

Bibliometric versus Inside-Knowledge History? An Assessment of Claveau and Gingras's "Macrodynamics of Economics: A Bibliometric History"

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Bibliometric versus Inside-Knowledge History? An Assessment of
Claveau and Gingras's "Macrodynamics of Economics:
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Abstract

This paper is an assessment of Claveau and Gingras's paper, "Macrodynamics of Economics: A Bibliometric History". Its contention is that for all its innovative character, bibliometric history cannot replace inside-knowledge history. To make my point, I examine the particular case of the history of macroeconomics by confronting what their paper can say about this history with what an inside-knowledge approach has to offer.

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INTRODUCTION

History of economics, a long-established sub-discipline of economics, has hardly displayed outstanding methodological innovations. Therefore, Claveau and Gingras's paper, "Macrodynamics of Economics: A Bibliometric History", using high-tech bibliometric methods and dynamic network analysis to "grasp the global structure and morphology of economics as it transformed over the second half of the 20th century" (p. 2), is a welcome enterprise (Claveau and Gingras 2016). Witness to this was the warm reception that it received at the 2016 History of Economics Conference at Duke University. The move was refreshing: here were two researchers doing what is expected from up and coming scholars, namely departing from what has traditionally been done.

I have been drawn to ponder upon Claveau and Gingras's work because I have been engaged in a research project similar in terms of its aim, yet poles apart with respect to the approach (De Vroey and Pensieroso 2016). The hallmark of their approach is that they avoid resorting to inside or trained knowledge. They want facts to speak for themselves using objective scientific measurement methods, thusly "avoiding subjective assessments of the boundaries of specialties." In this perspective, the researchers' work is limited to two tasks beyond devising and running the bibliometric machine (certainly a huge job!). First, they need to define a few notions and decide on taxonomic matters. This part of the job requires no knowledge of economics. Such knowledge is needed for the second task, interpreting the results of the bibliometric work, albeit to a small extent. While their approach can be termed 'bottom up' or 'history of economic theory with little economic theory', by contrast, mine is 'top down' or 'history of economics based on the knowledge of economic theory'. In my approach, measurement comes in a second stage, after the material has been organized theoretically, on the ground of 'inside knowledge' of economics, to borrow from Claveau and Gingras's terminology.

So much for my motivations. As for what I contend, it may be summarized by stating that bibliometrics, though a useful and impressive tool, cannot be a substitute for inside knowledge. While it is perfectly true that bibliometric work can deliver beyond the grips of traditional history of economic theory, the inverse is true as well: inside knowledge generates results that lie beyond the reach of bibliometrics. Claveau and Gingras may agree with this. Yet, the job of pointing out the limits of their own approach must be made by somebody from the other side of the divide.

CLAVEAU AND GINGRAS'S FRAMEWORK AND RESULTS

The scope of Claveau and Gingras's study is breathtaking. It encompasses 10,381,564 identifiable references drawn from 401,278 articles published in 536 journals, relating to economics, over fifty-eight years (from 1956 to 2014). Obviously, tackling such a large

sample is possible only thanks to the bibliometric method. Their object of study is networks of specialties. “Each specialty will correspond, at a given time, to a subset of the larger network defined by the discipline as a whole” (p. 8). Specialties are understood as ‘cognitive similarities’ rather than research fields attached to a specific object of analysis and scientific community.² The notion of ‘cognitive similarity’ is apprehended in a minimal way. The authors consider that there is cognitive similarity as soon as papers display a high level of common references – a case of ‘bibliographical coupling’.³

While ‘specialties’ are the central notion of Claveau and Gingras’s taxonomic construction, ‘time windows’ and ‘communities’ are its building blocks. The total time span of their study is sub-divided into 54 time windows of a five-year length. These are their units of analysis. For each time window, the so-called ‘Louvain algorithm’ is put at work to allocate papers (forming the nodes of the network) across specific communities on the basis of their bibliographical coupling. As for communities, they are groups of densely interconnected nodes that are only sparsely connected with the rest of the network.⁴

The most appealing feature of Claveau and Gingras’s work is its dynamic character – the study of how communities evolve over time. The central question they address relates to how successive nodes are interlinked, i.e. whether at time $t+1$, a node can be considered as the ‘child’ of a time t node. Communities that survive from one time window to the next are called ‘clusters’. More precisely, the notion of ‘cluster’ refers to the case when two subsequent communities are similar to an extent of $\geq 65\%$. When a cluster survives through several time windows, it becomes a ‘specialty’. Specialties may die, split or merge, all these states being revealed using the bibliographical coupling criterion. Finally, specialties can be regrouped in families or ‘sequences of specialties’. It turns out that seven of these sequences span the whole duration of the investigation. Communities, clusters, and specialties are identified and named on the basis of keywords, the terms most often found in the article titles. They are algorithmically extracted from the data. This means that papers are never directly identified in terms of their field, their content, or their method as they would be if the *Journal of Economic Literature* classification or keyword characterization was used. The only substantive information provided is lists of the ten most quoted documents (papers or books) in the articles’ references. These lists relate either to every time window or to entire specialties, the latter not necessarily identical to the former for aggregation reasons. On the

² “We conceive specialties as cognitive divisions, rather than organizational divisions among a population of researchers based on their primary professional affiliations. ... [We] understand specialties as constituted by a set of articles having a relatively high cognitive similarity compared to the rest of articles in the discipline.” (p.5)

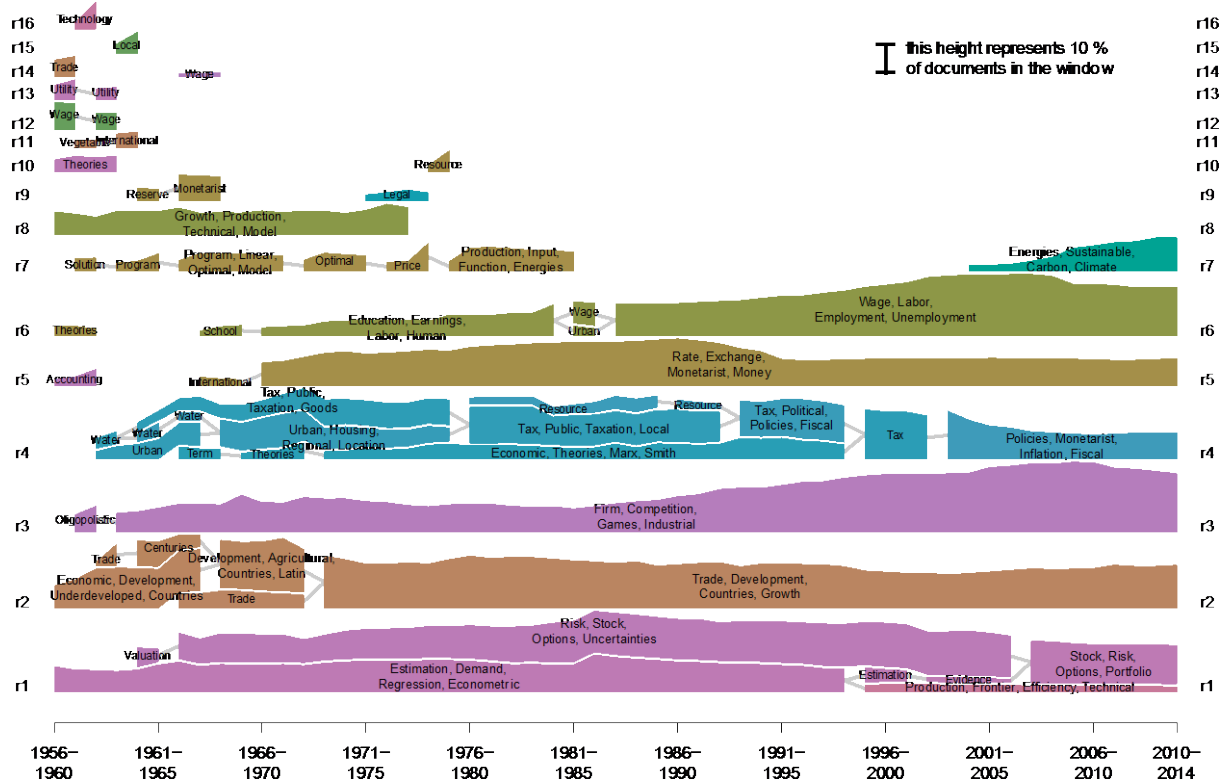
³ “Cognitive similarity can be measured from the references contained in the documents of the corpus. Indeed, the method of bibliographic coupling offers a manner to connect two publications on the basis of the similarity of the lists of documents they refer to. ... Two documents are considered close to each other when there is a high proportion of overlap in their references.” (p. 7)

⁴ “A community is nothing more than a subset of documents in a given time window, the subsets being determined by the community detection algorithm as applied to the time window.” (p. 10)

basis of these lists, Claveau and Gingras establish a link between what they understand by ‘specialties’ and what this term usually means, namely the different sub-disciplines of economics delineated according to their objects of study.

Claveau and Gingras’s inquiry reaches two types of results: factual and interpretative. The factual results are summarized in two graphs, Figures 4 and 5 in their paper, which are reproduced below.⁵

Figure 1. Specialties over time in economics (Figure 4 of Claveau and Gingras’s article)



⁵ Claveau and Grinchas supply a fascinating interactive web platform displaying snapshots of the dynamic network at every time window in relation to the whole period picture of the sequences of specialties. Cf. <http://www.digitalhistoryofscience.org/economics/>

Figure 2. Networks of economics. 1956-1960 time window (Figure 5a Claveau and Gingras's)

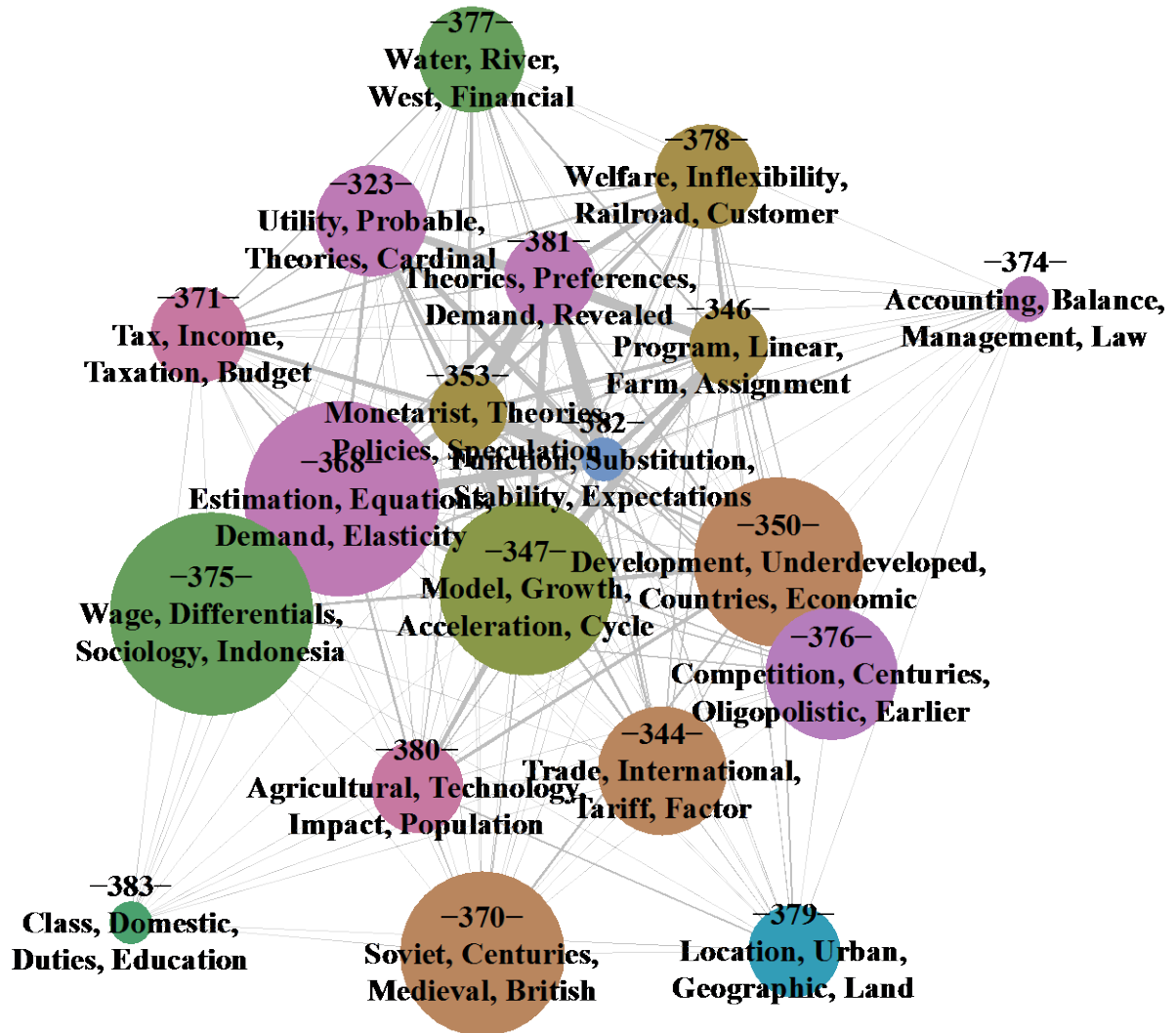
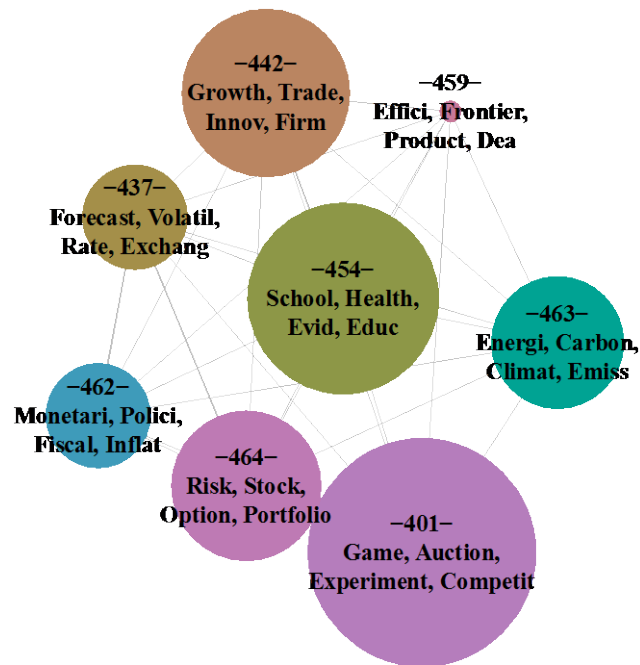


Figure 3. Networks of economics. 2010-14 time window (Figure 5b of Claveau and Gingras's article)



As illustrated in Figure 1, the bibliometric inquiry reveals the existence of ten main sequences of specialties, seven of which span most of the period analyzed. Named after their keywords, these seven sequences are as follows: (a) Estimation, Demand, Efficiency, Regression (Row 1); (b) Risk, Stock, Options, Portfolio (Row 1); (c) Development, Trade, Countries, Growth (Row 2); (d) Firm, Competition, Games, Concentration (Row 3); (e) Tax, Public, Economic, Urban (Row 4); (f) Rate, Exchange, Monetarist, Money (Row 5); and (g) Labor, Wage, School, Unemployment (Row 6). The remaining three are of minor size and shorter lived: (a) Program, Linear, Optimal, Production (Row 7); (b) Growth, Production, Technical, Function (Row 8); and (c) Energies, Sustainable, Carbon, Climate (Row 7).

Once the measurement job completed, there remains to interpret its results. This is done in Section 6 of the paper, entitled “Results and Analysis”. Herein Claveau and Gingras attempt to convert the bibliometric picture into the conventional account of the way economics unfolded as a discipline in terms of standard research fields. They conclude that on the whole the fit is fine for seven out of the ten sequences of as they have identified. Table 1, an enriched version of Claveau and Gingras’s Table 1, illustrates this.

Table 1. Main filiations of specialties

Row	Keywords	First window	Last window	Field
1	Estimation, Demand, Efficiency, Regression	1956-1960	2010-2014	econometrics
1	Risk, Stock, Options, Portfolio	1960-1964	2010-2014	finance
2	Development, Trade, Countries, Growth	1956-1960	2010-2014	development, trade & growth
3	Firm, Competition, Games, Concentration	1957-1961	2010-2014	industrial organization
4	Tax, Public, Economic, Urban	1958-1962	2010-2014	no single field
5	Rate, Exchange, Monetarist, Money	1963-1967	2010-2014	macroeconomics
6	Labor, Wage, School, Unemployment	1963-1967	2010-2014	labor
7	Program, Linear, Optimal, Production	1957-1961	1981-1985	non-identified
8	Growth, Production, Technical, Function	1956-1960	1973-1977	'old growth theory'
7	Energies, Sustainable, Carbon, Climate	2000-2004	2010-2014	non-identified

This table indicates that not all existing research fields are covered.⁶ Several are missing, possibly because their relative weight is too small. More important in my eyes is that the robustness of the correspondence they establish between bibliometric specialties and established research fields must be checked. Doing this row by row is too huge an endeavor. Therefore, I have limited myself to examining the case of macroeconomics, the field for which I have the best inside knowledge.

TESTING THE BIBLIOMETRIC APPROACH WITH RESPECT TO THE HISTORY OF MACROECONOMICS

Inside-knowledge history

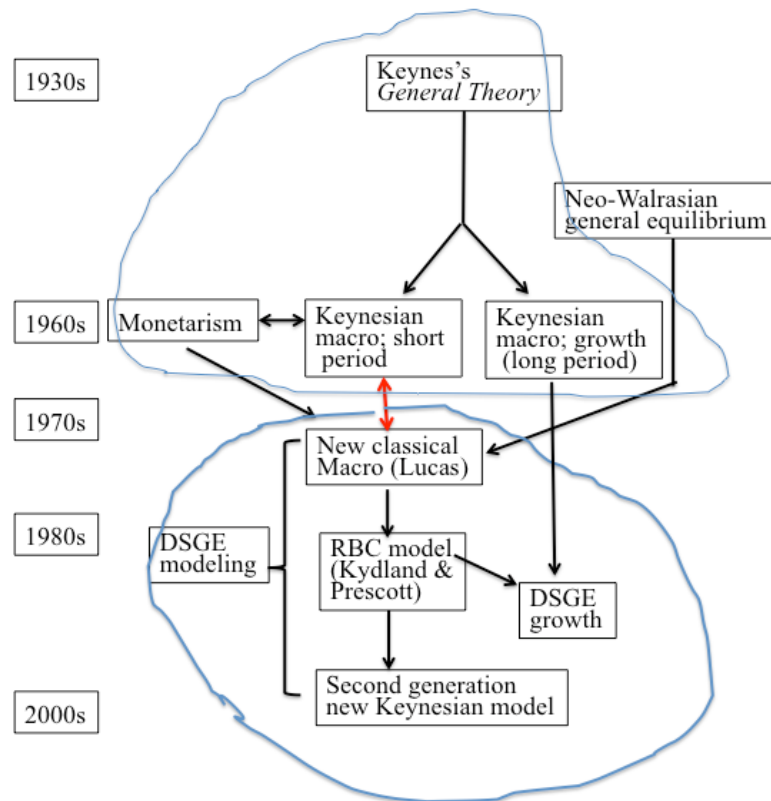
To begin with, I must provide an inside-knowledge sketch of the history of macroeconomics.⁷ It is summarized in Figure 4. It is apparent from it that the history of macroeconomics can be compared to a genealogical tree. The different episodes which macroeconomics went through are connected either through a relation of continuity (an arrow) or opposition (a two-headed arrow). While Keynes's *General Theory* played a pivotal role in triggering the new sub-discipline that was macroeconomics, the field took off only after Hicks and Modigliani translated the *General Theory*'s convoluted message into a simple system of equations, the IS-LM model. At its core lies what is called in Figure 4 'Keynesian macro; short period'. Parallel to it, a few Keynesian economists – Harrod, Domar, Kaldor, and Solow – proposed models related to the long period, i.e. growth models ('Keynesian macro: growth (long period)' in the figure). Although the two streams actually were unconnected, growth theorists regarded themselves as belonging to the Keynesian community. Under Friedman's stewardship, monetarism grew as a rival to Keynesian short-period macro; hence the double-headed arrow. Disputes between Keynesians and monetarisms were strong worded.

⁶ Missing fields are microeconomics, public economics, geographical economics, history, environmental economics, health, education, experimental economics. Cf. Card and Della Vigna (2015) and Kelly and Bruestle (2011).

⁷ Cf. De Vroey (2016).

However, with insight, it has turned out that the two approaches were more similar methodologically than what appeared at the time. The brawl was one between methodological

Figure 4. A snapshot of the history of macroeconomics ⁸



siblings. Much more radical was the transformation initiated by Lucas and which led to DSGE macroeconomics (DSGE standing for dynamic stochastic general equilibrium). It had all the trappings of a scientific revolution (which is why the double-headed arrow is red). From its inception to the present, this program has evolved over several waves as indicated in the table. Calling Lucas's model of business fluctuations the 'new classical model', Kydland and Prescott's RBC model can be considered as its 'child'. It takes up Lucas's dynamic method (a simplified Walrasian general equilibrium model, with intertemporal substitution as its key allocation principle) but replaces the idea of monetary shock with that of technology shock. Kydland and Prescott also innovated by resorting to calibration instead of econometrics for the empirical assessment of their model. Finally, RBC modeling proved able to anchor the study of fluctuations and growth in a single model, the neoclassical growth model (an extension of the Solow model). The same mutational process was at work in the rise of

⁸ Single-headed arrows indicate a relation of continuity; double-headed arrows a relation of opposition. A black double-headed arrow means an opposition within a given paradigm; a red double-arrow, a paradigmatic opposition. DSGE stands for 'dynamic stochastic general equilibrium'. What I prefer to call 'second-generation new Keynesian modeling' often goes by the name DSGE.

second-generation new Keynesian modeling. Using the RBC model as a base camp, it modified it by grafting ‘Keynesian’ assumptions (central bank, imperfect competition, and sluggishness) onto it. Thus, macroeconomics, a sub-discipline that started in the 1950s, has gone through two eras to date, the Keynesian and the DSGE eras. However, this transformation the passage from one era to the next happened within the macroeconomics fields. Though a revolution occurred content-wise, this hardly moved the boundaries of macroeconomics.

Bibliometric history

The task ahead is now to examine whether Claveau and Gingras’s work fits the above picture. As shown in Table 1, they associate Row 5 with macroeconomics: “[With Row 5] we thus have a cognitive specialty clearly dedicated to macroeconomics and monetary issues” (p. 19). Does this mean that the part of their study related to macroeconomics fits the summary provided in Figure 4?

The peculiarity of Row 5 is that, from the 1966-70 time window to the last one (2010-14), a single specialty prevails, under the ‘Rate, Exchange, Monetarist, Money’ keywords.⁹ Somewhat oddly, however, no reference to macroeconomics works is to be found in the list of the most quoted works for the whole specialty. These all refer to econometric works! A different picture arises when looking at the reference lists associated with each of the time windows for the specialty (as already stated, these lists are usually different from the list related to the entire specialty). Eight of the most quoted works in the inaugural 1966-70 time window belong to macroeconomics. The other two references are Friedman and Schwartz’s *Monetary History of the U.S.* and Gurley and Shaw’s *Money in a Theory of Finance*, both of which, though they belong to different fields, have a clear connection to macroeconomics. Thus, we have a good fit. Looking at the next sequence of time windows beginning with 1966-70, it may be observed that until 1975-1979, the list of most cited works remains broadly similar, the most quoted references being works belonging to Keynesian macroeconomics, with some room for dissenting views (Keynes, Patinkin, Friedman, Phelps, and Leijonhufvud). After this date, references to new classical pieces crop up with the names of Muth, Sargent and Lucas, and Barro appearing in the lists. Until the mid-1980s, most lists display a split between the two competing paradigms, Keynesian and new classical. From 1984-88 onwards, econometric articles start appearing. In the 1986-90 time window, there are seven. In the 1989-93 time window, they are all econometric papers. This is the case until the end of the study, that is twenty-one time windows.¹⁰

⁹ I leave aside a previous cluster of three time windows (starting in 1963, 1964, and 1965) centered on monetary theory because its list of most quoted references comprises no macroeconomic works.

¹⁰ This long stretch explains the prevalence of econometric works in the list of most cited works for the entire specialty.

The conclusion to be drawn at this juncture is mixed. The Row 5 sequence of specialties succeeds in capturing the main features of the history of macroeconomics for three of the seven post-Keynes's *General Theory* boxes in Figure 4, 'Keynesian macro, short-period', 'Monetarism' and 'New classical macro'. However, it fails to display the four other boxes: 'Keynesian macro: growth', 'RBC modeling', 'second-generation new Keynesian modeling', and 'DSGE macro, growth'. It also misses the early stage of Keynesian macroeconomics which took shape as a new sub-discipline of economics in the 1950s. No trace of this is to be found in Row 5. Finally, as noticed above, around the middle of the Row 5 sequence of specialties, references to macroeconomics documents disappeared from the list of most quoted works, being replaced with econometric papers. This looks odd, as it occurred at a time when, in the profession, the DSGE approach was thriving.

The question to be asked at this juncture is whether the phases of the history of macroeconomics, which are absent from Row 5, are absent from the whole bibliometric investigation. It may indeed be the case that they are hidden in other filiations of specialties. A detailed analysis of Claveau and Gingras's paper suggests that the second possibility is the right one as far as the early stage of Keynesian macroeconomics is concerned. Prior to the 1966-1970 time window, references to macroeconomics are to be found in two other rows. The first is Row 6, summarized by the 'Labor, Wage, School, Unemployment' keywords. Here, at the start of the sample, we have a cluster with three time windows (from 1953-57 to 1958-62), the keywords of which are 'Theories, Monetarist, Interest, Specialization'. The most commonly cited documents in the articles in this cluster all turn out to belong to macroeconomics. Among them we find *The General Theory*, Patinkin's *Money, Interest and Prices*, Hansen's *Monetary Theory and Fiscal Policy*, Hicks's IS-LM article, and Klein's *Keynesian Revolution* – in short, the founding works of Keynesian macroeconomics that were missing from Row 5. The second row where some missing episodes can be found is Row 9. Its keywords are 'Monetarist, Money, Multiplier, Reserve'. It runs over three time windows, starting with 1962-66 and ending with 1964-68. Seven of the most common references turn out to be macroeconomics documents, actually more or less the same as those in the last time window of the Row 6 cluster.¹¹

Looking at the relationship between what happened in Row 6 from 1953-57 to 1958-62, what happened in Row 9 from 1962-66 to 1964-68, and the early time windows of Row 5, we observe a nice theoretical continuity, a beautiful example of communities and their 'offspring'. We touch here a limit of the bibliometric method under the technical assumptions adopted by Claveau and Gingras: it fails to connect these two clusters to the long macro sequence in Row 5.

¹¹ The remaining three are not very distant in content: Hicks's *Value and Capital*, Friedman and Schwartz's *Monetary History of the US*, and Gurley and Shaw's *Money in a Theory of Finance*.

Let me now turn to the four boxes present in Figure 4, that are absent from Row 'Keynesian macro, growth', 'RBC modeling', 'DSGE macro, growth', and 'DSGE macro, second-generation new Keynesian models' are still missing. I begin with the last one. Upon scrutiny, it is to be found in Row 4, the general keywords of which are 'Tax, Public, Economic, Urban'. This row is a succession of specialties, whose relations Claveau and Gingras describe as 'tumultuous' – to me, a polite word for 'loose'. Be that as it may, the filiation comprises a specialty having 'Policies, Monetarist, Inflation, Fiscal' for keywords. It begins with 1999-03 and closes with 2010-14. All the most quoted pieces point to the 'DSGE macro, second-generation new Keynesian' box, displaying the names of its most famous representative economists (Calvo, Taylor, Woodford, Clarida, Gali and Gertler, Christiano, Eichenbaum and Evans, and Smets and Wouters). So, rather than being absent from Claveau and Gingras's configuration, the 'second-generation new Keynesian DSGE macro' episode is hidden in a catchall filiation of specialties different from the macroeconomics one.

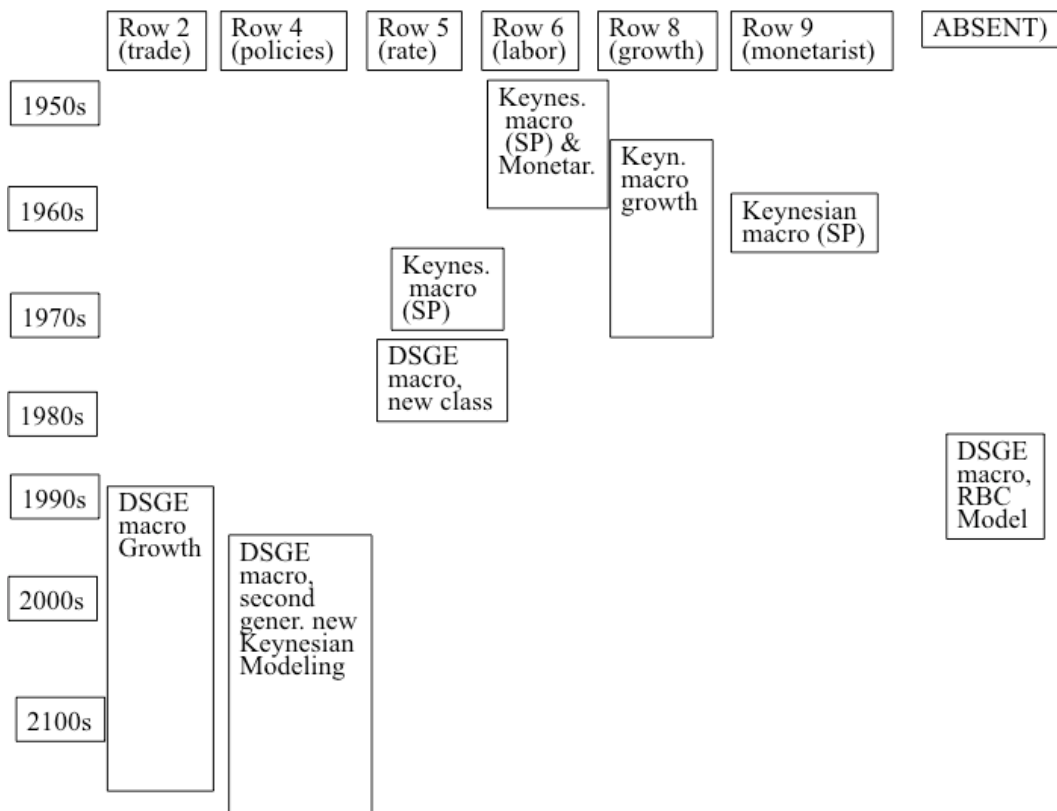
As for the two growth boxes displayed in Figure 4, one pertaining to the Keynesian and the other to the DSGE paradigm, they are to be found in two other filiations. Keynesian growth modeling can be found in Row 8, which spans eighteen time windows, starting with 1956-1960 (the beginning of the sample) and ending with 1973-77. Its keywords are 'Growth, Production, Technical, Model'. It turns out that five of the most quoted references for the whole cluster relate to the Solow model and can be associated with my 'Keynesian macro: growth' box. The other references are more diverse though they also deal with growth in its Keynesian variant. An individual examination of time windows reveals that in the first ones the discussions focus especially on the Harrod-Domar model. Gradually, the Solow model comes to the forefront. For example, close to the end of the cluster, in the 1971-75 time window, seven references relate to this model, referring in particular to growth accounting issues. The second row of concern for the presence of growth, this time in its DSGE variant, in Claveau and Gingras's configuration, is Row 2 which is characterized with the 'Development, Trade, Countries, Growth' keywords. It exists over the whole period analyzed. Here I consider only what happens from 1969-1973 onwards, after the merger between the 'Development, Agriculture, Countries & Latin' and the 'Trade, Tariff, International & Protection' specialties. This makes for forty-two time windows, the sequence of specialties lasting until the end of the investigation. The ten most quoted documents over the whole period are allocated between fields as follows: six documents relate to growth (2 Keynesian, 4 DSGE), three to trade/industrial organization, and one to economic geography. Taking the issue time window by time window, a more nuanced picture emerges. For about the first fifteen time windows (up to 1969-73), development references dominate (7/10) with 2/10 for trade and 1/10 for growth references. Then things start to change with the names of Romer and Lucas jumping to the first two places in the 1989-1993 time window. In 1990-94, six papers are macro-growth, five being DSGE macro, the sixth one referring to Solow's model.

Trade is the second main reference. This goes on until the last window with broadly the same works in the list of references. Among the novelties, Acemoglu's appears in the list for the first time in 2004-08. We may thus conclude that DSGE growth modeling is also present in Claveau and Gingras's configuration yet not in Row 5.

Finally, there is the case of the 'RBC modeling box'. Although the latter played such a crucial role in the development of macroeconomics, to the best of my knowledge, it has no counterpart in the bibliometric account. Its absence is especially odd in view of the fact that both 'DSGE macro, growth' and 'DSGE macro, second-generation new Keynesian', which are present, are its offspring.

However, the main shortcoming of Claveau and Gingras's configuration (as far at least as macroeconomics is concerned) is that it misses the logic of the development of this field. Despite their methodological differences, all the boxes in Figure 4 belong to the same field. In the authors' configuration, they are scattered in no less than six filiations of specialties, not mentioning the absence of RBC modeling. From an inside-knowledge point of view, this is wanting. Figure 5 illustrates.

Figure 5. Macroeconomics across filiations of specialties ¹²



¹² For the sake of graphical clarity, I have made Monetarism a part of Keynesian macro, short period.

The confrontation between Figures 4 and 5 is enlightening. Not only does Claveau and Gingras's study fail to identify macroeconomics as a single field – that is, based on a single well-acknowledged scientific community, with the same object of analysis, and standards of valid theoretical practice (even if they may evolve over time). It is also unable to shed light on the genealogical links, whether continuous or discontinuous, between the different episodes that have marked its history. This points to what seems to be an even more serious drawback, namely an inability to come to grips with genealogical connections. Claveau and Gingras have a vocabulary for it: 'child' (one community being the 'child' of an earlier one), 'merger', and 'split'. Yet, these are mere metaphors. In short, the biographical coupling instrument seems too rudimentary a tool for detecting relations of continuity or breach. Referring for example to Row 4, it suggests that second-generation new Keynesian modeling is the distant offspring of a matching between urban economics and public economics. To every macroeconomist, it is obvious that it is the 'child' of RBC macroeconomics and the 'grandchild' of Lucasian new classical macroeconomics. To take another example, Row 2 suggests that growth theory as initiated by Lucas and Paul Romer is the late offspring of a merger between old development theory and trade theory, a claim that stretches credibility.

Finally, I close my examination with some thoughts on the predominance of econometric references noticed above. In my view, the explanation lies in a phenomenon mentioned by Claveau and Gingras, namely the overall importance of econometrics papers and books in their lists of most quoted works. In their abstract, Claveau and Gingras write that their presence testifies to 'the dispersal of the econometrics-centered specialty in the early 1990s and the ensuing importance of specific econometric methods for the identity of many specialties since the 1990s" (p. 1). That econometrics tremendously gained in importance over the time period studied is undeniable. However, they fail to realize that this rise in importance raises a problem for the identification of specialties. In my eyes, the marked presence of econometric references in the list of most quoted works impedes the identification of specialties. The same is true for game theory. What these two fields have in common is that they have a dual nature. On the one hand, they are auxiliary disciplines. Game theory is an important tool for shaping reasoning and demonstrations in different fields. Econometrics is used in many fields for the purpose of verification/ falsification of theoretical propositions. On the other hand, they have become disciplines of their own, the enrichment of which is pursued for its own sake – game theory proper or econometric theory. The drawback of bibliographic coupling is that it does not allow us to disentangle whether references to econometric works in a given paper mean that it is a contribution to econometrics or that its author, say a macroeconomist, is just acknowledging her use of econometric tools in her paper. This, I suggest, accounts for the sudden disappearance of references to DSGE macro works in the Row 5 specialty and its replacement with references to econometric articles. The beginning of second-generation new Keynesian models was concomitant with the emergence

of structural VAR models, which were initiated by Sims and became one of the levers on which the new modeling strategy rested. Since second-generation new Keynesians used the new econometric methods, they felt it normal to include econometric articles in their bibliography; but this did not make their papers contributions to econometrics *per se*.

My guess is that the difficulties I have underlined in my study of macroeconomics also arise for other sub-disciplines. Rather than being the result of Claveau and Gingras misusing the bibliometric method, they point to its intrinsic limitations. Two of them are worth mentioning. The first lies in interpreting what lies behind the cognitive similarity diagnosis obtained through bibliographical coupling. Claveau and Gingras characterize ‘cognitive similarity’ as any of the following occurrences:

shared empirical objects (e.g., education or finance), shared methods (e.g., time series or cross-section econometrics), shared theoretical traditions (e.g., neoclassical or Sraffian economics). Which aspects are more important in determining the identity of specialties depends on context (pp. 5-6).

This link between bibliographical coupling and cognitive similarity can be criticized on several grounds. Their definition of cognitive similarity is too vague and broad. This makes it a catchall, kind of ‘anything goes’ category. For my part, I think that, in order to have substantive meaning, the notion of cognitive similarity should imply all three aspects they mention. Moreover, bibliographic coupling may indicate cognitive dissimilarity as well as cognitive similarity. This is the case in periods of controversies. Take macroeconomics at the turn of the 1980s when the disputes between Keynesians and new classicists were raging. It may be presumed that a high bibliographical coupling existed between Keynesian and non-Keynesian papers.

The second limit of the bibliometric approach I wish to mention relates to the list of most quoted references, the only source of substantive information available. These lists contain too much useless information, references to works from auxiliary disciplines and to works which be called ‘blockbusters’ – they are so famous that they crop up in several specializations. As a result, more significant references remain off the lists.

CONCLUSION

The reader of this paper may have the impression that it has only presented the side of the prosecution. Actually, my criticisms are not meant to be taken as derogative. Claveau and Gingras’s paper is innovative and welcome – as they write in their conclusion, “it is time for historians of economics to use the combined resources of large data, algorithmic methods and computing power” (p. 27). What is more, the application of the bibliometric method in economics is still in its infancy to the effect that much progress may be expected. The motivation of this paper is not to dismiss this new trend but to mitigate some possible over-enthusiasm for it. It is just that, as I have tried to argue, traditional history of economics still has a crucial role to play for the understanding of the history of economics. Thus, my final

word is that I regard the two approaches as complementary. Not that a synthesis between them can be made; it is rather that they have opposite qualities and defects.

REFERENCES

- Card, D. and Della Vigna, S. 2013. "Nine Facts about Top Journals in Economics." *Journal of Economic Literature*. 2013. **51**: 144–161.
- Claveau, F. and Y. and Gingras. 2016. "Macrodynamics of Economics: A Bibliometric History." *History of Political Economy*. Forthcoming.
- De Vroey, M. 2016. *A History of Macroeconomics from Keynes to Lucas and Beyond*. Cambridge, Cambridge University Press.
- De Vroey, M. and L. Pensieroso. 2016. "The Rise of a Mainstream in Economics." University of Louvain, *Department of Economics, Discussion Paper*, No.
- Kelly, M. and S. Bruestle. 2011. "Trends of Subjects Published in Economic Journal 1969-2007." *Economic Inquiry*. **49**: 658-673.

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