

# Economics and Business Review

Volume 1 (15) Number 1 2015

## CONTENTS

### **From the Editor**

*Tadeusz Kowalski*

### **Editorial introduction: Cliometrics of transition**

*Claude Diebolt, Jacek Wallusch*

## ARTICLES

### **Why did the knowledge transition occur in the West and not in the East? ICT and the role of governments in Europe, East Asia and the Muslim world**

*Ralph Hippe*

### **An exploration of the cliometric relationship between gender equality and economic growth**

*Faustine Perrin*

### **Cliometrics and general equilibrium: a pathbreaking analysis revisited**

*Claude Diebolt*

### **Synthetic ‘real socialism’: a counterfactual analysis of political and economic liberalizations**

*Ilaria Petrarca, Roberto Ricciuti*

### **(Un)finished transition. Stock of knowledge in Poland, 1924–2012**

*Jacek Wallusch*

## BOOK REVIEWS

Tadeusz Kowalski, *Globalization and Transformation in Central European Countries: The Case of Poland*, Poznań University of Economics Press, Poznań, 2013 (*Stanisław Rudolf*)

Katarzyna Szarzec, Adam Baszyński, Dawid Piątek, Michał Pilc, *Institutions in Transition Countries*, Katarzyna Szarzec (ed.), Global Development Research Group, Poznań, 2014 (*Beata Stępień*)

# Cliometrics and general equilibrium: a pathbreaking analysis revisited<sup>1</sup>

*Claude Diebolt*<sup>2</sup>

**Abstract:** This paper aims to contribute to the renaissance of the general equilibrium analysis applied to history. It discusses Jeffrey Williamson's seminal contribution in the field of cliometrics giving an explicit indication of all the interdependences and for simultaneously taking into account all the problems separated artificially in analysis of Marshallian partial equilibrium.

**Keywords:** cliometrics, general equilibrium.

**JEL codes:** B13, N01, N11.

## Introduction

*Jeffrey G. Williamson [...] has been the pathbreaking figure in the application of general equilibrium models to economic history [...] [James 1984: 237].*

In his seminal [1974] contribution Williamson's objective was to analyse the structure of the American economy from the Civil War to the First World War. It was a clear advance in literature as the great majority of cliometric works had hitherto focused almost exclusively on the period preceding the Civil War:

*[...] while cliometricians had made great strikes in improving our understanding of ante bellum economic experience, the post-Civil*

---

<sup>1</sup> Article received 15 August 2014, accepted 8 September 2014.

The author is particularly grateful to Jean-Pierre Dupuis, Jérôme Lallement and Jean-Luc De Meulemeester for their valuable comments. An earlier version of this paper was presented during different PhD lectures in France and abroad, at the *European Society for the History of Economic Thought* Conference in Strasbourg, and at a *Research Seminar on General Equilibrium as Knowledge* at the University Paris 1 Panthéon Sorbonne. Possible remaining errors are those of the author.

<sup>2</sup> BETA/CNRS, University of Strasbourg Institute for Advanced Study, 61 Avenue de la Forêt Noire, 67085 Strasbourg Cedex, France, e-mail: cdiebolt@unistra.fr.

*War still remained a frontier, while the twentieth century could be considered almost virgin territory [Williamson 1974: ix].*

His research followed two articles co-authored with Kelley in [1971] and [1973] (consolidated by a book in [1974]) devoted to the setting up of a general equilibrium model of an assumed “dualist economics” (a term first used in the economic literature by Lewis in [1954]) i.e. the Japanese economy during the Meiji period. Later on Lindert and Williamson [1980] used the same modelling philosophy to deal with the issue of inequalities and developed a computable general equilibrium (CGE) model in order to test for the validity of the Kuznets curve. All this research was also influenced by the context of economic research at the time (research on the general equilibrium theory was extremely well regarded amongst the profession) and in a sense pioneering (as the great success of CGE models appeared mainly during the 80’s linked with their use by the World Bank and other international organisations to assess economic policies for least developed countries).

Williamson built a CGE model that ignored much of the institutional characteristics of the post-Civil War economy – it was the price to pay for using this methodology – but a model that hopefully improved our understanding of the late nineteenth-century American economic development or even of the complete century.

The aim of this paper is to discuss these findings whilst keeping in mind the limitations that such a type of modelling exercise can place on our understanding. It is indeed clear that as far as the end of the period is concerned (especially the Great Merger Movement), assumptions of perfect competition are difficult to accept.

## 1. The cliometric framework

Williamson’s book is divided into 11 chapters and 3 statistical annexes (estimation of parameters, details of simulations and statistical series):

1. The Issues
2. Counterfactual History
3. A Model of Late Nineteenth-Century American Regional Growth
4. American History Rewritten: Fact or Fiction?
5. The Great Depression, 1870–96
6. Financial Intermediation, Capital Immobilities and Economic Growth
7. Farmers’ Discontent and Agricultural Performance: Facts, Issues and an Agenda
8. Elements of Agricultural Performance, Land Expansion and Productivity Growth
9. Transportation and American Development during the Gilded Age: 1870–90

## 10. Exports, World Markets and American Development

## 11. Immigration and American Growth.

Williamson's spatial framework is narrower than the one indicated in the title of the book, *Late Nineteenth-Century American Development: A General Equilibrium History*. His America is indeed limited to the North-East and the central north (the Midwest) regions of the country. The Rockies, the Pacific coast and the South are not included. Williamson's framework for regional analysis would thus appear very simplified. His field of investigation is made up of two regions – the first purely industrial and the second both industrial and agricultural. But the choice by Williamson was extremely judicious. The share of farming in the national income of the USA had been limited since 1870 and more than 60% of the population of the US was concentrated in the north-west quarter from the 1880's onwards, and 75% of national income was generated there. The time span (from 1870 to 1910) was chosen in order to focus on the period following the Civil War and preceding World War I.

Williamson aimed at going beyond the partial equilibrium approach to follow an old tradition in economics (beginning maybe with the *Tableau of François Quesnay* in 1758), i.e. modelling the structural relations of an economy to answer questions on its dynamics. Use of the counterfactual method (that is to say measurement of the influence of a factor on a development by the difference between that really observed and the hypothetical influence) allowed by the use of CGE models should make it possible to analyse how the economic development during the period could have been affected by the absence of certain factors considered as essential by more traditional economic historical approaches.

The fruitfulness of his counterfactual approach is heavily dependent on the researcher skills in formulating useful and pertinent historical questions. What would have happened in the American economy if the Civil War had not taken place or if transport had not been improved by the railways, or if the deterioration of terms of trade at world level had not worsened for American grain, and so on? It is the art of asking useful questions:

*Instead, the art is to develop models of historical development which capture the essential and suppress the trivial [Williamson 1974: 17].*

Williamson considers that the counterfactual method should make it possible to use simulation as a means for testing various assumptions concerning the behaviour of variables and on the way introducing a form of comparative dynamics as an extension of the comparative static models that he criticises, as did Temin [1971]), because they are valid only if it is assumed that the equilibrium positions are stable. It is however not realist to consider a constant technology for a long period of time. In other words, as an economic historian, Williamson's use of CGE models is one that allows some disequilibrium (if we

may say that). Technology is not considered as time-invariant but changing. He even departs from pure competition assumptions as there are some barriers to the mobility of factors between the two regions in his model (the USA is assumed to be an open economy with relative prices set at world level for the Eastern regions but that have to be adjusted for transportation costs in the Midwest).

His procedure follows four stages: formulation of the model, calibration/estimation, test and analysis. It is predictive in Friedman's philosophy [1953] in the sense that he considers that a theory cannot be tested by direct comparison of its postulates with reality. A theory is only realist if the predictions derived from it are good or better than those of other theories. Finally, the only satisfactory test of the validity of a hypothesis is the comparison of its predictions with experience. The hypothesis is discarded if its predictions are contradicted. Factual evidence can never prove a hypothesis but may simply not disprove it.

Williamson's idea was to build a model whose calibrated chronological series would be as close as possible to observed series or numerical data. These series referred to as 'actual' describe observed reality. In concrete terms Williamson assessed the role of a factor by assuming that the latter remains constant throughout the period of analysis. He measured the impact of this constancy on the other endogenous variables. He aimed at better assessing the true impact of the historical variation of this factor. As is explained on page 63 of his book he considers the model favourably when it makes it possible to detect turning points in the time series, without seeking to detect any particular pattern.

Williamson follows the conventional rule of CGE modelling and uses a Cobb-Douglas production function of the type with constant returns to scale. The model is suitable for representing a stable economy but is more questionable for addressing the problem of disequilibrium dynamics. For example, what form has the adjustment between investment and saving (not forgetting that neoclassic economists hold that investment comes from saving and that for Keynesians savings come from investment)? In addition how can capital be measured (Joan Robinson [1956], comes to mind!)? Williamson is aware of the relevance of such objections and specifies that for him there is no total mobility of the factors. In other words once capital goods are installed they cannot be transferred to another sector. As a result there is no equalisation of the price of factors between regions and sectors, ruling out any instantaneous reallocation.

Williamson constructs his long-term growth model in Chapter 3 of his book. It is based essentially on supply with no cycles and with no variations in overall demand (demand functions only affect interregional or international trade). In fact, it is a neoclassical growth model based on two regions (the Midwest, producer of agricultural and manufactured goods and the East, producing manufactured goods) and with three factors of production (labour, capital and land). Williamson uses 72 equations (pp. 46–50) that reflect production conditions,

returns and prices of factors, savings and investment allocation levels, consumer demand, transport costs, real interest rates, real wages and labour migration between sectors and regions. The money supply is constant and Williamson assumes balanced growth and full employment.

His starting point is the American Civil War that he considers as a decisive turning-point for the American economy, reducing subsequent growth rate and generating disequilibrium. The decline of the growth rate of the economy is considered to have resulted from a fall in capital accumulation rates and a decrease in land expansion rates. Variations of productivity of the various factors of production played only a marginal role in the economic slowdown of the country. These results are implied by the core-assumptions of the theoretical model centred essentially on the determinant factors of revenue and on the inter-regional and inter-industry flows of products and factors, with the exception of other sources of growth considered as exogenous (in particular technical progress and variations in labour flows).

We have to stress at this point that these results are not always validated by historical reality. Let us consider, for example, the stagnation during the 1890's. The imbalances on the capital markets are analysed as being mainly the result of transaction costs involved in capital transfers between regions. This explanation is incomplete. Indeed the Williamson's general equilibrium model classical assumptions of full use of resources and perfect competition appear quite incorrect in a context of depression, accelerated economic concentration and increasing unemployment—three characteristic features of the American economy in the late nineteenth century.

However Williamson's simulations lead economic historians to challenge 7 commonly-held views concerning economic growth at the time.

## **2. The Great Depression**

Williamson raises new questions about the much discussed Great Depression in the USA. He first eliminates the role of monetary factors and the Keynesian explanation based on demand, above all because he does not note any significant increase in unemployment. The answer must therefore be sought on the supply side. Williamson considered that the cause of the depression did not lie in a border effect or in the slowing-down of the growth of factors total productivity but is to be found in the long-term determinants of capital and savings formation rates. The Great Depression would thus in no way be accounted for by a decrease in savings efforts or even pressure on profits. The overall savings rate increased and prices of investment goods fell during the depression. In fact it remains to be found why the savings rate increased in the 1860's, why it remained stable until the 1890's and why it increased again from 1896 onwards.

These are still fundamentally important and unsolved questions which should attract future research efforts by cliometricians.

### 3. Financial intermediaries and the creation of an integrated national capital market

Analyses developed before Williamson's drew attention to the slowing-down effect of barriers to mobility of capital and the positive role of financial intermediaries transferring savings from regions with an excess to regions with a deficit. Indeed the development of an integrated national capital market ensuring capital mobility between sectors and regions appears to be a powerful feature enhancing growth. This type of capital market integration emerged gradually in the United States between 1870 and 1914. The relative immobility of capital resulted in differences in interest rates from one region to another. The convergence of these rates was a sign of increasing integration. Many people consider that the convergence of short-term interest rates resulted from the development of a national commercial-paper market and hence increased competition between bankers and brokers. A similar trend, but slower and less marked, is observed in long-term interest rates as a result of the growth of life insurance companies, the development of mortgage banks and the emergence of a national industrial stock market. In short integration resulted from the rise of financial intermediaries that resulted in the disappearance of the quasi-rents. Williamson's model perfectly illustrates the convergence of inter-regional interest rates. He postulates that agriculture financed industry in the Midwest from 1875 onwards. A fifth of savings in the East was transferred to the West in 1870 but the flow direction changed from 1885 onwards, albeit on a reduced scale.

Williamson considers that counterfactual analysis must be performed in order to appraise the capital immobility, assuming that savings are entirely mobile and so transaction costs are nil and adjustment performed without delay. The results are surprising. The imperfection of capital markets had a strong effect on the economic structure, allowing agriculture to decline more quickly, but had practically no effect on *per capita* income. Growth was therefore not affected. Furthermore Williamson observes that interest rates were not affected and when they were this would have been less marked if capital mobility had been perfect. In short Williamson showed that the poor functioning of the capital market in no way prevented industrialisation (measured by the decrease in the proportion of the agricultural working population in the total working population or by that of agricultural production in GNP). This approach calls into question a number of well-established ideas and especially those of Gerschenkron [1962, 1968].

#### **4. Farmers' discontent**

Farmers' discontent emerged periodically in the United States (after 1865 and in the 1890's). The complaints are well known: fall in the price of agricultural products (and hence of incomes), exaggerated gains by intermediaries benefiting from their monopolistic position, usurious interest rates and substantial debts. Are they justified? Williamson shows that the terms of trade were favourable to farmers as relative farm prices tended to increase. Real interest rates fell strongly after 1880. In addition agricultural labour productivity increased as did yields and average farm acreage. However real land prices jumped in an extraordinary manner during the Great Depression. This boom was not the result of irrational speculation but related to the halving of real farm mortgage rates. In fact land rent only increased slightly. But land values doubled between 1870 and 1900. Williamson considers that specialists tend to lay too much emphasis on farmers' incomes without paying attention to the considerable increase in the value of their assets as most had owner-operator status. This is where the paradox lies. Farmers also complained about poor allocation of resources. As in some under-developed countries today, agricultural credit in the 1870's was inadequate and growth sub-optimal as a result of over-vigorous industrialisation. In contrast industry was in turn the victim of this non-optimal distribution in the 1890's. Agrarian protests in the Midwest ceased at the same time.

#### **5. Agricultural performance**

"Abundance of land diverted too much capital and labour to agriculture!" This commonly held view turns out to be false as American agriculture suffered from a shortage of capital in the 1860's and 1870's. The hypothesis put forward is that the existence of a border between the two regions studied by Williamson should have reduced the labour supply for industry thus slowing-down industrialisation and causing a rise in real wages.

Williamson used counterfactual analysis to test these proposals comparing what actually happened with two hypotheses. The first involves intensive agricultural development with a constant land stock equal to that of 1870 (indicating the early 'closing of the frontier'). The second consists of extensive development with a land stock increasing by 4% per year (the real rate was 1.4% per year from 1870 to 1890). Williamson attempts here to assess the relative effects of the disappearance of the frontier by first examining the consequences for farm yields. In 1900 these would have been twice as high with fixed land stock (the use of capital per unit area would have increased considerably at the same rate as the labour factor). Mechanisation is thus not related to the increase in available land but much more to the relative increase in price of labour. In

addition westward expansion resulted in a decrease in yields after 1890. In short, as was mentioned above for the Great Depression, abundance of land had only a marginal effect on the growth of *per capita* income. Furthermore the ratios of regional growth rates remained the same. As for wages, according to Williamson, the early closing of the frontier caused a 7% decrease for farm workers and only 2% for workers in the East in 1910. Here again Williamson was led to reject the dominant views of his time and especially that of Turner [1986]. The abundance of available land did not markedly increase wages in industry after 1870. It could not have the effects attributed to it with regard to the use of a capitalist development mode or social relations. Finally, the gradual closing of the frontier favoured industrialisation. Williamson's counterfactual analysis made it therefore possible to appraise the effects of technical progress and gains in agricultural productivity. Had the total productivity of factors been nil the agricultural working population would have peaked in 1885 instead of 1895. Williamson therefore concluded that the gains in agricultural productivity delayed industrialisation and that the negative effects outweighed the positive effects of the closing of the frontier. This delay had no effect on a possible decrease in *per capita* income (quite the opposite). An increase in *per capita* income is therefore not synonymous with industrialisation.

## 6. Transport and the role of the railways

In contrast with Fogel [1964] who uses a partial equilibrium model and, by the way, did not explore the full complexity of interconnected effects, Williamson considered that the social savings generated by the railways were significant. The main effects originated from the improvement of interregional communication. Simultaneously the decreased transportation costs had side-effects on the industrialisation of regions like the Midwest that depended on goods manufactured in the East. The decrease in the price of domestic transport would also have slowed migration flows to the West as it contributed to the lowering of the relative advantage of real wages in Western regions in comparison with those in the East. Going on from this Williamson considered therefore that urbanisation and industrialisation might have been slowed by the development of railways. This idea radically questioned the thesis of Walt Rostow [1960] in favour of the railways as a key component of the growth of industrialisation, of the colonisation of land and of urbanisation.

From a purely macroeconomic perspective Williamson nonetheless agreed that the railways had a net positive effect on economic growth. Without the railways, (Fogel's counterfactual hypothesis), Williamson estimated that the American GNP would have been 21% smaller from 1871 to 1890 than it actually was. This point should nonetheless not be taken too seriously as the

Williamson model cannot truly address the geographic expansion of the market through the spread of the railway system in the country. Furthermore constant yield production functions do not allow him to take into account the increasing economies of scale possibly implied by market expansion. The difficulty of Williamson's exercise lay above all in the construction or calibration of a price series for transport as the prices published were often very different from the actual prices. Once again, instead of hypothesising a world without railways as Fogel did, Williamson probably asked a more relevant question: what is the effect of the convergence of regional prices on American development? His simulation is based on the assumption that transport prices remained constant at the level reached in 1870, thus assuming a world without progress in the railway sector. With transport prices remaining constant *per capita* GNP would have increased much less from 1868/1878 to 1884/1893 (at 1.81% per year) than it actually did (2.49%). The capital accumulation rate would have been only 5% per year rather than 6%. Social savings would have reached the impressive figure of 21% in 1890. Although this does not fully prove that the railways were an essential determinant of American economic development, the informed reader must agree with Williamson that the remarkable performance of the American economy during the 'Gilded Age' was also related to the improvements in interregional and intraregional transport between the Civil War and 1890. Williamson's simulations provide us with another very surprising result: the share of agriculture in total GNP would have been markedly lower with a constant price of transport. So, logically, it follows that the decrease in transportation costs had a powerful negative effect on industrialisation and slowed down the shift of the working population away from agriculture to the secondary sector. Industrialisation is therefore not always necessarily synonymous with economic growth.

At the end Williamson considered that the railways slowed industrialisation but nevertheless enhanced economic growth. He considered that this finding (that lower industrialisation and the maintenance of an important agricultural sector does not necessarily translate into slower growth) should make all economists cautious about the use of indexes of employment distribution by sector as a measure of economic development.

## 7. Exports

Were exports (mainly of grains) an engine of economic growth in the US or, in contrast, did they cause only the variation of the growth rate? This question asked by Williamson leads to a more fundamental question on the effect of world market conditions on economic growth in the United States. For farmers the situation was clearly one of worsening terms of trade (especially in the

early 1870's) between the prices of imported industrially produced items and the prices of exported agricultural foodstuffs at Eastern ports.

In order to understand the multiple effects Williamson uses a counterfactual by assuming that terms of trade remained constant throughout the period at their 1870 level (the most favourable for agricultural products). The worsening of world market conditions at the expense of American grain exports caused an array of dynamic effects. First, the increase of capital stock was less important than if the terms of trade had remained constant – but the depreciating impact of the Great Depression would have taken place anyway. The roots of this depression did not lie in world market conditions. Nevertheless *per capita* GNP would have increased a bit more quickly. The possibility that economic instability was partly due to external influences cannot be completely ruled out. The situation of farmers would have been better with constant terms of trade as rents, yields and land prices would have risen faster. External conditions hampered their growth. Farm mechanisation would have benefited from the relative fall in capital goods prices and real wages would have increased resulting from the acceleration of the accumulation rate of capital. In 1910, the agricultural working population would have been 34% larger than it actually was and it would have continued to grow steadily instead of reaching a peak in 1895. With constant terms of trade the country would have not been industrialised before 1895 as the proportion of the working population employed in industry would have remained the same. Industrialisation during the 25 years following 1870 cannot therefore be considered as an (national American) endogenous phenomenon. Williamson considered that it owed much to world market conditions, especially as the elasticity of foreign demand for grain in relation to its price was considerable.

## 8. Immigration

Williamson also revealed a complex mechanism in the evolution of mass-migration by making a clear distinction between the pull factors exerted by America and the push factors in the departure countries. The migration process is considered to be linked mainly to domestic economic and demographic conditions in the European countries of departure. The empty land in the West would therefore once again be just a myth in explaining American economic growth.

We know that traditional economic history tends to give a very considerable weight to mass-migration in the rapid economic growth of 19<sup>th</sup> century United States. To measure this weight Williamson used the counterfactual hypothesis that there were no push factors in Europe from 1870 to 1910, leaving just the pull forces originating from the endogenous developments of the US economy. Under these conditions the foreign born population would have

been 19% larger than the one observed but real wages in industry in the East would have remained the same. The attractiveness of the frontier territories – the famous mirage of land for the taking – does not seem to have played any role at all with regard to immigration as the overall increase in the foreign-born population remains identical whether the land stock is constant or increases by 4% per year. Likewise the assumption that the demographic pattern of the United States, with a characteristic fall in the natural rate of increase, truly affected immigration through an increase in real wages cannot be accepted. Williamson considered therefore that the conditions in Europe, treated as exogenous for America, played a much greater role than the frontier or domestic population conditions in the United States. It follows that the key elements to explain European immigration have to be found in the comparative levels of industrialisation and economic growth in the transatlantic economy. Williamson's model therefore enables the economic historian to properly gauge the effect of immigration which formed 26% of the total increase of the working population from 1870 to 1910. If America had closed the doors to immigration in 1870, as it did in 1924, industrialisation would have been slowed down even though *per capita* GNP would have increased slightly faster. We again find the non-complementarity between industrialisation and growth stressed in a preceding section.

## Conclusions

By applying a CGE methodology and calibration techniques to the important issue of American development between the Civil War and World War I, Williamson's pioneering approach was, in economic history, the first elaborated form of a neoclassical equilibrium model applied to history aiming at solving the complex problems implied by the interconnection and the integration of markets whilst identifying the influences exerted on these markets by exogenous factors. The message of Williamson's research is quite simple: to outline and initiate some of the new devices being employed today, at an international level, in cliometrics – the use of economic theory in general and model building in particular, the reliance upon quantification to buttress those models with historical data, the use of the historical discourse and the use of statistical theory and econometrics to combine models with data in a single consistent explanation. The cliometric models are powerful in part because of their internal consistency, in part because, combined with statistical and econometric techniques, they can assure consistency between available data (quantification) and the causal assertions embedded in the model, in part because they may facilitate the derivation of conclusions not intuitively obvious from the outset (counterfactual speculation).

Williamson's research could also be seen as being in line with Friedman's thinking, further investigated by the school of rational expectations (*equilibrium business cycles*). It was obviously Lucas [1976] who expressed the most severe attack against all current macro-economic models. Lucas criticised the lack of micro-economic foundations in Keynesian based models. Economic variables resulted from individual choices conditioned by expectations on the future state of the economy. It was essential to take into account the way people constructed these expectations otherwise it would be impossible to devise any economic policy.

As early as 1973 Lucas devised a model based on imperfect information and rational expectations. The Walrasian paradigm was abandoned; agents were supposed to have an imperfect vision of prices, after all. The starting point of the analysis rested on a big scale economy and decentralised markets. Hence agents took part in micro-markets and had only very imperfect information on the other markets and the price system. Their perception of random shocks could lead them to false interpretations of the price signals and to undertaking actions which would disturb the whole economic system.

Lucas' supply curve defined the product as a decreasing function of the price surprise, i.e. the unexpected rise of the general price level; it was Lucas' criticism of the Phillips curve. As a consequence non-anticipated inflation could lead an individual to believe that the relative price of his output had increased and therefore be tempted to increase production. The result was a money-based cycle around a long term growth path which characterised an economy at equilibrium. The money supply caused shocks to the system, leading to cyclical fluctuations, equilibrium cycles, where the propagation of the cycle can only originate in the agents' optimizing behaviour in reaction to shock. It was not enough to introduce shocks in the Keynesian system to describe fluctuations: economic movements had to be deducted from the agents' responses to these external impulses. In fact Lucas' analysis showed how an equilibrium model with decentralised markets and imperfect information could account for the effects of nominal shocks and real shocks on output. As for demand shocks, they had an impact on output only if they were not anticipated.

Although it was favourably received Lucas' theory proved incapable of explaining the persistence of output gaps (see for instance Modigliani's criticism). Lucas later introduced the costs of capital formation to account for this phenomenon of persistence. But Lucas' position was not sufficiently convincing for the supporters of the theory of cycles at equilibrium, who called on other types of shocks to reproduce persistence in the observed fluctuations, namely technological shocks.

The supporters of this new line of thought, called *Real Business Cycle* (RBC), defined it as the result of an optimal adaptation of the economy to equilibrium. They revived the neo-classical explanation of economic fluctuations. Following Lucas' initial path, they aimed at integrating the concept of cycle into

the Walrasian paradigm to express economic phenomena in terms of equilibrium. However they reversed Friedman's and Lucas' monetarist analyses as they tried and showed that most fluctuations could be explained without introducing a monetary disturbance. These fluctuations were supposed to result from optimal reactions of economic agents to shocks of the total factor productivity (the overall productivity of factors). As these shocks were exogenous and random the evolution of the cycle had to be of stochastic nature (quasi-cyclical). The economic cycle was, in that case, an oscillatory motion of the natural output and not the output gap to the trend since the factors which caused it were also at the source of growth. Hence the usual dichotomy between the sources of growth and the sources of fluctuations was not justified as the latter corresponded to the very variations of the natural growth rate, to the variations of productivity.

The first Real Business Cycle (RBC) models were developed by Kydland and Prescott [1982] and Long and Plosser [1983], in a complete break with the traditional view of the cycle. Firstly, this approach considers that monetary policies have no bearing in the cycle dynamic; it also insists on the exogenous character of technological shocks. Secondly, it considers that cycles are not an expression of disequilibrium; on the contrary they are the gauges that measure an economy's best adjustment to equilibrium. Lastly, it prevents cycles from being seen as variations of a same trend rather than changes to the trend. In fact it is an integrated vision of the growth of cycles.

The RBC founding authors' project is, in fact, clear to the keen observer; it is to understand the cyclical evolution of the economy. To do this the model associates a constant scale-of-economies production function with an equation of capital accumulation, added to various constraints. In fact the RBC theorists construct a model of calculable equilibrium. They introduce chance shocks so that the product resulting from the model's equilibrium fluctuates as does GDP in real terms.

Concordance between the simulated fluctuations and those of the real economic variables is tested. Where it is found the model is considered to represent the economic dynamic with a strong argument: that the cycles are thoroughly exogenous, with productivity variations coming from climate or international events. However contestable the RBC approach, it is today a major macroeconomic research project. Its advantage obviously lies in its methodology: quantitative simulations to simplify economic representation; however the underlying economic message in this approach remains relatively weak.

With the new century cliometrics develops an increasingly quantitative projection of economics into history for a better understanding (*wie es eigentlich gewesen ist*) and explanation of past events, of path dependence, but also for a more successful conception of present day or even future economic growth!

## References

- Fogel, R., 1964, *Railroads and American Economic Growth. Essays in Econometric History*, The Johns Hopkins Press, Baltimore.
- Friedman, M., 1953, *Essays in Positive Economics*, The University of Chicago Press, Chicago.
- Gerschenkron, A., 1962, *Economic Backwardness in Historical Perspective: A Book of Essays*, Harvard University Press, Harvard.
- Gerschenkron, A., 1968, *Continuity in History, and Other Essays*, Harvard University Press, Harvard.
- James, J., 1984, *The Use of General Equilibrium Analysis in Economic History*, Explorations in Economic History, vol. 21: 231–253.
- Kelley, A., Williamson, J., 1971, *Writing History Backwards: Meiji Japan Revisited*, Journal of Economic History, vol. 31: 729–776.
- Kelley, A., Williamson, J., 1973, *Modelling Economic Development and General Equilibrium Histories*, American Economic Review, vol. 63: 450–458.
- Kelley, A., Williamson, J., 1974, *Lessons from Japanese Development. An Analytical Economic History*, The University of Chicago Press, Chicago.
- Kydland, F., Prescott, E., 1982, *Time to Build and Aggregate Fluctuations*, Econometrica, vol. 50: 1345–1370.
- Lewis, A., 1954, *Economic Development with Unlimited Supplies of Labor*, Manchester School of Economic and Social Studies, vol. 22: 139–191.
- Lindert, P., Williamson, J., 1980, *American Inequality. A Macroeconomic History*, Academic Press, New York.
- Long, J., Plosser, C., 1983, *Real Business Cycle*, Journal of Political Economy, vol. 91: 39–69.
- Lucas, R., 1976, *Econometric Policy Evaluation: A Critique*, in: Brunner, K., Meltzer, A. (ed.), *The Phillips Curve and Labor Markets*, Carnegie-Rochester Conference Series on Public Policy 1, North Holland, Amsterdam: 19–46.
- Robinson, J., 1956, *The Accumulation of Capital*, Macmillan, London.
- Rostow, W., 1960, *The Stages of Economic Growth. A Non-Communist Manifesto*, 3rd ed. (1990), Cambridge University Press, Cambridge.
- Temin, P., 1971, *General-Equilibrium Models in Economic History*, Journal of Economic History, vol. 31: 58–75.
- Turner, M., 1986, *English Open Fields and Enclosures: Retardation or Productivity Improvements*, Journal of Economic History, vol. 46: 669–692.
- Williamson, J., 1974, *Late Nineteenth-Century American Development: A General Equilibrium History*, Cambridge University Press, London.

## Aims and Scope

Economics and Business Review is the successor to the Poznań University of Economics Review which was published by the Poznań University of Economics Press in 2001–2014. The Economics and Business Review is a quarterly journal focusing on theoretical and applied research work in the fields of economics, management and finance. The Review welcomes the submission of articles for publication dealing with micro, mezzo and macro issues. All texts are double-blind assessed by independent reviewers prior to acceptance.

## Notes for Contributors

1. Articles submitted for publication in the Economics and Business Review should contain original, unpublished work not submitted for publication elsewhere.
2. Manuscripts intended for publication should be written in English and edited in Word and sent to: [review@ue.poznan.pl](mailto:review@ue.poznan.pl). Authors should upload two versions of their manuscript. One should be a complete text, while in the second all document information identifying the author(s) should be removed from files to allow them to be sent to anonymous referees.
3. The manuscripts are to be typewritten in 12' font in A4 paper format and be left-aligned. Pages should be numbered.
4. The papers submitted should have an abstract of not more than 100 words, keywords and the Journal of Economic Literature classification code.
5. Acknowledgements and references to grants, affiliation, postal and e-mail addresses, etc. should appear as a separate footnote to the author's name<sup>a,b,etc</sup> and should not be included in the main list of footnotes.
6. Footnotes should be listed consecutively throughout the text in Arabic numerals. Cross-references should refer to particular section numbers: e.g.: See Section 1.4.
7. Quoted texts of more than 40 words should be separated from the main body by a four-spaced indentation of the margin as a block.
8. Mathematical notations should meet the following guidelines:
  - symbols representing variables should be italicized,
  - avoid symbols above letters and use acceptable alternatives ( $Y^*$ ) where possible,
  - where mathematical formulae are set out and numbered these numbers should be placed against the right margin as... (1),
  - before submitting the final manuscript, check the layout of all mathematical formulae carefully (including alignments, centring length of fraction lines and type, size and closure of brackets, etc.),
  - where it would assist referees authors should provide supplementary mathematical notes on the derivation of equations.
9. References in the text should be indicated by the author's name, date of publication and the page number where appropriate, e.g. Acemoglu and Robinson [2012], Hicks [1965a, 1965b]. References should be listed at the end of the article in the style of the following examples:  
Acemoglu, D., Robinson, J.A., 2012, *Why Nations Fail. The Origins of Power, Prosperity and Poverty*, Profile Books, London.  
Kalecki, M., 1943, *Political Aspects of Full Employment*, The Political Quarterly, vol. XIV, no. 4: 322–331.  
Simon, H.A., 1976, *From Substantive to Procedural Rationality*, in: Latsis, S.J. (ed.), *Method and Appraisal in Economics*, Cambridge University Press, Cambridge: 15–30.
10. Copyrights will be established in the name of the E&BR publisher, namely the Poznań University of Economics Press.

More information and advice on the suitability and formats of manuscripts can be obtained from:

### **Economics and Business Review**

al. Niepodległości 10

61-875 Poznań

Poland

e-mail: [review@ue.poznan.pl](mailto:review@ue.poznan.pl)

[www.puereview.ue.poznan.pl](http://www.puereview.ue.poznan.pl)

## Subscription

Economics and Business Review (E&BR) is published quarterly and is the successor to the Poznań University of Economics Review. The E&BR is published by the Poznań University of Economics Press.

E&BR is listed in ProQuest, EBSCO, and BazEkon.

Subscription rates for the print version of the E&BR: institutions: 1 year – €50.00; individuals: 1 year – €25.00. Single copies: institutions – €15.00; individuals – €10.00. The E&BR on-line edition is free of charge.

Correspondence with regard to subscriptions should be addressed to: Księgarnia Uniwersytetu Ekonomicznego w Poznaniu, ul. Powstańców Wielkopolskich 16, 61-895 Poznań, Poland, fax: +48 61 8543147; e-mail: [info@ksiegarnia-ue.pl](mailto:info@ksiegarnia-ue.pl).

Payments for subscriptions or single copies should be made in Euros to Księgarnia Uniwersytetu Ekonomicznego w Poznaniu by bank transfer to account No.: 96 1090 1476 0000 0000 4703 1245.