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ALBERTO ALESINA (1957-2020): MAN, RESEARCHER, PROFESSOR OF ECONOMICS, POPULARIZER*

ABSTRACT

This paper offers a short summary of the scientific work of Alberto Alesina. The fundamental contribution of this scholar has been the creation and development of modern *political economy,* since the first half of eighties. In this paper, I have initially tried to explain what political economy is about, and what today is meant by political economy. I have then focused the attention on one of Alesina's most important contribution: his 1994 article with Dani Rodrik un distributive politics and economics growth. Thereby, I have briefly illustrated some contributions of other scholars influenced by the aforementioned work, as well as some other articles of Alesina himself. Among the latter ones, I have focused the attention in particular on his contributions to the theory of "fiscal austerity" and to the economic role of "culture" broadly speaking.

Keywords: Political Economy; Government; Public Debt; Inequality; Economic Growth; Redistribution; Culture
JEL Classification: O11; O43

RIASSUNTO

Alberto Alesina (1957-2020): uomo, ricercatore, Professore di economia, divulgatore

Questo paper offre una breve sintesi del lavoro scientifico di Alberto Alesina. Il contributo fondamentale di quest'ultimo è stato la creazione e lo sviluppo della moderna *political economy* a partire dalla metà degli anni ottanta. In questo lavoro inizialmente ho cercato di spiegare di che

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cosa la political economy si occupa e che cosa si intende oggigiorno per political economy. Mi sono focalizzato, quindi, su di uno dei contributi più importanti di Alesina: il suo articolo del 1994 con Dani Rodrik su politica ridistributiva e crescita economica. Quindi, ho brevemente illustrato alcuni contributi di altri studiosi influenzati da detto lavoro, nonché da altri articoli di Alesina medesimo. Tra questi ultimi mi sono soffermato in particolare sui suoi contributi alla teoria dell'"austerità fiscale" ed al ruolo economico della "cultura" in senso lato.

1. Early life

Alberto Alesina was born in Broni, in the Province of Pavia, in 1957, in a traditional, middle-class Roman Catholic family. His father was an engineer and industrial manager, an important and respected profession, especially in Italy in the years of the economic miracle, a period of almost incredible economic growth (at an average rate of 8% per annum) occurred between the 1950s and mid 1960s, leading to the reconstruction of the economic, industrial and moral base of the country.

Alesina's mother was a high school teacher, also an elite, highly praised and respected profession at that time (for women and men alike). Both parents shared a deep commitment to their sons' education above most other things. Eventually, both Alberto Alesina and his sister Roberta graduated at Liceo Ginnasio Berchet in Milan, with a Diploma di Maturità Classica. This pre-university diploma was the most prestigious diploma offered by the Italian educational system at that time, as is still nowadays, focusing on a very high level study of Italian, classics (Greek and Latin), history, philosophy, math and sciences. A very broad education, in other words, that might have presumably favoured the proverbial eclecticism and the intellectual curiosity displayed by Alesina, from the very beginning and throughout his extraordinary career[1]. But Alberto and Roberta Alesina, though sharing the same school background, followed very different academic and professional paths afterwards. Roberta enrolled in the Medical School of the University of Pavia and became a successful medical doctor. Alesina, instead, enrolled in the newly created corso di laurea in Discipline Economiche e Sociali (Economics and Social Sciences program), also known as DES, at Bocconi University. The DES was a truly unique degree, that attracted many top students from all over Italy and abroad. Several of its students became renowned social scientists

[1] In this respect, Alberto might not be unique among the greatest Italian economists. The name of Vilfredo Pareto, for example, is worth mentioning. Pareto had a university training in civil engineering, but also a very solid background in the classics and history (see Coser, 1977). This was self-evident especially in his social and political thought. Pareto comes therefore to mind, but other influential names could be as well mentioned in this regard.

(economists in the first place, but also political scientists, sociologists, economic historians, statisticians and further more). The program lasted five years (rather than four, as all other academic programs in economics available in Italy in those days), and was based on a core of courses in advanced math, economic theory, law, history and other social sciences. Alesina enrolled at Bocconi University in the fall of 1976, and graduated in October of 1981, writing a thesis in the field of macro-monetary economics under the supervision of Professor Mario Monti. The thesis was titled Inflazione, Indicizzazione e Stabilità: un'Analisi Teorica. (Inflation, Indexation and Stability: A Theoretical Analysis). The research work written by the 24-years old student reveals already what will be one of the essential traits of the world-class researcher, that he would have soon become: attention for some of the most pressing problems of his country and of his time. Italy had a two digits inflation in those years, coupled with a serious unemployment issue. Inflation and unemployment were precisely the matters Alesina dealt with in his thesis. He applied state-of-the-art research methods (whether theoretical or empirical), avoiding as much as possible any unnecessary complication, and looked above all for simplicity combined with the thoroughness of analysis of the two problems he chose to analyze.

2. Moving to Harvard

The following year, Alesina begun his doctoral studies in economics at Harvard University, that he completed in 1986 by writing a doctoral dissertation under the supervision of Professor Jeffrey Sachs. In his dissertation, he focused on one of the first great political-economic issues, that he analyzed through his stellar career: political business cycles. This is a topic belonging to macroeconomics, studying how incumbent politicians manipulate the economy in order to either implement their own policy preferences or ideology (for example regarding the inflation vs. unemployment trade-off), or in order to improve their re-election chances[2]. Alesina's main contribution in this area consists in providing a very clever revision and extension of a previous, highly influential model issued by Douglas Hibbs (1977, 1987). Alesina's model was based on the replacement of a traditional Keynesian macroeconomic model displaying some irrationality, with an aggregate supply curve à la Lucas featuring rational expectations (see Alesina 1987, 1988, 1989,

[2] The work of William D. Nordhaus (1975) should be mentioned here as an early contribution to the political business cycle literature However, Nordhaus' model differs fundamentally from Alesina's and Hibbs' "partisan" models, in that politicians are purely concerned with the goal of winning office, and therefore have no intrinsic ideological motivation. See also the influential and comprehensive book of Edward R. Tufte (1978).

and Alesina *et al.*, 1997, for a general review of the literature and of some of its empirical validation).

Moreover, as I will explain in greater details below, in Section 3, the model considers a framework, where two parties with different ideology compete against each other, and mimics the American political-economic system, traditionally dominated by the Democrats and by the Republicans[3]. In Alesina's model, the Left-wing party is assumed to be more unemployment averse (and less inflation averse) than its rival, the Right-wing party, with just the opposite preferences.

After a two years stint as post-doc at Carnegie Mellon University in Pittsburgh, Alesina is back at Harvard, that will tenure him a few years later, remarkably in both the economics and in the government department. In Pittsburgh he met the famous political scientist Howard Rosenthal, another important academic figure, that impacted his career, and that coauthored with him some significant contributions, both in the theory of voting, and in formal American politics.

3. ALBERTO ALESINA, FOUNDING FATHER OF *MODERN POLITICAL ECONOMY*

At Harvard, Alesina's career unfolds as a continuous crescendo, for the importance, the variety and the novelty of the topics of his research agenda. Some of the related articles were published with distinguished and utmost important coauthors, after his original work on political business cycles. A partial list of Alesina's most important contributions among such research topics includes the following issues[4]:

- The theoretical and empirical determinants of long run economic growth.
- The causes and consequences of violent conflicts.
- Why governments often delay implementing efficient fiscal stabilization.
- The politics of ambiguity: why politicians rationally decide to be ambiguous in their policy announcements.

[3] The existence of political business cycles potentially generates high inflation periods and sharp economic fluctuations, that are harmful in terms of welfare. For this reason, Alesina and Summers (1993) amongst others, point out the benefits of delegating monetary policy to an independent Central Banker. Such an agent would be potentially free from political pressures, and therefore would be able to credibly pursue a low inflation policy much more easily. The "real" benefits of such an institution would include limiting economic fluctuations,more predictability of the policy maker, and lower risk premia in real interest rates. See also the important paper of Kenneth Rogoff (1985), where it is suggested to delegate central banking to somebody more inflation-adverse than the median voter, in order to credibly reduce any potential inflation bias.

[4] Please take notice that this list is not meant at all to be fully comprehensive, is by no means limited to the presented topics, and its items are reported in non-specific order.

- The causes and consequences of Central Banks independence, and the making of currency unions.
- The political determinants of budgetary policy and of the accumulation of public debt in a politically conflictual environment.
- The supply of public goods in communities featuring sharp ethno-linguistic diversity.
- The size of countries, in relation to factors such as wars and the diffusion of international trade.
- The logic of voting systems in advanced democracies and of the presidential system of government, specifically in the United States of America.
- The causes of the choice of different democratic electoral systems, and their workings and consequences.
- The importance of culture in a broad sense, of the family, and of gender inequality for various political-economic outcomes, including the study of historical origins, to be found in specific agricultural systems, and chronological persistence of some current beliefs and values regarding the proper role of women in society.
- The possible non-Keynesian effects of fiscal policy, namely the potential benefits for economic activity of a fiscal retrenchment, due to the anticipation of the future reduction in taxes, that comes along with it.

Notwithstanding the significant heterogeneity present across all these topics, much of the work mentioned above shares a fundamental common methodological denominator, that leads us to raise the question of what modern political economy is essentially about.

4. WHAT IS MODERN POLITICAL ECONOMY?

Alesina's work on political business cycles kicks off from the straight rejection of the Keynesian macroeconomics, that was standard in academic research and in policy making until the early 1970s. He instead favours the so called New Classical Macroeconomics, developed since the late 1960s by leading macroeconomic theorists such as Robert E. Lucas, Jr. (e.g. 1972 and 1973), Finn Kydland and Edward C. Prescott (e.g. 1977), Guillermo Calvo (1978), Thomas Sargent and Neil Wallace (e.g. 1981), Robert J. Barro and David B. Gordon (e.g. 1983) and other important scholars. To understand the first great pillar, with which Alesina's work begins, we therefore might pay some crucial attention to the revolution in macroeconomics, brought about by the

aforementioned scholars, that led to the emergence of the paradigm of the *New Classical Macroeconomics*.

New Classical Macroeconomics forcefully argues that the government can't continuously "fool" the economic agents (as it is implicitly assumed in standard Keynesian economics), for instance by systematically implementing expansive and inflationary policies, moving along the well-known Phillips Curve. The Phillips Curve represents the existence of a structural, long term trade-off between unemployment and inflation, that can be exploited at will by the policy maker. However, this is not possible if agents have "rational" expectations (i.e. based on all the available information) as opposed to adaptive expectations (i.e. based on some *ad hoc* rule). This is because rational expectations allow agents to understand any potential inflationary bias of the government, and therefore enable them not to systematically incur into it.

As a result, the only real effects that an expansive monetary policy can obtain, are in the short run alone, and provided that the policy in question is unexpected by the public, and can therefore temporarily fool people. Specifically, according to Lucas' celebrated "Island Model" (1972), agents are fooled by the policy maker, when they misperceive a positive price shock, in the sense of believing such a shock to be specific to their sector only, and raising only the relative price of their own output. Conversely, it is really an aggregate shock, affecting the economy as a whole, and not changing any relative price. In the long run, because of rational expectations, the agents can't be deceived by the government, and there is no such misperception (agents learn their mistake and correct their beliefs accordingly). Therefore, there is no structural trade-off between inflation and unemployment (i.e. there is no long run Phillips Curve), and the only effect of a monetary expansion is purely inflationary. The macroeconomic outcomes of much of the 1970s, that must have certainly impressed the young Alesina and many others, were actually characterized by *stagflation*, or the simultaneous presence, of both high inflation and high unemployment, in many of the advanced economies of the world. This pattern is virtually impossible to rationalize, according to the standard Keynesian theory, that is based on the premise of the existence of a structural trade-off between inflation and unemployment.

Equipped with a basic understanding of modern macroeconomic theory, we can now briefly go back to intuitively explain Alesina's (1987, 1988) partisan political business cycle model. The model assume, that *nominal* wages are set in the period just before elections will be held, and job

contracts cannot be indexed on *ex post* realized inflation. It follows, that people must form expectations, on which party will win the forthcoming elections: either the unemployment averse, or the inflation averse party. Such expectations are rational, in the sense that people anticipate, that either party will win with some probability, and its opponent will win with the complementary probability. After elections are held and political uncertainty is resolved, actual inflation turns out to be either *higher* or *lower* than (rationally) expected, depending on whether the Left-wing or its Right-wing opponent wins office. In the first case, *real* wages fall, as pre-determined nominal wages fall short of actual inflation; this puts the economy (that is moving along the short-term Phillips Curve) in a state of expansion. The opposite outcome, a *recession*, obtains instead, in case of a victory of the conservative party. However, both of these effects are only *transitory*: as soon as people are allowed to adjust employment contracts, they will revise them, taking into account actual inflation. In either case, the economy will return to its *natural rate equilibrium*, and the Phillips Curve will turn again into a straight, vertical line (the long-term Phillips Curve): monetary politics has only transitory effects.

Evidently, the paradigm of the New Classical Macroeconomics views economic interactions as a dynamic process, where all actors strategically interact, very much as players of a repeated game do, and Alesina's work fully shares this perspective. The uncompromising insistence on the assumption of full rationality of all agents, completely shared with the likes of Barro, Lucas, Prescott, Sargent and many other outstanding macroeconomists, is probably one of the main elements setting apart his work form the *Public Choice* tradition. This represents an earlier attempt of connecting economics and politics, developed and popularized by Nobel Laureate James Buchanan and his fellow scholars of the Virginia School. The Public Choice approach differs in a number of important ways from modern political economy. For example, it usually has an *a priori* negative view of the government, almost always represented as a voracious *Leviathan* . In addition, it is not as keen as modern political economy is, on constantly adhering to the first principles of rationality and optimization, that are the backbone of New Classical Macroeconomics, and of microeconomics as well, of course. For instance, Buchanan and Wagner (1977) argue, in a famous contribution, that politicians in industrial democracies suffer from an over-spending bias, that may presumably be at the root of the wasteful Keynesian policies. Such bias arises due to politicians' inability to fully internalize the dynamic consequences of their political-economic decisions, and assess the true costs and benefits of public spending programs. Arguably, the lack of the due attention to the micro-foundation of actors' behavior (politicians and

voters alike) is what, presumably, brought Public Choice in an almost dead-hand road, within a profession hegemonized by the high rationality standards set forth by the New Classical Macroeconomics.

Nevertheless, the importance of the overall Public Choice approach within the history of economic thought should not be too underestimated. And it is worth noticing here the influence, recognized by Buchanan (1960) himself, that the Italian School of Public Finance of the early XX century had on the Public Choice tradition. And, in particular, the work of scholars such Antonio de Viti di Marco, with his notion of Stato monopolista. In this context, I would also mention the name of Amilcare Puviani. Arguing that the citizens systematically overestimate the benefits and underestimate the costs of public expenditures (i.e. suffer from a cognitive bias defined as fiscal illusion), he anticipated some classic Public Choice themes (e.g. the already quoted work of Buchanan and Wagner, 1977). Interestingly, a recent attempt to make sense of cognitive biases in public spending, with the tools of modern behavioral economy and decision science, has been made by the late Alesina. In this respect, a very recent paper of his, coauthored with Francesco Passarelli, should be mentioned (Alesina and Passarelli, 2019). This paper explains the policy divergence in a median voter based model, by relying on advanced psychological arguments such as the Prospect Theory of Kahneman and Tversky (1979)[5].

One substantial difference of Alesina's overall methodological approach has to be highlighted with respect to the New Classical Macroeconomics. The New Classical Macroeconomics is often based on the assumption of the existence of a representative agent, that is to say, on the postulate, that all individuals are identical. The spirit of such assumption, that is apocryphal, is to eliminate any apparent potential complication with the eminent goal of building more tractable and handy macroeconomic models, by applying the proverbial Occam razor.
On the contrary, Alesina follows an alternative tradition within the social science, that includes the work of heterodox and very different economists such as Karl Marx (1867) and Joseph Schumpeter (1942), sharing the belief that the importance of social heterogeneity (antithetical to the representative agent), and the related potential conflict, is undisputable. Moreover, there is a crucial, possibly multifaceted, interaction between politics and economics (potentially mediated

[5] Another seminal contribution in the behavioral social science is Herbert Simon's (1982) classic notion of "bounded rationality". See also Bénabou and Tirole (2016), who provide a modern discussion of why and how emotional factors, and other cognitive distortions, influence and shape rational decision making, in a variety of setups.

by culture). Furthermore Alesina is also deeply inspired by an important part of modern political science, including the seminal work of Anthony Downs (1957). Downs argues that many interesting and important problems, involving the allocation of some scarse resources among different citizens with different stakes, can be solved with a proper use of economic theory and related mathematics. For example, Downs' work, An Economic Theory of Democracy (1957), as well as much of Alesina's own work, heavily rely on one of the most important results of the so-called social choice theory[6], the *median voter theorem* (henceforth MVT). The MVT allows to demonstrate a fundamental result in modern political economy, that is of crucial importance, for instance, in areas such as public finance. That is, a voting game between players, who are heterogenous in terms of one basic characteristic (e.g. their pre-tax income) and who have single-peaked preferences over a one-dimensional political outcome (e.g. the rate of income taxation), has an *unique* political equilibrium[7]. This equilibrium coincides with the policy preferred by the median voter, that is to say by the agent, whose relevant personal characteristic corresponds to the median of the distribution of characteristics across the voting population as a whole.

Such diverse traditions of social thought highlight the distributional conflicts that pervade, in a different guise and to a variable extent, different economic and political-institutional contexts. Conflicts appear to be often significantly shaped by the (potentially very different) distribution of income across citizens, as well as of political and social power. Different schools of thought also pinpoint, as well, quite different methods and tools to solve these conflicts: from a Bolshevik revolution to a careful application of the MVT.

Most importantly, fundamental distributive conflicts rule out the use of the fiction of the benevolent and fully knowledgeable social planner, typical of neoclassical welfare economics. This is because each economic policy choice, made by the government in office, necessarily reflects some kind of attempt of composition and conciliation, more or less balanced, of some underlying social interests. These interests may be more or less divergent, and indeed possibly even irreconcilable, within the existing institutional framework.

One particular problem, arising in the specific area we are now moving in, is that it is quite often

[6] See for instance Austen-Smith and Banks (2005), for a modern and highly comprehensive reference on the topic.

[7] Roughly speaking, a political equilibrium is an arrangement, that is not defeated by any alternative policy supported by some potential pivotal set of voters. This is by no means a trivial result, thinking about Arrow's general impossibility theorem regarding "rational" collective decision making.

difficult to fully compensate the losers of a certain policy arrangement, for a number of reasons[8]. First and foremost among them, is the fundamental problem of the lack of *ex ante* credibility of a potential course of action, including the optimal one, as this may paradoxically prove *ex post* to be sub-optimal, and therefore, eventually, to become an undesirable course of action. Such potential key tension is highlighted in many magisterial works of Calvo, Lucas, Prescott, and other prominent macroeconomists, who all talk in various guises of the *inconsistency* of optimal plans.

An example of this general principle is provided by a celebrated and extremely timely result in the political economy of international trade[9], known, from its discoverers, as the Stolper-Samuelson theorem. According to such theorem, the workers with relatively low human capital (or blue-collar workers) in advanced economies do lose, that is to say their income shrinks in relative *and absolute* terms, when the government opts for a free-trade regime with developing countries, rather than for (some degree of) protectionism. This occurs even though free-trade is well-known to be the socially efficient policy, according to almost all trade economists (i.e. free-trade leads to an improvement in *aggregate* production and consumption relative to protectionism). Therefore, free trade makes everybody potentially better-off in principle, but not necessarily in practice; for example, for the credibility problems associated with a sound policy of losers' compensation. This simple insight offers a rather straightforward explanation of why blue-collar workers may sometime prefer to vote for politicians with a protectionist agenda[10].

This reasoning confirms that governing, namely making collectively binding choices, means taking decisions that are often conflictual and a cause of disagreement among citizens (and even of open and violent struggle in some contexts), especially when the decisions in question are concerned with highly divisive political-economic issues.

Therefore, the allocation of political power, that determines who can do what, in the political-economic realm, is essential to explain economic policy. This is the case from the positive political economy perspective proposed by Alberto Alesina since the mid 1980s, together with a group of

[8] This area is usually referred to as the positive political economy of economic policy.
[9] As already mentioned, some important political economy work (inside or outside the typical neoclassical benchmark), certainly existed before Alesina's work. But it often didn't enjoy the essential connection with the revolution in dynamic macroeconomics of the 1970's and early 1980's (also for obvious chronological reasons), that is so important for much of Alesina's work.
[10] A notable example of this puzzling fact is that of the 2016 U.S. Presidential election. There, much of the Rust Belt working class population, largely supported, as it is well known,the protectionist platform of candidate Donald Trump vs. the relatively pro-tree trade platform of candidate Hillary Clinton.

other distinguished scholars. In consolidated representative democracies (the institutional environment we mainly pay attention in this essay), power is allocated[11], by formal political institutions: *in primis* the electoral law, and the form of state and of government. Power also depends, to some extent, by lobbying and other influence activities (usually also regulated by the law).

Precisely because political institutions are not neutral, in the sense that they affect the allocation of political power unevenly (with some of them giving more voice to the elites and others to the non-elites), it is crucial to rationally explain not only institutions' workings but also their origin, a far more challenging problem. That is to say, it is necessary to attempt to answer to the endogeneity question: where do institutions come from?
Focusing, as we mainly do in this paper, on consolidated democracies, we would like in particular to understand the origin of different constitutional systems, or patterns of democracy, according to the leading scholar of comparative politics and institutions Arend Lijphart's (1999), celebrated and highly successful expression[12].

Not too surprisingly, Alesina himself has tackled this question (and so have done, from different angles, a number of other political economists), in an important article appeared in the *QJE* and joint work with Philippe Aghion and Francesco Trebbi (2004)[13].

[11] With the due limitations posed by the system of checks and balances in existence.
[12] For instance, "consensual democracies", featuring proportional representation *cum* parliamentary government, tend to favor lower and middle classes and their parties, within coalition governments. Instead "majoritarian democracies", where "winner takes all" politics sually
prevail, often favor the rich in single-party executives. See on this point Ticchi and Vindigni (2010), for a model which explains why consensual democracy is generally led by a center-left coalition, implementing relatively redistributive fiscal policies, according to its own political ideology. Whereas majoritarian democracy, on the contrary, tends to favor politically the rich elites, that usually govern according to their conservative spending ideology. Interestingly, both of the institutional systems just mentioned, appear to be rather dynamically stable. In the sense that consensual democracy (according to Ticchi and Vindigni, 2010), tends to emerge in relatively homogenous (i.e. low inequality) societies. And, in addition, the left-wing spending policies usually implemented by the relatively progressive consensual governments, tend to make such polities even more egalitarian over time. Thereby also potentially consolidating the power of Center-Left coalitions within the particular pattern of democracy in existence (see also Lijphart's, 1999, seminal contribution, for an excellent discussion of the different types of democracy in existence and their consequences for a variety of economic and social policies). Pretty much the opposite occurs in a majoritarian democracy, that tends to appear in relatively unequal societies to begin with. Furthermore, the increasing inequality caused by the usual presence of the Right in office, with its conservative spending ideology, consolidates its own political-institutional power. Specifically, the original pattern of relatively unequal distribution of income, favouring the choice of majoritarian democracy in the first place, becomes more and more pronounced as time goes by.
[13] Aghion *et al.* (2004) focus on the optimal design of checks and balances in the Constitutional chart. Too few checks may prevent the leader to behave corruptly or opportunistically. But too many of them, could make policy making too much inflexible and sclerotic. The optimal constitution is then the one that finds the optimal balance between these sets of important and delicate trade-offs.

5. Alesina and Rodrik distributive politics and economic growth, *QJE* 1994

Making one step backward with respect to the fundamental question of the endogeneity of institutions, the conflict that often pervades societies (whichever their institutions may be) depends on how income is distributed by the market and redistributed by the government among the various social classes.

Moreover, in many models, distancing from the *ad hoc* assumption of the representative agent, the distribution of income between owners of capital and owners of labor is an element of primary importance in explaining the growth rate of the *per capita* income of an economy[14]. For instance, this is the case of the classical theory of economic development à la Kaldor-Pasinetti. Hereby, by assumption, only the capitalists (but not the workers) save and therefore allow the economy to grow (in both the short and long run), in an economic setting, where this process is driven by savings only. Clearly, in such an environment, a redistribution of income in favour of the capitalists, generated for instance by a political empowerment of their class, naturally leads to higher economic growth.

But the distribution of income among capitalists and workers turns out to be crucial even in the modern theory of endogenous economic growth, originally proposed by Paul Romer (1986, 1990), and further developed by Robert Barro (1990). This is the case, when such models are suitably generalized to allow for a nondegenerate initial distribution of income between capital (the accumulable factor of production) and raw labor (the non-accumulable factor of production) across the individuals. Alesina and Dani Rodrik precisely accomplished this, in a celebrated paper published in 1994 by the *QJE*. I will hereby focus on this contribution, offering firstly a succinct informal introduction to it, followed by a more technical presentation of the formal model, including a final marginal discussion of the theory's empirical validation. As I will argue at greater length later on, I am especially attached to the paper in question for both scientific and personal reasons. This is precisely, why I have decided to spend relatively more time on Distributive Politics and Economic Growth, rather than on any other contribution of Alesina.

[14] See Bertola *et al.* (2014) for a general discussion of the importance played by income distribution in macroeconomics, and in many economic growth models in particular. Taking seriously income distribution headlights the limitations of the representative agent assumption, but is itself subject to a (two-ways) influence by macroeconomics, emphasizing the importance of aggregate outcomes as well, for explaining convincingly the process of economic dynamics.

Rather than discussing Alesina and Rodrik's (1994) model in detail now, which we will do later on, in the Technical Appendix at the end of the paper, we prefer to present it hereby at a relatively informal level. In this regard, it is useful to is useful to begin by saying some words introducing the endogenous growth revolution initiated by Paul Romer in the early 1980s and continued by other prominent economists such as Robert Barro[15].

As it is well-known, the theory of economic growth has been revolutionized by Paul Romer in the two aforementioned path-breaking articles, respectively published in 1986 and 1990, both in the *JPE*. In these papers Romer extends Robert Solow's (1956) fundamental contribution, where long run growth is driven by exogenous technological change only (and savings are irrelevant, because of diminishing marginal returns to capital). Romer elaborates in his 1986 paper by allowing for knowledge externalities generated by the average stock of capital in the economy, or in the accumulable factor of production more generally, as opposed to raw labor, that is also used in production. In his 1990 paper, Romer provides a theory of endogenous technical change, where profit-maximizing firms invest in the creation of new technologies, which is perhaps his most impressive contribution. In both models, justly recognized with the Nobel Prize as Solow's work was, technological change becomes endogenous, depends on aggregate savings, and is therefore shaped both by market forces and by potential government policies (such as various kinds of subsides or taxes), interacting with them.

Barro (1990) published, also in the *JPE,* a still different model of endogenous growth, where growth depends on productive public expenditures (entering the production function along with capital and labor); in such framework, the state has obviously a potentially critical economic role in fostering capital accumulation, by providing various types of public infrastructures, including law and order and national defence.

As I already mentioned, Alesina and Rodrik depart from Barro's (1990) model, generalizing it to allow for some form of socio-economic heterogeneity. People differ in terms of their relative endowment of capital and labor, and this diversity will shape people's different preferences over fiscal policy. Specifically, a capital tax is used to finance the provision of the productive public good, allowing for endogenous growth. But the same tax also distorts factor prices: it reduces the

[15] The 1988 paper by Robert Lucas should also be mentioned, given its enormous impact on modern growth. It is quite different, though, from the papers mainly relevant for us here, given its focus on the accumulation of human capital in a homogenous society.

net interest rate (that creates the incentives to save) and it raises wages, as labor is complemented in production by the productive public good. It turns out, that people, who are relatively well endowed of labor vs. capital, i.e. the poor vs. the rich, prefer relatively high taxes, boosting their wage income, despite the negative effect of taxation on capital accumulation and economic growth. In particular, the more labor-rich is the voter, who turns out to be pivotal in the (democratic) political process considered, or, equivalently, the more unequal society is, the higher is taxation, and the lower is the growth rate of the economy according to the model.

In other words, the main prediction of the model is that **the poorer is the median voter relative to the mean voter (or the more unequal the society is), the higher taxes will be, and the lower the economic growth rate will be.**

The crucial prediction of the model is empirically tested by the authors, in the second part of the paper, by taking into account as much as possible the basic problem of endogeneity of income inequality (using the state-of-the-art methods available at the time). Clearly, inequality is potentially correlated with a host of unobservable factors, also correlated with economic growth. The empirical results presented in the paper strongly support the theory's main insight, **that higher income inequality should be expected to have a detrimental causal effect on economic growth**.

It is not surprising that Alesina and Rodrik's paper has been regarded, for a long time now, as a classic contribution to the theory and the empirics of the political economy of economic growth, and that it is still an extremely influential contribution today. One that hardly any potential new addition to the literature on inequality, politics and growth can ignore.

6.The Influence of Alesina and Rodrik's (1994) paper on some subsequent research in political economy

Alesina and Rodrik's paper had a huge impact not only on the field of political economy, but also on the theory of economic growth and on macroeconomics more generally, contributing to the generation of a new and large literature, on the theme of the relationships between politics, income distribution and economic development.

The paper teaches us, or better so, it reminds us of a fundamental lesson already imparted by the

classical economics, that is to say that politics and economics are not ultimately separable disciplines, and the understanding of many economic phenomena, beginning with economic growth, is not really possible, by neglecting the role played by politics.

Among the contributions that are most keenly connected with the work of Alesina and Rodrik, are several highly celebrated papers. While the list of such papers is very long, in my opinion the following contributions, at least, should be mentioned, as part of a brief but essential review. They are presented below in chronological order:

- Roberto Perotti's paper (1996); this paper carefully examines the empirical plausibility of different causal mechanisms potentially linking political institutions, income inequality, and economic growth. Interestingly, relatively little support is found for the canonical positive theory of fiscal redistribution based on the median voter theorem, and due to Meltzer and Richard (1981). This theory posits that fiscal redistribution should be higher, the poorer is the median voter, relative to the mean voter. Because positive theories of fiscal redistribution based on the MVT seem to have some problems when confronted with the data, according to Perotti and others, people have spoken of the Perotti paradox in this respect, and a relatively vibrant debate has emerged in the growth literature afterwards.
- Roland Bénabou's (2000); this paper explains the diversity of the social contract (the degree of fiscal redistribution of income in cash or public goods chosen by society), observed at the same time in the US and in Western Europe. The US and Western Europe appear to be relatively similar in terms of economic development and of political institutions (in the sense that both are consolidated, advanced industrial democracies). Yet, fiscal redistribution is much lower in the US than it is in Western Europe. In explaining this remarkable puzzle, Bénabou demonstrates that when redistribution can be efficiency-enhancing (i.e. improving the allocation of resources in presence of market failures), it will be higher in a relatively more homogenous society, that will more intensively politically support it. This society, therefore, will tend to become even more equal over time, due to the intervention of a generous welfare state. Such is the case of Western Europe in general, and, within it, of the Scandinavian countries most significantly. The opposite is true in the U.S., where the existence of a relatively high inequality, politically supports a relatively weak

welfare state, that tends to make inequality persistent, and possibly increasing over time[16]. Interestingly, as Bénabou points out, redistribution potentially corrects market failures, but also creates fiscal distortions (to savings and the labor supply for example), therefore it is not obvious which particular social model, the Western European one or the American one, dominates over the other, or is dominated by the other, in terms of growth performance[17].

- Daron Acemoglu and James A. Robinson's papers on political transitions (see their comprehensive 2005 book); this book largely opened the new field of endogenous political institutions, and explained the emergence (or non-emergence), and the consolidation (or lack of consolidation) of political democracy in the Western World and elsewhere. In this book, furthermore, democracy emerges when the rich elites ruling a dictatorship cannot credibly commit to future redistribution in favour of the poor masses, and therefore are compelled to concede democracy. Democracy guarantees hereby a persistent reallocation of political power, due its relative durability. Interestingly, democracy emerges when inequality in is some intermediate range: if there is too little inequality, the demand of democracy by the masses is not too strong; conversely, if there is too much inequality, the elites respond to the demand of democracy by the masses with repression or other institutional manipulations. For example, the elites could create a military dictatorship, where they, and the military are in control of the state. Or, alternatively, they may establish a captured democracy, i.e. a political realm that is *de facto* ruled by the rich elite by some form of vote buying. A captured democracy may be unable to do much redistributive public spending anyway, due to the (endogenous) existence of a weak fiscal government apparatus, generating low "state capacity"[18].

In all the aforementioned works, the distribution of income obviously plays a fundamental role for a large class of political-economic outcomes, including the endogenous dynamics of both fiscal

[16] Bénabou's model is based on a dynamic generalization of Meltzer and Richard's (1981), where fiscal policy is "given a chance". That is, it can raise growth and welfare, in a world of incomplete markets, rather than only redistribute income (at the cost of some deadweight loss). Moreover, the political process is a flexible generalization of the MVT. In the sense that the rich are affected by a positive (or negative) political bias, reflecting for example some potential (exogenous) institutional variation. However, importantly, the model does not need to assume any institutional heterogeneity to explain any variation in the observed social contract.

[17] See also the book of Alesina and Glaeser (2004) for a broad discussion of the comparative political economy of the welfare state in Western Europe vs. the US.

[18] See, on the topic of endogenous state capacity, inequality, and the politics of redistribution in a captured democracy, the contribution of Acemoglu *et al.* (2011).

redistribution, and political institutions, all themes that are already to be found, in different guises (either in fully explicit terms or *in nuce*), in Alesina and Dani's magisterial work.

7. Other early works of Alberto Alesina, foundational for modern political economy

The field of modern political economy emerged as an important sub-field of economics during the first part of Alesina's career or so, from the mid 1980s to the late 1990s, after which time it become consolidated and started a partially new life of its own, preserving much of the spirit of its founder, despite the natural evolution[19]. It is therefore appropriate, in my view, to mention here a few of such other papers of Alesina (and coauthors of his), besides his initial work on political business cycles (Alesina, 1987, and 1988, for example) and his 1994 growth paper, both of them forming the hard core of what may be termed as the classical version of modern political economy. Though I am as usual forced to be extremely succinct, and to ignore even highly important works, the following papers must be mentioned in describing the emergence of modern political economy, as a new and autonomous field of economics.

- In 1990, Alesina and Alex Cukierman published in the *QJE* an intriguing paper, showing that under certain circumstances (including uncertainty on some of their traits on the part of voters in a dynamic setting), politicians have an incentive to be ambiguous, namely not to fully reveal to voters their own real policy preferences, in order to increase their chances of electoral victory. They therefore implement a compromise policy between their own genuine preferences, and the policy preferred by their party. In addition, they may choose to strategically implement procedures that make it more difficult for the public to elicit their true preferences.
- In a 1990 paper, Alesina and Guido Tabellini provided a novel theory of the dynamics of public deficit and debt, that differs from the influential normative theory of Robert Barro (1979). In

[19] Political economy has changed since its early days in the mid 1980s in a number of ways. At the theoretical level, models have become more comprehensive and more rigorous, assuming, in some sense, more and more the spirit of the dynamic general equilibrium models of modern macroeconomics, with less free parameters and *ad hoc* assumptions of various kind. In particular, the use of relatively advanced game theory has become widespread, leading to dynamic models which are relatively rich of interactions. In these models a Markov
Perfect equilibrium is often looked for, in other to convincingly deal with the potentially daunting problem of the "history-dependence" of players' strategies. History-dependence leads naturally to the complicated issue of the potentially large multiplicity of Subgame Perfect equilibria. At the empirical level, the "credibility revolution" in micro econometrics has become extremely influential also in political economy. This revolution stresses the crucial importance of searching plausibly for causal relations between the variables of interest as opposed to simple correlations. This, the rigorous search for causality, is after all, the basic quest of science in
general. This evolution is apparent in many relatively late papers of Alesina.

this theory, governments use public debt with an eye to minimize the intertemporal distortions caused by the high taxes, that may be needed (in alternative to public debt) to finance public expenditures programs. Doing so allows governments to achieve the goal of financing the same expenditures more efficiently, i.e. with lower taxes, and lower distortions. Alesina and Tabellini note that public debt is a "state" variable[20], that can potentially work as a commitment device in a dynamic and polarized environment, as opposed to a representative agent framework. In such heterogenous environment, potential governments have different ideologies or preferences over public spending (i.e. which public good to provide social welfare vs. national defense). They are therefore divided by a potential conflict over which spending policy to implement, in the present and in the *future*. Then, the government presently in power effectively ties the hands of the future government, by overspending today (relative to some normative criterion), in its preferred public good. This may be a different one from the preferred public good of a different government, given the existing social heterogeneity and the related potential political insatiability. This is because, crucially, no default on the outstanding stock of debt is allowed for by assumption. Hence, overspending allows the incumbent government to force its potential successor, to implement a spending policy closer to its own preferences, rather than to the actual preferences of the potential future new incumbent.

- In a 1991 contribution published in the *AER*, Alesina and Allan Drazen addressed the question of why, seemingly often, governments fail to implement fiscal stabilization programs immediately, even when this action represents the efficient policy. The public debt will have to be financed anyway in some future, as default is not allowed, with potentially very distortionary taxation. Essentially, conflicting parties are involved in a "war of attrition" type of game, where they both ignore the true cost of "not throwing the towel" of their opponent (while they do know exactly their own cost). In equilibrium, fiscal stabilizations are delayed, as both players hope that their opponent will give up first, and therefore pay most of burden of the resulting, inefficiently postponed fiscal adjustment. Notice that some of the main ideas of the Alesina and Drazen's (1991) paper appear already in Alesina's article, The End of Large Public Debts, (see Giavazzi and Spaventa, eds., 1988).
- In a very original 1996 paper, Alesina and Perotti offer a quite different perspective on the

[20] In macroeconomics, a state variable is a slow-moving (exogenously or endogenously) entity that shapes the general economic environment.

causal relation between inequality, politics and growth, as compared to the one inspiring the *QJE* 1994 paper with Rodrik. According to Alesina and Perotti (1996), inequality may influence growth through a channel that is quite different from the canonical Meltzer and Richard's mechanism (i.e. by triggering a highly redistributive fiscal policy, which discourages savings and capital accumulation). Instead, inequality may be detrimental for growth by fuelling extra-institutional political instability. In other words, as Alesina and Perotti point out, a highly unequal society may be ridden by a variety of social conflicts, including relatively violent ones (e.g. mass killings or military coups), that undermine property rights, and the related incentives to invest, thereby slowing down economic growth.

- In 1997 Alesina and Spolaore present a theory of the equilibrium determination of the number of countries, heterogenous across political-institutional patterns, as well as economic environments, featuring, in particular, a variable degree of economic integration[21]. A basic trade-off operates in the model: larger countries can exploit more potential economies of scale in the production of public goods (a clear efficiency gain, which leads to a bigger government). However, larger countries have also a potentially larger, and therefore more heterogenous population, that is likely to be more polarized. Therefore, they tend to experience more political-economic domestic conflicts, compared to a smaller country with a more homogenous citizenry. The "optimal" choice of a country's size reflects the basic trade-off in question. An important paper's finding is that an institutional transition towards more democracy (i.e. a weakening of the potential Leviathan government in power), is likely to lead to an equilibrium secession. This is because citizens, if given more voice, prefer to split in order to live in smaller polities where economies of scale in the provision of public goods are less exploited, but also less political-economic conflicts divide the population. Alesina *et al.* (2000) further expanded on these basic issues. They pointed out that economic integration, is likely to lead to economic disintegration, by allowing even relatively small countries to enjoy the many benefits of trade (including a greater volume of production and of consumption of goods, as well a greater variety of available goods). This is because economic integration allows countries to choose to exploit the many potential efficiency gains brought about by international trade, rather then relying on domestic economies of scale. These may have the drawback of coming along a "too much diverse" domestic polity. Finally, Alesina and Spolaore (2005) investigate the role of war and international relations in

[21] See also the 2003 book by the same authors for a comprehensive discussion of this topic.

shaping the size of countries[22].

- In a 1999 paper, jointly written with Reza Baqir and William Easterly, and published in the *QJE*, Alesina demonstrated, that more ethno-linguistic fragmentation across American cities is potentially detrimental to public goods' provision. A possible explanation of this remarkable public finance finding, is that relatively different individuals tend to trust each other less, and therefore to agree less on collective spending decisions. Hence, more heterogeneous populations appear to have smaller governments.

8. The late Alberto Alesina

Alesina's work is unique also in another important dimension, arguably a reflection of his exceptional curiosity: the continuous expansion of his own cultural horizons reached areas and domains ranging from the psychology of individual decision making, to cultural and social anthropology, to the economics of gender. All these different topics seemingly were not at the core of his very first research interests, focused primarily on political macroeconomics. Nevertheless, Alesina remained true until the very end to his original interests in macropolitical economy, as his late work on the politics and economics of austerity eloquently testifies. This late work was written with Carlo Favero and Francesco Giavazzi and was related to his earlier work with Silvia Ardagna.

In discussing some of the main contributions of the relatively late Alberto Alesina, I would like to remind my readers once again that space constraints force me to neglect again much of his important work.

- In 2013, Alesina published, in the *QJE*, with Paola Giuliano and Nathan Nunn a highly cited and influential paper. This paper is noteworthy for many reasons. Basically, it strongly corroborates one influential theory published in 1970 by Ester Boserup, that argues that the historical roots of the current division of labor by gender, as well as many shared beliefs concerning the proper economic and social role of women. According to Boserup, the traditional role of women originates in the specific patterns of agricultural production

[22] It should be mentioned that the study of the equilibrium determination of the number and size of countries, has influenced other areas, like international economics for example. Alesina and Barro's *QJE* 2002 paper, for instance, revisits and extends the classical theory of optimal currency areas developed in the 1960s by Robert Mundell. Alesina and Barro (2002) show that the determination of optimal currency areas depends on a complex variety of factors including the size of countries and their distances, rather than just economic similarity.

adopted in a relatively remote past. In particular, the use of the plough requires significant physical strength (especially on the upper body), that is needed to pull the plough or to control the animal pulling it. These features of plough-based agriculture led to a very specific gender division of labor, with men usually working outside in the fields, and women doing activities within the house. Crucially, according to Boserup, this differentiation of gender roles, led as well as to specific patterns of beliefs concerning the proper social role of men and women, and supporting plough-based agricultural systems as well. Indeed, *prima facie*, quantitative evidence reported by Alesina *et al.* (2013) uncovers a strong set of correlations between the historical adoption of the plough, and the existence, today, of cultural patterns, revealing lack of appreciation for gender equality, as well as a limited degree of participation of women in both economics and politics. As intriguing as the theory and preliminary evidence might be, they are not immune to potential criticism. One natural potential objection refires to a "reverse causality problem". What if the adoption of the plough itself may have been historically caused by a potential preexisting culture, possibly related to some religious beliefs[23], and not the other way around? More generally, the historical adoption of the plough may have been endogenous to some unobserved factor, shaping as well the prevailing culture, together with its attitude towards women in particular. Therefore, and in the spirit of Boserup's historical narrative, a rigorous causal demonstration of the consequences of the adoption of plough-based agriculture for gender equality, is potentially problematic. To tackle any potential problem, Alesina and coauthors adopted a sophisticated, multifaceted econometric methodology. Briefly, drawing on previous work of others (see the article for details), they provided a theory of endogenous adoption of the plough, that distinguishes between crops that are more, and crops that are less "compatible" with the plough itself, and suitable to be cultivated with that method. The suitability of a location for cultivating plough-positive vs. plough-negative crops predicts well the adoption of the plough *in loco*, and therefore provides a plausible foundation for an instrumental variable-based strategy, meant to explain the emergence of plough-based agriculture. A further concern might be that the historical use of the plough may shape the external environments in which people live, including institutions, markets, laws. This, in turn, may directly affect female labor participation. That is to say, not through the specific channel of the molding of culture

[23] Many historical religions seem to adhere to specific women-unfriendly precepts, concerning the proper division of labour between men and women, within and outside the household.

and beliefs on the appropriate economic role of women. To circumvent this other potential problem, Alesina *et al.* (2013) also looked at the observed variation in beliefs concerning the role of women, among children of immigrants originally coming from places adopting *different* agricultural regimes. Because culture and norms are inside people (i.e. they live *in interiore homine*) and move with them wherever they may go, unlike institutions, markets, and laws which are part of a given, and *identical* (for all its citizens) external environment. The latter cannot explain any potentially observed cultural difference between children of immigrants living in the same country. The proposition that the plough matters by shaping the relevant human beliefs and culture, appears to be corroborated even by this new empirical exercise.

- We remark that the contribution of Alesina *et al.* (2013) is only one (if possibly the most influential) of the significant work investigating the interconnections between culture and institutions undertaken by the late Alberto Alesina and his co-authors. The now burgeoning field exploring the interconnections between culture and institutions was, indeed, a much under-researched area by economists until recent years. It has been revived thanks to the work of Alesina, and a few other prominent scholars, just like political economy has been. Alesina and Giuliano (2015) do offer a very comprehensive review of this promising and rapidly growing area of research. Another contribution of Alesina within this area that is worth mentioning, is his 2010 paper on importance of family ties, also co-authored with Paola Giuliano. Alesina and Giuliano (2010) show how family ties affect economic behavior in a number of important ways. For instance, stronger family ties lead to more home production, as well as to larger families. The labor force participation of women and youngsters, and geographical mobility are also all affected, and appear all to be lower under stronger family ties. As usual, Alesina and Giuliano are careful in assessing the causality of their results; their empirical strategy is based on looking at the behavior of second-generation immigrants. We end this necessarily short discussion of an extremely important topic, by noticing that the field of culture and economics is far from disconnected from political economy, but has many important ties with it. For example, Alesina and Giuliano (2015) mention the work of the sociologist and anthropologist Emmanuel Todd (1985), who argues that family systems influence the system of values the people absorb at an early age, and in turn the development of political systems.
- More recently, in 2019, Alesina published a highly praised book with Carlo Favero and

Francesco Giavazzi on the theme of "fiscal austerity", that was awarded the *Hayek Prize*, sadly enough shortly before his passing away. The book carefully explains under which circumstances a highly debated policy as fiscal austerity does indeed work according to the authors, and when it may not necessarily do so. Fiscal austerity is supposed to ameliorate public finances, at little recessional costs[24]. Their work is related to an important article by Giavazzi and Marco Pagano, going back to 1990, and reporting two cases of major fiscal retrenchments occurred in two small European countries, Denmark and Ireland, in the mid 1980s. Fiscal austerity policies in the analyzed countries have, apparently, ameliorated the respective economic conditions, including the level of GDP and the state of public finances, improving them[25]. A heated debated followed on the macroeconomics of fiscal austerity. The basic logic of austerity runs against the traditional static Keynesian model taught in all basic macroeconomic classes. There, a cut in public expenditures, that are part of aggregate demand, has unambiguously negative effects on output. The simple Keynesian model, however, has been criticized by the New Classical Macroeconomics, for not considering the expectations of the public, concerning the future government's behavior. More generally, the basic Keynesian model does not frame the making of economic policy, and of fiscal policy in particular, in the appropriate environment. In such a context both government and agents act as players, in a fully strategic, dynamic interaction. In a nutshell, the Keynesian model fails to take into account that an expansion in public expenditures will soon or later have to be matched by a fiscal stabilization, cutting expenditures or raising taxes in order to meet the government's intertemporal budget constraint[26]. Once expectations on future government's policy are duly taken into account, an expansion of government spending *today* may actually have *recessional* effects *today*. This is because individuals correctly anticipate the higher and more distortionary taxes[27], that will have to be levied by the government in the *future*, in

[24] See also the previous work of Alesina and Ardagna (e.g. 2010), and the article of Alesina *et al.* (2015).

[25] It is worth noticing that an early brilliant (1993) theoretical paper by Giuseppe Bertola and Allan Drazen published in the *AER*, has importantly contributed to our understanding of austerity's logic. The paper offers one of the first formalizations of the surprising findings of Giavazzi and Pagano concerning the fiscal reforms of Denmark and Ireland. Bertola and Drazen assume that public spending follows a Browinian motion, being infrequently and randomly regulated by the government. This policy leads to a nonlinear relation between personal consumption to GDP and public spending. Regulations occurs when the latter reaches some "budget cuts", that is, critical points where some fiscal stabilization is implemented.

[26] Sargent and Wallace (1981) among others, are an early reminder to us that the intertemporal budget constraint of the government must be satisfied, with all the implied consequences for public policies and expectations formation, when default is ruled out.

[27] As it is well known, the fiscal distorsions caused by some level of taxes, are usually assumed to increase at the margin with the level of taxes itself (e.g. Barro, 1979).

order to service the forthcoming greater public debt. But then, as argued by Alesina and his coauthors (2019), a policy of austerity, consisting in the implementation of some form of fiscal retrenchment can actually have *expansionary* effects already in the short run. In addition, spending cuts are shown to be far more effective than raising taxes, in dealing with an exceedingly high public debt. This can happen to the extent that austerity induces people to expect a robust reduction of public debt, as well as the implementation of *lower* taxes. The latter, in turn, allow the enjoyment of a greater disposable income in some future. In a dynamic, expectations-based environment such as the framework typical of modern macroeconomics, expected future tax cuts are indeed already operational already in the present, as people desire to smooth consumption over time. Uniformly and in particular in the present already, the people benefit of the greater consumption opportunities, that are expected to become eventually available in the future. A discussion of the topic of expansionary austerity cannot fail to mention the important criticism raised by prominent economists, including Olivier Blanchard and Paul Krugman. Krugman especially criticized the potentially expansionary effects of fiscal retrenchments, in well-known articles published in renowned newspapers. An early criticism of the notion of expansionary austerity is also due to Roberto Perotti (2011), who also critically revisits the evidence on the non-Keynesian effects of fiscal policy provided by Giavazzi and Pagano (1990)[28]. Unfortunately, the untimely passing away of Alesina has impeded a more thorough confrontation on an such important issue, between himself and other intellectual giants of his same standing, but with a dissenting opinion, to the benefit of whole community of economists as well as of society at large. But we will possibly see in the next years, how the austerity debate will evolve, and which competing view will be proven more "correct".

[28] In a still earlier contribution, Blanchard and Perotti (2002) document that positive government spending shocks can have positive and relatively persistent effects on output.

TECHNICAL APPENDIX

This Appendix presents in some analytical detail, Alesina and Rodrik's (1994) model.

Alesina and Rodrik consider an infinite-horizon economy in continuous time, with an extended neoclassical production function, a rather standard setup for many early endogenous growth models. Specifically, the production function they assume, drawing on Barro's (1990) paper, is of the form

$$y = Ak^{\alpha} g^{1-\alpha} l^{1-\alpha}, \tag{1}$$

with $\alpha \in (0,1)$. In this expression, k stands for the accumulable factor of production, including physical but also human capital for example, g indicates the stock of productive public spending supplied by the government, and l stands for the non-accumulable factor of production, that is to say raw labor[29].

Productive public expenditures are financed with proportional taxation of capital, and the government budget constraint is assumed to be always balanced, so that, at each time we have[30],

$$g = \tau k. \tag{2}$$

Combining these last two equations, one gets a new production function of the form

$$y = A\tau^{1-\alpha} l^{1-\alpha} k. \tag{3}$$

The crucial feature of this last equation is that it is linear in the accumulable factor of production, so that, in principle, it can potentially replicate (at least if taxes do not increase too much) Romer's miracle of preventing the marginal productivity of capital, net of taxes, to fall below the rate of time preference. At that point, growth is well-known to stop along with the evaporation of the individual incentives to save, and the economy ends up in a stationary state.

Because in Barro's the assumption of a representative agent is maintained, just as in both of Romer's models, there is no scope for distributive politics in affecting economic growth in any

[29] We remark that, unlike private capital, the productive public good g is not a state-variable of the model, but a control variable, linked with taxes and the government (static) budget constraint. See equation (2) reported above.

[30] Note that, even if taxes are proportional, more capital rich individuals contribute more, for any given tax rate, simply because they have more to give.

way. It follows, that the natural criterion for setting taxes is the proverbial maximization of social welfare. Alesina and Rodrik (1994), vice versa, generalized Barro's model in a critical dimension, by assuming that people are indeed heterogeneous, in the sense of having a different initial relative endowment of capital and labor income. More precisely, people differ in their initial *relative* ownership share of the aggregate raw labor stock vs. their relative ownership share of the aggregate capital stock; therefore, for a generic individual i, the following formula applies,

$$\sigma_0^i = \frac{l^i/1}{k_0^i/k_0} \in [0, \infty] \tag{4}$$

a formula naturally assuming the normalization to 1 of the aggregate stock of raw labor (i.e. $\int_i l^i \, di = 1$). Note that while the numerator of this formula is, obviously, always constant, the denominator may, in principle, change over time, with individual i potentially getting richer or poorer in terms of relative endowment of capital income[31].

Before proceeding, it will be useful to make progress to describe the economic environment, beginning by the derivation of the factor rental rates (capital and labor) faced by the individuals, who act as price-takers in competitive markets, as a function of the taxes[32]. Using the Cobb-Douglas specification assumed for the production function, we have

$$r^k(\tau) = [r(\tau) - \tau], \text{with } r \equiv \frac{\vartheta y}{\vartheta k} = \alpha A \tau^{1-\alpha} \equiv r \overset{+}{\widehat{\tau}} \tag{5}$$

and

$$r^l(\tau) = \omega(\tau) k^i \sigma^i, \text{with } \omega \equiv \frac{\vartheta y}{\vartheta l} = (1-\alpha) A \tau^{1-\alpha} k \equiv \omega \overset{+}{\widehat{(\tau)}}. \tag{6}$$

Both formulas obviously apply since both factor markets are perfectly competitive, and the neoclassical functional theory of income distribution is thus relevant in this setup; therefore, each

[31] The output of formula (4) is a *datum* of history, reflecting the initial conditions of the economy, that could be any. However, in principle, it may be that σ_t^i becomes different, as times goes by, from σ_0^i for some t. As explained later, however, this will never occur in equilibrium.

[32] It may be useful to remind, that since the neoclassical theory of income distribution obviously applies, the total factor income accruing to an agent, from any factor of production, is simply equal to the marginal productivity of that factor of production, times its personal endowment of that same factor. Also, because of Euler's theorem, all output is exhausted by rewarding all the factors of production, that are priced according to their marginal productivity (i.e. there is no left-over income to deal with).

factor obtains a gross reward equal to its marginal productivity. But remember that capital (only) is taxed, at rate τ, so that the *net* marginal reward of it is *not* equal to $r(\tau)$ but to $[r(\tau) - \tau]$ and it will turn out to be a non-monotonic function of taxes, unlike the wage rate, that at each point in time (given the accumulated k), increases monotonically with τ. Intuitively, this is the reason why capitalists will prefer *less* taxation than workers: they better internalize its cost, and therefore the potentially harmful consequences of too much taxation, on economic growth, as well as on their own welfare[33].

The program, that individual i solves consists in maximizing its discounted lifetime utility, given its income, and the dynamic constraint representing the evolution of its wealth. At each point in time, this reflects its endowment of labor and capital, its consumption decision, and the government's policy preferences. That is to say, the tax rate τ levied on capital income, that is assumed to be taken as given by all citizens at each instant, is yet indeterminate at this stage. Formally, individual i solves the following problem

$$maxU_0^i(\{c_t^i\}) = \int_0^\infty e^{-pt} ln(c_t^i) dt, \tag{7}$$

subject to the static and dynamic budget constraint of the same individual, that read, respectively,

$$y^i = \omega(\tau) l^i + [r(\tau) - \tau] k^i = \omega(\tau) k^i l^i \sigma^i + [r(\tau) - \tau] k^i. \tag{8}$$

and

$$\frac{dk_t^i}{dt} = \omega(\tau) \sigma^i k^i + [r(\tau) - \tau] k^i - c^i. \tag{9}$$

Equation (evolution capital i) is the differential equation describing the evolution of the capital stock owned by individual i; its right-hand-side includes the decomposition of the total income of individual i into its labor income, and capital income respectively, net of its consumption. The solution of this problem of dynamic optimization (using Pontryagin's Maximum Principle) leads to the differential equation, describing the optimal evolution of *growth rate* of consumption, for given taxes, an equation that has the relatively standard from,

[33] Notice that, while taxes are in principle unrestricted (i.e. they can potentially go all the way up to 100%), equation (5) makes clear that, in concrete, this is not the case. In particular, the interest rate can't be negative of course (otherwise nobody would hold any capital), and that implies that $\tau \leq (\alpha A)^{1/\alpha} \equiv \tau^*$. Such equation potentially introduces an endogenous "state capacity" constraint into the model; but it is not so relevant as it will never bite in practice.

$$\frac{dc_t^i/dt}{c_t^i} = [r(\tau) - \tau] - \rho. \tag{10}$$

Note now an important point: the interest rate (or marginal productivity of capital) is a non-monotonic function of taxes. On the one hand, higher capital taxes boost the provision of the productive public good g, that in turns raises both the interest rate and the wage rate (the latter for any given capital stock); on the other hand, higher taxes reduce the returns to savings and therefore discourage capital accumulation and growth. These two forces are acting in the opposite direction, suggesting that the growth maximizing capital tax rate will be an intermediate one, as opposed to a corner solution (and different from the tax rate maximizing social welfare).

Assuming that people expect taxes to be endogenously constant (and expectation that will prove to be consistent with equilibrium), we have that the law of motion of the capital stock delivers the following expression for the rate of expansion of k^i,

$$\frac{dk_t^i/dt}{k_t^i} = \omega(\tau)\sigma^i + [r(\tau) - \tau] - \frac{c^i}{k^i}. \tag{11}$$

In balanced-growth, all variables will have to grow at a constant, identical rate (by Uzawa's Theorem); therefore we will have that the equality of the rate of evolution of individual consumption and wealth (i.e. equations (10) and (11)), will lead to the following equation

$$[r(\tau) - \tau] - \rho = \omega(\tau)\sigma^i + [r(\tau) - \tau] - \frac{c^i}{k^i}.$$

This equation delivers the consumption function of individual i, or

$$c^i = \omega(\tau)\sigma^i k^i + \rho k^i. \tag{12}$$

Equation (12) has a very nice, transparent interpretation in terms of how it links the *functional* distribution of income to the consumption behavior of the agents: in particular, the generic individual i always consumes its *full* labor income, and a fraction ρ of its capital stock, regardless of taxes. In other words, an individual, who starts out as a pure worker, will never become something of a partial capitalist. Moreover, the class structure of the economy will endogenously reproduce itself over time, reflecting optimal individual saving decisions, as well as

the expected tax policy of the government[34].

Moving forward, we need to solve for the taxes, that maximize the lifetime utility of the potentially pivotal individual; call it individual i for simplicity. Here politics comes into play, since the government in office cares, by assumption, about the welfare of the pivotal agent only. The problem in question therefore reads

$$\max_{\tau} U_0^i\left(\{c_t^i\}\right) = \int_0^{\infty} e^{-pt} \ln\left(c_t^i\right) dt, \tag{13}$$

s.t.

$$c^i = \left[\omega(\tau)\sigma^i + \rho\right] k^i.$$

and [35]

$$\frac{dk_t^i/dt}{k_t^i} = \frac{dk_t/dt}{k_t} = [r(\tau) - \tau] - \rho \equiv \gamma(\tau).$$

Solving this problem, the preferred tax rate of individual i results to be implicitly defined by the equation

$$\tau^i\left[1 - \alpha A(1-\alpha)\tau^{i^{-\alpha}}\right] = \rho(1-\alpha)\theta^i\left(\tau^i\right), \tag{14}$$

where

$$\theta^i\left(\tau^i\right) \equiv \frac{\omega\left(\tau^i\right)\sigma^i}{\omega(\tau^i)\sigma^i + \rho}\,. \tag{15}$$

[34] This point has been emphasized by Giuseppe Bertola in an independent paper, published in 1993 in the *AER*, where similar political and distributional issues are studied in a model derived from Romer's (1986) model of endogenous growth. As Bertola remarks, in these class of models, labor income (i.e. the returns to the non-accumulable factor of production) is always entirely consumed, whereas savings only come from capital income (i.e. the returns to the accumulable factor of production). This is a remarkable finding, since the same kind of saving propensities *assumed* in a Kaldor-Pasinetti type of model, emerge as optimal individual choices in a model of endogenous growth, where both accumulable and non-accumulable factor play a role in production. In addition, any fiscal policy, altering the functional distribution of income and the factors' rental rates, has the potential to affect long run growth. One such policy is a capital subsidy, financed with a wage tax.

[35] Observe that the government takes into account both the saving behavior of the potentially pivotal individual i, which naturally affects its welfare, and both the aggregate saving behavior, which affects the state variable k, relevant obviously for all individuals. However, because all individuals have the same consumption and saving pattern, the two dynamic equations in question are identical.

The term $\theta^i(\tau^i)$ has a nice interpretation, since it represents the share of labor income of individual i as part of the total income allocated to consumption by the same individual. Also, $\theta^i(\cdot)$ is increasing in τ^i : obviously it increases in $\omega(\cdot)$ and, moreover, $\omega(\cdot)$ is, as we already know, increasing in τ^i (as higher taxes have the static effect of boosting both factor prices). In addition, the term $\theta^i(\tau^i)$ shows, in combination with equation (14), what is the preferred tax of individual i ; it turns out that such tax rate τ^i is *constant*, *unique* and *increasing* in σ^i . These all are foundational results for the model's political-economic equilibrium, as we shall soon see.

For example, the preferred tax rate of a pure capitalist (someone with no labor income at all, and therefore with $\sigma^i = 0$ and $\theta^i = 0$), is equal to

$$\tau^k = [\alpha A(1-\alpha)]^{\frac{1}{\alpha}}. \tag{16}$$

It can be easily demonstrated that the preferred tax rate of a pure capitalist is also the tax that the maximizes the economic growth, rate i.e. the one that a potential "technocratic" government would implement[36]. We assume that such government is solely concerned with intertemporal efficiency (or the maximization of the whole pie), and indifferent to any redistributive issue[37]. This government has, obviously, no interest in implicitly subsidizing labor income by taxing at a rate superior to τ^k , a policy generating a static expansion of wages (recall equation (6)), that would be entirely consumed, as all labor income is. Therefore, such policy would not contribute to stimulate economic growth at all and would only, instead, slow it down by reducing the incentives to save. Conversely, a developmental government cares only to provide the growth maximizing level of the productive public good, i.e. allowing to maximize the net interest rate, and that requires taxing capital at the "technocratic" rate expressed by equation (16)[38].

[36] Or a "Stalinist" government, or a "development dictatorship" of the East Asian type, to make a more modern example.
[37] This is straightforward since, as we know, the rate of growth of capital reads $[r(\tau) - \tau] - \rho = \alpha A \tau^{1-\alpha} - \tau - \rho$. Simple algebra shows that the expression reported in equation (16) maximizes the function corresponding to the right-hand-side of this equation (and the net interest rate as well).
[38] One can also think to the polar special case, of an individual, who is a "pure worker", i.e. owning no capital income at all. Such an individual is characterized by a σ tending to infinity, since we have that

$$\lim_{k_0^i \to 0} \sigma_0^i(k_0^i) = \infty.$$

In addition, its corresponding value of θ is clearly equal to one, for any tax rate. It follows that the preferred tax rate of a pure worker is implicitly defined by the equation

$$\tau^i\left[1 - \alpha A(1-\alpha)\tau^{I^{-\alpha}}\right] = \rho(1-\alpha),$$

At this point, we have all the ingredients that are needed to solve for models' political equilibrium, and we shall do so by relying on the median voter theorem (MVT). People differ in one basic characteristic, σ, and people with greater σ prefer *higher* taxes than people with lower σ (i.e. there is a monotonic relation between σ and the preferred individual tax policy). Moreover, the policy space has one dimension, i.e. the unique tax rate τ present in the model, and the preferences of all agents are single-peaked over taxes. It follows by the MVT, that the voting game has a *unique* political equilibrium, that precisely consists in implementing the preferred tax rate of the median voter, defined as τ^m. The median voter's personal characteristic, σ, defined as σ^m, corresponds to the median of the distribution of this characteristic across all voters. Such agent is the effective political winner of the voting game: intuitively, exactly 1/2 of the voters would like taxes to be lower than τ^m, and vice versa, so that the median voter (with $\sigma = \sigma^m$) splits the population in half, and therefore turns out to be the pivotal agent. Formally, τ^m is defined implicitly by equation (14), with $\tau^i = \tau^m$, and it is constant over time, consistently with people's expectation of facing a constant tax rate; this expectation therefore proves to be fully congruent with the actual equilibrium outcome.

As we know, τ^m increases with σ^m, a parameter that can be interpreted as capturing the distance from an equal society, i.e. where $\sigma^i = 1$ for any i [39], so that the appropriate inequality index, chosen by the paper's authors, is $\sigma^m - 1$ [40]. Furthermore, the total income of agent i, expressed

obtained from equation (14), with $\theta^I(\tau^I) = 1$. Interestingly, it can be demonstrated that the preferred tax rate of a pure worker (or the tax rate implemented by what we may call, with some potential abuse of terminology, a "left-wing populist" government), also leads to positive long run growth. This is because such a voter (or its own government) rationally understands that: wages (like gross interest rates) depend positively on taxes, but wages (unlike interest rates) also depend positively on capital. Therefore, a pure worker uses taxes to both boost its own static wage income, and to promote capital accumulation to some degree, in order to increase its future path of labor income, that depends on the future path of k. This is also the reason, why expropriating entirely the capitalists, a policy that would obviously stop growth altogether, is not a desirable policy, even for people who own no capital whatsoever.

[39] Note that a perfectly egalitarian society clearly has a "representative agent", with $\sigma = 1$, and that the maximization of its welfare is obviously different from the maximization of pure economic growth (i.e. the preferred policy of the agent with $\sigma^i = 0$).

[40] Note that $\sigma^m - 1 > 0$, consistently with the observation (see for example Bénabou, 2000), that the empirical distribution of income, in relatively developed countries, is often left-skewed in the sense that the median income is below the mean of the distribution. This is obviously the case here, where the mean voter has $\sigma = 1$, and the median voter is less capital rich than the mean, which means, in this context, that $\sigma^m > 1$. In addition, the growth rate in the median voter equilibrium is lower than it is in the "representative agent" scenario, precisely because the left-skewness of the income distribution makes the median voter poorer than the mean voter (and therefore demanding more, partially distortionary, redistribution). Notice also, that in the special case of a fully egalitarian income distribution, the MVT equilibrium would achieve the maximization of the welfare of the "representative agent". This is obviously because of the coincidence of median and mean of the distribution (that implies $\sigma^m = 1$). In other words, we conclude that the MVT equilibrium, in general, maximizes neither the economic growth rate, nor social welfare (in the

by equation (8), can also be written, rearranging terms, as

$$y^i = \left[\omega + (r(\tau) - \tau)1/\sigma^i\right] l^i k^i.$$

Since most people have the same approximate endowment of raw labor, i.e. $l^i \approx 1$ for most i, the larger is σ^i, the lower is y^i. It follows that a greater value of index $\sigma^m - 1$ reflects a greater distance between y^m, the median income, and the average income, and, in this sense, also a higher inequality.

We conclude by stating the paper's key result (already mentioned in the main text): **the poorer is the median voter relative to the mean voter (or the more unequal the society is), the higher taxes will be, and the lower the economic growth rate will be[41].**

The crucial prediction of the model is empirically tested by the authors, in the second part of the paper, by taking into account as much as possible the basic problem of endogeneity of income inequality (using the state-of-the-art methods available at the time). Clearly, inequality is potentially correlated with a host of unobservable factors, also correlated with economic growth. The empirical results presented in the paper strongly support the theory's main insight, **that higher income inequality should be expected to have a detrimental causal effect on economic growth[42]**.

It is not surprising that Alesina and Rodrik's paper has been regarded, for a long time now, as a classic contribution to the theory and the empirics of the political economy of economic growth, and that it is still an extremely influential contribution today. One that hardly any potential new addition to the literature on inequality, politics and growth can ignore.

"representative agent" economy benchmark). Politics is politics, after all, and it carries its own distortions and failures, just like the free market does.

[41] A technical comment is necessary at this point. Some authors, such as Krusell *et al.* (1997), have criticized Alesina and Rodrik's median voter equilibrium arguing that, in their opinion, it is not time-consistent. A short paper by Lindner and Strulik (2004) demonstrates, however, that when the government in Alesina and Rodrik's is allowed to constantly re-optimize in favor of the median voter, it always picks the constant tax rate emerging in their median voter equilibrium. In other words, according to Lindner and Strulik (2004), Alesina and Rodrik's approach is fully rigorous, and correct, as the time-consistent Markovian Stackelberg equilibrium of a differential game between the government (acting as leader), and the median voter (acting as follower).

[42] One comment is in order here, regarding the model's testing. The theory relies on the MVT and therefore may seem to assume the existence of a (consolidated) democracy. Alesina and Rodrik instead clarify that such is not the case, as even dictatorships are subject to some redistributive pressures. Indeed, the question of whether democracies outperform dictatorships in growth terms or vice versa, is still an important research question today.

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