

The Vatican Conferences of October 7–13, 1963: Controversies over the Neutrality of Econometric Modeling

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The conference organized by the Pontifical Academy of Sciences (PAS) in 1963¹ on “the role of econometrics in formulating development plans”² represents a milestone in the work of Ragnar Frisch but also in the history of econometrics, challenging the more or less normative status of econometric models. This conference, or more precisely the PAS Study Week, was driven from the start by the statement that “the free game of individual choices does not ensure, as we believed in the past, favourable outcomes for all concerned” (PAS 1965, 1).

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1. The proceedings were published in 1965.

2. This session was the seventh of a series starting in June 6–13, 1949, on the “biological problem of cancer,” followed in November 19–26, 1951, by a session on the “problem of microseisms.” The third one took place from April 24 to May 2, 1955, on “the problem of trace elements in plant and animal life.” In May 20–28, 1957, the fourth one gathered scientists on “the problem of stellar populations.” The topic of the fifth one was “the problem of macromolecules of biological interest” and was held October 23–31, 1961; and the sixth one, on October 1–6, 1962, was dedicated to “the problem of cosmic radiation within interstellar space.” The seventh was the first one dedicated to social sciences and it is not surprising as it coincided with the Vatican II Council (October 11, 1962, to December 8, 1965); see footnote 5.

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The PAS study week is interesting in two respects: while (and because) econometrics is acknowledged as “a significant progress for mathematical systems to study phenomena related to economic activities,” the PAS invited the community of econometricians to revisit the role and contribution of economics to social justice and welfare issues. Thereby, econometrics was anchored in a tension between being defined as a tool of knowledge defined within a reference to positivism on the one hand, and as a means of changing society and creating a better world on the other.

The PAS conference might shed some light on this tension in the history of econometrics. The organization of the conference by the academy and the selection of these core economists were under the responsibility of Marcello Boldrini, then president of the International Institute of Statistics and very much interested in mathematical programming for planning purposes and statistical issues in econometric modeling. The presidency of the academy was held since 1959 by Georges Lemaître (1894–1966), an astronomer, focusing on the notion of gravity in space, a mathematician, and professor in mechanics and mathematical methodology at the University of Louvain. He was very impressed by the use of mathematics in social sciences. As underlined by Ladoux (1994), it is noticeable that within the context of the Vatican II Council³ that the academy turned its focus to social sciences and social issues. But surprisingly, the 1963 conference is not even mentioned in the “official” history of the PAS conferences (Sorondo 2003).

The week is based on Pietro Salviucci’s statement, chancellor of the Pontifical Academy: “Modern economies are extremely complex and both theory and practice show that the free play of individual choice does not guarantee, as used to be thought, favourable results for the community” (Salviucci in PAS 1965, ix).

In order to question and answer this statement, Boldrini organized the Study Week around two key contributions by Richard Stone, on building econometric models, and by Ragnar Frisch, on the role of econometrics in designing and implementing economic policies. Eighteen invited contributors were divided in two groups: the first one, chaired by Richard Stone, gathered Robert Dorfman, D. Gale Johnson, Tjalling Charles Koopmans, Prasanta Chandra Mahalanobis, Edmond Malinvaud, Michio Morishima, Luigi Pasinetti, and Erich Schneider; the second one, chaired by Wassili W.

3. As shown by Mayeur et al. (2000) and Fouilloux and Gugelot (2016), the XXI^e concile of Vatican, named Vatican II, organized by the Pope Jean XXIII, October 11, 1962–December, 8, 1965, urged for the involvement of the Church in the current social and political debates on reforming society in the context of social progress, decolonization, globalization, and the Cold War, and then initiating the Church to the challenges of secularization.

Leontief, with Maurice Allais, Franklin M. Fisher, Ragnar Frisch, Trygve Haavelmo, Walter Isard, Henry Theil, and Herman O. A. Wold.

The proceedings of the conference provide invaluable material because they include all the contributions and, more important, a detailed transcription of the discussions following each presentation. While the contributions were already published and were not particularly seminal or innovative, the main benefit of these proceedings relies on the opportunity to discover the debates, comments, approvals, and critiques formulated, which gives some important clues to the heterogeneous conceptions of the purposes and practices regarding econometric modeling. As acknowledged by Herman Wold (1965, 93), while all the participants agree on the development of econometrics as a specific subfield of economic discipline, the definition of this specificity is at the heart of the discussions.

Three main issues of debate can be identified over the fifteen hundred pages of the proceedings: (1) the aim of econometric modeling: the definition of the purpose of econometrics as a tool of investigation and/or as a tool for improving the human condition of living or, in other words between understanding and planning; (2) the scientific status of the model; and (3) the role of value judgment in the work of the econometrician in the practice of econometric modeling.

The debates reveal that the question of the building a “science” of economic phenomena is still intense thirty-two years after the birth of the Econometric Society. They help us understand what grounded the practice and ambition underlying the work of these econometricians and how they define and face the challenge of “neutrality” of both the model and their own practice.

The Study Week starts by the definition of the different kinds of models (part 1). The debate arises slowly when clarifying the relation between the nature of the model and its purpose and possible use (part 2). The contributors end in questioning the neutrality of their tools and of their own scientific work and practice (part 3). Facing the heterogeneous conception of “neutrality,” we then understand the different paths taken by econometricians for further development of econometric modeling (conclusion).

1. The Nature and Role of Econometric Models: A Common Understanding?

In line with Frisch’s impulse at the creation of the Econometric Society, and later of *Econometrica*, (Andvig 1984; Bjerkholt, 1998), all the participants shared the definition of econometrics as the “unification of mathematics,

statistics and economics” (Frisch 1926). This approach aims to combine theoretical and empirical measurement through modeling (Dupont-Kieffer 2003, 2013a, 2013b). The model became the tool of scientific investigation for the economists as underlined by Morgan (2013, 2).

Stone dedicates a large part of his introductory contribution to the nature of the model and its role in the scientific process, but also its role in the design and implementation of economic policies and planning procedures in the short as well as the long term. Stone (1965, 82–84) defines precisely the ten patterns of economic model building in the conclusion of his long introductory speech, which can be summarized as follows:

1. Setting up the “general background of knowledge” to be taken into account;
2. Exploring “possible worlds”;
3. Being coherent and realistic: “coherence can be achieved by giving the model a suitable structure; realism is quite a different matter (Stone 1965, 82);
4. Relying on aggregate functions such as consumption, investment, production;
5. Getting the data needed by the model; that means not only to be aware that data collection and harmonization is a rigorous and strenuous task but he argues for more reliable “information” (82);
6. Providing a set of scenarios for policymaking;
7. Being supported by a system of control, the latter being a “mixture of centralised and decentralised administrative machinery” (82);
8. Giving a goal and a path. Stone then presents in a few words the essence of the two kinds of models he has developed in his paper that should be used for planning purposes. On the one hand, he advocates for a long-run model that points out a direction and a state to be reached for the economic system. On the other hand, he proposes a short-run model that describes the necessary path to reach such a desired state. An iterative process is necessary between the two in order to adapt both the objectives and the means to reach them;
9. Taking into account not only the real sphere of economic activities but also the financial one;
10. Embodying “human abilities and attitudes” in a coherent picture of the economic system.

Stone’s typology reveals connections with previous debates on mediating empirical investigation and theoretical analysis, on the need for large

amounts of data (such as national accounts) to feed econometric models, but also on the need to distinguish real and financial flows and stocks (Vanoli 2002; Dupont-Kieffer 2012b). It is grounded upon Frisch's and Haavelmo's structural approach.⁴ This two-fold agenda of econometrics—empirical measurement and theoretical measurement—was adopted after the Second World War when the “Cowles Commission became a hybrid institution somewhere between these two sites of science, between a university department and a national laboratory” (Düppe and Weintraub 2014). However, the research at the Cowles Commission turned “away from empirical work toward mathematical theory” from 1949 under the leadership of Koopmans but without a “clear direction” (Weintraub 2002, 277), reflecting a clear tension over the priority to be given in econometric modeling between focusing on empirical investigation and favoring an abstract mathematical framework to figure out the rules of the economic mechanisms.

As shown by Weintraub (2002, chap. 4), the question is not only about the use of mathematics and the formalism of economics, but, more important, on the object and purpose of economic research and investigation, echoing a key point of Wold's comments on Stone's contribution about the identification of the purpose of the model building: “My main point is to emphasize a fundamental distinction between three aspiration levels in scientific model building. The first is *finding*, the second is *understanding*, the third is *prediction*. Correspondingly, we may talk about (1) descriptive models [“What happened?”]; (2) explanatory models [“Why has it happened?”]; (3) forecasting [“What will happen?”]” (Wold 1965, discussion, 93; Wold's emphasis).

Wold, standing on an analogy between economics and meteorology,⁵ considers that econometrics has reached the stage when the explanatory models are strong enough and sufficiently coherent to provide solid and “valid” forecasting. He urges all econometricians to dedicate their efforts to two areas, business cycles and economic growth (Wold 1965, 94). These three types of models are of the same order and aim to capture the appropriate mechanical laws. The combination of the three provides an overview and understanding of the causality at stake among economic phenomena. Even if forecasting mainly relies on statistical investigation at a first glance, it requires the formulation of mechanical laws determining

4. Le Gall 1994; Dupont-Kieffer 2003, chap. 5; Bjerkholt and Dupont-Kieffer 2009.

5. He particularly refers to the work of two Norwegian scientists of the 1910s–20s studying the thermodynamic theory of cyclones at the Bergen School. This analogy seems fruitful to Wold when approaching the differences between short-term forecasting and long-term forecasting.

these trends (Dupont-Kieffer 2012a). Indeed, Frisch started to investigate jointly the nature and the causes of the business cycles from 1927. His contributions on time series decomposition and analysis, and the role of the production of capital goods in the generation of business cycles ends in the propagation and impulse model or Cassel model (Frisch 1933). The model shows how much Frisch cared about the production of a theoretical framework able to explain and predict cycles and crises. This requirement of the econometric investigation is more explicit in lecture eight of the Poincaré lectures given in Paris in 1933: the formulation of causal and mechanical laws is the way to account for and regulate a chaotic world of economic phenomena (Bjerkholt and Dupont-Kieffer 2009).

Tinbergen (1937) and Frisch (1931) started to consider the use of the knowledge of the economic laws to develop countercyclical policies to improve the living conditions of human beings (Dupont-Kieffer 2003). This shift toward planning advocated by Frisch in 1946 in the editorial of the first issue of *Econometrica* (Frisch 1946), is still at stake and vivid in the years following the Second World War, in particular with the work of Lawrence Klein (Pinzón-Fuchs 2016).

The two keynote papers of the conference, the opening contribution by Richard Stone and the concluding one by Ragnar Frisch, aimed to investigate solutions to reconcile the advantages of economic planning with those of individual initiative in order to face the imperfections of market: “But, the imperfections of *laissez-faire*, as a mode of economic organisation are so glaring that it is either thrown out altogether, as in the socialist countries, or modified out of all recognition by state intervention even in countries devoted to the principle of free enterprise” (Stone 1965, 4). Planning aims to achieve certain goals by combining administration and control. Stone does not want to reduce the debate on planning to ideological arguments based on the nature of ownership, but more pragmatically adopts an approach based on the “functional design of good planning” (Stone 1965, 26).

2. Modeling for Planning or the Abandonment of Science?

The main issue of controversy emerging from the PAS conference is clearly the possibility of articulating these three types of model building (descriptive, explanatory, and forecasting) with those that Frisch and Allais would qualify as “decisional models.” The “social responsibility of

the econometrician” is addressed by the PAS in 1963 in a context marked by the Second World War and Cold War.

Pope Paul VI⁶ opened the debate as follows in his opening speech: “our religion not only does not oppose any real objection to the study of natural truths, but that, without crossing the bounds of its proper sphere of transgressing those of the domain of science properly so-called, it can promote scientific research, honour its results and help them to be better used for the good of humanity” (PAS 1965, introduction, xxxiv).

Surveying all the contributions, the content of “the good of humanity” is very unclear. Mahalanobis explains how the realization of the “good of humanity,” such as growth, health, and education, requires a transformation of the economic system and of *laissez-faire*. He then identifies barriers that hamper this transformation of market economies, barriers that can be overrun by setting plans (Mahalanobis 1965, 1076).

The debates echoed Koopmans’s definition of the relevant methodology for economic science as stated in 1957:

In a “successful” analysis, the reasoning leads to conclusions that are interesting for one or both of two reasons which are connected with the purposes the analysis is to serve. A distinction needs to be made between explanatory and normative models. Synonymous designations such as descriptive, or positive, versus prescriptive analysis are also in use. The two types of analysis do not necessarily differ in the interpretations placed on the terms. They differ only in, the motivation of the search of conclusions, and in the use made of those that are found. (Koopmans 1957, 133–34)

Koopmans (1957) clearly establishes a relation between the nature of the models and the nature of the motivations of econometric modeling. But we can see that two issues are at stake: Is the building of the models independent from the purpose of their use? In other words, are the models “neutral” when they are built for a specific action goal, and then free of any value judgment? The inclusion of decisional models is then assimilated to the rejection of the “neutrality” of not only the econometric tools but also of the econometrician himself:

The model is neutral if it is constructed by a scientist who has a non-emotional attitude to it, has no ideological aims, and who does not

6. Giovanni Battista was elected Pope June 21, 1963. He carried on the agenda of reforming the Catholic Church initiated by Jean XXIII with the XXI Council.

include views on what ought to be at the base of his construction. The model is neutral if it aims to describe and explain the facts. It is no longer neutral once it is intended to act on the facts, and this is the reason for my complete acceptance of Prof. Frisch's terminology, distinguishing between explanatory, forecasting, and decisional models. (Allais 1965, discussion, 106)

The discussion continues on "forecasting" as the borderline activity. Wold questions the objectivity and the reliability of data and forecasting activities when dealing with short-term and long-term forecasts and its impacts on modeling of economic growth:

"As is well known, econometric models of economic growth often are a hybrid between strict forecasting and economic programming and policy making" (Wold 1965, 154). In the discussion following his presentation, Wold clarifies his viewpoint on the ambiguity between forecasting and planning models: "If a scientific model is to be used for forecasting the results of a change in economic policy, the observed regularities should include some evidence from earlier changes in policy. There is a fluid border between science and policy" (179).

Maurice Allais strongly opposed both arguments on the social versus individual preferences and on the use of econometrics for planning.⁷ One argument refers to the difficulty of defining social preference functions, and Allais worried that Stone's and Frisch's approaches would mute the voices of "millions of people who have their personal and very legitimate preferences" (Allais 1965, discussion, 1207). He believed that defining social preferences is very complex and their solution relies on the choices validated by a majority in a democratic system, which may eliminate the rights of minorities. He regarded the community as a "superposition of individual interests" and concluded that it "would appear to be impossible to replace individual preferences by a single preference function for the whole society" (Allais 1965, discussion, 1208).

In the debates following the presentations of both Stone and Frisch, Allais stresses that econometrics should remain a "technical" tool for better understanding but not for planning:

First, as I already stressed in the first day of this meeting, I think econometrics should remain neutral, i.e. we must avoid introducing political

7. The opposition of Allais to Frisch and the lively (if not aggressive) debates between the two should be read through the description given by Debreu in an interview to Roy Weintraub (2002, 321 and later). It is not only a question of personalities but of two conceptions of the use of mathematics in a scientific agenda.

views into our discussions. Personally, I would say that I am a neoliberal, but I think political views should remain outside the technical discussion of econometric problems. I do not accept at all that Prof. Frisch's paper can be regarded in any way as specifying the main lines of a future of econometrics. Econometrics is a very powerful tool of analysis but nothing more. (Allais 1965, discussion, 1206)

In a Latourian perspective, it is on the distinction on what the model can say on “nature” and cannot say on “culture” (Dupont-Kieffer 2013b) that Allais questions Stone (and Frisch) by flagging “neutrality”:

I must stress that there is a very good reason for my not completely agreeing with Prof. Frisch. There is a very great difference between three types of model: explanatory models, forecasting models and decisional models . . . when you develop a decisional model, what is the criterion of truth? I cannot see that there is one. You may think “I am neutral”. You may think this is always true, but you can be wrong; and if I think “you are not neutral” and if you think “I am neutral,” and if we are in disagreement, who is to decide? You see here a great difference between the first two types of model and the third. For the first two models there is a judge: nature. Nature can answer “you are right” or “you are wrong,” but with a decisional model, nobody, nothing can answer.” (Allais 1965, discussion, 109)

The use of models for planning was then very controversial as they revealed the blurring frontier between politics (culture) and economics (nature). The main issue is the change of status of the “scientist,” when scientific knowledge can be used to transform the object of the scientific investigation. The issue in these debates is that the action can modify the causal relationships identified between economic and social phenomena. Policy design and implementation involve different arenas, the political and the scientific/academic. The issue of basing policy action on scientific work is, for the participants of the PAS conference, the introduction of value judgments in the modeling process, especially when setting policy priorities and making choices on planning goals and paths. Thus, the work is more normatively grounded. Frisch believes being able to establish a procedure linking the actors in both the political and academic arenas in a way that value judgment is assumed to be clearly identified and isolated from the modeling process *per se*. He will propose a division of tasks between selection and implementation in an iterative process based on interviews. When analyzing Frisch's views on planning in a tribute delivered in Oslo thirty years later, another participant in the PAS, Edmond

Malinvaud, underlines his innovative approach but also the inherent limits of the shift toward decisional models:

Certainly Frisch knew that his work could be considered only as explanatory. The preference function exhibited in his examples involved definitively fewer variables than would have been necessary for a real application of his programming models for the selection of development projects. He could not ignore, either the rather special position of a respected professor interviewing people who, although endowed with high responsibilities, were disposed to give some of their time, so expressing their gratitude as well as their preferences. A large acceptance and diffusion of his general views about economic planning had to occur before one could seriously entertain the practical application of his methods. (Malinvaud 1998, 572)

Malinvaud gently notes the utopian pattern of Frisch's daydreams, but one can wonder with Olivier Rey if a science based on measurement is not leading, at the end, to utopian projects, which, by their size and ambition, will inspire "admiration, astonishment and shame or disgrace" (Rey 2014, 30).

While the model, notably econometric, remains for Frisch a means of investigation, it is also grasped as the instrument, indeed a technology, of intervention in the world. Yet, step by step, these two functions of the model—as a tool of knowledge and a tool for intervention—merged in Norway (Lie 1995), in the Netherlands (van den Bogaard 1998), and in France (Desrosières 1993), especially after the Second World War. Econometric models with official statistics contributed to the growing quantification as an institutional practice, where quantification is thought of as a tool of proof and a tool of governance (Desrosières 2008, 18). The econometric model, which then has the status of a pillar of economic policy entrusted to experts, becomes and remains, as Adrienne van den Bogaard emphasized, the core of social practice—of academic, as well as political milieus—and this is because "the model has to be understood as a practice connecting data, price indices, national accounts, equations, institutes, experts, law and politics" (van den Bogaard 1999, 284). This intertwining of actors and tools at the core of policymaking and planning points out that tools such as the planning models cannot be disconnected from the practice and savoir-faire in a "handicraft" process (Halsmayer 2017). This handicraft of quantification can be characterized by two features: (1) this quantification process is iterative and (2) this iterative process involves choices and value judgment at each of its steps (Maas, forthcoming).

These debates ring a bell and remind us of the “tension between reform and knowledge” in social sciences in the United States: “During the McCarthy and Vietnam eras, as today, divisions over both the substantive content of academic knowledge and the policy implications to be drawn from it also divided the academy internally” (Furner 2011, xvii).

Furner ([1975] 2011) shows that a postwar context requires the role of experts in order to plan and steer the recovery agenda. As in the United States at the end of the nineteenth century, after the Civil War, the tension between what she called “advocacy” and “objectivity” would divide the academic community and lead the evolution of the discipline toward professionalization and more specialization in scientific tasks. I can identify motivations for this need beyond the operational purposes. Their expertise is bi-dimensional: technical and political. In a postconflict context, the need for value-free recommendations is crucial to overcome partisan views and build a consensus. As analyzed by Wold, economic policy is based on different “value judgments” (Wold 1965, 110). But the aim of the econometrician should be to build “a policy model, where the value judgments underlying alternative political actions are included as specified hypotheses which in themselves are politically neutral” (100).

This quest for a strictly scientific “political model” pushed Stone and Frisch in particular to set up procedures in order to guarantee the separation between science and politics. As Stone’s iteration procedure is anchored in the model building process per se, Frisch turns to a more institutional procedure of iterative dialogue between econometricians and decision makers (politicians and administrative staff).

Stone (1965, 29–41) mainly focuses on the definition of two kinds of models, *the steady states*, specifying the desired objectives and state of the economic system to be reached in the long term, and *the transient states*, specifying the path to be taken to reach such desired state, that is, what to do in the short term. Stone’s *dual model* (1965, 34) prefigures the “backward” approach adopted in the late 2000s in climate change economics and strategy: path and the strategies to adopt period by period are designed according to the long-term goal, with an adaptive and revision process time to time. Indeed, Stone insists not only on the definition of both models but even more on the way they should interact. Each model is composed of a structure of five blocks for each period: assets, labor, output, investment, and consumption. The first step of his procedure is to use the steady-state model to determine the stock of assets that must exist at the beginning of 1970, and, assuming that the output growth rate will be

pushed to the “technological ceiling of the system” (34). Once determined, these initial stocks and the objective assets, being given the labor force and the technology at the initial year and in 1970, econometricians have to design the transient model which will maximize the level of consumption period by period in order to reach the desired level of assets, with the aim to determine whether the consumption should not fall below a certain level, or that it should not fall below the level of the previous year, and then examine the whole time path of consumption. He is considering an iterative process during the transitional period for the adaptation of the transient models in order to be sure to reach the terminal requirements. His approach, as acknowledged by himself, is very “organic” and: “The dual model is intended to explore several possible paths to the steady state and to indicate the good and bad points of each alternative” (35).

But he then has to face the limit of his approach, at some point politics and politicians have to come in the iterative procedure: “an acceptable path should, one might suppose—though this is a political question—be reasonably smooth” (Stone 1965, 33). Frisch goes beyond Stone’s proposals as he implies from the beginning the interaction between econometricians and politicians and brings them together, allocating to them specific tasks and roles. He presents his view on the methodology of policy and planning in a very short eight-page paper that cannot be understood without reference to his work of 1955 (Frisch 1955) and 1962 (Frisch 1962). This short paper gives rise to a vivid, even aggressive, controversy recorded in the twenty-eight pages related to Frisch’s contribution, the strongest opponent to Frisch being Allais.

If, after the Second World War, Frisch clearly associates economic policy with the development of models for economic planning, his commitment to the free-market trade system is fundamental for a true understanding of his approach which proposes to ground planning on econometrics: “The purpose of wise planning is to realise many such special goals, while retaining as many as possible of the advantages of the competitive system” (Frisch 1965, 1198).

Frisch (1965) compares the advantages of direct planning with three other types of economic policy, as underlined by Louça (1999, 9). He first criticizes economic policies based on the Phillips curve (“Samuelson-Solow menu”) mainly because of the undetermined reactions of the banks and financial sector led by a will to phase out economic policy. He also rejected policies implemented in economies combining market tools and planning tools, where the market forces are disturbed by some interventions in

specific sectors and introducing inefficiency. And at last he rejects direct planning, where a national state intervenes directly to determine quantities of goods and services used in production. Those direct interventions are barriers to individual initiatives and render the system of production inefficient. Efficiency and freedom are the main arguments used by Frisch to condemn mixed economies compared to central planning.

After linear programming from 1934 to the early 1960s, Frisch turns to models to solve planning issues.⁸ The preface of the presentation of the OSLO-channel model (Frisch 1962) presents an explicit classification of the different modeling approaches of political economy corresponding to four approaches defined as successive steps for an extensive use of the models: the onlooker approach, the ad hoc instrument approach, the possible instrument approach, and the optimization approach. This classification emerges as the mirror of Frisch's awareness of shifting from the model as a tool for explanation to one for monitoring policies. Econometrics is in both cases understood as a set of technical tools associating a specific methodological analysis framed by the ambition of quantification and the development of measurement tools as models, confluence analysis, statistical indices, linear programming, macrodynamic analysis, national accounts, and national budgets.

Modeling is crucial for economic policy in Frisch's alternative proposal, as it allows economists and policymakers to understand, to forecast, and to act. After the Second World War, Frisch seems aware that the modeling of economic phenomena cannot be done in isolation of the social and political context, especially when economic analysis is policy driven.⁹ Including personal elements, from both the expert and the politician, relies on two major working stages: *selection* and *implementation*. Selection consists of setting specific economic objectives, and implementation involves creating institutions in charge of realizing these objectives. During these two stages of work, experts and politicians will mobilize, implicitly or explicitly, personal and social norms that influence the economic analysis.

8. Frisch was initially invited to PAS in order to present his approach to linear programming but decided at the last moment to present his selection/implementation procedure (correspondence between Boldrini and Frisch in 1962–63, National Library, Oslo, Box 761B). Facing the dead ends of his general equilibrium macromodeling in *Circulation Planning* (Frisch 1934), Frisch starts to investigate what would become linear programming in the 1940s and started to publish on this issue after 1945 (Frisch 1957b).

9. Frisch associates modeling to experimentation. Boumans 2015 analyzes and describes how experimentation for social phenomena cannot be done in isolation.

The cooperation between policymakers and econometricians is based on the development of decision models, defined as a “model where possible decisions are explicitly considered as essential variables” (Frisch 1962, 253). It proposes to detail the different steps in modeling decisions with regard to economic policy, as well as those related to the effective implementation of economic policy.

Frisch clearly details selection because it corresponds to the specification of value judgments. It involves distinguishing what relates to the structure of the economy (as reported by the structure of the model) from the political ambition for the community as a whole. In the final phase of the development of econometric modeling, that is, optimization, economic policy relies on the definition of a function of preference, this definition being conceived as the search for an optimum (whether an economic or social optimum). Selection must lead to the definition of this function of preference, notably when policymakers formulate objectives of social justice and economic development (such as economic growth, environmental management, norms of education, spatial organization, and development). The first task of the econometrician is to set up these flexible objectives, in cooperation with policymakers, through an iterative process on the determination of preferences regarding the economic future of a country. Econometricians would formalize the choices of policymakers and calculate an optimal solution, which could differ from the economic optimum due to the inclusion of concrete variables on political actions. The ultimate decision as regards the most desirable economic situation for the country is taken by the political authorities, and never by the econometricians, whose role is limited to advising policymakers.

When analyzing Frisch’s (1957a) approach to decision models, the border between the political authority and the scientific arguments is becoming increasingly blurred. The work of the econometricians consists in translating the choices of policymakers but also to interpret them during a process where the end of the separation between the two spheres is being set in motion. During the implementation process, the econometric model can evolve from an analytical and forecasting tool into a decision model able to modify the economic reality, that is, from a positive tool toward an instrument to spread the constitutive values of a society.

4. Conclusion

My article focused on the PAS conference as representative of the ongoing debates in the 1950s–60s among econometricians on the comprehensive

and systematic use of econometric models for planning and the future path for econometrics. More than illustrative, the conference makes explicit and clear the underlying tensions related to the heterogeneous conceptions of econometric models and the work of the econometrician. The debates show that econometricians are conscious of the normative dimension of their work and tools.

The possibility of using the “truth” for the “good of humanity” led the PAS participants to challenge both the neutrality of the model and the work of the econometrician: shall econometricians use their knowledge to dampen economic fluctuations or to improve human living conditions? Or shall they first and mainly focus on improving their understanding of economic phenomena by performing the model?

By revisiting the PAS contributions, it appears that three types of solution are emerging to increase the neutrality of the tools, or the work, at hand for econometricians. These solutions can be understood as different paths to be taken for future econometrics. By the search for more “neutrality,” the participants of the PAS prescribed three distinct ways of gaining neutrality: the two first targeting econometrics, developing mathematical economic theory and improving the statistical estimation procedure, and the third targeting the work of the econometrician, building planning models and procedures at hand for the experts.

To illustrate this stand, we can turn to the PAS contributions themselves where we find those who favored theoretical innovations, such as Edmond Malinvaud’s (1965) on revisiting the optimal path of economic growth or Maurice Allais’s (1965) contribution on the role of capital goods in the economic development or those like Wold’s (1965) questioning of simultaneous equations related to the development of dynamic models or Franklin Fisher (1965) and his estimation of dynamic systems, turned to methodological innovations for economic modeling in a quest to better connect the observation of economic phenomena and their theoretical explanation. Models will need more accurate testing and estimation procedures and, moreover, a larger amount of reliable data. And at last, Frisch was not the only one focusing on institutional solutions and econometric modeling to ease and make efficient policies and planning. Henri Theil (1965) starts his contribution by redefining the decision rules for any planning procedure.

This crisis of the “neutral” status of both the econometric model and the econometrician ends in the specialization of econometricians in the production of technical tools, whether mathematical or statistical, and the technical procedures for experts. Both ways turn to econometrics to focus on the elaboration of more complex mathematical and statistical tools, and

econometric modeling to deal with panel data (Dupont and Pirotte 2011) or spatial data, hedonic prices. This increased focus on the technicity can explain why econometrics can be seen as a “tooled discipline.”¹⁰ Econometrics comes to be defined more by its highly complex modeling techniques for measurement purposes and less by the common investigation by the majority of econometricians on specific economic issues such as the understanding of business cycles or the identification of growth determinants as was the case in the 1930s.

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10. We borrow the term from Erich Pinzón-Fuchs 2016.

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