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Edith penrose's influence on economic analysis, strategic management and political economy

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ABSTRACT

Edith Penrose is best known for her classic book *The Theory of the Growth of the Firm*, originally published in 1959, but she also made major contributions in other fields, including patents, the oil industry, and development economics. This special double issue of the *International Review of Applied Economics* publishes recent research from a range of leading economists and management scholars from across the world, either explicitly analysing Penrose's contribution, or else analysing topics from firms' collaborations with universities through to the practice and consequences of share buy-backs, which demonstrate that a Penrosian perspective helps to illuminate the reality of such processes.

KEYWORDS

Edith Penrose; growth of the firm; patents; innovation; development economics

JEL CLASSIFICATION

A11; B13; B50; D22; L25; O12

1. Introduction

In this article we consider Penrose's influence on economics, management, political economy, development and methodology as a backdrop to the papers in this special issue. We start by considering in [Section 2](#) her ground-breaking work on firm growth and her methodological approach before considering her work on large international firms, patents, development and political economy in [Section 3](#). [Section 4](#) then provides an overview of the papers in this double special issue, and [Section 5](#) concludes.

2. *The Theory of the Growth of the Firm*: applied economics, theory and methodology

Penrose's, (1959/2009) book *The Theory of the Growth of the Firm* provided a new approach to analysing business behaviour and performance based on an explicit consideration of the internal organisation of the firm and its managerial capabilities. Penrose was keen to understand the limits to firm growth and the interaction between internal resources and market opportunities. Her study explored how firms' resources are managed, acquired, transformed, created and re-created to shape business performance and competitive advantage. Penrose's work led to a new theory of firm growth and to the resource-based view of the firm. Both have been highly influential in the fields of

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economics and management, the first as an alternative to the neoclassical theory of the firm and the second as a foundation for modern theories of strategic management.

What is pertinent for this special issue of the *International Review of Applied Economics* is that Penrose (1959) regarded theory and applied analysis as necessary and complementary elements in advancing our understanding of firm behaviour and performance, bridging the divide that had come to exist between the theory of the firm and empirical research:

In the literature of economics, the firm of the 'real world' has long lived in that uncomfortable no-man's-land between the high and dry plateaus of 'pure theory' and the tangled forests of 'empiric-realistic' research. (Penrose, 1959, p. x)

Penrose looked at the firm from the inside out, having gained deep insight into the operations of the Hercules Powder Company (HPC) as a college-business fellow attached to HPC while working on a research project on *Advancement of Financial Knowledge* led by Fritz Machlup (A. Penrose 2018, 120) at John Hopkins University. Penrose chose to work on the theory stream of the project and used her case study of the HPC to inform the development of theory. The case study of HPC was initially to be included in her book *The Theory of the Growth of the Firm* but was later extracted and published separately (as E. Penrose 1960). Still, her combination of applied and theoretical work was built into *The Theory of the Growth of the Firm* from the start.

Her approach was to redefine the firm to enable the development of a new theory of firm growth. In a reflective lecture, 'The Theory of the Growth of the Firm Twenty-Five Years After' given at Uppsala University in 1984, Penrose argued:

Few economists thought it necessary to enquire what happened inside the firm – indeed their firm had no 'insides', so to speak. I do not say they were wrong, only that, being theoretical economists they saw reality differently from other people. The question I wanted to answer was whether there was something inherent in the very nature of any firm that necessarily limited its rate of growth. Clearly a definition of a firm that did have 'insides' was required. (Penrose, 1984, cited in A. Penrose 2018, 253)

Penrose conceptualised the firm as a collection of productive resources or capabilities. Technology, knowledge and human capital are key, but it is the firm's managerial capabilities and their capacity to combine and renew resources that is central to enabling the firm to innovate and grow. Penrose analysed growth as a *process* that emanates from the ability of managers to fully utilise and enhance the productive potential of the internal resources currently at their disposal, and to integrate new resources,

Physically describable resources are purchased in the market for their known services; but as soon as they become part of a firm the range of services they are capable of yielding starts to change. The services that resources will yield depend on the capacities of the men using them, but the development of the capacities of men is shaped partly by the resources men deal with. The two together create the special productive opportunity of a particular firm. The full potentialities for growth provided by this reciprocal change will not necessarily be realized by any given firm, but in so far as they are realized, growth will take place which cannot be satisfactorily explained with reference to changes in the *environment* of the firm. (E. Penrose 1959/2009, 69–70)

According to Penrose, firms differ significantly in terms of the resources they possess and the way they are configured and utilised. Hence, for Penrose, the neoclassical

approach of modelling the behaviour of a single representative firm and then replicating that to explain the behaviour of many identical firms in an industry or an economy, was wholly inadequate. Innovation, knowledge, especially firm-specific knowledge, and learning are unique to firms and shape their growth. Managerial resources and capacity are particularly important, as Penrose saw managerial capabilities as the main limit to firm growth.

Managerial capabilities can be expanded by developing both existing resources, via enhancing knowledge, learning, and experience, and by employing new staff. However, Penrose argues that new hires, especially new managerial staff, will not immediately be at their most productive. It takes time for new managers and employees to gain the firm-specific knowledge and experience that is necessary for their capabilities to be fully utilised in combination with the firm's existing technological knowledge and human capital. It is the process of combination and renewal of resources that generates growth.

In many ways Penrose's analysis of managerial capabilities and the innovative firm was ahead of the curve and her theory of the innovative enterprise is more relevant today than it was when first published in 1959. The increasing importance of knowledge, technology and human capital, moves management of the firm's capabilities, particularly its intangible knowledge and human capital, centre stage. Indeed, Penrose's theory of the growth of the firm may help explain the UK 'productivity puzzle' that has emerged since the financial crisis. As noted by the UK Office for National Statistics, labour productivity,

has demonstrated weak growth since the 2008 economic downturn, while in the previous 10 years it was close to historical long-term average growth rates of 2.0% per year. This sustained period of minimal labour productivity growth has been labelled the UK's 'productivity puzzle', and it is arguably the defining economic question of our age. (Office for National Statistics 2019, 3)

The productivity puzzle is captured by the fact that while UK output and employment have recovered since the financial crisis of 2007–2008 and the consequent global recession of 2009, productivity growth, as measured by output per employee, has remained flat, and below levels observed before the financial crisis. Penrosian theory points to managerial capabilities, in particular the ability of management to utilise and enhance the resources within the firm (knowledge, financial resources for investment in capital, research and development and human capital) and managers' capacity to combine their existing resources with new resources, such as newly recruited employees. Relaxation in labour protection laws may play a role as it has become easier to shed staff with valuable firm-specific knowledge. While new recruits have been hired in the recovery phase after the great recession, it takes time for managers to utilise the full potential of newly employed resources (capital, labour and knowledge), which by virtue of their 'newness' are less productive than existing internal resources. Penrose's approach also explains why firms may choose not to shed staff during a downturn in order to retain firm-specific, institutional knowledge that is valuable to the firm and its future growth.

2.1. Penrose's methodology

As discussed above, the methodology underlying *The Theory of the Growth of the Firm* was grounded in insights gained from a detailed case study to inform a new theoretical

approach. In this section we consider three aspects of Penrose's methodological approach that are relevant to the subject matter and content of the *International Review of Applied Economics*: (i) pluralism and multi-disciplinarity, (ii) rationality and biological analogies; and (iii) complexity.

Penrose was open to pluralism in method and multi-disciplinarity, seeing neoclassical economics as unduly constrained by a desire to convey 'scientific' rigour yet unable to embrace the complexity required by acknowledging firm diversity:

Because of its complexity and diversity, a firm can be approached with many different types of analysis—sociological, organizational, engineering, or economic—and from whatever point of view within each type of analysis seems appropriate to the problem in hand. Within economics itself there are several different approaches to the study of the firm, and one type—the so-called 'theory of the firm'—continues to hold the field in spite of vigorous attacks; of all the approaches it is probably the most often misunderstood and misapplied by both its defenders and its attackers. (E. Penrose 1959/2009, 9)

At the time she was writing, economics was dominated by the neoclassical theory of the firm. Applied industrial economics and business studies, which did draw on a wider set of disciplines – in her 1984 lecture, Penrose approvingly cites sociology, institutional theory, behavioural psychology and business analytics – met with some resistance from within mainstream economic departments. Penrose recognised the methodological limitations of the dominant neoclassical theory and its methodological approach, but chose not to tackle that issue head on:

Educated laymen as well as economists studying the vagaries of actual business behaviour often show an understandable impatience with the 'theory of the firm', for they see in it little that reflects the facts of life as they understand them. It is therefore worth a little trouble, perhaps, to discuss at the very beginning the nature of the 'firm' in the 'theory of the firm', to indicate why it provides an unsuitable framework for a theory of the growth of firms, but at the same time to make clear that we shall not be involved in any quarrel with the theory of the 'firm' as part of the theory of price and production, so long as it cultivates its own garden and we cultivate ours. Much confusion can arise from the careless assumption that when the term 'firm' is used in different contexts it always means the same thing. (E. Penrose 1959/2009, 2)

For Penrose, the term 'firm' was used to mean an actual firm; for mainstream economics, it meant something else. One explanation of why Penrose chose to sidestep, rather than engage in debate around the static, neoclassical theory of the firm is that it would no doubt have detracted from the development of her own theory, thereby contributing to a continued lack of pluralism. To use an expression of Keynes, it would have made the 'struggle to escape' existing modes of thought more difficult.¹

For Penrose, the neoclassical theory of the firm was designed as a theory regarding prices and quantities ('their garden'), but was of limited use for other purposes. In particular, it did not address the more interesting and challenging question of how firms grow over time and why they grow at different rates. Distinguishing the different objectives of neoclassical theory and her own approach paved the way for Penrose to develop her own approach and theory without becoming engulfed in unnecessary arguments over the mainstream theory.

The second and third aspects of Penrose's methodological approach concern the way she handled rationality and complexity. For Penrose, the idea of a representative firm was

a nonsense. Firms are not identical: they differ in important ways in terms of their resources, and over the way in which those resources are configured and utilised. Innovation, knowledge – especially firm-specific knowledge – and learning are part of this approach, as is path dependency. Moreover, managers do not necessarily share a single common motivational goal (e.g. profit maximisation or growth maximisation); rather, their objectives and decision-making behaviours will differ from one manager to another, and this therefore needs to be explicitly considered:

In addition to the traditional approaches, there have been sporadic attempts to develop theories of the growth of firms using biological analogies and treating firms as organisms whose processes of growth are essentially the same as those of the living organisms of the natural world. There are many difficulties with this type of analysis, one of the most serious being the fact that human motivation and conscious human decision have no place in the process of growth. This alone, I believe, is sufficient ground for rejecting such theories of the growth of firms. All the evidence we have indicates that the growth of a firm is connected with attempts of a particular group of human beings to do something; nothing is gained and much is lost if this fact is not explicitly recognized. (Penrose, 1959, p. 2)

Penrose thus rejected biological analogies in *The Theory of the Growth of the Firm* as they preclude consideration of varieties of human motivation.

The purpose of analogical reasoning in which we consciously and systematically apply the explanation of one series of events to another very different series of events is to help us better to understand the nature of the latter, which presumably is less well understood than the former. If the analogy has really helpful explanatory value, there must be some reason for believing that the two series of events have enough in common for the explanation of one, *mutatis mutandis*, to provide at least a partial explanation of the other. (Penrose, 1959, pp. 806–807)

Biological analogies applied to the growth processes of firms do not share sufficient common series of events to be helpful. Penrose wanted to incorporate complexity and diversity in firm behaviour and resources – something that is now being tackled using agent-based modelling and computer-based simulations.

3. Patents, large international firms, development, and policy

While Penrose is best known for her book *The Theory of the Growth of the Firm*, she also made major contributions to the analysis of patents, large international firms, and economic development, as well as having played a major role in shaping economic policy. As Michael Best and Elizabeth Garnsey have argued:

Edith did not pursue the growth of the firm research agenda or lecture on related subjects. In fact she made little subsequent reference to her theory of the growth of the firm until writing and speaking invitations to do so poured in during the last years of her life. At LSE and SOAS her concerns focused on economic development. (Best and Garnsey, 1999, p. 199)

Prior to her book *The Theory of the Growth of the Firm*, Penrose worked on innovation and patents. In 1950 she co-authored a paper on patents with Fritz Machlup that provides a systematic account of the patent controversy in the nineteenth century – a controversy between those who were in favour of abolishing the patent system and those who wanted to preserve and/or extend the use of patents. The article is outstanding in its careful and

precise marshalling of economic arguments on both sides of the debate, but what is more remarkable is that the paper shows that these economic arguments were set against a wider backdrop of social, legal and political arguments which allowed Machlup and Penrose to understand that the question of the patent controversy was not solved by academic arguments but by political arguments, ‘propaganda’ (to use their term) and legislation – the academic controversy died down once the political controversy was resolved, although we note that it has resurfaced in the era of COVID-19 and climate change. In other words, Penrose’s analysis was very much in the tradition of political economy, and she recognised that economic problems do not exist outside of wider social and political controversies, influenced by a legal and institutional setting. In a later article (E. Penrose 1973) she addressed the questions of patents and economic development.

Her analysis both of large international firms (E. Penrose 1968) and of the oil industry was also conducted very much within a political economy approach, covering the impact of foreign investment by large international corporations in the oil industry on the economies of the low-income countries as well as issues related to competition, monopoly power, dumping, and unfair competition. She made a number of recommendations for policies regarding large international firms, designed to address the uneven spread of any potential benefits from foreign investment.

4. Overview of papers

The importance of Penrose’s work, as indicated above, was the spur for crafting and launching an annual series of lectures at SOAS University of London on Penrose and her contributions to the academy as well as to the worlds of policy and practice. All this is described in the first article below, by Kofi Adjepong-Boateng and Christine Oughton on ‘Professor Edith Penrose and the Penrose Lectures’. One of the lecturers who was not able to publish in this Special Issue was Professor Rita McGrath of Columbia Business School, and Adjepong-Boateng and Oughton therefore include a brief synopsis of the key points McGrath made in her Penrose lectures, on financialisation and the innovative capacity of firms, as well as on the implications of digitisation for firm growth.

The first substantive article in this Special Issue collection is by Professor Bronwyn Hall, one of the Penrose Lecturers, on ‘Patents, Innovation, and Development’ in which she surveys recent research on the role of patents in encouraging innovation and growth in developing economies, beginning with a brief history of international patent systems and facts about the current use of patents around the world. Hall discusses research on the implications of patents for international technology transfer and domestic innovation, and reports on her own work (with co-authors) on regional patent systems, and the impact of patents on firm performance, on pharmaceutical patenting, and on domestic innovation. Hall concludes that patents may be relatively unimportant in development, even for middle income countries.

Next, another of the Penrose Lecturers, Professor Mariana Mazzucato discusses ‘Collective Value Creation: a new approach to stakeholder value’, arguing that ‘The corporate community has rediscovered an old idea: stakeholder value’, and that the concept’s history is rooted in the literature on varieties of capitalism. Within that scholarship, Mazzucato argues, the concept of stakeholder value has served to delineate institutional and relational differences between capitalist systems and forms of corporate

governance, and is currently being used to argue for the redirection of capitalism to deliver on key goals related to inclusion and sustainability. In her paper, Mazzucato argues that the concept of stakeholder value – and the related endeavours to change capitalism – will remain weak unless it goes to the centre of how we create value. Moralistic exhortations to business leaders, Mazzucato argues, will not be enough to bring about a true stakeholder form of capitalism, for which we would need to have a stronger base in both theory and practice regarding how to restructure finance, production, and public-private partnerships in new ways that recognise the state's market-shaping role, and that would support an equitable distribution of value across stakeholders.

In 'Is the most unproductive firm the foundation of the most efficient economy? Penrosian learning confronts the neoclassical fallacy', William Lazonick – another of the Penrose Lecturers – argues that Edith Penrose's *The Theory of the Growth of the Firm* provides an intellectual foundation for a theory of innovative enterprise, which is essential to any attempt to explain productivity growth, employment opportunity, and income distribution. Penrose's theory of the firm is also, Lazonick argues, an antidote to the 'absurdity' that has been taught by economists to millions of college students for over seven decades that 'the most unproductive firm is the foundation of the most efficient economy'. The dissemination of this 'neoclassical fallacy' to a mass audience began, Lazonick goes on to argue, with Paul A. Samuelson's textbook, *Economics: An Introductory Analysis*, first published in 1948, following which this 'neoclassical fallacy' has persisted through eighteen revisions of Samuelson's *Economics* and in its countless 'economics principles' clones. Lazonick challenges the intellectual hegemony of neoclassical economics by exposing the illogic of its foundational assumptions about how a modern economy operates and performs, arguing that to get beyond the neoclassical fallacy, economists must be trained in a 'historical transformation' methodology that integrates history and theory, in which theory serves as both a distillation of what we have learned from the study of history and a guide to what we need to learn about reality as the 'present as history' unfolds.

In 'The story of flight', John Kay uses the history of commercial aviation – from the earliest attempts at flight to the modern civil aircraft – to illustrate the central role of the evolutionary progress of collective knowledge in what is loosely described as technical progress. No individual knows how to build an airbus – ten thousand people working together do. Kay's emphasis on collective intelligence as a means of solving problems builds on Penrose's insight that the firm is best viewed as a collection of capabilities, to develop a template for the modern corporation that recognises the development of 'capital as a service' and the importance of 'hollow corporations', franchises, and platforms in the twenty-first century economy.

Penrose's work on international oil firms is discussed by Damian Tobin in 'Captive markets and climate change: revisiting Edith Penrose's analysis of the international oil firms in the era of climate change', in which he argues that Edith Penrose's analysis of the investments of the international oil companies stemmed from her interest in the economics of the large international firm and its implications for developing economies. Tobin argues that Penrose's approach highlights the endogenous factors shaping the growth of the large firm, and cautions against viewing it as a neutral technocracy where investment automatically responds to price incentives. Drawing on Penrose's

concept of a captive market in oil products, this research develops Penrose's ideas around motive, profit, self-financing and the international firm to explain why the institutional environment still favours investment in fossil fuels. Tobin reports on country and firm level data on investment and production in downstream petrochemical refining which show a connection between the captive market and the strategies of the large oil firms in expanding refining capacity as a strategic hedge against regulatory policies to limit climate change. This locks society into a carbon intensive infrastructure, reduces the motivation for investment, and adds to global CO₂ emissions. Tobin's findings indicate, he argues, that the oil companies need to take greater risks on green investments with their retained earnings, and that governments need to direct this investment towards socially useful purposes using coordinated regulatory pressure.

In 'Complementarities between product and process innovation and their effects on employment: a firm-level analysis of manufacturing firms in Colombia', Juana Paola Bustamante Izquierdo considers the effects of innovation on employment growth at the firm level using a framework that draws on Penrose's insight's regarding the importance of the availability of managerial and planning resources at the firm level.

In 'Penrose's theory of the firm in an era of globalisation', Chia Huay Lau and Jonathan Michie analyse the consulting engineering sector that in Edith Penrose's day operated almost exclusively domestically, and consider why firms in this sector are now increasingly operating internationally, and whether the factors identified – by Penrose and others – as causing firms to grow are also relevant to the expansion of these firms overseas. Their findings support Penrose's resource-based theory that unique strategic resources that are inimitable and non-substitutable can provide firms with competitive advantages, with internationalisation providing consulting engineering firms with opportunities to obtain different kinds of expertise and resources from other regions. With a larger pool of expertise to draw from, firms can develop their firm-specific strategic assets and technical advantages along the lines that Penrose suggested.

In 'Necessary and sufficient conditions for the absorptive capacity of firms that interact with universities', Júlio Eduardo Rohenkohl, Andreia Cunha da Rosa, Janaina Ruffoni and Orlando Martinelli consider firms that interact with universities in their search for external knowledge, aiming to identify the necessary and sufficient conditions for these firms to reach certain levels of absorptive capacity. They argue that their results are consistent with Penrose's theory of the firm, both as regards the importance to the firm of sourcing knowledge resources externally and then absorbing these resources successfully within the firm, and also as regards the diversity of firms when it comes to the managerial capabilities to deliver all this successfully.

In 'Profit rate dynamics in US manufacturing', Michael Joffe argues that Edith Penrose took agency, managerial capabilities, heterogeneity and open-endedness as characteristic of the economy, while neoclassical theory, in contrast, envisages convergence to a standard rate of return, invoking inter-industry capital flows and diminishing returns as the main mechanism. Joffe analyses data on US manufacturing for 1987 to 2015, finding that the features of the distribution confirm Penrose's view, while neoclassical theory fared poorly: the data did not support 'a standard rate of return', and there were no plausible macro shocks that could have produced the observed dispersion. Penrose's conception of heterogeneous managerial capacity, on the other hand, refers to a concept

of economic power distinct from market power, corresponding to differential *ex ante* strength; differential profit outcomes represent *ex post* strength.

Irene Roele and Sonja Ruehl ask ‘What is Edith Penrose’s legacy for the theory of the firm?’, and consider the continuing usefulness of Penrose’s perspective for strategic management, from the point of view of the practitioner, the management educator and to the development of the academic field of strategic management. Roele and Ruehl draw on methods originating with Penrose’s pioneering case study methodology by framing illustrative ‘vignettes’ or case examples for analysis and discussion, including that of Tesco, which draws on extensive participant observation as well as theory, concluding that:

The business world has changed and will change in specific ways which Edith Penrose could not have foreseen but, nevertheless, her approach continues to be extended and remains applicable.

Of continuing relevance are themes which Penrose explicitly foresees: that enterprises making better use of unused resources will be ‘vast’, that knowledge generation and organisational learning are key to firm survival and expansion and that ideas, imagination and willingness to experiment on the part of managements are continually required.

In ‘Regulating stock buybacks: the \$6.3 trillion question’ Lenore Palladino and William Lazonick argue that ‘shareholder primacy’ as a theory of corporate governance is embedded in the neoclassical model of the firm, which lacks a theory of how corporations innovate over time as set out by Penrose. This is a problem because corporate resource allocation decisions shape business investment, income distribution, and productivity growth, with ‘stock buybacks’—when a corporation repurchases its own shares on the open market—manipulating stock prices and enriching senior corporate executives and hedge fund managers. Palladino and Lazonick argue that the growing distribution of corporate funds to share-sellers via stock buybacks is a source of productivity fragility in the US economy, which requires policies to curb the excessive use of corporate funds on stock buybacks.

Finally, in ‘The Life and Times of Edith Penrose’, Michie reports on and discusses the biography of Edith Penrose, written by her daughter-in-law Angela Penrose. The book – and review article – cover many of the points made by the various authors referred to above regarding Penrose’s contributions to theory and practice, and also much else besides regarding her personal life, which is equally impressive, from opposing fascism before the Second World War, then contributing greatly to the war effort in Britain, including by advising on how food rationing might best be organised, through to her courageous opposition to McCarthyism in the U.S., which led to her and her husband abandoning America and moving to Britain.

Note

1. Keynes wrote in the Preface to his *General Theory of Employment, Interest and Money* that ‘The composition of this book has been for the author a long struggle of escape, and so must the reading of it be for most readers if the author’s assault upon them is to be successful – a struggle of escape from habitual modes of thought

and expression. The ideas which are here expressed so laboriously are extremely simple and should be obvious. The difficulty lies, not in the new ideas, but in escaping from the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds' (Keynes, 1936, p. viii).

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References

- Best, M., and E. Garnsey. 1999. "Edith Penrose, 1914–1996." *The Economic Journal* 109 (453): 187–201. <https://doi.org/10.1111/1468-0297.00408>.
- Keynes, J. M. 1936. *The General Theory of Employment, Interest and Money*. London: Macmillan.
- Office for National Statistics. 2019. "Labour Productivity, UK: October to December 2019." *Statistical Bulletin* 1–13. <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/bulletins/labourproductivity/januarytomarch2019>.
- Penrose, A. 2018. *No Ordinary Women: The Life of Edith Penrose*. Oxford: Oxford University Press.
- Penrose, E. 1959/2009. *The Theory of the Growth of the Firm*. Oxford: Oxford University Press.
- Penrose, E. 1960. "The Growth of the Firm—A Case Study: The Hercules Powder Company." *Business History Review* 34 (1): 1–23. <https://doi.org/10.2307/3111776>.
- Penrose, E. 1968. *The Large International Firm in Developing Countries: The International Petroleum Industry*. London: George Allen and Unwin Ltd.
- Penrose, E. 1973. "International Patenting and Less-Developed Countries." *The Economic Journal* 83 (331): 768–786. <https://doi.org/10.2307/2230670>.