



Political economy revisited: structures and objectives at the systemic level

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Abstract

Political economy developed from profound transformations in economic and political life. The economic sphere extended from the management of individual units, such as households or the royal *demesne*, to a system defined as the collection of economic activities subject to sovereign authority, and characterized by widening webs of productive and social interdependencies across manifold units. In the political sphere, sovereign decisions came to be considered in the light of the material opportunities and constraints associated with productive interdependencies. Accordingly, the principle of economic life moved from the allocation principles of the household to system-level decision-making, guided by the correspondence between means and polity-level objectives and understood in the light of the material and social interdependences in the polity. The paper maintains that the relationship between economic structures and objectives at the systemic level should become again a central object of political economy. It goes on to argue that the development of structural economic analysis since the 20th century provides powerful analytical tools to investigate: (i) the systemic objectives that polities could pursue given their economic structure; (ii) the social aggregates that could form out of those which economic structure makes possible, and the particular objectives they could construe and pursue; and (iii) the constraints that economic structure imposes on the pursuit of all objectives, be they systemic or particular.

Keywords Political economy · Structural economic analysis · Economic structures · Systemic objectives · Collective objectives · Particular objectives

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1 Introduction

The transition from the ruling of the household in classical *oikonomia* to the political-economic discipline of Bodin (1576), Botero (1588, 1589), Serra (2006 [1613]), and Henri de Montchrétien (1999 [1615]) highlights not only a change in object of study but also the switch to a different approach to concept formation and methodology (Scheffold, 2016). For the *recta dispensatio* at the core of the judgement and decision-making of the *pater familias* in classical *oikonomia* (Brunner, 2000 [1980], Frigo, 1985) gives way to the treatment of sovereign decision-making concerning the correspondence of means to political objectives given the interdependences between the individuals, or the collective bodies, in the polity (Maifreda, 2012). This switch involves a change both in the object of study and in the type of questions being asked. In fact, the analysis moves to a different level of aggregation, as the relevant unit becomes the *political system* as the collection of activities subject to sovereign authority, rather than the family household or the royal *demesne*. At the same time, the emphasis of pre-modern *oikonomia* on the ‘right’ assignment of weights to different objectives, which combines judgement on means with judgement on ends, gives way to a concentration on the pursuit of sovereign interest, whereby the complex intertwining of ends and means characterizing each household in the intellectual tradition of *oikonomia* recedes to the background (Leshem, 2016; Helmer, 2021; see also Cardinale & Scazzieri, 2016).

The switch from *oikonomia* to political economy in the writings of Bodin, Botero, Serra and Montchrétien conceives the polity as a web of interdependencies between individual or collective actors and leads to a focus on the constraints and opportunities for sovereign decisions generated by those interdependencies (see also Bagchi, 2014; Perrotta, 2013, 2016a, b; Tiran, 2017). This approach associates the polity’s material welfare with the fulfilment of *proportionality conditions* between the interdependent activities conducive to that objective. This viewpoint, which is expressed already in Pierre de Boisguillebert (1707a, b) and is later developed by the Physiocrats (Quesnay, 2006 [1759], Mercier de la Rivière, 1767), the Classical Economists (Smith, 1976 [1776]; Ricardo, 1951 [1817]) and Karl Marx (1867), highlights the need to overcome a purely allocative approach to the pursuit of material welfare. Given the polity’s objectives, their pursuit is seen to reflect both the distribution of available means (such as non-produced resources and intermediate products) between alternative uses *and* the proportionality conditions governing the use of those means to achieve objectives. The consideration of effective means to achieve the welfare of a collective (the polity), given the interdependencies characterizing the internal structure of that collective, identifies political economy as a field of investigation at the crossroads between normative and positive analysis. Jeremy Bentham expressed this duality when describing the purpose of his *Manual of Political Economy* relative to that of Smith’s *Wealth of Nations*:

[the] design of this work [Bentham’s *Manual of Political Economy*] is different from that of his [Smith’s *Wealth of Nations*]. His had two objects, the *το ον* [what is] and the *το πρεπον* [what is proper]. But the *το ον* is evidently the principal. The other comes in incidentally as it were. In this, the sole object is

the *το πρεπον*. His object was the science; my object is the art (Bentham, 1952 [1793-95], p. 224).

Economic theory developed within the field associated with the above duality but seldom explicitly addressed the intertwining between means-ends reasoning at the level of the polity and its economic structure. In fact, most theoretical developments followed either route without attempting a comprehensive investigation of the conditions under which manifold objectives of actors such as individuals, social groups or the polity as a whole may be intertwined with the economic interdependencies that provide the means to those actors, thus shaping the pursuit of those objectives. For example, Hermann-Heinrich Gossen adopted the normative point of view maintaining that economics should be conceived as a practical science, whose purpose is ‘to help man obtain the greatest sum of pleasure during his life’ (Gossen, 1983, p. 39; 1st edn. 1854). In a similar vein, Philip Henry Wicksteed highlighted that economics should be considered a branch of the ‘general science of the administration of resources ... conceived without any formal or conventional limitations’ (Wicksteed, 1933, pp. 16–17; 1st edn 1910). Lionel Robbins built on Wicksteed’s contribution defining economics as ‘the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses’ (Robbins, 1935, p. 16). This, as Robbins argued in another essay, entails the view that economics should be seen as ‘discussion not of the nature of certain *kinds* of behaviour arbitrarily separated off from all others, but of a certain *aspect* of behaviour viewed as a whole’ (Robbins, 1933, p. xxii). In this strand of economic theory, the focus is on the techniques of means-ends reasoning, whilst taking means and ends as given. Economists following the alternative, “positive” track draw attention to the causal mechanism generated by technological or social interdependencies and to the way in which the attainment of objectives presupposes the working of that mechanism. This point of view is apparent in Boisguillebert’s statement that ‘the two hundred professions that nowadays enter the composition of a prosperous and developed state, starting with the baker and ending with the actor, are not, in general, called forth the ones by the others by anything but the pursuit of pleasure; however, as soon as they are introduced and have taken some kinds of roots, they come to be part of the substance of a State, and cannot be disconnected or separated from it without immediately altering the whole civil body’ (Boisguillebert, 1843 [1707a], p. 404). Boisguillebert emphasised the necessary proportions between different activities within the economy as an integrated system of production and consumption activities, setting the stage for Quesnay’s view of the economy as a circular flow (Quesnay, 2006 [1759]) and to Achille Nicholas Isnard’s (Isnard, 1781) and Léon Walras’ (1874-77) representation of interdependencies in terms of interconnected markets for goods and services. Classical political economy as developed by Adam Smith and David Ricardo built on these premises a theory whose principal goal is to study ‘the social order of riches’ (Romagnosi, 1827, p. 24), that is, the *proportionality conditions characterizing economic interdependence* (Scazzieri, 2020, 2023).

The coexistence in economic theory of two conceptual frameworks, focussed respectively on criteria for the best allocation of resources and on proportionality conditions, led economists to emphasize the distinction between two mutually com-

petitive research programmes. Luigi Pasinetti highlights the link of the two analytical frameworks with two different model economies (the pure exchange economy and the pure production economy) and two different phases of economic development (the phase of trade and the phase of industry) (Pasinetti, 1965, 1981, 2007). John Hicks draws a similar distinction between ‘catallactics’ and ‘plutology’ (Hicks, 1976, pp. 210–212) and maintains that the two approaches may be likened to ‘blinkers’ or ‘rays of light’, which ‘illuminate a part of the target, leaving the rest in darkness’ (Hicks, 1975, p. 320). Hicks also argues that conceptual revolutions in economics ‘are not clear advances in the scientific sense’ (Hicks, 1975, p. 320). Alberto Quadrio Curzio and Roberto Scazzieri called attention to a link between that duality and two different stages in the development of industrial economies: a ‘transformation’ stage, which implies a one-way avenue from given resources to final goods, and a ‘structural’ stage, which presupposes a circular flow based on feedbacks from the production of goods to the utilization of produced goods as means of production (Quadrio Curzio & Scazzieri, 1983, 1986). Mauro Baranzini and Roberto Scazzieri explored the relationship between the two above visualizations of economic activity and what they call the ‘meaning variance’ of key theoretical concepts (such as ‘value’ and ‘price’) involved when switching from one visualization to another (Baranzini & Scazzieri, 1986, pp. 14–18).

This paper argues that means-ends reasoning is as relevant at the level of the polity as it is at the level of individual units, but it takes different forms at each level of aggregation. At the level of the polity, means-ends reasoning is intertwined with the analysis of economic structures, as structures shape the constraints and opportunities for the pursuit of systemic objectives. It therefore requires analytical tools that cannot be reduced to those of *oikonomia* or the catallactic tradition. The paper is structured as follows. Section 2 investigates how the field of political economy derives from the recognition of a broadening field of economic interdependencies. Section 3 explores the dual nature of those interdependencies – material and social – and shows that, depending on how interdependencies are represented, different social aggregations and their mutual relationships could emerge as the salient ones. Section 4 reconstructs the conceptual process that, by bringing together economic structures and means-ends reasoning, constitutes the field of political economy. It goes on to demonstrate that different representations of interdependencies highlight (i) different systemic objectives that polities could pursue, (ii) different particular objectives that social groups could construe, and (iii) different constraints that economic structures could impose on the pursuit of systemic and particular objectives. Section 5 concludes by calling attention to the research programme for political economy outlined in the paper.

2 Interdependencies and proportions: defining the political economy field

The origin of political economy as a type of investigation is intertwined with the emergence of a domain of material interdependencies between individuals or groups beyond the spheres of the individual household or the royal *demesne*. This shift

entails a transformation of both the economic and political spheres (Pabst, 2018; Pabst & Scazzieri, 2023). The economic sphere moves beyond the arrangements within individual organizational units (individual household, royal demesne) and involves widening interdependencies across manifold economic units at different levels of aggregation. The political sphere moves beyond the level of sovereign decision (be it of the absolute or constitutional type) and involves consideration of the material opportunities and constraints that make sovereign decisions feasible or unfeasible under any given set of interdependencies. The widening of interdependencies is central to the transformation of both the economic and the political sphere. Investigation of interdependencies is thus a prerequisite for understanding the internal structure of the political economy field.

Political economy as a type of investigation derives its building blocks from a variety of intellectual sources. The classical tradition of *oikonomia* suggested that one can identify and use rational principles as a benchmark for allocating available resources among different uses. As the Renaissance philosopher Augustinus Niphus pointed out: ‘The first objective of economic activity is the right stewardship of things pertaining to the household, its ultimate objective is life, as Aristotle and Plato argue, indeed the diligent and industrious life of those living together in the same household’ (Niphus, as quoted in Martello, 1912, p. 330)¹. Following a different conceptual strand, the humanist tradition of ‘civil life’ writings suggested that the principles governing human sociability could also explain and govern the interconnectedness of individuals and groups in the material sphere, that is, the sphere in which division of labour provides the goods and services needed to the subsistence and welfare of societies. Indeed, this interconnectedness came to be seen as the foundation of civil life itself: ‘I define Civil Life as the life which we enjoy in community with other people, to the mutual benefit or profit’ (Lipsius, 2004 [1589], I.i.1, p. 261). The interface between *oikonomia* and *vita civilis* opened a new field of social investigation. The quest for rational principles ensuring the right allocation of resources within the household was extended from individual households to the economic-political system as a whole. The sphere of *vita civilis* thus came to include not only general sociability conditions but also the proportionality criteria that should govern the interdependence between specialized activities and the corresponding productive sectors or social groups. The search for the ‘law’ (*nomos*) expressing the right allocation moved from the individual to the collective sphere, so that the collective sphere itself became the object of a rational investigation concerning the proportionality between activities in the social domain. This transition had important consequences for the type of proportionality criterion to be considered. For the *oikonomia* of individual households is primarily concerned with the right distribution of existing resources among different uses. In contrast, the switch to the collective sphere entailed that resources that could be considered as given (and limited) from the point of view of each individual household were not necessarily so from the point of view of the whole system of interdependent activities. In fact, the consideration of *vita civilis*

¹ ‘Opus autem oeconomicum primum est rerum familiarum recta dispensatio, ultimum autem est vita, ut Aristot et Plato asserunt, atque studiosa vita eorum qui in eadem domo convivunt’ (Niphus, as quoted in Martello, 1912, p. 330).

as a set of interdependent activities often involved switching the focus from scarcity to producibility, in the sense that the resource thresholds constraining individual households could often be removed, or at least shifted upwards for a significant time. Switching attention to producibility disclosed a dimension of allocation that had previously been overlooked: the proportionality condition that any collection of interdependent activities must satisfy for those activities to be effectively integrated with one another in the production system. In this case, the allocation problem moves from the distribution and utilization of scarce resources to the effective organization of division of labour in the production of goods unconstrained by resource availability. This switch is a fundamental one for several reasons. First, the search for proportionality moves from the individual to the collective sphere. Second, the collective sphere becomes the proper object for systematic economic inquiry. Third, this investigation identifies a new approach in which the search for new principles of allocation (i.e., the *nomos* of material life) combines with the quest for context-relevant allocation criteria (for example, whether the primary object of investigation should be allocation of non-produced goods or proportionality between production processes) and with the determination of policy principles that fit the configuration of opportunities and constraints characterizing any particular context.

Different contexts of political economy highlight different types of interdependence between economic activities. For example, Antonio Serra's *Breve trattato* (Serra, 2006 [1613]) contrasts manufacturing interdependencies in an export-led economy (Venice) with interdependence between agriculture and manufacturing in a closed economy (the Kingdom of Naples). In Venice, manufacturing and growth jointly trigger increasing returns and the further expansion of foreign trade:

[Venice] is [...] aided by her extensive manufactures; which factor brings a great many people there, not only by reason of the trades themselves, in which case the effect would be attributed to them, but also as a result of the conjuncture of these two factors; the one furnishes strength to the other; the great course due to commerce and the situation being increased by manufactures, and the manufactures being increased by the great concourse due to commerce, while commerce is made greater by this same assembling of people (Serra, 2006 [1613], p. 151).

In the Kingdom of Naples, geographical location and lack of a manufacturing base make it impossible to conduct industrial activities in view of external trade. In this case, and differently from Venice, the development process cannot be triggered by export-led manufacturing expansion and the interdependencies between domestic agriculture and manufacturing become central to the provision of material means.

Serra's *Breve trattato* marks a stage of investigation in which the intertwining of internal and external interdependencies determines the structure of a political economy and defines the range of policy decisions that are feasible in it (see also Roncaglia, 2005, 2012, 2016; Perrotta, 2016a). Acknowledgement of interdependencies also highlights that certain proportions between economic activities are compatible with the existing economic structure while others are not. For example, Pierre de Boisguillebert calls attention to the "right proportions" between production activi-

ties that are needed to avoid both commodity gluts and scarcity crises: ‘it is thus proportions that make the whole wealth’ (Boisguillebert, 1843[1707b], p. 279; see also Boisguillebert, 1843[1707a]). Boisguillebert’s recognition of the proportionality conditions for the stability of a political economy is a stepping stone towards the later discovery by Quesnay (2006 [1759]) that the proportions ensuring the sustainability of the system’s social product may be compatible with the formation of a net product over and above what is needed to reproduce the overall social product at a given scale. Quesnay’s theory of the net product (*produit net*) highlights two related aspects of the proportionality condition: (i) the proportionality between productive sectors required to make the social product sustainable (i.e., reproducible) from one production cycle to another independently of the absolute level of activity of the different sectors; and (ii) the correspondence between the formation of a net product of given magnitude and the final demand required to make the generation of that net product sustainable over time. In Quesnay there is a close relationship between proportionality condition on the production side and proportionality condition on the demand side. Thus, the “right proportions” within any given political economy would reflect both production technology and the system’s social structure. Quesnay highlights that the full reproduction of a set of production and consumption activities at a given scale requires that appropriate stocks of means of production be available at the start of the production cycle (what he calls *avances*), as well as that the whole net product be utilized as unproductive consumption so as to allow ‘the annual net product to return to the productive class’ (Quesnay, 2006 [1759], p. 348). This approach combines consumption and final demand in the reproduction conditions of the economy and points to the role of *social structures* in closing the degrees of freedom compatible with net output formation. Quesnay’s *Tableau économique* views interdependencies in terms of a horizontal circular flow between social classes directly related to one another through production and expenditure flows (see also Leontief, 1991 [1928]).

Shortly afterwards, Cesare Beccaria’s *Lezioni di economia pubblica* (Beccaria, 1971a [ms. circa 1769]) outlined a study of interdependence based on the representation of the economy in terms of a complex organizational hierarchy of productive activities. Beccaria discusses the possibility of different circular subsystems, subject to different conditions for reproduction and expansion, within the same economic system. At the same time, he highlights that the transformation of raw materials, and of subsistence goods in particular, is the central factor to determine the relative position of each subsystem within a national economy. This proportionality criterion applies not only to the different classes of producers in a given economy but also to the relationship between classes of producers across *different* national economies:

[T]he political borders of a state are not always, or almost never, the same as its economic borders [...]. The land of one nation nourishes the industry of another, the industry of the latter fertilizes the land of the former: those two nations, despite having divided sovereignty and being reciprocally independent of their respective political laws, are in fact a single nation closely held together by the strength of physical laws, and dependent of one another in virtue of their economic relationships (Beccaria, 1971[ms.circa 1769], p. 391).

[T]he foreign lands providing the foodstuff that represents the surplus labour of one nation [can be considered as] making a single body with the lands providing subsistence goods in that nation itself (Beccaria, 1971a [ms. circa 1769], pp. 395–396).

Both Quesnay and Beccaria highlight proportionality conditions that must necessarily hold for any given system of national or international economic interdependencies to be able to reproduce itself. Charles-Léonard Simonde de Sismondi further develops this type of analysis investigating the extent to which the existing institutional set-up may simultaneously fulfil proportionality conditions on the production side and on the demand side. Sismondi's view is that the social structure of industrial capitalism is not suitable to the fulfilment of either condition because: (i) non-coordinated processes of technical transformation make it difficult to achieve technological proportionality at any given time; (ii) substitution of machines for human work makes technological unemployment unavoidable; and (iii) substitution of large-scale production for production in small-sized units reduces the purchasing power of large strata of population and thus makes production gluts unavoidable (Sismondi, 1819; see also Barucci, 1975; Bridel, 2009). Quesnay's emphasis on the dual proportionality condition (on the production and demand sides) and Sismondi's analysis of disproportionalities associated with industrial capitalism are building blocks of Karl Marx's political economy of capitalism (Marx, 1983 [1867]). In fact, Marx draws on Quesnay's *Tableau économique* to analyse the circular flow and to characterize the technological setup of an industrial economy². At the same time, Marx develops Sismondi's idea that the internal dynamics of industrial capitalism involve the disappearance of a large body of potential consumers, thereby endangering the fulfilment of the second proportionality condition and thus the reproducibility of the economic system at a given scale.

3 Material and social interdependencies

Interdependencies are central to the way in which a political economy organizes itself to achieve its objectives. Most interdependencies have a material origin, as they are associated with the material arrangement of actions to meet human needs³. As a result, material interdependencies often have a counterpart in the social interdependencies between individuals and/or social groups. There is thus a relationship between the connectivity brought about by interdependencies in the material sphere and the connectivity due to the social division of labour and other patterns of group affiliation. However, the same material interdependencies may be compatible

² This is shown by Marx's splitting of the industrial goods sector into two sub-sectors producing means of production for, respectively, the consumer goods and capital goods sectors.

³ Beccaria considered social interdependencies to be a 'necessary consequence' (*conseguenza necessaria*) of the organization of actions in the material sphere (Beccaria, 1971b [1770], p. 333).

with different such patterns, because of the criss-crossing character of complementarities and cleavages in society (Ross, 1920; Coser, 1956; Cardinale et al., 2017; Pabst and Scazzieri, 2016, 2023). Different patterns of division of labour may be salient depending on which type of group affiliation and connectivity is highlighted when representing a configuration of material interdependencies. From this point of view, three dimensions of interdependence can be distinguished: (i) interdependence between flows of materials-in-process or finished products; (ii) interdependence between individual or collective actors; and (iii) interdependence between the actions carried out by the actors mentioned under (ii). Boisguillebert's *Dissertation sur la nature des richesses* (Boisguillebert, 1707a) highlights the interdependence between different professions (i.e., groups involved in a given productive activity) in a developed system of social division of labour (see Sect. 1). Boisguillebert calls attention to the need for specialized skills and to their complementarity in making a complex society viable. Quesnay and the other Physiocrats switched attention to a different side of connectivity, which highlights interdependence between the product flows that need to be transferred from one social group to another to allow a circular, self-sustaining mechanism of product formation and systemic reproduction (Quesnay, 2006 [1759], Mercier de la Rivière, 1767). Here attention is focussed on material interdependencies on the production and consumption side, even if there is a one-to-one correspondence between productive sectors and group affiliations (agriculturists, artisans, *classe stérile*). Unlike the Physiocrats, Smith (1976 [1776]) and Ricardo (1951 [1817]) highlight the interdependence between social groups (manufacturers, landlords, merchants and wage labourers in Smith; capitalists, workers and rentiers in Ricardo) without directly addressing the interdependence between material flows. Karl Marx (1978[1885]) builds on both Physiocracy and classical political economy to highlight the necessary connectivity between material flows for the physical reproduction of the economy and, *at the same time*, the type of interdependence between classes (capitalists and workers) required for the reproduction of the existing social structure. In Marx's analysis, social classes are in the foreground as they had been in Smith and Ricardo, whilst the material conditions for interdependence are also brought back in view.

In the first half of the 20th century, economic analysis returned to study material interdependence. Among the objects of investigation, particularly important for this paper's purposes are the proportionality conditions for the viability of product flows and the feasibility of specific dynamic trajectories, such as growth at the maximum rate and growth compatible with full employment and full utilization of productive capacity. Wassily Leontief develops a method to detect the structural relationships of the economy as 'circular flow' (Leontief, 1991 [1928]) and outlines a 'Tableau' of the US economy based on the empirical analysis of intermediate and final product flows between sectors of the economy (Leontief, 1941, 1951). Jan von Neumann studies a model economy characterized by the circular interdependence of processes delivering intermediate products to one another; he identifies the constraints that circular interdependence imposes for an economy to be on a uniform expansion path at maximum growth rate for a given technology (von Neumann, 1945-46 [1935-37]). Piero Sraffa goes back to the relationship between material and social interdependencies. He theorizes the influence of social relationships (primarily, in his case, between cap-

italists and workers) for determining the rate of profit and the unit wage, and thus the relative prices at which the products should be exchanged for one another to allow material reproduction (Sraffa, 1960). In Sraffa's case, the relationship between the material and social conditions for reproduction is carried out in terms of 'horizontal' interdependencies between production processes and under institutional assumptions that suggest a perfectly competitive capitalist economy.

More recent contributions have addressed the same issue under different assumptions. Luigi Pasinetti highlights the dual character of material interdependence, which may be alternatively represented in terms of a circular network of intermediate products (say, a network in which corn is input to corn and iron, while iron is input to iron and corn) or in terms of a 'one-way' flow of multiple layers of intermediate products, in which each final product corresponds to a different vertically integrated sector of productive inputs (for example, the vertically integrated sector delivering corn as final output will include all intermediate inputs, as well as quantities of labour, directly or indirectly contributing to corn production) (Pasinetti, 1973, 1981). This approach highlights the distinction and complementarity between the two visualizations of material interdependence. Pasinetti also calls attention to a formal condition that makes it possible to switch from a circular to a vertical representation of interdependence and vice versa (Pasinetti, 1973). A remarkable implication of this dual approach to production interdependence is that social interdependence appears to have a *dual route* to express itself (Cardinale, 2018). On the one hand, a circular representation coupled with the common assumption of uniform profit and wage rates leads to visualise a trade-off between the two, and therefore a conflict between receivers of profits and wages (Sraffa, 1960). On the other hand, a vertically integrated representation makes it possible to conceive different aggregations. For example, different parts of an industry may contribute to different vertically integrated sectors, such as those of domestic demand-led and export-led sectors, and could therefore have contrasting interests (see Cardinale & Landesmann, 2017, 2022).

Alberto Quadrio Curzio investigates the distinction between the horizontal and the vertical representation of material interdependence under a different set of assumptions. Horizontal interdependence is analyzed through what he calls the 'jointed techniques' method, which encompasses the case in which the same good is produced by means of a variety of different techniques (Quadrio Curzio, 1967; 1986, 1996; Quadrio Curzio & Pellizzari, 1996). Vertical interdependence is studied through the 'disjointed techniques' method, which highlights the relationship between productive subsystems using different primary resources that are sequentially related over time by the use of each other's net product (Quadrio Curzio, 1975, 1986; Quadrio Curzio & Pellizzari, 1996). The two approaches make it possible to investigate different features of social interdependencies. The jointed techniques approach foregrounds the function of prices and income distribution in allowing the mutual compatibility of techniques of different efficiency via the formation of rent incomes whose size depends on the relative efficiency of the corresponding technique. The disjointed techniques approach highlights the role of physical residuals in generating material opportunities and constraints along any given dynamic trajectory, and thus in allowing and/or hindering certain growth and distribution patterns along that trajectory. The two methods taken together call attention to the intertwining of material and

social interdependencies, and to the role of both types of interdependence in triggering certain dynamic trajectories while making other trajectories impossible. In this context, social groups with entitlements to resources of strategic relevance for material interdependencies ('macro decision makers') can exert a crucial role in determining the dynamic path of the economy (Quadrio Curzio & Pellizzari, 2018, pp. 693–694; Scazzieri et al., 2015, pp. 457–460).

4 Aggregations and collective objectives: means-ends reasoning at the systemic level

Political economy as a field of investigation was born from the discovery that sovereign authority could not effectively exert itself without considering the technological and social interdependencies within the economy, and that the economic arrangements of society could not be addressed without moving beyond the domain of classical *oikonomia* and acknowledging the existence of a plurality of relatively independent and self-directed stakeholders. This statement by Henri de Montchrétien suggests that the pursuit of objectives by self-directed actors (in his case, 'merchants') can be instrumental to the achievement of political goals:

[E]very society, in general, appears as consisting of government and commerce... [*M*]erchants are more than useful in the State. And their quest for profit, which materializes through their work and industry, contributes a good deal to the public good' (Montchrétien, 1999 [1615], p. 285, as partially quoted and discussed in Hont, 2005, p. 4; emphasis added).

In contrast, James Steuart's *Principles of Political Oeconomy* argue that the provision of material needs in the polity can be achieved, without direct state intervention, by triggering the development of interdependencies between self-directed economic actors:

The principal object [of political economy] is to secure a certain fund of subsistence for all the inhabitants, to obviate every circumstance which may render it precarious; to provide every thing necessary for supplying the wants of society, and to employ the inhabitants (supposing them to be free-men) in such a manner as *naturally to create reciprocal relations and dependencies between them*, so as to make their several interests lead them to supply one another with their reciprocal wants (Steuart, 1966 [1767], p. 17; emphasis added).

The joint discovery that achieving political objectives requires tackling economic relationships, and that the working of economic relationships has an inherent political dimension, is central both to the emergence of political economy as a distinct field of investigation and to its subsequent development (Deane, 1989). This discovery defines the domain of political economy as a type of investigation at the crossroads of means-ends reasoning and structural analysis. Classical *oikonomia* and the classical writings on political advice were primarily concerned with the most effective

ways to achieve predetermined objectives, as shown, respectively, in Aristotle's treatment of the household economy (*Oikonomikos*; Aristotle, 1920 [ms 4th century BC]) and in Kauṭīliya's art of government (*Arthaśāstra*; Kauṭīliya, 1986 [ms 4th century BC]). Differently from the classical tradition of economic and political writings, early modern political economy draws attention to the structure of technological and socioeconomic interdependencies considered as means to achieve economic and political objectives (see also Muldrew, 1993, 2000). This is apparent in Quesnay's *Tableau économique*, which adopts a specification of interdependencies between social classes that is a prerequisite for the policy actions he advocates (i.e., free trade and *impôt unique*). His contribution laid the groundwork for the work of several subsequent writers such as Beccaria (1971a [ms circa 1769]; see Scazzieri, 2014) and Achille-Nicolas Isnard (1781; see Steenge & van den Berg, 2007; van den Berg & Steenge, 2016).

Means-ends reasoning in political economy also presupposes the determination of objectives relevant to the polity as a collective body. This shifts the setting of objectives beyond the sphere of individual decisions and raises the issue of which decision-making principles are appropriate at the level of the polity. Jeremy Bentham's *Principles of Morals and Legislation* (Bentham, 1952 [1793-95]) discusses a notion of 'interest of the community' identifying it with the aggregate of individual interests: '[t]he interest of the community then is, what? –the sum of the interests of the several members who compose it' (Bentham, 1843 [1781], vol. I, p. 2). Bentham's approach is built on a collection of individual actors characterized by heterogeneous preferences; the opportunities and constraints associated with intermediate social aggregates and their patterns of interdependence are outside his field of investigation. In contrast, classical political economists acknowledge the existence of plural social aggregates and their interests in the polity but identify collective interest with the interest of particular socioeconomic groups, such as Smith's manufacturers (Smith, 1976 [1776]) or Ricardo's capitalists (Ricardo, 1951 [1817]). Whilst they provide analytical tools to detect conflicts of interest within the structure of interdependencies, they do not address the possibility of alternative definitions of collective interest. In contrast, Friedrich List's analysis of the relationship between private and collective advantage highlights the possibility of a clash between the two, but it does not address the relationship between *different* private interests and the public interest:

Canals and railroads may do great good to a nation, but all waggoners will complain of this improvement. Every new invention has some inconvenience for a number of individuals, and is nevertheless a public blessing (List, 1996 [1827], p. 87).

The development of structural economic analysis in the 20th century has provided new tools to study the internal structure of a political economy. For the purposes of this article, its aggregation and disaggregation criteria can be shown to be associated with alternative constraints on the pursuit of systemic objectives. For example, horizontal aggregation highlights the proportionality condition for reproducibility of the circular flow at a given technology in use, where different proportions between industries may be compatible with the Hawkins-Simon viability conditions (Hawkins

and Simon, 1949). From a means-ends viewpoint, the proportionality conditions can be interpreted as structural constraints on the pursuit of the systemic objective of viability (Cardinale, 2022). In contrast, the disaggregation of the economy into a set of vertically integrated sectors highlights the proportionality condition for full employment and full utilization of productive capacity for an economy undergoing structural change (Pasinetti, 1981, 1993). Pasinetti's framing of the Keynesian full employment requirement in terms of a collection of vertically integrated sectors (Pasinetti, 1973) can be seen as reformulating Keynes' polity-level visualization of the economy and policy, recasting the problem in terms that are cognizant of the different proportions between sectors that would in principle be compatible with full employment.⁴ Pasinetti's reformulation, in fact, calls attention to the multiple proportions between sectors that may be compatible with full employment and full utilization of productive capacity under conditions of technical progress and changes in consumer preferences. These proportionality conditions, which differ from those related to viability at a given technology, can therefore be seen as structural constraints on the pursuit of a different systemic objective, i.e., pursuing full employment and full utilization of productive capacity.

Because the aggregations deriving from these criteria may correspond to social groups that have the capacity to act, and specifically to pursue particular objectives that are distinct from the systemic ones, different aggregation criteria not only bring to view different systemic objectives and constraints on their pursuit, as discussed above; they also indicate which social groups could count as collective actors and which particular objectives they might pursue, which would themselves be subject to systemic constraints (Cardinale, 2018, 2022). For example, the viability conditions for a horizontal economy can be satisfied by a range of different relative prices and proportions between industries. Hence, within that range, they allow for conflicting particular objectives of the social groups associated with those industries. In a similar fashion, in an economy represented as a set of vertically integrated sectors, full employment is possible under a range of different proportions between such sectors; hence, it can be seen as a systemic objective compatible with a variety of particular objectives. However, unlike the case of viability of a horizontal economy, actors associated with different industries or income types within the same vertically integrated sector might have a common interest between themselves, but conflicting interests relative to actors in the same industry or income type but within other vertically integrated sectors.

The distinction between the viability condition in a horizontal economy and the full employment condition in a vertical economy highlights that systemic objectives

⁴ Pasinetti notes that 'Keynesian macroeconomic analysis is [...] generally carried out in terms of vertically integrated magnitudes (net natural income, net savings, net investments, consumption, etc.)' (Pasinetti, 1973, p. 1). Arthur Cecil Pigou had noted that the proportions between 'the different sorts of consumption goods' must be assumed to be constant in order to carry out aggregate analysis about consumption goods 'in general' (the same is said to hold for investment goods) (Pigou, 1952 [1941], p. 50). The relationship between aggregate analysis and industry-level interdependencies is discussed by Heinrich Bortis (Bortis, 1997), and a link between macroeconomic dynamics and the transformation of social structure is explored by Mauro Baranzini in his analysis of the relationship between the trajectory followed by aggregate magnitudes and changing proportions between classes of savers (Baranzini, 1991).

can be identified in alternative ways. In turn, the different support that either systemic objective could receive from social groups could depend on the latter's particular objectives. For example, some groups could define the systemic objective as viability at a given technology because an unviable system could affect their ability to pursue their own objectives; other groups might define the systemic objective in terms of full employment under structural change. Hence, economic structure (and the aggregation and disaggregation criteria through which it is represented) matters for defining which systemic objective is pursued in specific situations, what material constraints – such as proportions between industries or sectors – structure imposes on its pursuit, and how different constraints can be compatible with the particular objectives of social groups. In general terms, different trajectories of structural change could make certain features of economic structure more salient than others. This is likely to be associated with changes in the relative importance of different systemic objectives and their relationship with the particular objectives of social groups.⁵

Other approaches to technological and socioeconomic interdependence highlight yet other hierarchies of particular and systemic objectives. If we drop the one commodity-one technique assumption and allow that certain commodities may be produced by using multiple techniques, we introduce the possibility to generate incomes based on the *relative positions* of certain groups of stakeholders relative to one another, where these incomes are rents of the Ricardian type. In this case, the jointed techniques approach highlights the formation of differential rents as a condition for the viability of a production structure, including the simultaneous utilization of techniques of different efficiency (Quadrio Curzio, 1967, 1996; Quadrio Curzio & Pellizzari, 1996). In contrast, the disjointed techniques approach shows that different subsystems can work as relatively independent sub-economies unless residuals can be transferred from one subsystem to another, thus affecting the latter's growth rate and hence the growth rate of the entire economic system (Quadrio Curzio, 1975, 1986; Quadrio Curzio & Pellizzari, 1996). The structure of differential rents compatible with a given jointed technology does not necessarily coincide with the structure of differential rents associated with the maximum growth that given resource constraints make possible. For the latter case may involve the transfer of residuals from one subsystem to another, which may result in a change of the relative cost effectiveness of production processes. This would entail the substitution of processes that had previously been discarded for other processes that had subsequently been brought into use. The different specifications of structure respectively associated with jointed and disjointed techniques highlight different constellations of interests and different institutional set-ups that can make partial interests compatible with the pursuit of a systemic objective depending on whether the latter is expressed, respectively, by the

⁵ For example, if a dynamic path is represented by foregrounding the 'structural apparatus', the prominence of the circular interdependence between intermediate products could make the viability of such apparatus essential for the feasibility of the dynamic path of the economy as a whole, emphasizing the systemic importance of the sectors constituting the structural apparatus. In contrast, in representations of dynamic paths centred on the 'transformation apparatus', the salience of the one-way avenue from labour and other productive resources to final goods is likely to emphasize the criticality of availability of inputs and of final demand, and hence of the sectors and social groups connected to them (Quadrio Curzio & Scazzieri, 1983, 1986, 1990; Scazzieri et al., 2015).

viability of a given production technology or by maximum growth along a structural change trajectory of sequentially connected techniques (Scazzieri & Quadrio Curzio, 2022).

5 Conclusion

Political economy emerged from profound transformations in the organization of economic and political life. The economic sphere extended from the management of individual units, such as households or the royal *demesne*, to the *political system*, understood as the collection of activities subject to sovereign authority and characterized by widening and deepening webs of interdependencies across manifold units. In the political sphere, sovereign decisions came to be considered in light of the material opportunities and constraints associated with economic interdependencies. Accordingly, the principle of economic life moved from the allocation principles guiding the decision-making of the *pater familias* in classical *oikonomia*, to the system-level decision-making guided by the correspondence between means and polity-level objectives given the material and social interdependences in the polity. Proportions between economic activities took centre stage in understanding the functioning of the economic sphere, and in setting opportunities and constraints for the pursuit of polity-level objectives.

The paper has argued that the adjustment of means to ends is as relevant at the level of the polity as it is at the level of individual units. But opportunities and constraints at the level of the polity are shaped by economic structures; means-ends reasoning at that level must therefore be combined with the analysis of those structures. Hence, it requires specific analytical tools, which are not those of *oikonomia* or the catallactic tradition. Moreover, the patterns of material connectivity that characterize economic interdependencies have a counterpart in the connections entailed by social division of labour. Different patterns of group affiliations, however, may develop out of the same set of economic interdependencies, depending on the criteria that are used to aggregate the former from the latter. And because the resulting aggregations may correspond to social groups that could in principle organise themselves to pursue particular objectives that do not correspond to the systemic ones, economic structures not only provide opportunities and constraints for the pursuit of systemic objectives; they also provide a blueprint for how social aggregates might form and pursue their objectives, whilst being themselves subject to systemic constraints.

The paper has maintained that the development of structural economic analysis since the 20th century should not be confined to the analysis of economic structure. Rather, it should be seen as providing powerful analytical tools to *revisit political economy*. Doing so requires addressing and bringing together the three fundamental problems identified in this paper: (i) the systemic objectives that polities could pursue given their economic structure; (ii) the social aggregates that could form out of those which economic structure makes possible – thus becoming collective actors – and the particular objectives they could construe and pursue; and (iii) the constraints that economic structure imposes on the pursuit of all objectives, be they systemic or particular.

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