undoubtedly linked to greater spending, both in industrialized and less developed countries. For the former countries expenditures grow in the social security and transportation and infrastructure categories, while for the latter the increase is more generalized (even though transportation is still relevant). With these findings Rodrik's hypothesis is confirmed but explains only in part the growth of government and the author here suggested that the changes could be due to a modification of the preferences of the government, leading to higher expenditure across the board. Both population and heterogeneity contribute to a decline in central government expenditures, only partially offset by a rise in local governments, consistently with the theory of economies of scale. About W. law the conclusion is that in an advanced stage of development, increases in spending are driven by demographics (aging of population) and limited to social security, that is the only category positively correlated with income. Another explanation could be a supply side effect, due to the enhanced ability to collect taxes. A majoritarian electoral system is correlated with an overall lower level of

expenditures in all government systems (presidential, parliamentary, federal). Income inequality and political rights seems to go into the direction of a larger government as theorized in the first studies. However, the sample analyzed by Shelton is heavily weighted towards democratic developed countries, this could open the possibility of a different overall effect of electoral enfranchisement if more diverse system were taken into consideration. What can be learned from Shelton's study is that even if some results seem to be clear (e.g. trade openness or W. law) the causes are not always outright. The explanations for the same phenomenon (e.g. trade openness leads to higher spending) can coexist with each other and can be a mix of demand and supply side causes.

A recent study that attempts to offer a comprehensive explanation of government growth is from Gallegati and Tamberi (2020). Here the approach is different: rather than starting with the most prominent theories and testing them, the authors try to find empirical regularities over a very long period of time using only W. law and explain the evolution of public spending involving a mix of these theories. Since the time span considered covers more than a century of history, the panel of countries is necessarily limited to a few developed ones. As I discussed in this work W. law can be interpreted in different ways and give place to diverse models, but in the paper form G. and T. it is simply the relationship between the share of public spending to GDP and per capita income. In this work the authors

put forward different conclusions depending on the period examined. The pre-WWII years are characterized by a **"ratchet effect"** like evolution, with peaks of growth of spending coinciding with the pre wars armament booms. In this period differences between countries are marked. After WWII, the golden era of public sector, cross-country **heterogeneity decreases** and all of the economies show a rapid growth of government both in absolute and relative terms. Here the explanation is to be found in the shift in prevailing **ideology**. The attitude towards the tradeoff between market and government failures changed over time, favoring an expansion of public spending until the 80s, followed by a reduction of growth or even a decline on total outlays, leading again to a period of **heterogeneity** of growth between countries. W. law is overall not confirmed, but in absolute terms there is evidence of larger swings in public spending if compared to GDP growth. Thus, the results show a **nonlinear relationship** (inverted U-shape) between government size and income, agreeing with the recent literature on the inefficiency of a public sector that is too large and with the change in ideology regarding market failures and government failures. Finally, the paper concludes that the recent phenomena that characterized the global economy (2007 financial crisis, 2020 COVID-19 pandemic) can lead to another shift in attitude towards a larger role of the state and to new levels of public intervention.

CHAPTER 4 – DATA ANALYSIS

In the first chapter I described the role of the institutions and the justification for the intervention of the state in the economy. In the second chapter I provided an historical overlook of the growth of government in the last 150 years. After this historical introduction to the argument of public spending, I explored some of the most important theories on the determinants of its growth and reported some studies conducted in the last decades, until the most recent contributions. Finally, in this chapter I am going to try to obtain meaningful results that should confirm (or reject) my expectations based on the mainstream theories.

In this last part I chose to focus my research on **demand side explanations** rather than supply side ones, for a few reasons. The first and more obvious is that supply side explanations are more difficult to formulate, since their theoretical base can be complex, in fact one should assess how a phenomenon impacts the structure of government that in turn would provoke a change in expenditure decisions, while demand side theories are more straightforward. Another reason is that, in my opinion, a cross-country comparison is not always possible when analysing the behaviour and peculiar characteristics of single governments. For example, political divisions into leftist and right-wing parties are not always clear-cut within one country and the problem is even more consistent if we consider different nations.

Another aspect of my research is that I privileged **OECD countries**, instead of using a more diversified panel of observations. Again the reasons are multiple: data availability (and perhaps quality) is greater for developed countries and this permits to take into consideration larger periods of time as well as a wider range of indicators; even when not specified most of the literature that I referred to on historical evolution and determinants of government size are about advanced economies, so my findings should be coherent with the rest of the work I analysed.

The data that I used are taken mainly from two websites: *ourworldindata.org* and *databank.worldbank.org*. The first source is a website that collects data about different topics, with the unique feature of offering historical data series, making it possible to follow the evolution of some indicators over very long periods of time. The second, instead offers updated data for a huge variety of world development indicators, but their availability is limited for many countries and the time series do not date back to before 1960 (and many variables are measured for even shorter periods). Therefore, the regressions on the data that I will present are based on observations over a period of around 50 years.

4.2 THE MODELS

When trying to analyse a complex phenomenon such as the growth of public spending a starting point can be to test some of the most prominent hypotheses in

order to check if the results confirm or contradict the theory. Thus, I decided to run a first regression that included variables from Wagner's law (GDP) and Rodrik's compensation hypothesis (trade openness).

W. law makes its appearance in the equation with a non-linear relationship of the **per capita GDP** with government expenditure. The idea is that public expenditure should have a positive but diminishing relationship with economic development, stronger at early stages, but for advanced countries there is a point where it should reach a plateau or eventually decrease. In theory total expenditures should describe something that resembles an inverse U-shaped curve with a positive coefficient for per capita GDP and a negative one for the per capita GDP squared.

Trade openness, instead, is a variable that, according to Rodrik, should increase in some way the volatility of income in an open country, thus pushing up public expenditure in an attempt to limit economic risk. Therefore, trade should enter the equation with a positive sign of the coefficient.

In addition to this I included the **time** factor. At first, I considered also the inclusion of an **inequality** indicator. While the rationale behind the time variable is outright, the explanation for the inequality is not straightforward. In the literature higher inequality is naturally associated to a greater demand for redistribution, leading to higher expenditure (e.g. Meltzer and Richard). Anyway, the effect of inequality is mediated by the vote and the behavioural theory of

government: do politicians implement policies that effectively reduce inequality or is it that inequality is more correlated with the culture and the intrinsic characteristics of a country? The empirical analysis shows that Northern and Eastern European countries tend to have low levels of inequality, Southern European and Anglo-Saxon ones a medium level and Middle Eastern countries and Latin American ones a high level, suggesting a sort of territorial division. The scarcity of historical data about inequality lead me to think that I could group the few observations into a dummy variable that would represent the level of a country. Unfortunately, the theoretical implications of such a procedure are overlapping the fixed effect model (that I will explain at the end of this section), since both the dummy and the fixed effect represent an explanation for the peculiar characteristics of a country, leading to the technical problem of multicollinearity. In addition to that, the level of inequality of many countries underwent substantial changes during the years, making it reductive to consider a single value as an indicator for the whole period. In the end I decided to drop the inequality indicator in favour of a more basic model.

Therefore, the final model is: $govexp = \alpha + \beta_1 * lngdp + \beta_2 * lngdp2 + \beta_3 * trade + \beta_4 * year + \varepsilon$ where *govexp* is the total government expenditure in percentage of GDP, *lngdp* is the logarithm of the real per capita GDP expressed in 2011 USD (I use the logarithm for convenience in order to have much smaller values), *lngdp2*

is the square of lngdp, *trade* is the sum of imports and exports over GDP and *year* is the time control variable. The data of this first regression are all taken from ourworldindata (see the previous section) and the period covered is 1960-2011. The countries observed are all the 37 OECD with the exclusion of Luxembourg. With the same technique I subsequently tested the same hypothesis with different expenditure categories. Thus, I analysed three different models: one with total outlays, one with social expenditure and another with health expenditure. I analysed these two categories, because they have seen their importance growing in the last decades and they will probably continue to expand in advanced economies. Again, the period considered is of a few decades 1960-2010s and the countries are all the OECD (minus Colombia and Lithuania for social expenditure only).

Since GDP as an indicator includes many factors and an innumerable quantity of processes contribute to its formation, its interpretation can be complex. For this reason, I run a second model, similar to the first in the hypotheses, but with different variables.

In order to substitute GDP, I used the **age dependency** ratio, the number of **young** (0-15) and **old** (65+) people over the working-age population. Advanced economies tend to have an older population and, in theory, this should put pressure over the pension system and the public health provision. A large

proportion of old people represents greater expenditure, especially in the social category. A high ratio of young people should contribute too to an increase in government expenditure, but in different ways. It could, for example, drive up the education expenses and transfers for families. Since young and old people ratios can have different impact on public spending, I decided to separate the age dependency ratio into these two components.

Another substitute for GDP is the **urbanization** rate, in fact historically the level of urbanization of a country has been a consequence of economic progress, to the point that it was one of the determinants of government size growth adducted by Wagner in its law at least at early stages of development; however, I do not believe that for advanced economies the urbanization rate is a good proxy of the wealth of a country.

I then proceeded maintaining the same approach, but with slightly different variables, also for trade openness. Trade is an indicator of globalization, in fact Rodrik's hypothesis used this variable to represent the increasing interconnection among countries and the greater risks that the economy would face as a consequence. The **KOF globalization index** (KOFGI) is an indicator developed by the ETH of Zurich and measures economic, social and political globalization of a large number of countries since 1970. It is constructed with many factors and it can be broken down into a number of sub-indicators. I chose the **KOF**

economic and social globalization sub-indexes in order to include a broader definition of openness into the equation and have a possibly diverse effect from the use of a simple trade variable. The KOFGI can be broken down (Tab. 4.1) into three equally weighted sub-indexes (economic, social and political globalization) and at the same time into two different approaches of measurement: “de facto” and “de jure”. The first two categories are again divided into sub-indicators, in such a way that economic globalization is made up of trade and financial indexes, while social globalization resumes interpersonal, informational and cultural measures. In the end there are up to twelve indexes (trade, financial, interpersonal, informational, intercultural, political globalization, each of them de facto and de jure) that gauge the level of globalization in different fields, both “de facto” (empirical measures) and “de jure” (legal and infrastructural level). The sub-indicators have the same weight of the others in the same category (e.g. interpersonal globalization de facto accounts for half of the interpersonal globalization index, that is one third of the social globalization index, that in turn is one third of the total index). Each indicator is ultimately defined by a set of measures with different weights.

Tab. 4.1

2019 Globalisation Index: Structure, variables and weights

Globalisation Index, de facto	Weights	Globalisation Index, de jure	Weights
Economic Globalisation, de facto	***33.3***	***Economic Globalisation, de jure***	***33.3***
Trade Globalisation, de facto	*50.0*	*Trade Globalisation, de jure*	*50.0*
Trade in goods	38.5	Trade regulations	25.8
Trade in services	45.1	Trade taxes	25.3
Trade partner diversity	16.4	Tariffs	25.4
		Trade agreements	23.5
Financial Globalisation, de facto	*50.0*	*Financial Globalisation, de jure*	*50.0*
Foreign direct investment	27.3	Investment restrictions	32.2
Portfolio investment	16.9	Capital account openness	38.7
International debt	25.7	International Investment Agreements	29.1
International reserves	3.2		
International income payments	26.9		
Social Globalisation, de facto	***33.3***	***Social Globalisation, de jure***	***33.3***
Interpersonal Globalisation, de facto	*33.3*	*Interpersonal Globalisation, de jure*	*33.3*
International voice traffic	20.0	Telephone subscriptions	40.6
Transfers	21.8	Freedom to visit	32.4
International tourism	21.2	International airports	27.0
International students	20.4		
Migration	16.6		
Informational Globalisation, de facto	*33.3*	*Informational Globalisation, de jure*	*33.3*
Used internet bandwidth	43.2	Television access	35.7
International patents	23.6	Internet access	42.0
High technology exports	33.2	Press freedom	22.3
Cultural Globalisation, de facto	*33.3*	*Cultural Globalisation, de jure*	*33.3*
Trade in cultural goods	28.0	Gender parity	26.2
Trade in personal services	24.3	Human capital	41.2
International trademarks	11.1	Civil liberties	32.6
McDonald's restaurant	20.9		
IKEA stores	15.7		
Political Globalisation, de facto	***33.3***	***Political Globalisation, de jure***	***33.3***
Embassies	36.2	International organisations	36.0
UN peace keeping missions	26.1	International treaties	33.6
International NGOs	37.7	Treaty partner diversity	30.4

Notes: Weights in percent for the year 2017. Weights for the individual variables are time variant.
Overall indices for each aggregation level are calculated by the average of the respective de facto and de jure indices.

Source: KOF Swiss Economic Institute, ETH Zürich

I considered the use of an economic-cycle variable as well: **unemployment**. Unemployment is undoubtedly correlated with GDP growth and, while advanced economies tend to have low levels of unemployment, it determines a certain amount of public intervention through social benefits and policies for the labour market.

With these premises I run a new model: $govexp = \alpha + \beta_1 * old + \beta_2 * young + \beta_3 * unemp + \beta_4 * urban + \beta_5 * KOFGI + \beta_6 * KOFEcGI + \beta_7 * KOFSoGI + \beta_8 * year + \varepsilon$ where *govexp* is the total government expenditure, *old* and *young* are the dependency ratio variables, *unemp* is the unemployment, *urban* is the percentage of people living in urban areas in terms of total population (the definitions of urban areas vary by country and usually concern the population density or the buildings density), *KOFGI*, *KOFEcGI* and *KOFSoGI* are the total, economic and social globalization indexes and *year* is the time. I tested this model on four different categories of expenditure: **total, health, education** and **social**. The dataset that I used is constructed in part with data from ourworldindata (urbanization, health, social and total expenditure), in part from the KOF website and the rest (young, old, unemployment and education spending) from the worldbank. The countries composing the panel are all the 37 OECD members, except for the social expenditure model, that excludes Colombia and Lithuania

and the total expenditure that lacks historical data about Luxembourg. The period of analysis is 1970s-2010s.

When studying a panel of countries, it is a standard practice to use the **fixed effect model** instead of the simple pooled ordinary least squares. With this procedure the equation includes an unknown parameter that is specific of a unit (in this case the country) and time-invariant and explains in part the differences between units. Since countries have features that are not easily captured by explanatory variables and running a model that comprehends all the different characteristics among nations is impossible, the fixed effect is the best alternative. I run the regressions using robust standard errors in order to avoid the problems of heteroskedasticity and autocorrelation (especially of the dependent variable) that the observations did present.

The following tables (Tab. 4.2, 4.3) resume a few summary statistics, like the number of observations, the size of the panel and the historical period examined and the source of the data.

Tab. 4.2

SUMMARY STATISTICS

	GDP and Trade model			KOF and Population model			
	Total exp	**Health**	**Social**	**Total exp**	**Health**	**Education**	**Social**
N. of observations	1459	1448	699	1124	1209	1017	440
Panel of countries	36 (OECD w/o LUX)	37	35 (OECD w/o COL, LTU)	36 (OECD w/o LUX)	37	37	35 (OECD w/o COL, LTU)
Period	1960-2011	1960-2014	1960-2016	1970-2011	1970-2014	1970-2016	1970-2016

Tab. 4.3

DATA SOURCES

	owiid	**wb**	**KOF**
Total exp	x		
Health	x		
Social	x		
Education		x	
Unemployment		x	
Old		x	
Young		x	
Urbanization	x		
Trade	x		
per capita GDP	x		
KOFGI			x
KOFEcGI			x
KOFSoGI			x

4.3 THE RESULTS

At a first sight, the model with GDP and trade looks inadequate to explain government size, in fact two out of the three regressions do not show any significant variable besides time. However, I found some evidence of significance, coherently with the literature, for the **GDP theory in the social expenditure** category. As hypothesized, the coefficient of per capita GDP is positive, while its square is negative, suggesting an **inverse U-shaped curve**. Social expenditure, that is the most important component of government spending, seems related to economic growth. Even though the first two regressions did not show any result, the last and the most representative model confirmed the expectations. Even if the result is not robust to a change of the dependent variable I consider it a satisfactory outcome, since the evolution of government size in the last sixty years is pretty much the evolution of social expenditure and a coherent result bodes well for the next regressions.

When testing the second model I found that from time to time some variables were not significant at all, thus I found useful the implementation of a procedure known as “backward elimination”: first I run the complete regression and then I eliminated each time the least significant variable until I found a satisfactory model. With this expedient and with the use of the converse procedure that adds variables to an already significant model (forward selection), I obtained a set of

interesting results, that can hopefully give an insight on the determinants of the four categories analysed.

The first regression on total government outlays (Tab. 4.4) presents four explanatory variables. The most significant is **unemployment** and, as I will show, it is positive and strongly significant in all the regressions, reinforcing the hypothesis that higher unemployment is undoubtedly linked to higher government transfers and social benefits in general. The **KOF economic and social indexes** enter the model with **opposite signs** and with acceptable significance. Since the economic index is a measure of trade and financial globalization, it is similar to the trade openness factor. Thus, a positive sign is coherent with the empirical literature on openness and a confirmation of Rodrik's hypothesis may come from an analogous result in the social expenditure model. On the other hand, the second indicator is a measure of interpersonal, informational and cultural interconnection among countries, that is the real meaning of what we commonly consider as "globalization". A negative coefficient can be read in several ways and if one wants to maintain a simple interpretation, I can imagine that the economy of a more globalized country shifts from being government-oriented towards a market-oriented organization. The explanation for the last, and least significant, variable is less straightforward. The **young people ratio is negative** and I would interpret this as the opposite of an older society. In fact, a higher ratio of young people is

naturally associated with a lower number of old people, while an old population is typical of developed economies and associated with greater public spending. However, one must be cautious in the interpretation, since the countries analysed are all advanced and they have all passed through the demographic transition in the last decades, making them similar in the population structure. Therefore, a younger population can be a signal of a less advanced economy (e.g. Latin American countries), but only to a limited extent, thus explaining the weak significance of the variable.

Tab.4.4

TOTAL GOVERNMENT EXPENDITURE MODEL

	Fixed effects model	**Dependent variable: govexp**		
Variables	**Coefficients**	**t-ratio**	**p-value**	
const	48,4744	3,358	0,0019	***
young	-0,3423	-1,845	0,0736	*
unemp	1,15071	4,629	4,89E-05	***
KOFEcGI	0,353471	2,537	0,0158	**
KOFSoGI	-0,348549	-2,238	0,0317	**
	R-squared	**test F**	**p-value**	
	0,755071	25,8979	4,89E-10	

When I tested the model on health expenditure, by adding or eliminating variables I found that there are two possible sets of determinants that can be used in the explanation (Tab. 4.5, 4.6). Both the regressions on health expenditure present again a positive and significant coefficient for unemployment, however, this time

the interpretation is not clear-cut. One can imagine that a higher level of unemployment leads to higher total expenditure (due to the rise in social benefits) opening the way for a generalized increase in "social" spending even in categories that are not directly affected by the unemployment (I put social in inverted commas because I am referring to a broader definition of it than just the official spending category). In some way it would make the government more prone to increase the expenditure in other categories, partly because of pressure from the departments or the change in public opinion. Apart from this supply side explanation, the other determinants are more easily justified. The ratio of **old people** in the second regression is obviously positive, as more health assistance is required when the age of population grows. In the same regression **the KOF social globalization index is positive as well as the KOF total** in the first test, while the KOF economic is of opposite sign. Therefore it may be that in this category of expenditure, **trade and financial interconnection can lower the costs of health provision**, thus leading to lower expenditures, while a globalized culture do not shift the economy to a market-oriented system and there is not an external pressure for privatization. Instead, the tendency can be towards a larger public health system (e.g. USA social and political pressure for a cheaper public health provision coming also from the comparison with other advanced economies that rely on efficient public systems). One may argue that in the last years we have seen an attempt to cut down expenditures in this category, but in my opinion

rationalization of spending do not come from globalization, rather it can be due to internal budgetary constraints.

Tab. 4.5

HEALTH EXPENDITURE MODEL 1

	Fixed effects model	Dependent variable: health		
Variables	**Coefficients**	**t-ratio**	**p-value**	
const	-197,814	-8,477	4,22E-10	***
young	0,0200831	1,553	0,1291	
unemp	0,0316102	3,414	0,0016	***
KOFGI	0,0601374	2,099	0,0429	**
KOFEcGI	-0,0608632	-3,113	0,0036	***
year	0,101139	8,299	7,04E-10	***
	R-squared	**test F**	**p-value**	
	0,892793	58,8405	2,55E-16	

Tab. 4.6

HEALTH EXPENDITURE MODEL 2

	Fixed effects model	Dependent variable: health		
Variables	**Coefficients**	**t-ratio**	**p-value**	
const	-3,32533	-3,733	0,0007	***
old	0,0604097	2,101	0,0427	**
unemp	0,0483751	3,351	0,0019	***
KOFSoGI	0,097157	5,648	2,05E-06	***
	R-squared	**test F**	**p-value**	
	0,846932	61,2511	3,24E-14	

The third category tested is education (Tab. 4.7). Here the interpretation of the unemployment coefficient is the same as for the health: a general increase in

government commitment can reflect into higher expenditures in categories that are not directly affected by unemployment. Interestingly, the young people ratio is not significant, while the old is. Again, a weak negative significance of old people ratio can be associated with a **younger society**, the opposite of the explanation for total government: an older population has a smaller share of young students, requiring a lesser effort in education spending. The **urbanization** factor being positive is not surprising as typically in rural areas the school system is less sophisticated and the tendency to invest in education is where there is a higher concentration of people. Finally, the **KOF globalization index is positive** suggesting that an open country invests in human capital in order to enhance its competitiveness on the global scene.

Tab. 4.7

EDUCATION EXPENDITURE MODEL

	Fixed effects model	**Dependent variable: education**		
Variables	**Coefficients**	**t-ratio**	**p-value**	
const	-0,988496	-0,5522	0,5842	
old	-0,0610449	-1,823	0,0767	*
young	0,022905	1,339	0,1888	
unemp	0,0613202	4,853	2,35E-05	***
KOFGI	0,0499712	2,986	0,0051	***
urban	0,0319494	2,155	0,0379	**
	R-squared	**test F**	**p-value**	
	0,760962	9,74877	5,96E-06	

The analysis of the social expenditure model brought the most interesting results. Through the selection of different variables, I obtained six significant models, that are coherent with the literature and confirm the prominent role of social expenditure in explaining government size of advanced countries in the last decades. I constructed a table (Tab. 4.8) in which I marked the significance of each variable with the usual stars (from one to three in order of growing significance) and the sign of its coefficient. The first thing that can be observed is that the **old people ratio** and **unemployment** are present in all models and are positive and strongly significant, confirming their close relationship with social expenditure. In fact, the data that I used refer to social expenditure as a set of nine policy areas according to the definition of OECD. The areas are old age, survivors, incapacity-related benefits, health, family, active labour market policies, unemployment, housing and other social policy areas, with old age and health being the largest categories by far. A rise in old people ratio and in unemployed, naturally entails a rise in the benefits associated to these two categories. All the models are constructed starting from these two factors: each time I added other combinations of variables in order to obtain a significant result for all the coefficients. Thus, the six models are a combination of old and unemployment with young, with KOF total, with time, with KOF economic and social, with young and KOF economic, with young and KOF social. All the coefficients are positive, except for young people ratio. As I pointed before, a

younger society requires less assistance and social interventions. Some categories of expenditure like family benefits may be affected and would probably grow, but the most important ones (old age benefits and health) would definitely decrease with a younger population, resulting in a smaller government size. The time coefficient being positive is simply the empirical evidence of the growth of social expenditure in the last decades. What may be more difficult to interpret are again the **KOF indexes**. They are all positive, meaning that both economic and social globalization have the same impact on social spending. The coefficients are coherent with the ones estimated for health expenditure, that represents an important share of social outlays. The only one that changes its sign is the economic index. Here it can be helpful the reference to Rodrik, in fact he believed that trade openness (that jointly with financial openness constructs the KOF economic index) increased the volatility of the income of a country, exposing people to greater external risk. Therefore, **trade openness should be associated to greater efforts of the state in social protection** and this is exactly what I observed in these models. The KOF economic indicator enters the models estimated (total and social expenditure) with a positive sign, confirming Rodrik's theory about risk and social protection. I can conclude that the social expenditure model gives clear results coherent with the theory and the empirical evidence.

Tab. 4.8

SOCIAL EXPENDITURE MODELS

	model 1	model 2	model 3	model 4	model 5	model 6
old	+ ***	+ ***	+ ***	+ ***	+ ***	+ ***
unemp	+ ***	+ ***	+ ***	+ ***	+ ***	+ ***
young	- ***				- *	- *
KOFGI		+ ***				
KOGEcGI				+ ***	+ ***	
KOFSoGI				+ ***		+ ***
year			+ ***			

CONCLUSIONS

In this paper I first presented the role of the state as an institution and its evolution, then I introduced the concept of state capacity and presented its linkage with public spending. In the second chapter I reported on the growth of government expenditure in the last 150 years, with a focus on the second half of the 20th century. The growth of government size has seen a generalized acceleration in the so-called "golden era" of the 60s-80s and only in the last three decades the historical process of public spending increase has shown a trend of stabilization, and a decrease in some cases. After the historical report I proceeded with the exposition of the most important theories on expenditure determinants and in the last chapter I tested a few models in order to confirm the literature. The main findings are that social expenditure can be considered the most representative category of total government spending, since it is the one that has continuously grown in importance during the years. There is some evidence of an inverse U-shaped relation between GDP and government size, as theorized by some economists (e.g. Facchini, Melki), thus it can be considered a sort of extension of Wagner's law. The results about health and education expenditure are coherent, but the most important findings are for the social category. Here almost all the variables used are significant and confirm the expectations and Rodrik's hypothesis on the role of public spending in open economies. Since I

used different datasets and obtained the same results for various categories of expenditure, I can consider the results robust and be satisfied by the outcome.

I would like to add a few more words to this paper by commenting the current global situation. In the year in which I am writing these pages the global economy is facing an unprecedent downfall in peacetime. The infamous COVID-19 pandemic has drastically changed our lives and how we interact and work, probably forever. While the population is still adapting to this new way of living, the governments have already engaged in extraordinary expenditures, with two figures budget deficits. The ongoing debate in Europe about the use and destination of the supplementary resources will probably be an argument for the next few years. Therefore, the reader of a paper on public spending should expect some reference to the current situation and maybe even projections of expenditure and the determinants of it. Nonetheless, I decided to not include this argument in my thesis for a few reasons. First of all, this is a historical analysis, thus the latest years and projections of the future are not exactly required in the presentation of the phenomenon of government size growth. Second this is a difficult field to enter and the ever-changing global situation does not make it easy to analyse what is going to happen. But the main reason is that the 2020 pandemic is a war-like scenario in terms of economic impact. The extraordinary high level of public spending that we are witnessing do not represent the norm in the evolution of

government size. It is rather a break and an analysis should study it with the same approach followed for World Wars: sometimes the years of the break are simply excluded, other times the researcher uses an interpolation. In any case the short period is not considered with the same approach of the others. Then, what can we expect? Will there be a displacement effect or have our advanced economies already reached a plateau from which only temporary deviations are possible? Probably we will be able to comment only in the next years.

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