

# Sir Christopher Pissarides and the 2010 Nobel Memorial Prize in Economic Sciences<sup>1</sup>

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The award of the 2010 Nobel Memorial Prize in Economic Sciences<sup>2</sup> to Christopher A. Pissarides, LSE, jointly with Peter A. Diamond, MIT, and Dale T. Mortensen, Northwestern University, honored the third individual of Greek ancestry, after the the poets George Seferis and Odysseus Elytis, who were awarded the Nobel Prize for Literature in 1963 and 1979, respectively. The Swedish Academy of Sciences rewarded patient research that extended over decades by preeminent academic economists noted for their insightful contributions, who together taught economists how to change the way they thought about unemployment, a hot topic of current economic and social interest. Their work is summarized under the title “Markets with Search Frictions.” A central element of this part of economics is search theory, a theory of decisive importance in understanding many economic phenomena, but especially unemployment.

Economists agree that the contributions of these three eminent scholars to our understanding and dealing with unemployment, in particular, is the most significant such contribution since 1936, when *The General Theory* of John Maynard Keynes appeared. In the remainder of this essay, I seek to explain the evolution of Pissarides’ concrete contribution to the body of knowledge that was honored by the 2010 Nobel Memorial Prize in Economic Sciences, and to modern macroeconomics, emphasizing more specifically its interaction with labor economics.

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<sup>1</sup>English version of text that appeared in the *Athens Review of Books*, July–August 2012.

<sup>2</sup>Formally, it is known as The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. The laureates’ Nobel Lectures are available online at

[http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2010/](http://www.nobelprize.org/nobel_prizes/economics/laureates/2010/), and are published in more complete form by the *American Economic Review*, June, 101, 4, 2011, 1045-1072, 1073-1091, 1092-1105.

This piece deliberately introduces some biographical facts in order to compose a more detailed picture of Pissarides' evolution as a thinker and of his concrete contribution to this important area of economics. My long-standing and close friendship with him along with a fair amount of shared scholarly interests offer me the advantage of personal knowledge of key moments in the development of his research ideas. In that connection, also particularly interesting are biographical details offered by the contributions of Charles Bean, Olivier Blanchard and Dale Mortensen to this selection of essays. In numerous conversations over more than thirty years I was an "eye-witness" to key leaps of his economic thinking. Regarding Christopher Pissarides as a teacher, ample testimony is given by doctoral students at the LSE, who offered their own views for the purpose of the special issue of the *Athens Review of Books*, July–August 2012.

As all other essays in this collection clarify, the new element in search theory is a formal analysis of markets where transactions involve frictions, and the classical supply and demand mechanism that explains price adjustment is absent. Individuals looking for work, housing, or a spouse, and firms looking for suitable staff recognize that they need to search, a process that requires money, effort and patience until the right match is found. Such a match might not materialize, however, and therefore it is not surprising that some workers will remain unemployed, while job openings will remain unfilled and apartments will stay vacant. There exist circumstances when periods of high unemployment appear to be unavoidable because important economic magnitudes cannot be changed instantaneously as a result of "frictions;" at the same time, some unemployment is socially desirable, as when certain activities are rendered obsolete by technological advancement or competitive imports, forcing workers to seek employment in surviving plants and industries. Thus, low demand for auto workers in Torino is not inconsistent with vacant positions in Greek-owned ships. Similarly, firms must be able to fire employees so as to be able to hire when they need to.

The innovations of Diamond, Mortensen and Pissarides comprise a brilliant model, which has come to be known as the DMP model.<sup>3</sup> In order to fully understand them one must

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<sup>3</sup>The summary of the DMP model, published by the Swedish Academy of Sciences is very accessible and may be read by the lay public: [http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2010/popular-](http://www.nobelprize.org/nobel_prizes/economics/laureates/2010/popular-)

delve into complicated and often abstract mathematical tools and ingenious use of statistical techniques. In return, these new ideas improve our analytical capabilities in understanding labor markets and allowing more effective analyses of different policy tools. Many such measures aim at moderating risky outcomes, especially those hitting economically weaker population groups. As an example, unemployment assistance must protect the unemployed against income losses while giving them incentives to continue search.

What is the key innovation that makes the DMP approach so revolutionary? It is that unemployment is a central characteristic and inevitable outcome of the process of the large flows that define the modern labor market. These flows reflect the aggregation of all factors contributing to fluctuations in employment, that is hiring minus firing and voluntary departures, such as quits and retirements. As I explain shortly below, this accomplishment is made possible in a methodologically rigorous and analytically elegant fashion that has changed the way we think about unemployment and is ultimately consistent with the facts. Additional details are provided by the other essays in this collection.

The market, as an institution and concept, is ancient, and its role in the allocation of productive factors, especially of labor, has been met with criticism, of a moral and philosophical nature, such as by marxism. The notion of buying and selling labor is repugnant. Yet, the notion of transactions in services is quite acceptable. After all, the terms under which services are provided by dentists, plumbers, stone masons, teachers and drivers affect us all, both as consumers and producers of services. Similarly, from an employer's viewpoint, hiring a suitable labor force also depends critically on the terms under which services are to be provided, some of which cannot always be precisely predetermined. Labor contracts are profoundly different from futures contracts for commodities, because they need to leave unspecified various parameters that are subject to human choice, being behavioral features of workers and firms.

For both sides of the labor market, salaries or wages are just one dimension of the

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economicsciences2010.pdf. The scientific version is naturally more technical, but still accessible to all professional economists and many other scientists: [http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2010/advanced-economicsciences2010.pdf](http://www.nobelprize.org/nobel_prizes/economics/laureates/2010/advanced-economicsciences2010.pdf)

implicit contracts that determine employment. Others are the institutions of a particular society that determine what is socially acceptable. If employment is determined by the firms' profit motive, employers recognize that it might not be profitable to hire and fire their workers on a daily (or hourly) basis. From this perspective, which was notably established by Costas Azariadis, another distinguished Greek economist, in his "Implicit Contracts and Underemployment Equilibria," *Journal of Political Economy*, 1975, 83:1183–1202, it is easy to see that being fired is undesirable because it deprives one of options, and the resulting unemployment is involuntary (a term due to Keynes), and yet it is not the only way to terminate an employment spell. If you want to look for another job and quit your current one to search more effectively, you would prefer to find an attractive job as soon as possible, but that might take time. The associated unemployment is often referred to as voluntary, but is it really? Incorporation of these ideas in economic theory in a rigorous manner requires new concepts about what equilibrates the labor market, namely not just through pay but through the utility offered by labor contracts. Both Costas Azariadis and Christopher Pissarides contributed to the establishment of this concept.

The research by Peter Diamond, Dale Mortensen and Christopher Pissarides, but especially by Pissarides, disentangled the Gordian knot associated with the distinction of unemployment into voluntary and involuntary, showing it to be futile. Their methodology allows the ingenious use of the more substantive (and preexisting) distinction of cyclical (conjunctural), that varies with the general fluctuation of national income, and structural, that is associated with the mismatch between skills demanded by jobs and those possessed by workers looking for jobs. Firms create jobs when it is profitable to do so, but they too are subject to frictions. To the stock of the unemployed, there corresponds the stock of all positions that firms wish to fill. Workers and firms are searching for matches, but their wishes cannot be fulfilled instantaneously. Employment starts only after both parties have arrived at mutually accepted terms. The labor market adjusts through flows.

Key elements of Pissarides' contributions are evident already in his doctoral disserta-

tion, which was published in 1976.<sup>4</sup> This work was influenced by the *Phelps Volume*,<sup>5</sup> a set of essays that has had an extraordinary influence on the development of modern macroeconomics and is directly involved in four other economics Nobel prizes, namely to Robert Lucas, Edmund Phelps, Dale Mortensen and Edward Prescott. The article that established his contribution to the Nobel work, “Short-Run Equilibrium Dynamics of Unemployment, Vacancies and Real Wages,” *American Economic Review* 75:676–690, explains in an especially elegant manner the coexistence of unemployment and unfilled jobs (vacancies), while those magnitudes evolve as the economy adjusts towards its short run equilibrium. Such an adjustment is subject to continuous shocks, while the plot of those quantities form the Beveridge Curve, a downward-sloping curve in an unemployment versus vacancies space, which is an empirical finding that goes back to Lord Beveridge’s *Full Employment in a Free Society*, published in 1944. I recall vividly Chris’ enthusiasm during a conversation in 1984, while he was visiting Princeton University and was invited to present that research in a research seminar at Boston University. He emphasized that his theory also predicted that the economy follows counter clockwise loops along the Beveridge curve, each of which records a particular cycle of contraction and expansion.

This seminal article was preceded by twenty earlier ones in high quality outlets. Among them, one may discern concrete steps that led Chris to his 1985 synthesis, namely his “Job Matchings with State Employment Agencies and Random Search,” *Economic Journal* 1979, 89:818–833. This article develops critical simplifications of the job matching problem, such as modeling the rate of contacts between unemployed workers and prospective employers as a function of the total number of unemployed people and unfilled jobs and ignoring wage setting. I recall Chris’ enthusiasm, back when he and I met for the first time during his visit to Brown University in 1979, about modeling innovations of that paper, which as we now know opened the way to the more mature treatment in the 1985 *American Economic Review* piece.

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<sup>4</sup>Pissarides, Christopher A. *Labour Market Adjustment: Microeconomic Foundations of Short-Run Neoclassical and Keynesian Dynamics*, Cambridge University Press, 1976.

<sup>5</sup>Phelps, Edmund S. et al. *Microeconomic Foundations of Employment and Inflation Theory*. New York, W. W. Norton, 1970.

Notably, the total number of unemployed people and unfilled jobs aggregate decisions by individuals and firms. Equilibria are defined as situations where such decisions are mutually consistent, while individuals and firms follow optimal policies, in the sense that they are doing their best, given market conditions and the information available to them. There are also important details where Chris took bold innovative steps. For example, when an unemployed worker and a prospective employer meet, they are in an one-to-one situation, and thus the conditions for competitive market-based determination of the wage rate, which presumes many agents, are obviously not satisfied. Chris assumed that the wage rate is determined by Nash bargaining, which in turn reflects a modicum of rigidity that is reminiscent of Keynesian wage rigidity.

Chris' brilliant 1985 piece leads to predictions that are largely consistent with actual observations on the unemployment and vacancy rates. Proceeding with a sequence of econometric studies, first of which is "Unemployment and Vacancies in Britain," *Economic Policy*, 3, 1986:499-540, Chris demonstrated the usefulness of his theory using British data. Olivier Blanchard and Peter Diamond followed by using US data. Newly collected microeconomic data at the firm level, which were pioneered by Steven Davis and John Haltiwanger and became available in the late 1980s, led to further confirmation of the importance of the Pissarides model. We are now in the 1990s, Pissarides' reputation is growing, the collaboration with Dale Mortensen has started and soon opens up new avenues, as they themselves explain in the official Nobel biographies<sup>6</sup> (and Mortensen in his contribution to this collection as well). This joint research will establish both of them at the pinnacle of this area of macroeconomics. I recall how modest Chris was during a presentation of the early part of that research during a seminar at the LSE in 1994.

As the Nobel award citation explains, the central innovation of the DMP model is the masterful analysis of markets with frictions within a micro-founded general equilibrium model. As a result, aggregate outcomes are based on the behaviors of individual agents, thus limiting the need (and scope) of arbitrary assumptions that people often make. The models

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<sup>6</sup>[http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2010/mortensen.html](http://www.nobelprize.org/nobel_prizes/economics/laureates/2010/mortensen.html);  
[http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2010/pissarides.html](http://www.nobelprize.org/nobel_prizes/economics/laureates/2010/pissarides.html)

naturally lead to empirical tests that have given largely reliable results.

Like all scientific theories, the DMP model, too, has received criticism, from which it emerged stronger. The Mortensen–Pissarides collaboration was decisive in providing further and deeper applications and generalizations. Research by others that it motivated allowed it to be embedded in the more conventional general equilibrium framework, thus demonstrating that its applicability in a broader range of phenomena was not the result of special assumptions. It has thus become an essential tool of modern macroeconomics, having provided a standard way to deal with frictions when they are important.

The research of Peter Diamond, Dale Mortensen and Christopher Pissarides has inspired thousands of other articles and thus has profoundly changed modern macroeconomics. I know how prescient Chris’ intuition was about the future of what became the DMP model, well before it became an established tool. I recall, for example, the conversation that he and I had, when Peter Diamond was starting his Fisher–Schultz Lecture, in the 1981 European Meeting of the Econometric society in Amsterdam. “Fascinating stuff,” he said, “money and matching together, I too have thought of similar things.” He and I agreed that modeling unemployment and vacancies together was a key step, which would take a lot of time before they are expressed in the form of flexible models. Indeed, it took a lot of time, but Chris chose to go in depth on subjects that were more empirically motivated and closer to labor market applications than other scholars, a conscious choice that paid off handsomely in ways that complemented Diamond’s and Mortensen’s own brilliant innovations.

### **An Overview of the Scholarly Work of Christopher Pissarides**

Pissarides’ research accomplishments in several different areas including labor markets with frictions, other macroeconomic issues and labor markets more generally, starts in 1972, with the appearance, while he was still a graduate student, of two articles, one of which was published by the *Journal of Political Economy* in 1974. By the time of the announcement of the Nobel award in October 2010, Chris’ scientific work consists of books, editing of collective works, articles in refereed journals and other publications. Regarding books, of which there were two, the first of which was based on his doctoral dissertation at the LSE and is discussed above in footnote 4, and the second, titled *Equilibrium Unemployment Theory*,

whose first edition by Blackwell's appeared in 1990 and its second by MIT Press in 2000. This second book, in effect a monograph, is a masterful synthesis of how the viewpoint of markets with frictions, originating in Chris' own research and with ample acknowledgement and integration of the contributions of others, has improved our understanding of short-run macroeconomic dynamics. Regarding collective works, Chris has edited three different such works in collaboration with others. Regarding journal articles, Chris has published sixty four different articles in refereed journals (including all of the most prestigious ones), twenty six pieces in collective works and conference proceedings, sixteen invited book reviews and twenty invited lectures.

The recognition of Pissarides' work, by the time of the Nobel award, is documented as follows: 2082 entries in the *Social Science Citation Index — Web of Science* concerning fifty six different works, with 37.8 citations per article and an H index of 24; scholar.google.com contained 5640 entries, of which 3578 were to the 2000 edition of his *Equilibrium Unemployment Theory*.

Chris' rich scientific research extends beyond the research that was honored by the Nobel. The work is broadly in the area of applied theory and focuses on key issues of economic policy, especially employment and macroeconomic policy, and was developed within the research program of LSE's Centre for Labour Economics. That center focused on burning issues of economic policy in the 1970s and 1980s, like stagflation and the high unemployment that characterized many European economies and the British economy, in particular, during that time. A large part of Chris' work grew out of collaboration with students and colleagues at the center and is quite broad, extending from matters pertaining to education policy, numerous questions associated with migration and intersectoral labor flows, matters of political economy of fiscal policy, pension policy, gender issues in labor markets in many European countries, and many other issues of macroeconomic interest, typically linked to labor markets. More recently, he has directed his attention to international economics, growth theory and the economics of structural change. He has been invited by numerous universities, governmental and non-governmental institutions to give lectures and provide advice, including notably, the World Bank, the OECD, and several EU institutions.



As Chris revealed during his Nobel Foundation interview,<sup>7</sup> which was jointly conducted with his co-laureates Peter Diamond and Dale Mortensen, his involvement in hot issues of public policy, especially related to unemployment, through the activities of the Centre for Labour Economics (and later on, its successor the Centre for Economic Performance) at the LSE was a crucial source of motivation that enabled him to go deeply into matters of unemployment. During that same interview, he revealed that he had been deeply influenced by a close reading of John Hicks' *Theory of Wages*, which first appeared in 1932 and emphasized the role of frictions and institutions in the functioning of labor markets, beyond the analysis made possible by the competitive model. He was also deeply influenced by Keynes' *General Theory* as well as Axel Leijonhufvud's interpretation of it,<sup>8</sup> which Chris characterized as incomplete.

### **Brief Biography of Christopher Pissarides**

Christopher Pissarides was born in Nicosia on February 20, 1948, the second child of Anthony and Eudokia Pissarides, he graduated from the Pankypriou School in 1965, and then went straight to England to do his A levels. His schooling years in Cyprus coincided with the Cypriot independence struggle, which was a trying period for all but especially the young, whose education was disrupted. As he himself eloquently describes in his official Nobel Biography<sup>9</sup>, his parents' devotion to educational values and his own scholarly inclinations prevented the "Troubles" from overly interfering with his education. Extensive coverage by the Cypriot press, following the Nobel announcement, offer lovely pictures from his childhood years, based on interviews with childhood friends and family members.<sup>10</sup>

Christopher Pissarides<sup>11</sup> was promoted to professor of economics at the LSE in 1986,

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<sup>7</sup><http://www.nobelprize.org/mediaplayer/index.php?id=1411>

<sup>8</sup>Leijonhufvud, Axel. *Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory*. New York: Oxford University Press, 1968. Chris' original research on the logic of Keynesian aggregate demand was part of his doctoral dissertation, published in 1976. See footnote 4.

<sup>9</sup>[http://www.nobelprize.org/nobel\\_prizes/economics/laureates/2010/pissarides.html](http://www.nobelprize.org/nobel_prizes/economics/laureates/2010/pissarides.html)

<sup>10</sup>For a small selection, see, *Simerini*, October 13, 2010, especially, by his mother, "My Son, Fifi," <http://www.sigmalive.com/simerini/news/local/315003>; "Modest, Perseverant, and Hardworking," <http://www.sigmalive.com/simerini/news/local/315041>.

<sup>11</sup>This paragraph is the only part of the present document which is updated relative to the original Greek

served as Head of his department during 1996-1999, was appointed to the Sosnow Chair in Economics in 2006, to School Professor in 2012 and to Regius Professor of Economics at the London School of Economics in 2013, the highest academic honor that may be bestowed in the United Kingdom. This is the first time the Regius title is given to an economist.<sup>12</sup> In addition, he is Professor of European Studies at the University of Cyprus, and since the Spring of 2013 Chairman of the Council of National Economy of the Republic of Cyprus. He is also the Helmut and Anna Pao Sohmen Professor-at-Large of the Hong Kong University of Science and Technology. Chris was honored with the Aristeion Prize of the Republic of Cyprus for his contribution to Arts, Humanities, and Sciences in 2008, and he was awarded the Grand Cross of Archbishop Makarios III in 2011, the highest honor that may be bestowed by the Republic of Cyprus. He was elected Fellow of the Econometric Society in 1997, of the British Academy in 2002, of the European Economic Association in 2005, of the Society of Labor Economics in 2008, Foreign Fellow of the Academy of Athens, Fellow of the Academia Europaea, and Honorary Foreign Member of the American Economic Association in 2011 (a distinction honoring only forty one individuals worldwide as of that time). He shared with Dale Mortensen the IZA Prize in Labor Economics in 2009, the first time it was given to a non-American. He served as president of the European Economic Association in 2011. He was honored in June 2013 with a knighthood as Knight Bachelor for his contributions to Economics.

I would be remiss if I were to neglect his commitment and generosity with his time to Cyprus. As a member of the Monetary Policy Committee of the Central Bank of Cyprus for seven years, he contributed to Cyprus' successful process of accession into the European Union in 2004 and the Monetary Union in 2008. As a member of the Interim Governing Board of the University of Cyprus, he contributed immensely to the creation of that university, an institution of higher learning of admirable quality, that is in principle accessible to both the Greek- and Turkish-speaking communities in Cyprus.

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version.

<sup>12</sup><http://www.lse.ac.uk/newsAndMedia/aroundLSE/archives/2013/RegiusProfessorship.aspx>  
<http://www.lse.ac.uk/economics/newsAndEvents/news.aspx>

Costas Azariadis and I writing in *Kathimerini*, October 17, 2010,<sup>13</sup> emphasized that during a time when the traditional values of Greek society and culture are under strain, in Greece (and since then in Cyprus, as well), this great scholar and wonderful person was guided in his life by those same values – devotion to his family, tireless commitment to science, to education and the young — offers a marvelous model to all, but especially to the young.

Chris is married to Rachel Ngai (with whom has has also collaborated in research), and their son, Nicolas, was born in January 2012. He has two older children, of whom he is very proud: Antony, 26, an economist and finance specialist who studied at Oxford and the LSE and has had a successful career in the City, and Miranda, 24, a talented artist who finished the Slade School of Art of the University of London in 2012 and has already had several successful art exhibitions of her own. About Miranda, he told *Vima* during an interview,<sup>14</sup> “One day, the world will be talking about the painter Miranda Pissarides. You will see!”

Generous with his time to his students and his friends and colleagues, Chris has contributed like few other scholars to the training of the younger generations. As a teacher of thousands of students during his academic career, and as an adviser to numerous governmental and international institutions he has applied his science for the benefit of humanity. The lesson for young scholars is eloquently expressed by Olivier Blanchard in his contribution to this collection of essays: “When you think you are right, don’t listen too much to others.”

After George Seferis and Odysseus Elytis, Sir Christopher Pissarides, now in the Pantheon of Science, makes us Greek scientists doubly proud.

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<sup>13</sup>“Our Christopher Pissarides.”

[http://news.kathimerini.gr/4dcgi/\\_w\\_articles\\_economyagor\\_100067\\_17/10/2010\\_419001](http://news.kathimerini.gr/4dcgi/_w_articles_economyagor_100067_17/10/2010_419001).

<sup>14</sup>October 31, 2010, <http://www.tovima.gr/politics/article/?aid=363953>.