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- Abramovitz, M. (1956), 'Resources and output trends in the US since 1870', *American Economic Review*, **46**, 5–23.
- Abramovitz, M. (1989), *Thinking about Growth*, Cambridge: Cambridge University Press.
- Abramovsky, L. and Griffith, R. (2006), 'Outsourcing and offshoring of business services: How important is ICT?', *Journal of the European Economic Association*, **4** (2–3), 594–601.
- Acemoglu, D., Aghion, P., Bursztyn, L. and Hémous, D. (2012), 'The environment and directed technical change', *American Economic Review*, **102**, 131–66.
- Adams, J.D. (1990), 'Fundamental stocks of knowledge and productivity growth', *Journal of Political Economy*, **98**, 673–702.
- Adams, J. (2006), 'Learning internal research and spillovers', *Economics of Innovation and New Technology*, **15**, 5–36.
- Aghion, P., Dechezlepretre, A., Hémous, D., Martin, R. and Van Reenen, J. (2016), 'Carbon taxes, path dependency, and directed technical change: Evidence from the auto industry', *Journal of Political Economy*, **124**, 52–104.
- Aghion, P., David, P.A. and Foray, D. (2009), 'Science, technology and innovation for economic growth: Linking policy research and practice in "STIG Systems"', *Research Policy*, **38**, 681–93.
- Aghion, P. and Howitt, P. (1992), 'A model of growth through creative destruction', *Econometrica*, **60**, 323–51.
- Aghion, P. and Howitt, P. (1998), *Endogenous Growth Theory*, Cambridge, MA: MIT Press.
- Ahn, S. (2000), 'Firm dynamics and productivity growth: A review of micro evidence from OECD countries', OECD Economic Department WP 297.
- Alchian, A. (1950), 'Uncertainty evolution and economic theory', *Journal of Political Economy*, **58**, 211–21.
- Amiti, M. and Wei, S. (2009), 'Service offshoring and productivity: Evidence from the US', *World Economy*, **32** (2), 203–20.
- Anderson, P.W., Arrow, K.J. and Pines, D. (eds) (1988), *The Economy as an Evolving Complex System*, Reading, MA: Addison-Wesley.

- Angrist, J.D. and Pischke, J.S. (2008), *Mostly Harmless Econometrics*, Princeton, NJ: Princeton University Press.
- Antonelli, C. (1997), 'The economics of path-dependence in industrial organization', *International Journal of Industrial Organization*, **15**, 643–75.
- Antonelli, C. (1999), *The Microdynamics of Technological Change*, London: Routledge.
- Antonelli, C. (2008), *Localized Technological Change: Towards the Economics of Complexity*, London: Routledge.
- Antonelli, C. (2009), 'The economics of innovation: From the classical legacies to the economics of complexity', *Economics of Innovation and New Technology*, **18**, 611–46.
- Antonelli, C. (ed.) (2011), *Handbook on the Economic Complexity of Technological Change*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp. 1–62.
- Antonelli, C. (2013a), 'Knowledge governance, pecuniary knowledge externalities and total factor productivity growth', *Economic Development Quarterly*, **27**, 62–70.
- Antonelli, C. (2013b), 'Compulsory licensing: The foundations of an institutional innovation', *WIPO Journal*, **4**, 157–74.
- Antonelli, C. (2015a), 'Innovation as a creative response: A reappraisal of the Schumpeterian legacy', *History of Economic Ideas*, **23**, 99–118.
- Antonelli, C. (2015b), 'The dynamics of knowledge governance', in C. Antonelli and A. Link (eds), *Handbook on the Economics of Knowledge*, London: Routledge, pp. 232–62.
- Antonelli, C. (2017a), 'Endogenous innovation: The creative response', *Economics of Innovation and New Technology*, **26** (8), 689–718.
- Antonelli, C. (2017b), *Endogenous Innovation: The Economics of an Emergent System Property*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.
- Antonelli, C. and Colombelli, A. (2015a), 'External and internal knowledge in the knowledge generation function', *Industry and Innovation*, **22**, 273–98.
- Antonelli, C. and Colombelli, A. (2015b), 'The knowledge cost function', *International Journal of Production Economics*, **168**, 290–302.
- Antonelli, C. and David, P.A. (eds) (2016), *The Economics of Knowledge and Knowledge Driven Economy*, London: Routledge.
- Antonelli, C. and Fassio, C. (2016), 'The role of external knowledge(s) in the introduction of product and process innovations', *R&D Management*, **46**, 979–91.
- Antonelli, C. and Ferraris, G. (2011), 'Innovation as an emerging system property: An agent based model', *Journal of Artificial Societies and Social Simulation*, **14** (2), DOI: 10.18564/jasss.1741.

- Antonelli, C. and Ferraris, G. (2017a), 'The Marshallian and Schumpeterian microfoundations of evolutionary complexity: An agent based simulation model', in A. Pyka and U. Cantner (eds), *Foundations of Economic Change: A Schumpeterian View on Behaviour, Interaction and Aggregate Outcomes*, Heidelberg, Berlin and New York: Springer, pp.461–500.
- Antonelli, C. and Ferraris, G. (2017b), 'The creative response and the endogenous dynamics of pecuniary knowledge externalities: An agent based simulation model', *Journal of Economic Interaction and Coordination*, <https://doi.org/10.1007/s11403-017-0194-3>.
- Antonelli, C. and Gehringer, A. (2016), 'The cost of knowledge and productivity dynamics: An empirical investigation on a panel of OECD countries', in A.N. Link and C. Antonelli (eds), *Strategic Alliances: Leveraging Economic Growth and Development*, London: Routledge, pp. 155–74.
- Antonelli, C. and Scellato, G. (2011), 'Out-of-equilibrium profit and innovation', *Economics of Innovation and New Technology*, **20** (5), 405–21.
- Antonelli, C. and Scellato, G. (2013), 'Complexity and innovation: Social interactions and firm level productivity growth', *Journal of Evolutionary Economics*, **23**, 77–96.
- Antonelli, C. and Scellato, G. (2015), 'Firms size and directed technical change', *Small Business Economics*, **44** (1), 207–18.
- Antonelli, C., Barbiellini Amidei, F. and Fassio, C. (2014), 'The mechanisms of knowledge governance: State owned corporations and Italian economic growth, 1950–1994', *Structural Change and Economic Dynamics*, **31**, 43–63.
- Antonelli, C., Crespi, F. and Scellato, G. (2012), 'Inside innovation persistence: New evidence from Italian micro-data', *Structural Change and Economic Dynamics*, **23** (4), 341–53.
- Antonelli, C., Crespi, F. and Scellato, G. (2013), 'Internal and external factors in innovation persistence', *Economics of Innovation and New Technology*, **22**, 256–80.
- Antonelli, C., Crespi, F. and Scellato, G. (2015), 'Productivity growth persistence: Firm strategies, size and system properties', *Small Business Economics*, **45** (1), 129–47.
- Antonelli, C., Krafft, J. and Quatraro, F. (2010), 'Recombinant knowledge and growth: The case of ICTs', *Structural Change and Economic Dynamics*, **21**, 50–69.
- Antonelli, C., Patrucco, P.P. and Quatraro, F. (2011), 'Productivity growth and pecuniary knowledge externalities: An empirical analysis of agglomeration economies in European regions', *Economic Geography*, **87**, 23–50.
- Aoki, M. and Yoshikawa, H. (2002), 'Demand saturation: Creation and

- economic growth', *Journal of Economic Behavior & Organization*, **48** (2), 127–54.
- Arora, A. and Gambardella, A. (1990), 'Complementarity and external linkages: The strategies of the large firms in biotechnology', *Journal of Industrial Economics*, **38**, 361–79.
- Arrighetti, A., Landini, F. and Lasagni, A. (2014), 'Intangible assets and firm heterogeneity: Evidence from Italy', *Research Policy*, **43**, 202–13.
- Arrow, K.J. (1962), 'Economic welfare and the allocation of resources for invention', in R.R. Nelson [NBER] (ed.), *The Rate and Direction of Inventive Activity: Economic and Social Factors*, Princeton, NJ: Princeton University Press, pp. 609–25.
- Arrow, K.J. (1969), 'Classificatory notes on the production and transmission of technical knowledge', *American Economic Review*, **59**, 29–35.
- Arthur, W.B. (1989), 'Positive feedbacks in the economy', *Scientific American*, **262**, 92–99.
- Arthur, W.B. (2007), 'Complexity and the economy', in H. Hanusch and A. Pyka (eds), *Elgar Companion to Neo-Schumpeterian Economics*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp. 1102–10.
- Arthur, W.B. (2009), *The Nature of Technology: What It Is and How It Evolves*, New York: Free Press.
- Arthur, W.B. (2014), *Complexity and the Economy*, New York: Oxford University Press.
- Arthur, W.B., Durlauf, S.N. and Lane, D.A. (eds) (1997), *The Economy As an Evolving Complex System II*, Reading, MA: Addison-Wesley.
- Atkinson, A.B. and Stiglitz, J.E. (1969), 'A new view of technological change', *Economic Journal*, **79**, 573–78.
- Axtell, R. (2005), 'The complexity of exchange', *Economic Journal*, **115**, F193–210.
- Baily, M.N., Hulten, C. and Campbell, D. (1992), 'Productivity dynamics in manufacturing plants', *Brooking Papers on Economic Activity: Microeconomics*, 187–249.
- Barabasi, L.A. (2010), *Bursts: The Hidden Pattern behind Everything We Do*, New York: Dutton.
- Bartelsman, E. and Dhrymes, P. (1998), 'Productivity dynamics: U.S. manufacturing plants 1972–1986', *Journal of Productivity Analysis*, **9** (1), 5–34.
- Bartelsman, E. and Doms, M. (2000), 'Understanding productivity: Lessons from longitudinal microdata', *Journal of Economic Literature*, **38** (3), 569–94.
- Bartelsman, E., Haltiwanger, J. and Scarpetta, S. (2009), 'Cross country differences in productivity: The role of allocation and selection', NBER Working Paper 15490.

- Bartelsman, E.J., Caballero, R.I. and Lyons, R.K. (1994), 'Customer-driven and supplier-driven externalities', *American Economic Review*, **84**, 1075–84.
- Beaudry, C. and Breschi, S. (2003), 'Are firms in clusters really more innovative?', *Economics of Innovation and New Technology*, **12**, 325–42.
- Belenzon, S. (2012), 'Cumulative innovation and market value: Evidence from patent citations', *Economic Journal*, **122**, 265–85.
- Ben Hassine, H., Boudier, F. and Mathieu, C. (2017), 'The two ways of FDI R&D spillovers: Evidence from the French manufacturing industry', *Applied Economics*, **49**, 2395–408.
- Bergek, A., Berggren, C., Magnusson, T. and Hobday, M. (2013), 'Technological discontinuities and the challenge for incumbent firms: Destruction, disruption or creative accumulation?', *Research Policy*, **42**, 1210–24.
- Bianchi, M., Campo dall'Orto, S., Frattini, F. and Vercesi, P. (2010), 'Enabling open innovation in small and medium-sized enterprises: How to find alternative applications for your technologies', *R&D Management*, **40**, 414–31.
- Biatour, B. and Dumont, M. (2011), 'The determinants of industry-level total factor productivity in Belgium', Federal Planning Bureau Working Paper, 7–11.
- Bischi, G.I., Dawid, H. and Kopel, M. (2003), 'Gaining the competitive edge using internal and external spillovers: A dynamic analysis', *Journal of Economic Dynamics and Control*, **27**, 2171–93.
- Bloom, N. and Van Reenen, J. (2007), 'Measuring and explaining management practices across firms and countries', *Quarterly Journal of Economics*, **122** (4), 1351–408.
- Bloom, N. and Van Reenen, J. (2010), 'Why do management practices differ across firms and countries?', *Journal of Economic Perspectives*, **24** (1), 203–24.
- Blume, L.E. and Durlauf, S.N. (2005), *The Economy As an Evolving Complex System III*, Oxford: Oxford University Press.
- Blume, L.E. and Durlauf, S.N. (eds) (2001), *Social Dynamics*, Cambridge, MA: MIT Press.
- Bontempi, M. and Mairesse, J. (2008), 'Intangible capital and productivity: An exploration on a panel of Italian manufacturing firms', NBER Working Papers 14108.
- Boschma, R.A. (2005), 'Proximity and innovation: A critical assessment', *Regional Studies*, **39**, 61–74.
- Bottazzi G., Secchi A. and Tamagni, F. (2008), 'Productivity, profitability and financial performance', *Industrial and Corporate Change*, **17**, 711–51.
- Bou, J.C. and Satorra, A. (2007), 'The persistence of abnormal returns at

- industry and firm levels: Evidence from Spain', *Strategic Management Journal*, **28**, 707–22.
- Breschi, S., Lissoni, F. and Malerba, F. (2003), 'Knowledge relatedness in firm technological diversification', *Research Policy*, **32**, 69–97.
- Bresnahan, T., Gambardella, A. and Saxenian, A. (2001), 'Old economy inputs for new economy outputs: Cluster formation in the new Silicon Valleys', *Industrial Corporate Change*, **10**, 835–60.
- Broedner, P., Kinkel, S. and Lay, G. (2009), 'Productivity effects of outsourcing: New evidence on the strategic importance of vertical integration decisions', *International Journal of Operations and Production Management*, **29** (2), 127–50.
- Brynjolfsson, E. and Hitt, L.M. (2000), 'Beyond computation: Information technology, organizational transformation and business performance', *Journal of Economic Perspectives*, **14** (4), 23–48.
- Caldari, K. (2015), 'Marshall and complexity: A necessary balance between process and order', *Cambridge Journal of Economics*, **39**, 1071–85.
- Camagni, R. and Capello, R. (2013), 'Regional innovation patterns and the EU regional policy reform: Toward smart innovation policies', *Growth and Change*, **44** (2), 355–89.
- Cameron, G., Proudman, J., and Redding, S. (2005), 'Technological convergence, R&D, trade and productivity growth', *European Economic Review*, **49**, 775–807.
- Cappelli, R., Czarnitzki, D. and Kornelius, K. (2014), 'Sources of spillovers for imitation and innovation', *Research Policy*, **43** (1), 115–20.
- Cassiman, B. and Veugelers, R. (2006), 'In search of complementarity in innovation strategy: Internal R&D and external knowledge acquisition', *Management Science*, **52**, 68–82.
- Cefis, E. (2003), 'Is there persistence in innovative activities?', *International Journal of Industrial Organization*, **21**, 489–515.
- Cefis, E. and Orsenigo, L. (2001), 'The persistence of innovative activities: A cross-countries and cross-sectors comparative analysis', *Research Policy*, **30**, 1139–58.
- Chandler, A.D. (1977), *The Visible Hand: The Managerial Revolution in American Business*, Cambridge, MA: Belknap Press of Harvard University Press.
- Chandler, A.D. (1990), *Scale and Scope: The Dynamics of Industrial Capitalism*, Cambridge, MA: Belknap Press of Harvard University Press.
- Chesbrough, H. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Boston, MA: Harvard Business School Press.
- Chesbrough, H. and Crowther, A.K. (2006), 'Beyond high tech: Early

- adopters of open innovation in other industries', *R&D Management*, **36** (3), 229–36.
- Chesbrough, H., Vanhaverbeke, W. and West, J. (2006), *Open Innovation: Researching a New Paradigm*, Oxford: Oxford University Press.
- Cincera, M., De Clerq, P. and Maghe, V. (2014), 'First typology of the national innovation systems in the 28 EU member states and in the 9 third countries covered by the ENIRI study', ENIRI Project, Brussels.
- Clausen, T., Pohjola, M., Sapprasert, K. and Verspagen B. (2012), 'Innovation strategies as a source of persistent innovation', *Industrial and Corporate Change*, **21**, 553–85.
- Coad, A. and Rao, R. (2006), 'Innovation and market value: A quantile regression analysis', *Economics Bulletin*, **15**, 1–10.
- Cohen, W.M. (2010), 'Fifty years of empirical studies of innovative activity and performance', in B.H. Hall and N. Rosenberg (eds), *Handbook of the Economics of Innovation*, Amsterdam: Elsevier, pp.131–213.
- Cohen, W.M. and Klepper, S. (1996), 'A reprise of size and R&D', *Economic Journal*, **106** (437), 25–51.
- Cohen, W.M. and Levinthal, D.A. (1989), 'Innovation and learning: The two faces of R&D', *Economic Journal*, **99**, 569–96.
- Cohen, W.M. and Levinthal, D.A. (1990), 'Absorptive capacity: A new perspective on learning and innovation', *Administrative Science Quarterly*, **35**, 128–52.
- Colombelli, A. and von Tunzelmann, G.N. (2011), 'The persistence of innovation and path dependence', in C. Antonelli (ed.), *Handbook on the Economic Complexity of Technological Change*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp.105–20.
- Colombelli, A., Foddi, M. and Paci, R. (2013a), 'Scientific regions', in R. Capello and C. Lenzi (eds), *Territorial Patterns of Innovation: An Inquiry on the Knowledge Economy in European Regions*, London: Routledge, pp.43–69.
- Colombelli, A., Krafft, J. and Quattraro, F. (2013b), 'Properties of knowledge base and firm survival: Evidence from a sample of French manufacturing firms', *Technological Forecasting and Social Change*, **80**, 1469–83.
- Colombelli, A., Krafft, J. and Quattraro, F. (2014), 'High growth firms and technological knowledge: Do gazelles follow exploration or exploitation strategies?', *Industrial and Corporate Change*, **23** (1), 261–91.
- Conte, A. and Vivarelli, M. (2005), 'One or many knowledge production functions? Mapping innovative activity using microdata', IZA DP No. 1878.
- Corrado, C., Hulten, C. and Sichel, D. (2009), 'Intangible capital and economic growth', *Review of Income and Wealth*, **55** (3), 661–85.

- Cowan, R. and Jonard, N. (2004), 'Network structure and the diffusion of knowledge', *Journal of Economic Dynamics and Control*, **28**, 1557–75.
- Cowan, R., Jonard, N. and Zimmermann, J.B. (2006), 'Evolving networks of inventors', *Journal of Evolutionary Economics*, **16**, 155–74.
- Cowan, R., Jonard, N. and Zimmermann, J.B. (2007), 'Bilateral collaboration and the emergence of networks', *Management Science*, **53**, 1051–67.
- Crépon, B., Duguet, E. and Mairesse, J. (1998), 'Research and development, innovation and productivity: An econometric analysis at the firm level', *Economics of Innovation and New Technology*, **7** (2), 115–58.
- Crespi, F. (2007), 'IT services and productivity in European industries', in H.L.M. Kox and L. Rubalcaba (eds), *Business Services in European Economic Growth*, London: Palgrave Macmillan.
- Crespi, F. and Scellato, G. (2014), 'Knowledge cumulability and path dependence in innovation persistence', in C. Antonelli and A. Link (eds), *The Routledge Handbook of the Economics of Knowledge*, London: Routledge, pp. 116–34.
- Cyert, R.M. and March, J.C. (1963), *A Behavioral Theory of the Firm*, Englewood Cliffs, NJ: Prentice-Hall.
- D'Ignazio, A. and Giovannetti, E. (2006), 'From exogenous to endogenous economic networks: Internet applications', *Journal of Economic Surveys*, **20**, 757–96.
- Da Silva, M.A. (2014), 'The knowledge multiplier', *Economics of Innovation and New Technology*, **23** (7), 652–88.
- Dahlander, L. and Gann, D.M. (2010), 'How open is innovation?', *Research Policy*, **39**, 699–709.
- Dasgupta, P. and Stiglitz, J. (1980), 'Industrial structure and the nature of innovative activity', *Economic Journal*, **90**, 266–93.
- David, P.A. (2007), 'Path dependence: A foundational concept for historical social science', *Cliometrica: Journal of Historical Economics and Econometric History*, **1**, 91–114.
- David, P.A. (1985), 'Clio and the economics of QWERTY', *American Economic Review*, **75**, 332–37.
- David, P.A. (1993), 'Knowledge property and the system dynamics of technological change', *Proceedings of the World Bank Annual Conference on Development Economics*, Washington, DC: World Bank.
- David, P.A. and Keely, L. (2003), 'The endogenous formation of scientific research coalitions', *Economics of Innovation and New Technology*, **12**, 93–116.
- Dawid, H. (2006), 'Agent-based models of innovation and technical change', in L. Tesfatsion and K.L. Judd (eds), *Handbook of Computational Economics, 2: Agent-Based Computational Economics*, Amsterdam: North-Holland, pp. 1235–72.



- Deschryvere M. (2014), 'R&D, firm growth and the role of innovation persistence: An analysis of Finnish SMEs and large firms', *Small Business Economics*, **43** (4), 767–85.
- Dobusch, L. and Schüller, E. (2013), 'Theorizing path dependence: A review of positive feedback mechanisms in technology markets, regional clusters, and organizations', *Industrial and Corporate Change*, **22**, 617–47.
- Di Stefano, G., Gambardella, A. and Verona, G. (2012), 'Technology push and demand pull perspectives in innovation studies: Current findings and future research directions', *Research Policy*, **41**, 1283–95.
- Dosi, G. (1982), 'Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change', *Research Policy*, **11**, 147–62.
- Dosi, G. (1997), 'Opportunities, incentives and the collective patterns of technological change', *Economic Journal*, **107** (444), 1530–47.
- Dosi, G., Marsili, O., Orsenigo, L. and Salvatore, R. (1995), 'Learning, market selection and the evolution of industrial structures', *Small Business Economics*, **7** (6), 411–36.
- Durlauf, S.N. (2005), 'Complexity and empirical economics', *Economic Journal*, **115**, 225–43.
- Ebersberger, B. and Herstad, S.J. (2011), 'Product innovation and the complementarities of external interfaces', *European Management Review*, **8**, 117–35.
- Engelsman, E.C. and van Raan, A.F.J. (1994), 'A patent-based cartography of technology', *Research Policy*, **23**, 1–26.
- Enkel, E., Gassman, O. and Chesbrough, H. (2009), 'Open R&D and open innovation: Exploring the phenomenon', *R&D Management*, **39**, 331–41.
- Erixon L. (2016), 'Is firm renewal stimulated by negative shocks? The status of negative driving forces in Schumpeterian and Darwinian economics', *Cambridge Journal of Economics*, **40**, 93–121.
- Faems, D., De Visser, M., Andries, P. and Van Looy, B. (2010), 'Technology alliance portfolios and financial performance: Value-enhancing and cost-increasing effects of open innovation', *Journal of Product Innovation Management*, **27**, 785–96.
- Faggio, G., Salvanes, K.G. and Van Reenen, J. (2009), 'The evolution of inequality in productivity and wages: Panel data evidence', LSE Working Paper.
- Fassio, C. (2015), 'How similar is innovation in German, Italian, and Spanish medium-technology sectors? Implications for the sectoral systems of innovation and distance-to-the-frontier perspectives', *Industry and Innovation*, **22** (2) 102–25.

- Feldman, M.A. (1999), 'The new economics of innovation, spillovers and agglomeration: A review of empirical studies', *Economics of Innovation and New Technology*, **8**, 5–25.
- Feldman, M.A. (2003), 'The locational dynamics of the US biotech industry: Knowledge externalities and the anchor hypothesis', *Industry and Innovation*, **10** (3), 311–29.
- Fleming, L. (2001), 'Recombinant uncertainty in technological search', *Management Science*, **47** (1), 117–32.
- Fleming, L. and Sorenson, O. (2001), 'Technology as a complex adaptive system: Evidence from patent data', *Research Policy*, **30**, 1019–39.
- Foster, J. (2005), 'From simplistic to complex systems in economics', *Cambridge Journal of Economics*, **29**, 873–92.
- Foster, J. and Metcalfe, J.S. (2012), 'Economic emergence: An evolutionary economic perspective', *Journal of Economic Behavior and Organization*, **82** (2), 420–32.
- Foster, L., Haltiwanger, J. and Krizan, C.J. (2001), 'Aggregate productivity growth: Lessons from microeconomic evidence', in E. Dean, M. Harper and C. Hulten (eds), *New Developments in Productivity Analysis*, Chicago: University of Chicago Press, pp. 303–72.
- Fritsch, M. (2002), 'Measuring the quality of regional innovation systems: A knowledge production function approach', *International Regional Science Review*, **25**, 86–101.
- Furman, J.L., Porter, M.E. and Stern, S. (2002), 'The determinants of national innovative capacity', *Research Policy*, **31**, 899–933.
- Galindo-Rueda, F. and Haskel, J. (2005), 'Skills, workforce characteristics and firm-level productivity in England', Report prepared for the Department of Trade and Industry, Department for Education and Skills, Office for National Statistics.
- Gay, C., Latham, W. and Le Bas, C. (2008), 'Collective knowledge, prolific inventors and the value of inventions: An empirical study of French, German and British patents in the US, 1975–1999', *Economics of Innovation and New Technology*, **17**, 5–22.
- Gehring, A. (2011a), 'Pecuniary knowledge externalities across European countries: Are there leading sectors?', *Industry and Innovation*, **18** (4), 415–36.
- Gehring, A. (2011b), 'Pecuniary knowledge externalities and innovation: Intersectoral linkages and their effects beyond technological spillovers', *Economics Innovation and New Technology*, **20**, 495–515.
- Gehring, A. (2012), 'A new sectoral taxonomy based on pecuniary knowledge externalities: Knowledge interactions in a vertically integrated system', *Economic System Research*, **24**, 35–55.
- Gehring, A. (2013), 'Financial liberalization, growth, productivity and

- capital accumulation: The case of European integration', *International Review of Economics and Finance*, **25**, 291–309.
- Gehring, A., Martínez-Zarzoso, I. and Nowak-Lehmann Danzinger, F. (2016a), 'TFP estimation and productivity drivers in the European Union', CEPR Discussion Paper 189.
- Gehring, A., Martínez-Zarzoso, I. and Nowak-Lehmann Danzinger, F. (2016b), 'What are the drivers of total factor productivity in the European Union?', *Economics of Innovation and New Technology*, **25** (4) 406–34.
- Geroski, P., Kretschmer, T. and Walters, C. (2009), 'Corporate productivity growth: Leaders and laggards', *Economic Enquiry*, **47** (1), 1–17.
- Geroski, P., Lazarova, S., Urga, G. and Walters, C.F. (2003), 'Are difference in firm size transitory or permanent?', *Journal of Applied Econometrics*, **18**, 47–59.
- Giannangeli, S. and Gomez-Salvador, R. (2008), 'Evolution and sources of manufacturing productivity growth: Evidence from a panel of European Countries', European Central Bank: Working Paper Series.
- Gilley, K. and Rasheed, A. (2000), 'Making more by doing less: An analysis of outsourcing and its effects on firm performance', *Journal of Management*, **26** (4), 763–90.
- Gomulka, S. (1970), 'Extensions of "the golden rule of research" of Phelps', *Review of Economic Studies*, **37**, 73–93.
- Griffith, R., Harrison, R. and Van Reenen, J. (2006a), 'How special is the special relationship? Using the impact of U.S. R&D spillovers on U.K. firms as a test of technology sourcing', *American Economic Review*, **96**, 1859–75.
- Griffith, R., Huergo, E., Mairesse, J. and Peters, B. (2006b), 'Innovation and productivity across four European countries', *Oxford Review of Economic Policy*, **22** (4), 483–98.
- Griffith, R., Redding, S. and Van Reenan, J. (2003), 'R&D and absorptive capacity: Theory and empirical evidence', *Scandinavian Journal of Economics*, **105** (1), 99–118.
- Griliches, Z. (1979), 'Issues in assessing the contribution of research and development to productivity growth', *Bell Journal of Economics*, **10** (1), 92–116.
- Griliches, Z. (1990), 'Patent statistics as economic indicators: A survey', *Journal of Economic Literature*, **28**, 1661–707.
- Griliches, Z. (1992), 'The search for R&D spillovers', *Scandinavian Journal of Economics*, **94** (Supplement), 29–47.
- Griliches, Z. (ed.) (1984), *R&D Patents and Productivity*, Chicago: University of Chicago Press.
- Grillitsch, M., Tödting, F. and Höglinger, C. (2013), 'Variety in knowledge

- sourcing, geography and innovation: Evidence from the ICT sector in Austria', *Papers in Regional Science*, **94**, 25–43.
- Grimpe, C. and Kaiser, U. (2010), 'Balancing internal and external knowledge acquisition: The gains and pains from R&D outsourcing', *Journal of Management Studies*, **47** (8), 1483–509.
- Grossman, G. and Helpman, E. (1991), *Innovation and Growth in the Global Economy*, Cambridge, MA: MIT Press.
- Grossman, G. and Helpman, E. (2005), 'Outsourcing in a global economy', *Review of Economic Studies*, **72** (250), 135–59.
- Guiso, L. and Schivardi, F. (2007), 'Spillovers in industrial districts', *Economic Journal*, **117** (516), 68–93.
- Gunday, G., Ulusoy, G., Kilic, K. and Alpkan, L. (2011), 'Effects of innovation types on firm performance', *International Journal of Production Economics*, **133** (2), 662–76.
- Hall, B.H. and Mairesse, J. (1995), 'Exploring the relationship between R&D and productivity in French manufacturing firms', *Journal of Econometrics*, **65**, 263–93.
- Hall, B.H., Jaffe, A.B. and Trajtenberg, M. (2005), 'Market value and patent citations', *Rand Journal of Economics*, **36**, 16–38.
- Harison, E. (2008), 'Intellectual property rights in a knowledge-based economy: A new frame-of-analysis', *Economics of Innovation and New Technology*, **17**, 377–400.
- Harper, D.A. and Lewis, P. (2012), 'New perspectives on emergence in economics', *Journal of Economic Behavior & Organization*, **82**, 329–37.
- Heckman, J.J. (1981), 'The incidental parameters problem and the problem of initial conditions in estimating a discrete time-discrete data stochastic process', in C.F. Manski and D. McFadden (eds), *Structural Analysis of Discrete Data with Econometric Applications*, Cambridge, MA: MIT Press, pp. 179–95.
- Henrekson, M. and Johansson, D. (2010), 'Gazelles as job creators: A survey and interpretation of the evidence', *Small Business Economics*, **35**, 227–44.
- Heshmati, A. (2003), 'Productivity growth, efficiency and outsourcing in manufacturing and service industries', *Journal of Economic Surveys*, **17** (1), 79–112.
- Hözl, W. (2009), 'Is the R&D behaviour of fast-growing SMEs different? Evidence from CIS III data for 16 countries', *Small Business Economics*, **33** (1), 59–75.
- Howells, J., Gagliardi, D. and Malik, K. (2008), 'The growth and management of R&D outsourcing: Evidence from UK pharmaceuticals', *R&D Management*, **38**, 205–19.
- Ilmakunnas, P., Maliranta, M., and Vainiomäki, J. (2004), 'The roles of

- employer and employee characteristics for plant productivity', *Journal of Productivity Analysis*, **21** (3), 249–76.
- Ito, K. and Lechevalier, S. (2010), 'Why some firms persistently out-perform others: Investigating the interactions between innovation and exporting strategies', *Industrial and Corporate Change*, **19**, 1997–2039.
- Iwai, K. (1984), 'Schumpeterian dynamics: An evolutionary model of innovation and imitation', *Journal of Economic Behavior & Organization*, **5** (2), 159–90.
- Iwai, K. (2000), 'A contribution to the evolutionary theory of innovation, imitation and growth', *Journal of Economic Behavior & Organization*, **43**, 167–98.
- Goya, E., Vayá, E. and Suriñach, J. (2013), 'Do spillovers matter? CDM model estimates for Spain using panel data', SEARCH WP 4/28.
- Jaffe, A. (1986), 'Technological opportunity and spillovers of R&D: Evidence from firms' patents, profits, and market value', *American Economic Review*, **76** (5), 984–1001.
- Jaffe, A. (1989), 'Real effects of academic research', *American Economic Review*, **79** (5), 957–70.
- Johansson, B. and Löf, H. (2008), 'Innovation activities explained by firm attributes and location', *Economics of Innovation and New Technology*, **16**, 533–52.
- Johansson, B., Löf, H. (2014), 'R&D strategy, metropolitan externalities and productivity: Evidence from Sweden', *Industry and Innovation*, **21**, 141–54.
- Johansson, B., Löf, H. (2015), 'Innovation strategies combining internal and external knowledge', in C. Antonelli and A. Link (eds), *Handbook of the Economics of Knowledge*, London: Routledge, pp. 29–52.
- Jones, C.I. (1995), 'R&D based models of economic growth', *Journal of Political Economy*, **103**, 759–84.
- Kim, J. and Chang-Yang, L. (2011), 'Technological regimes and the persistence of first-mover advantages', *Industrial and Corporate Change*, **20**, 1305–33.
- Kirman, A. (1997), 'The economy as an evolving network', *Journal of Evolutionary Economics*, **7**, 339–53.
- Kirman, A. (2011), 'Learning in agent-based models', *Eastern Economic Journal*, **37** (1), 20–27.
- Kirman, A. (2016), 'Complexity and economic policy: A paradigm shift or a change in perspective? A review essay on David Colander and Roland Kupers's complexity and the art of public policy', *Journal of Economic Literature*, **54** (2), 534–72.
- Knudsen, M.P. and Mortensen, T.B. (2011), 'Some immediate – but

- negative – effects of openness on product development performance’, *Technovation*, **31**, 54–64.
- Krafft, J., Quatraro, F. and Saviotti, P.P. (2009), ‘The evolution of the knowledge base in biotechnology: Social network analysis of biotechnology’, *Economics of Innovation and New Technology*, **20**, 445–75.
- Krafft, J., Quatraro, F. and Saviotti, P.P. (2014), ‘Knowledge characteristics and the dynamics of technological alliances in pharmaceuticals: Empirical evidence from Europe, US and Japan’, *Journal of Evolutionary Economics*, **24** (3), 587–622.
- Krugman, P. (1994), ‘Complex landscapes in economic geography’, *American Economic Review*, **84**, 412–17.
- Krugman, P. (1995), *Development Geography and Economic Theory*, Cambridge, MA: MIT Press.
- Kuznets, S. (1971), *Economic Growth of Nations: Total Output and Production Structure*, Cambridge, MA: Harvard University Press.
- Laitner, J. and Stolyarov, D. (2013), ‘Derivative ideas and the value of intangible assets’, *International Economic Review*, **54** (1) 59–95.
- Lane, D.A. (2002), ‘Complexity and local interactions: Towards a theory of industrial districts’, in A. Quadrio Curzio and M. Fortis (eds), *Complexity and Industrial Clusters: Dynamics and Models in Theory and Practice*, Heidelberg and New York: Physica-Verlag, pp. 65–82.
- Lane, D.A. and Maxfield, R. (1997), ‘Foresight complexity and strategy’, in W.B. Arthur, S.N. Durlauf and D.A. Lane (eds), *The Economy As an Evolving Complex System II*, Reading, MA: Addison-Wesley, pp. 169–98.
- Lane, D.A., Pumain, D., Leeuw, S.E. and West, G. (eds) (2009), *Complexity Perspectives in Innovation and Social Change*, Berlin: Springer.
- Laursen, K. and Salter, A. (2006), ‘Open for innovation: The role of openness in explaining innovation performance among UK manufacturing firms’, *Strategic Management Journal*, **24**, 131–50.
- Lazonick, W. (1993), ‘Learning and the dynamics of international competitive advantage’, in R. Thomson (ed.), *Learning and Technological Change*, New York: St. Martin’s, pp. 172–97.
- Lazonick, W. (2007), ‘Varieties of capitalism and innovative enterprise’, *Comparative Social Research*, **24**, 21–69.
- Le Bas, C. and Scellato, G. (2014), ‘Firm innovation persistence: A fresh look at the framework of analysis’, *Economics of Innovation and New Technology*, **23** (5–6), 423–46.
- Lee, K.B. and Wong, V. (2011), ‘Identifying the moderating influences of external environments on new product development process’, *Technovation*, **31**, 598–612.

- Leibenstein, H. (1976), *Beyond Economic Man: A New Foundation for Microeconomics*, Cambridge, MA: Harvard University Press.
- Levinthal, D.A. (1997), 'Adaptation on rugged landscapes', *Management Science*, **43** (7), 934–50.
- Levit, G., Hossfeld, U. and Witt, U. (2011), 'Can Darwinism be "generalized" and of what use would this be?', *Journal of Evolutionary Economics*, **21**, 545–62.
- Lhuillery, S. (2011), 'Absorptive capacity, efficiency effect and competitors spillovers', *Journal of Evolutionary Economics*, **21**, 649–63.
- Li-Ying, J., Wang, Y. and Salomo, S. (2013), 'An inquiry on dimensions of external technology search and their influence on technological innovation: Evidence from Chinese firms', *R&D Management*, **44**, 53–74.
- Lin, C., Wu, Y.-J., Chang, C., Wang, W. and Lee, C.-Y. (2012), 'The alliance innovation performance of R&D alliances: The absorptive capacity perspective', *Technovation* **32**, 282–92.
- Link, A.N. (1980), 'Firm size and efficient entrepreneurial activity: A reformulation of the Schumpeter hypothesis', *Journal of Political Economy*, **88**, 771–82.
- Link, A. and Siegel, D. (2007), *Innovation, Entrepreneurship, and Technological Change*, Oxford: Oxford University Press.
- Loasby, B.J. (2010), 'Capabilities and strategy: Problems and prospects', *Industrial and Corporate Change*, **19**, 1301–16.
- Lokshin, B., Belderbos, R. and Carree, M. (2008), 'The productivity effects of internal and external R&D: Evidence from a dynamic panel data model', *Oxford Bulletin of Economics and Statistics*, **70** (3), 399–413.
- Löf, H. and Heshmati, A. (2002), 'Knowledge capital and performance heterogeneity: A firm-level innovation study', *International Journal of Production Economics*, **76** (1), 61–85.
- López, R.A. (2005), 'Trade and growth: reconciling the macroeconomic and microeconomic evidence', *Journal of Economic Surveys*, **19**, 623–48.
- Lopez-Garcia, P. and Puente, S. (2012), 'What makes a high growth firm? A dynamic probit analysis using Spanish firm-level data', *Small Business Economics*, **39**, 1029–41.
- Lorentz, A., Ciarli, T., Savona, M. and Valente, M. (2016), 'The effect of demand driven structural transformation on growth and technological change', *Journal of Evolutionary Economics*, **26**, 219–46.
- Love, J.H. and Roper, S. (2009), 'Organizing the innovation process: Complementarities in innovation networking', *Industry and Innovation*, **16**, 273–90.
- Lucas, R.E. (1998), 'On the mechanisms of economic development', *Journal of Monetary Economics*, **22**, 3–42.
- Lucas, R.E. (2008), 'Ideas and growth', *Economica*, **76**, 1–19.

- Lundvall, B. (1988), 'Innovation as an interactive process: From user–producer interaction to the national system of innovation', in G. Dosi et al. (eds), *Technical Change and Economic Theory*, London: Frances Pinter, pp. 349–69.
- Malerba, F., Orsenigo, L. and Petretto, P. (1997), 'Persistence of innovative activities sectoral patterns of innovation and international technological specialization', *International Journal of Industrial Organization*, **15**, 801–26.
- Malerba, F., Nelson, R.R., Orsenigo, L. and Winter, S.G. (2001), 'History-friendly models: An overview of the case of the computer industry', *Journal of Artificial Societies and Social Simulation*, **4** (3), <http://jass.soc.surrey.ac.uk/4/3/6.html>.
- Máñez, J., Rochina-Barrachina M. and Sanchis-Llopis, A. (2014), 'The determinants of R&D persistence in SMEs', *Small Business Economics*, **44** (3) 505–28.
- Marrocu, E., Paci, R. and Pontis, M. (2012), 'Intangible capital and firms' productivity', *Industrial and Corporate Change*, **21** (2), 377–402.
- Mansfield, E., Schwartz, M. and Wagner, S. (1981), 'Imitation costs and patents: An empirical study', *Economic Journal*, **91** (364), 907–18.
- March, J.C. (1988), 'Bounded rationality ambiguity and the engineering of choice', in D.E. Bell, H. Raiffa and A. Tversky (eds), *Decision Making: Descriptive, Normative, and Prescriptive Interactions*, Cambridge: Cambridge University Press.
- March, J.C. (1991), 'Exploration and exploitation in organizing learning', *Organization Science*, **2**, 71–87.
- March, J.C. and Simon, H.A. (1958), *Organizations*, New York: Wiley.
- Marrocu, E., Paci, R. and Pontis, M. (2012), 'Intangible capital and firms' productivity', *Industrial and Corporate Change*, **21** (2), 377–402.
- Marshall, A. (1920 [1890]), *Principles of Economics*, 8th edition, London: Macmillan.
- Martin, R. and Sunley, P. (2012), 'Forms of emergence and the evolution of economic landscapes', *Journal of Economic Behavior & Organization*, **82**, 338–51.
- McEvily, S.K. and Chakravarthy, B. (2002), 'The persistence of knowledge-based advantage: an empirical test for product performance and technological knowledge', *Strategic Management Journal*, **23** (4), 285–305.
- McGahan, A.M. and Silverman, B.S. (2006), 'Profiting from technological innovation by others: The effect of competitor patenting on firm value', *Research Policy*, **35** (8) 1222–42.
- Merino, F. and Rodríguez, D. (2007), 'Business services outsourcing by manufacturing firms', *Industrial and Corporate Change*, **16** (6), 1147–73.



- Metcalfe, J.S. (1998), *Evolutionary Economics and Creative Destruction*, London: Routledge.
- Metcalfe, J.S. (2002), 'Knowledge of growth and the growth of knowledge', *Journal of Evolutionary Economics*, **12**, 3–16.
- Metcalfe, J.S. (2007a), 'The broken thread: Marshall, Schumpeter and Hayek on the evolution of capitalism', ESRC Centre for Research on Innovation and Competition, University of Manchester.
- Metcalfe, J.S. (2007b), 'Alfred Marshall's Mecca: Reconciling the theories of value and development', *Economic Record*, **83**, S1–22.
- Metcalfe, J.S. (2009a), 'On Marshallian evolutionary dynamics, entry and exit', in J. Vint, J.S. Metcalfe, H.D. Kurz, N. Salvadori and P.A. Samuelson (eds), *Economic Theory and Economic Thought: Essays in Honour of Ian Steedman*, London: Routledge, pp. 350–73.
- Metcalfe, J.S. (2009b), 'Marshall and Schumpeter: Evolution and the institutions of capitalism', in A. Pyka, U. Cantner, A. Greiner and T. Kuhn (eds), *Recent Advances in Neo-Schumpeterian Economics: Essays in Honour of Horst Hanusch*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp. 53–77.
- Metcalfe, J.S. (2013), 'Management and the representative firm: The modern significance of the Marshall's evolutionary economics', *Economics of Innovation and New Technology*, **22**, 222–37.
- Miller, J.H. and Page, S.E. (2007), *Complex Adaptive Systems*, Princeton, NJ: Princeton University Press.
- Mohnen, P. and Hall, B.H. (2013), 'Innovation and productivity: An update', *Eurasian Business Review*, **3** (1), 47–65.
- Mokyr, J. (1990a), 'Punctuated equilibria and technological progress', *American Economic Review*, **80** (2), 350–54.
- Mokyr, J. (1990b), *The Lever of Riches*, New York and Oxford: Oxford University Press.
- Mortara, L. and Minshall, T. (2011), 'How do large multinational companies implement open innovation?', *Technovation*, **31**, 586–97.
- Mueller, M. and Pyka, A. (2016), 'Economic behaviour and agent-based modelling', in R. Frantz, S. Chen, S.-H., K. Dopfer, F. Heukelom and S. Mousavi (eds), *Routledge Handbook of Behavioral Economics*, London: Routledge, pp. 405–15.
- Napoletano, M., Dosi, G., Fagiolo, G. and Roventini, A. (2012), 'Wage formation investment behavior and growth regimes: An agent based analysis', *Revue de l'OFCE*, **124**, 235–61.
- Nelson, R.R. (1959), 'The simple economics of basic scientific research', *Journal of Political Economy*, **67**, 297–306.
- Nelson, R.R. (1982), 'The role of knowledge in R&D efficiency', *Quarterly Journal of Economics*, **97**, 453–70.

- Nelson, R.R. and Winter, S.G. (1977), 'In search of useful theory of innovation', *Research Policy*, **6** (1), 36–76.
- Nelson, R.R. and Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Cambridge, MA: Belknap Press of Harvard University Press.
- Nelson, R.R., Winter, S.G. and Schuette, H.L. (1976), 'Technical change in an evolutionary model', *Quarterly Journal of Economics*, **90**, 90–118.
- Nesta, L. (2008), 'Knowledge and productivity in the world's largest manufacturing corporations', *Journal of Economic Behavior & Organization*, **67**, 886–902.
- Nesta, L. and Dibiaggio, L. (2003), 'Technology strategy and knowledge dynamics: The case of biotech', *Industry and Innovation*, **10** (3), 331–49.
- Nesta, L. and Saviotti, P.P. (2005), 'Coherence of the knowledge base and the firm's innovative performance: Evidence from the pharmaceutical industry', *Journal of Industrial Economics*, **53**, 123–42.
- Neter, J., Wasserman, W. and Kutner, M.H. (1990), *Applied Linear Statistical Models*, Burr Ridge, IL: Irwin.
- Newell, R.G., Jaffe, A.B. and Stavins, R.N. (1999), 'The induced innovation hypothesis and energy-saving technological change', *Quarterly Journal of Economics*, **114**, 941–75.
- Nooteboom, B. (2000), *Learning and Innovation in Organizations and Economies*, Oxford: Oxford University Press.
- Ó hUallacháin, B. and Leslie, T.F. (2007), 'Rethinking the regional knowledge production function', *Journal of Economic Geography*, **7**, 737–52.
- O'Regan, N. and Kling, G. (2011), 'Technology outsourcing in manufacturing small- and medium-sized firms: another competitive resource?', *R&D Management*, **41**, 92–105.
- Ostrom, E. (2010), 'Beyond markets and states: Polycentric governance of complex economic systems', *American Economic Review*, **100**, 641–72.
- Ostrom, E. and Hess, C. (eds) (2006), *Understanding Knowledge As a Commons: From Theory to Practice*, Cambridge, MA: MIT Press.
- Ozman, M. (2009), 'Inter-firm networks and innovation: A survey of literature', *Economics of Innovation and New Technology*, **18**, 39–67.
- Page, S.E. (2011), *Diversity and Complexity*, Princeton, NJ: Princeton University Press.
- Pakes, A. and Griliches, Z. (1984), 'Patents and R&D at the firm level: A first look', in Z. Griliches (ed.), *R&D and Productivity: The Econometric Evidence*, Chicago: University of Chicago Press, pp. 55–72.
- Parisi, M.L., Schiantarelli, F. and Sembenelli, A. (2006), 'Productivity innovation and R&D: Micro evidence for Italy', *European Economic Review*, **50**, 2037–61.
- Parker, S., Storey, D. and van Witteloostuijn, A. (2010), 'What happens

- to gazelles? The importance of dynamic management strategy', *Small Business Economics*, **35**, 203–26.
- Patrucco, P. (2008), 'The economics of collective knowledge and technological communication', *Journal of Technology Transfer*, **33**, 579–99.
- Patrucco, P. (2009), 'Collective knowledge production costs and the dynamics of technological systems', *Economics of Innovation and New Technology*, **18**, 295–310.
- Penrose, E. (1952), 'Biological analogies in the theory of the firm', *American Economic Review*, **42** (5), 804–19.
- Penrose, E. (1959), *The Theory of the Growth of the Firm*, Oxford: Blackwell.
- Peters, B. (2009), 'Persistence of innovation: Stylized facts and panel data evidence', *Journal of Technology Transfer*, **36**, 226–43.
- Phelps, E.S. (1966), 'Models of technological progress and the golden rule of research', *Review of Economic Studies*, **33**, 133–45.
- Porter, M.E. and van der Linde, C. (1995), 'Toward a new conception of the environment–competitiveness relationship', *Journal of Economic Perspectives*, **9**, (4), 97–118.
- Pyka, A. and Werker, C. (2009), 'The methodology of simulation models: Chances and risks', *Journal of Artificial Societies and Social Simulation*, **12**, 1–4, <http://jasss.soc.surrey.ac.uk/12/4/1.html>.
- Pyka, A. and Fagiolo, G. (2007), 'Agent-based modelling: a methodology for neo-Schumpeterian economics', in H. Hanusch and A. Pyka (eds), *Elgar Companion to Neo-Schumpeterian Economics*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp.467–502.
- Quatraro, F. (2009), 'Innovation, structural change and productivity growth: Evidence from Italian regions 1980–2003', *Cambridge Journal of Economics*, **33**, 1001–22.
- Quatraro, F. (2010), 'Knowledge coherence variety and productivity growth: Manufacturing evidence from Italian regions', *Research Policy*, **39**, 1289–302.
- Quatraro, F. (2012), *The Economics of Structural Change in Knowledge*, London: Routledge.
- Rahko, J. (2014), 'Market value of R&D, patents, and organizational capital: Finnish evidence', *Economics of Innovation and New Technology*, **23** (4), 353–77.
- Ravix, J.L. (2012), 'Alfred Marshall and the Marshallian theory of the firm', in M. Dietrich and J. Krafft (eds), *Handbook on the Economics and the Theory of the Firm*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing, pp.49–54.
- Raymond, W., Mairesse, J., Mohnen, P. and Palm, F. (2013), 'Dynamic

- models of R&D, innovation and productivity: Panel data evidence for Dutch and French manufacturing', NBER Working Paper 19074.
- Reichman, J. (2000), 'Of green tulips and legal kudzu: Repackaging rights in subpatentable invention', *Vanderbilt Law Review*, **53**, 17–43.
- Rigby, D.L. (2015), 'Technological relatedness and knowledge space: Entry and exit of US cities from patent classes', *Regional Studies*, **49** (11), 1922–37.
- Rivera-Batiz, L.A. and Romer, P.M. (1991), 'Economic integration and economic growth', *Quarterly Journal of Economics*, **106**, 531–56.
- Roberts, V., Yoguel, G. and Lerena, O. (2017), 'The ontology of complexity and the neo-Schumpeterian evolutionary theory of economic change', *Journal of Evolutionary Economics*, **27** (4) 761–94.
- Romer, P.M. (1990), 'Endogenous technological change', *Journal of Political Economy*, **98**, S71–102.
- Roper, S. and Hewitt-Dundas, N. (2008), 'Innovation persistence: Survey and case-study evidence', *Research Policy*, **37**, 149–62.
- Rosser, J.B. (1999), 'On the complexities of complex economic dynamics', *Journal of Economic Perspectives*, **13**, 169–92.
- Rosser, J.B. (ed.) (2004), *Complexity in Economics: Methodology Interacting Agents and Microeconomic Models*, Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.
- Rothaermel, F.T. and Hess, A.M. (2007), 'Building dynamic capabilities', *Organization Science*, **18** (6), 898–921.
- Ruckman, K. (2008), 'Externally sourcing research through acquisition: Should it supplement or substitute for internal research?', *Industry and Innovation*, **15**, 627–45.
- Ruttan, V.W. (1997), 'Induced innovation evolutionary theory and path dependence', *Economic Journal*, **107** (444), 1520–29.
- Safarzyńska, K. and van den Bergh, J.C.J.M. (2010), 'Evolutionary models in economics: A survey of methods and building blocks', *Journal of Evolutionary Economics*, **20** (3), 329–73.
- Santarelli, E. and Vivarelli, M. (2007), 'Entrepreneurship and the process of firms' entry, survival and growth', *Industrial and Corporate Change*, **16** (3), 455–88.
- Saviotti, P.P. (2004), 'Considerations about the production and utilization of knowledge', *Journal of Institutional and Theoretical Economics*, **160**, 100–121.
- Saviotti, P.P. (2007), 'On the dynamics of generation and utilisation of knowledge: The local character of knowledge', *Structural Change and Economic Dynamics*, **18**, 387–408.
- Saviotti, P.P. and Pyka, A. (2008), 'Micro and macro dynamics: Industry

- life cycles, inter-sector coordination and aggregate growth', *Journal of Evolutionary Economics*, **18**, 167–82.
- Schankerman, M. and Pakes, A. (1986), 'Estimates of the value of patent rights in European countries during the post-1950 period', *Economic Journal*, **96** (384), 1052–76.
- Scherer, F.M (1986), *Innovation and Growth: Schumpeterian Perspectives*, Cambridge, MA: MIT Press.
- Schumpeter, J.A. (1911–34), *The Theory of Economic Development*, Cambridge, MA: Harvard University Press.
- Schumpeter, J.A. (1928), 'The instability of capitalism', *Economic Journal*, **38**, 361–86.
- Schumpeter J.A. (1939), *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, New York: McGraw-Hill.
- Schumpeter, J.A. (1941), 'Alfred Marshall's Principles: A semi-centennial appraisal', *American Economic Review*, **31** (2), 236–48.
- Schumpeter, J.A. (1942), *Capitalism, Socialism, and Democracy*, New York: Harper & Brothers.
- Schumpeter, J.A. (1947), 'The creative response in economic history', *Journal of Economic History*, **7**, 149–59.
- Scitovsky, T. (1954), 'Two concepts of external economies', *Journal of Political Economy*, **62**, 143–51.
- Silva, E. and Teixeira, A.C. (2009), 'Surveying structural change: Seminal contributions and a bibliometric account', *Structural Change and Economic Dynamics*, **19**, 273–300.
- Simon, H.A. (1947), *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*, London: Macmillan.
- Simon, H.A. (1979), 'Rational decision making in business organizations', *American Economic Review*, **69** (4), 493–513.
- Simon, H.A. (1982), *Metaphors of Bounded Rationality: Behavioral Economics and Business Organization*, Cambridge, MA: MIT Press.
- Smit, M.J., Abreu, M.A. and de Groot, H.L. (2015), 'Micro-evidence on the determinants of innovation in the Netherlands: The relative importance of absorptive capacity and agglomeration externalities', *Papers in Regional Science*, **94** (2), 249–72.
- Sorenson, O., Rivkin, J.W. and Fleming, L. (2006), 'Complexity, networks and knowledge flow', *Research Policy*, **35**, 994–1017.
- Stock, J.H. and Yogo, M. (2005), 'Testing for weak instruments in linear IV regression', in D.W.K. Andrews and J.H. Stock (eds), *Identification and Inference for Econometric Models: Essays in Honor of Thomas Rothenberg*, Cambridge: Cambridge University Press, pp. 80–108.
- Strumsky, D., Lobo, J. and Van der Leeuw, S. (2012), 'Using patent

- technology codes to study technological change', *Economics of Innovation and New Technology*, **21**, 267–86.
- Suarez, D. (2014), 'Persistence of innovation in unstable environments: Continuity and change in the firm's innovative behavior', *Research Policy*, **43**, 726–36.
- Syverson, C. (2011), 'What determines productivity?', *Journal of Economic Literature*, **49** (2), 326–65.
- Teece, D. (2007), 'Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance', *Strategic Management Journal*, **28** (13), 1319–50.
- Teece, D. and Pisano, G. (1994), 'The dynamic capabilities of firms: An introduction', *Industrial and Corporate Change*, **3**, 537–55.
- Terna, P. (2009), 'The epidemics of innovation: Playing around with an agent-based model', *Economics of Innovation and New Technology*, **18**, 707–28.
- Theyel, N. (2013), 'Extending open innovation throughout the value chain by small and medium-sized manufacturers', *International Small Business Journal*, **31** (3), 256–74.
- Thoma, G., Torrisi, S., Gambardella, A., Guellec, D., Hall, B.H. and Haroff, D. (2010), 'Harmonizing and combining large datasets: An application to firm-level patent and accounting data', NBER Working Paper 15851.
- Triguero, A. and Corcoles, D. (2013), 'Understanding innovation: An analysis of persistence for Spanish manufacturing firms', *Research Policy*, **42**, 340–52.
- Triguero, A., Corcoles, D. and Cuerva, M.C. (2014), 'Persistence of innovation and firm's growth: Evidence from a panel of SME and large Spanish manufacturing firms', *Small Business Economics*, **43** (4), 787–804.
- Van Zeebroeck, N. (2011), 'The puzzle of patent value indicators', *Economics of Innovation and New Technology*, **20**, 33–62.
- Van Zeebroeck, N. and van Pottelsberghe, B. (2011), 'The vulnerability of patent value determinants', *Economics of Innovation and New Technology*, **20**, 283–308.
- Vandekerckhove, J. and De Bondt, R. (2008), 'Asymmetric spillovers and investments in research and development of leaders and followers', *Economics of Innovation and New Technology*, **17**, 417–33.
- Veblen, T. (1898), 'Why is economics not an evolutionary science?', *Quarterly Journal of Economics*, **2** (4), 373–97.
- Vergne, J.P. and Durand, R. (2011), 'The path of most persistence: an evolutionary perspective on path dependence and dynamic capabilities', *Organization Studies*, **32**, 365–82.

- Verona, G. and Ravasi, D. (2003), 'Unbundling dynamic capabilities: An exploratory study of continuous product innovation', *Industrial and Corporate Change*, **12** (3), 577–607.
- Veugelers, R. and Cassiman, B. (1999), 'Make and buy in innovation strategies: Evidence from Belgian manufacturing firms', *Research Policy*, **28**, 63–80.
- Von Hippel, E. (1988), *The Sources of Innovation*, Oxford: Oxford University Press.
- Von Hippel, E. (1998), 'Economics of product development by users: The impact of sticky local information', *Management Science*, **44**, 629–44.
- Voudouris, I., Lioukas, S., Iatrelli, M. and Caloghirou, Y. (2012), 'Effectiveness of technology investment: Impact of internal technological capability, networking and investment's strategic importance', *Technovation*, **32** (6), 400–414.
- Weitzman, M.L. (1996), 'Hybridizing growth theory', *American Economic Review*, **86**, 207–12.
- Weitzman, M.L. (1998), 'Recombinant growth', *Quarterly Journal of Economics*, **113**, 331–60.
- Windrum, P. and Birchenhall, C. (2005), 'Structural change in the presence of network externalities: A co-evolutionary model of technological successions', *Journal of Evolutionary Economics*, **15**, 123–48.
- Winter, S.G. (1987), 'Knowledge and competence as strategic assets', in D.J. Teece (ed.), *The Competitive Challenge: Strategies for Industrial Innovation and Renewal*, Cambridge, MA: Ballinger, pp.159–84.
- Winter, S.G., Kaniovski, Y.M. and Dosi, G. (2000), 'Modeling industrial dynamics with innovative entrants', *Structural Change and Economic Dynamics*, **11** (3), 255–93.
- Wooldridge, J. (2005), 'Simple solutions to the initial conditions problem in dynamic, nonlinear panel data models with unobserved heterogeneity', *Journal of Applied Econometrics*, **20**, 39–54.
- Yildizoglu, M. (2002), 'Competing R&D strategies in an evolutionary industry model', *Computational Economics*, **19**, 51–65.
- Youn, H., Bettencourt, L.M.A., Strumsky, D. and Lobo, J. (2015), 'Invention as a combinatorial process: Evidence from US patents', *Journal of the Royal Society, Interface*, **12** (106), DOI: 10.1098/rsif.2015.0272.
- Zhang, J. (2003), 'Growing Silicon Valley on a landscape', *Journal of Evolutionary Economics*, **13**, 529–48.

