Complexity, Innovation, and Development: Schumpeter Revisited

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The role of innovation and entrepreneurship is increasingly getting policy attention in emerging countries. A growing body of literature is deriving its inspiration from the work of Joseph Schumpeter. His seminal 1911 book, The Theory of Economic Development, outlined a general framework for understanding the role of innovation and entrepreneurship in economic transformation. Despite Schumpeter’s influence on economic policies in industrialized countries, there has been little application of his work in emerging countries. On surface, the failure to apply Schumpeter’s ideas to emerging countries appears to be an intellectual oversight. To the contrary, this paper argues that the application of Schumpeter’s ideas to emerging countries was debated through the 1950s, but early architects of development studies deemed it to be irrelevant. The core of the rejection was an epistemological clash between Schumpeter’s systems approach to economic transformation and that of his critics who adhered to a more static, linear, and incremental view of economic change. Thus, Schumpeter’s central themes of innovation and entrepreneurship focused on endogenous transformation and evolution of economies, while his critics, who focused on the importance of central planning, relied on equilibrium models reflected in the role of bureaucracies as economic sources of stability.

Introduction

Those seeking to bemoan the fate of emerging countries draw emblematic parallels with East Asian countries. One of the most evocative images is the claim that in the early 1960s Ghana and South Korea were at the same level of development. South Korea advanced to become an industrialized country now providing development assistance to Africa. Ghana, on the other hand, has gone through a series of frustrating coups, economic stagnation, and negligible participation in the global trading system despite its gold mines and world-class cocoa plantations.

These cases conjure up images of a world of uneven growth dominated by inequities. Others have attributed the rise of East Asian economies to windfalls of the Cold War. But the seed of rapid economic transformation was planted in The Theory of Economic Development, Joseph Schumpeter’s seminal work published in 1911. In this ground-breaking book Schumpeter outlined the epic role of innovation and entrepreneurship in economic development. This was his bold attempt to depart from the

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1 This paper is drawn from the author’s draft book tentatively entitled, How Economies Succeed: Innovation and the Wealth of Nations. I am grateful to Professor F.M. Scherer (Harvard Kennedy School) for sharing his insights and knowledge about Joseph Schumpeter that rekindled my interest to explore why Schumpeter’s Theory of Economic Development only marginally informs policy discussions on “economic development.” I have also benefited from valuable comments and additional information from Richard Nelson (Columbia University) and Norman Clark (The Open University, UK). Finally, I thank Katherine Gordon (Harvard Kennedy School) and Katharina Lix (Harvard College) for their research support for this paper.

Complexity, Innovation, and Development

Theories of economic equilibrium that dominated classical economic text of the time.

Schumpeter’s work was appropriately called “the theory of economic development” because it described a world that is analogous to large parts of today’s emerging countries. However, these countries have not benefitted much from Schumpeter’s intellectual legacy.

At first glance it would appear that the lack of application of Schumpeter’s ideas to emerging countries was a historical oversight given that most of them were colonies at the time of his writing. However, theses countries were desperately searching for alternative development models that would free them from dependence on their former colonial masters.

Schumpeter was writing during the ascendency of neoclassical economics that placed considerable emphasis on mathematical equilibrium models that Schumpeter was rejecting. Schumpeter framed economic development as an evolutionary process. He laid the foundations of looking at economies as complex systems. It is therefore not surprising that Schumpeter’s work has been consistently excluded from compilations of studies on economic development, as surveyed by Thanawala. In fact, the dismissal runs deep. Nobel laureate Arthur Lewis wrote in his 1955 book, Theory of Economic Growth, that Schumpeter’s Theory of Economic Development “is very much narrower in scope than its title implies.”

This paper argues that although the work was not ignored, it was debated throughout much of the 1950s and the general consensus was that Schumpeter’s ideas were not relevant to emerging countries. The paper traces the early debates in development studies on Schumpeter’s ideas.

The paper is divided into four parts. The first part outlines the fundamental elements of Schumpeter’s theory of development. This is followed by a review of debates on the relevance of Schumpeter’s ideas in emerging countries. The third part assesses the evolution of development studies through the life of Hans Singer, a former student of Schumpeter and a leading architect of development theory and practice. The paper concludes with an assessment of policy implications of Schumpeter’s relevance for contemporary economic policy in emerging countries.

The Economy as a Complex System

First, Schumpeter was concerned with overall system transformation in the same way that his critics wanted to see rapid economic change in emerging countries. He pioneered the application of complex systems thinking to economic development. Second, Schumpeter was interested in change over time, which is why he adopted an evolutionary approach that recognized the importance of history. By appealing to complexity and time, Schum-


peter stood in sharp contrast with his critics whose economic models appealed to the static equilibrium notions although in practice they sought to depart from them.

Schumpeter’s “economic sociology” is laid out in his “missing Chapter 7” of The Theory of Economic Development. The chapter, which was dropped in his 1926 edition of this book, laid out a summation of his theoretical outlook that emphasized the fact that economic development was an emergent property arising from endogenous systemic change and not a response to external stimuli. He stressed that “it is not possible to explain economic change by previous economic conditions alone. For the economic state of a people does not emerge simply from the preceding economic conditions, but only from the preceding total situation.”

Also evident in this formulation is the fact that economic evolution is a non-linear or discontinuous process with emergent properties. Schumpeter saw “that kind of change arising from within the system which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Add successively as many mail coaches as you please, you will never get a railway thereby.” This theme is explicit in his notion of the generation of variety through new combinations as well as their selection and retention.

By adopting an ecosystem approach, Schumpeter was able to identify the forces of economic succession that resulted from the invasive waves of railroads. For Schumpeter, “The essential point to grasp is that in dealing with capitalism we are dealing with an evolutionary process.” He continues, “[The] process of industrial mutation…that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.”

A systems approach would make it easier, both conceptually and practically, to address the ecological implications of development. So far the dominant approaches to environmental issues came from the traditional conservation movement that assumes that the environment is better protected by excluding human activities. Efforts to promote sustainable development can hardly be advanced without a greater use of innovation.

Schumpeter’s dynamic theory of economic development continues to be marginalized in mainstream economics. Schumpeter held the view that it was possible for one “to accept both his theory of

8 Ibid., 64 n. 1 (emphasis in original).
10 Schumpeter, Capitalism, Socialism and Democracy, 82.
11 Ibid., 83.
innovation-driven economic progress, and the equilibrium analysis of how markets determined prices and the allocation of resources.’’

But as Nelson rightly says, this “coexistence was incoherent.” Schumpeter’s theory of innovation-driven economic development “not only put forth a different view of what was most important about capitalist economies. It diverged from theory that stressed equilibrium conditions…. It was virtually impossible to buy conceptually into both at the same time.”

Schumpeter was aware that a departure from equilibrium thinking would put him at odds with the economics establishment. His first book, The Nature and Content of Theoretical Economics, published in 1908 when he was 25, was a failure. His own mentor, Eugen von Böhm-Bawerk, advised him that knowledge did not advance through bright new insights but “through the old professors’ dying off.”

Schumpeter did not wait. He proceeded to push the frontiers of economic thought with the publication of The Theory of Economic Development. The book challenged then current economic wisdom and was not well received from the outset.

The central idea of Schumpeter’s new book is that when “new combinations appear discontinuously, then the phenomenon characterising development emerges… Development in our sense is then defined by the carrying out of new combinations.” Schumpeter contends that “new combinations are, as a rule, embodied, as it were, in new firms which generally do not arise out of the old ones but start producing beside them…in general it is not the owner of stage-coaches who builds railways.”

He did not consider the revival of new industries following downturns as necessarily representing innovation although such acts may create opportunities for innovation or the creation of new combinations. Indeed, Schumpeter notes that “[a]s a rule the new combinations must draw the necessary means of production from some old combinations.”

What is critical, however, is the generation of novelty and not simply the return to previous levels of production.

Schumpeter’s theory of development covers at least four key elements. First, he considers the process of economic development to be endogenous and driven by the creation of new combinations including new products, new production methods or processes, new organizational forms, new markets, and new sources of raw materials and inputs. Second, these combinations are carried out by entrepreneurs who are motivated to undertake certain actions. Third, the entrepreneur is the change agent whose actions disturb the equilibrium of the economy.
steady state and cause economic discontinuities. Finally, the emergence of credit-providing institutions plays a key role in stimulating entrepreneurial activities. In his view, it is the credit-providing institutions that take risks by providing funding to entrepreneurs.

**Debating Schumpeter**

The debate over the relevance of Schumpeter’s theory to emerging countries started with the publication of Ragnar Nurkse’s 1953 book, *Problems of Capital Formation in Underdeveloped Countries*. The timing is particularly important. Many of the major development planning efforts initiated by the United Nations (UN) and other international development agencies were just starting to take shape. Nurkse is recognized as one of the founding fathers of classical development economics who worked with the League of Nations on the transition from peace to war. He was an advocate of a “big push” for large-scale investment in emerging countries to start and sustain the development process.

In grappling with the issue of emerging countries, he argued that “Schumpeter’s theory seems to…provide the mould which we must use, although we may use it with slightly different ingredients.” He based his reasoning on the important role that Schumpeter assigns to “the creative entrepreneur, or rather to the action of considerable numbers of such entrepreneurs and their imitators, carrying out innovations, putting out new commodities, and devising new combinations of productive factors.”

Nurkse was particularly interested in the capital formation impact of the diffusion of technology across different industries. “Even if an innovation tends each time to originate in one particular industry, the monetary effects of the initial investment…are such as to promote a wave of new applications of capital over a range of different industries.” He drew inspiration from Schumpeter’s contention that it is the “avalanche of consumers’ goods that permanently deepens and widens the stream of real income although in the first instance they spell disturbance, losses, and unemployment.”

Nurkse believed that a “frontal attack” with “a wave of capital investments in a number of different industries…can economically succeed while any substantial application of capital by an individual entrepreneur in any particular industry may be blocked or discouraged by the limitations of the pre-existing market.” He envisaged that such an approach would create conditions for mutual support among a diverse range of entrepreneurs.

Nurkse recognized the importance of modifying Schumpeter’s ideas to suit new geographical locations. He pointed out that defeating the forces that reinforce

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24 Ibid., 13.

25 Ibid., 13.


economic stagnation may require different forms of institutional organization. “In the early industrial development of Japan, for instance, the state was the great innovator and the industrial pioneer on a wide front. Japan’s early industrial development seems to have been ‘planned’ and carried out in large measure by the state.”

Schumpeter provided Nurkse with the vision to articulate a strategy for emerging countries that would entrust development in the hands of entrepreneurs. He was well aware of the debate between planners and anti-planners. His position was pragmatic, believing that “one cannot realistically treat the problem as…exclusive choice between state action and individual enterprise.” He was primarily concerned with capital formation and saw greater potential for reinvestment in the hands of entrepreneurs.

Prior to the release of Nurkse’s book, a forceful attack on Schumpeter was unleashed by Henry Wallich, an American central banker, economist, and Yale professor at the Third Meeting of Central Bank Technicians of the American Continent held in Havana, Cuba, in 1952. Wallich acknowledged that Schumpeter provided “the most outstanding intellectual performance” because of the internal coherence in his work, but argued that “in applying this doctrine to the less developed countries of our day, we find that it does not fit.”

Wallich stressed that entrepreneurs as agents of change did not apply to less developed countries because the “entrepreneur is not the main driving force, innovation is not the most characteristic process, and private enrichment is not the dominant goal.”

For Wallich, countries differed in their national endowment for entrepreneurial qualities, which to some degree accounted for their economic stagnation. He attributed this to this list of “human traits”: “Real estate mindedness, mistrust of industrial ventures, remnants of a feudal past.” His authority was international agency surveys of missions. Although he acknowledged that Schumpeterian development could follow the rise of entrepreneurship, he remained pessimistic about its emergence. This position is in contradiction with Nurkse, who noted that the “state might withdraw from areas where individual enterprise has learned to stand on its own feet and turn its attention to other fields where its powers are needed to clear the way.”

Wallich extended his objection to two other areas. He contended that innovation was not a characteristic feature of less-developed countries. For him, the

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28 Ibid., 15.
29 Ibid., 155.
30 “Leaving investment to the individual entrepreneur can have the advantage of providing the machinery for saving the increment of income which capital investment creates. If there is any hope for substantial private saving it lies mainly in the reinvestment of entrepreneurial profits.” Ibid., 155.
32 Ibid., 190.
33 See ibid., 191.
34 Ibid., 190.
35 Ibid., 190.
36 Nurkse, Capital Formation in Underdeveloped Countries, 156.
“process is better described perhaps as one of assimilation.... [T]o organize a new industry in a less developed country is an art of entrepreneurial initiative. But it is evidently very different from the original process of innovation.”

This position is a misrepresentation of Schumpeter, He was not concerned with the novelty of technology but how it transformed the economy.

On consumption, Wallich challenged Schumpeter’s view that economies were transformed from the generation of new combinations. He argued that unlike in Schumpeter’s model, where production takes a central role, “derived development” had to build on consumption. He notes that derived development “is based, not on innovation but on the assimilation of existing innovations. It is this feature that suggests the general concept of derived development—derived from innovations made elsewhere.”

This view would lock emerging countries at the tail end of the product cycle, making them perpetual importers of foreign products with no capacity for technological learning. This position reveals Wallich’s poor understanding of Schumpeter’s view of innovation. The assimilation of imported technology would be consistent with Schumpeter’s idea of the creation of new markets, provided this is associated with new combinations.

Other economists offered convenient interpretations of Schumpeter noting that emerging countries lacked the capacity for endogenous growth. Schumpeter argued that economic development comprised such change “as are not forced upon it from without but arise by its own initiative, from within.”

Bonné, for example, argued that this view ignores the development impact of “a factory established in an underdeveloped Middle Eastern country by European capital at the height of its flow towards the East half a century ago.” For him, such an investment would constitute an imposition from outside and therefore would not be consistent with Schumpeter’s view of development. This constitutes a misreading of Schumpeter’s concept of economic transformation from within. The example, in fact, fits Schumpeter’s view that innovation includes the creation of new markets using existing technologies.

Bonné’s contention was that Schumpeter’s concept of development was too restrictive to accommodate the needs of emerging regions. Indeed, Schumpeter’s theory excluded “mere growth of the economy, as shown by the growth of population and wealth.” He focused on the structural transformation of the economy and not merely on expansion in growth.

Bonné pointed out that expansion in population is often a source of innovation. Ironically, he noted that such forces did under certain conditions generate new combinations. He said that the “necessity of expanding production in a densely populated underdeveloped area has, time and again, caused revolutionary changes in local agricultural techniques, and, in particular, in irrigation. Innovation is frequently the result of population pressure, a nexus

38 Ibid., 195.
40 A. Bonné, Studies in Economic Development: With Special Reference to Conditions in the Underdeveloped Areas of Western Asia and India (Westport, CT: Greenwood, 1957), 250.
41 Schumpeter, The Theory of Economic Development, 63.
not adequately allowed for in Schumpeter’s model.”

Bonné maintained that Schumpeter reflected the characteristics of the Western world. Although Schumpeter did not dwell much on the challenges of emerging countries, he offered a universal theory. Schumpeter sought to develop a comprehensive theory of economic sociology as reflected in the “missing Chapter 7” that was excluded from subsequent editions of his book. He thought his theory applied broadly to the “economy, politics, social relations, the arts, science, and morality.”

Bonné advanced his own theory that in fact reflected much of Schumpeter’s thinking. He defined economic development as consisting of “a series of economic activities causing an increase in the productivity of the economy as a whole and of the individual earner, and also an increase in the ratio of earners to total population.”

Bonné added new elements such as capital formation, incentives, market expansion, balanced ratio of population increase to economic growth, the use of modern technologies, and political and social regimes conducive to economic development.

His formulation shifted the locus of economic development from endogenous forces at the microeconomic level to wider macroeconomic considerations. It opened up the scope for national planning involving a larger role by state agencies. He noted that since “development in underdeveloped countries is not a self-induced process generated from within, it needs a strong hand to guide and protect it—a function which, at least for a transitional period, will have to be performed by authorities.”

What was in question was not the role of authorities per se, but how the specific functions that they performed could help to facilitate innovation through the creation of new combinations. To the contrary, he outlined standard bureaucratic functions that were hardly supportive of the dynamic entrepreneurial function for economic development as provided by Schumpeter.

The most comprehensive rejoinder to Wallich was provided by Douglas Rimmer at University College Ghana in 1961. By then, the planning paradigm and the exclusion of alternative approaches to economic development had been firmly established. Rimmer returned to Nurkse’s work as the starting point and proceeded to question the basis upon which Wallich rejected the applicability of Schumpeter to emerging countries. He challenged Wallich’s view that emerging countries are primarily concerned with consumption.

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47 Ibid., 255–256.
48 Ibid., 258.
He pointed to errors of interpretation such as “identification of innovation with new technology.”

Rimmer raised interesting points regarding the impact of short-term pressure to show improvements in economic growth on the extent to which economists were likely to acknowledge the relevance of Schumpeter. This is an important point that downplays long-term investments such as technical training, institution-building, and technological innovation.

In a 1962 response to the decade-long debate, Laumas noted a false dichotomy between investment in infrastructure and improvement in the policy environment. He said that “even though government action in creating infrastructure investment can be conceived to be conducive to the growth of private entrepreneurship, yet it gives rise to the possibility of uncertainties which may tend to vitiate the social climate.”

He underrated the important role that Schumpeter attached to infrastructure, especially railroads, in fostering entrepreneurship. Laumas also misread Schumpeter’s view on the significance of the size of the technological innovation, a common confusion between technical and economic change.

It appears on the surface that Nurske, Wallich, and Bonné shared some common interests in the role of industrial development. But they differ remarkably on the emphasis they place on the role of entrepreneurs. It is also evident from the debates that Schumpeter’s critics started with a commitment to the role of planning and did not adequately offer a convincing case on the absence of entrepreneurs in emerging countries. Their focus was on the supremacy of government intervention through government planning processes, paving the way for choosing the state rather than the private sector as the main recipient of development assistance.

Schumpeter’s critics carried the day and much of the conduct of development studies continues to stress the role government plays in ways that reduce the private sector’s freedom to operate. The influence of Wallich continued to be reflected in scholarly journals well into the 1960s.

Reassessing Hans Singer and the Birth of Development Studies

The rejection of Schumpeter’s ideas by development economists was shared widely among leading founders of the field. Probably the most important player in this rejection was Hans Singer, a towering figure in development studies and architect of numerous United Nations (UN) agencies, programs,

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50 Ibid., 434.
52 For a rebuttal on this topic, see R. Wiles, “Schumpeter and Underdeveloped Countries: Comment,” Quarterly Journal of Economics 77 (4) (1963): 697–699. As Schumpeter stated, “It should be observed at once that the ‘new thing’ need not be spectacular or of historical importance. It need not be Bessemer steel or the explosion motor. It can be the Deerfoot sausage.” J.A. Schumpeter, “The Creative Response in Economic History,” Journal of Economic History 7 (2) (November 1947): 151.
and projects. Singer’s life history to a large extent reflects the debates surrounding Schumpeter’s work and that of his contemporaries such as John Maynard Keynes.\textsuperscript{55}

It is now acknowledged that Singer was the sole originator of the famous Prebisch-Singer thesis on worsening trade terms between industrialized and developing countries.\textsuperscript{56} Singer’s 22 years in the United Nations (UN) were devoted to a prodigious career where he contributed immensely to the articulation of new concepts and the creation of international development institutions and programs in fields covering international trade, children, development financing, food aid, science and technology, and development research.\textsuperscript{57}

An area that stands out in his work at the UN is his resounding dismissal of the relevance of Schumpeter’s ideas to development. He expresses deeply pessimistic views in “Obstacles to Economic Development.”\textsuperscript{58} From the outset, he argued that Schumpeter’s “theory is a good basis for a survey of the general obstacles to economic development, not because it applies to underdeveloped countries but because it fails to apply.”\textsuperscript{59}

The basis for his analysis is his acceptance of Wallich’s three arguments against Schumpeter: the absence of entrepreneurs in those countries and hence the need for government intervention; the lack of capacity to generate new technologies; and the local focus for consumption rather than production. Singer accepted its premises as being consistent with “what can be observed in underdeveloped countries.”\textsuperscript{60}

Singer argues that the existence of entrepreneurs is not a cause of development but its consequence:

“From this point of view the Schumpeter system is not really a theory of economic development, in the sense of a theory of how such development starts. Rather, it is a theory of how economic development continues and proceeds, once it has reached a certain stage characterized by the creation of innovating private entrepreneurs, and by the creation of the kind of society in which they can operate.”\textsuperscript{61}

Singer failed to acknowledge the inspirational model that Schumpeter was using, which was essentially the transformation of the economic system from within. The shift from one economic level to the next was independent of the level at which society was starting off provided there is generation of new combinations, especially in relation to agricultural economies.

Singer, like Wallich, made a strong case for the role of the public sector. He acknowledged, however, the low level of administrative capacity in less-developed

\textsuperscript{55} There is a separate body of literature that looks at the theoretical and personal differences between Schumpeter and Keynes which will not be reviewed in this paper. Those interested in data on how intellectual history is judging the two might want to look at A.M. Diamond, Jr., “Schumpeter vs. Keynes: ‘In the Long Run Not All of Us Are Dead,’” Journal of the History of Economic Thought 31 (4) (2009): 531–541. An instructive comparison of the two economists is A. Smithies, “Schumpeter and Keynes,” Review of Economic Statistics 33 (2) (1951): 163–169.


\textsuperscript{57} Toye, “Hans Singer and International Development,” 915–923.


\textsuperscript{59} Ibid. 19.

\textsuperscript{60} Ibid., 19.

\textsuperscript{61} Ibid., 23.
countries, and—like Schumpeter in the case of entrepreneurs—stressed the quality of human resources. Singer’s case for improving “public administration” could have been made for “business administration” as well. By then, technical assistance programs were being developed through new international development agencies. This was not the case everywhere, however. For example, the development of the semiconductor industry in Taiwan benefited from U.S. technical assistance programs that involved combinations of private and public sector players.

Working from the theories of factor endowment and product cycle, Singer rejected Schumpeter’s idea of endogenous innovation and argued for a “technology transfer” model consistent with the concept of “derived development” as put forward by Wallich. He did not think that modern technologies developed for industrialized-country consumers were appropriate for less-developed countries. His view clearly misrepresented Schumpeter by focusing on new technologies rather than on new economic structures.

In addition, Singer’s prognosis was particularly gloomy. He argued that “a different technology, and in many ways an older or ‘inferior’ one, would be more appropriate….In many respects the technology of a hundred years ago would be desirable for them, and would make their economic development easier.” To compound this pessimistic view, he said “that technology no longer exists. It has been scrapped, and rightly scrapped, in the industrialized countries—and the technology of the industrialized countries is the only existing technology.” He added that “[u]p to a point, it may have been an advantage to be a latecomer in economic development, but by now it has clearly turned into a serious disadvantage.”

Wallich and Singer put excessive faith in the goodwill of governments. They assumed that government officials would naturally respond to democratic pressure to increase the living conditions of the people. But in many cases the state has been abused for personal gain. Many of the East Asian countries that have strived to improve the economic conditions of the people cannot attribute their motivations solely to democratic pressure.

Singer was a prominent development thinker and the extent to which his views influenced development practice is a subject for further enquiry. What is evident is that his thinking was congruent with the conduct of international development agencies and remains so currently, despite the rise of ideas such as “private–public partnerships.” He and other critics of the relevance of Schumpeter not only failed to appreciate the importance of entrepreneurship in development, but they took a view of the role of government that in the end could not achieve the same transformational changes they wanted.

Singer would later return to the issue of science and technology but through his view that technology played a role in the prevalence of the “dual economy” and efforts were needed to facilitate its trans-

62 Staples, The Birth of Development.
64 Ibid., 25.
65 Ibid., 25.
66 Ibid., 26.
67 Ibid., 30.
fer to developing countries. This view is indeed consistent with the “derived development” concept that Wallich used as a basis for rejecting Schumpeter’s relevance to emerging countries. Singer, however, understood that the successful transfer of “appropriate technologies” would require a functional domestic infrastructure.68

Christopher Freeman, who created the Science Policy Research Unit at the University of Sussex, agreed with Singer, and their joint work resulted in the creation of the “Sussex Group,” which Singer chaired. In 1970, it produced a highly influential document, The Sussex Manifesto: Science and Technology to Developing Countries during the Second Development Decade, which was incorporated into UN documents and became a basis for subsequent international decisions on technology transfer.69

These efforts led to the Vienna 1979 UN Conference on Science and Technology for Development, which created a commission, fund, and center to implement its decisions.70 The “technology transfer” debate quickly became highly acrimonious as it extended to cover issues such as intellectual property. The diplomatic push for “technology transfer” was seen by Singer as a way to correct the global economy duopoly and very much mirrored the overall imbalance in trade relations. But industrialized countries saw it as impinging on the intellectual property rights that were owned not by governments but by enterprises. Ironically, this program that put power in the hands of governments and largely excluded the private sector did not face new pressures to protect private sector interests.

In 1993, the UN Centre for Science and Technology for Development was abolished. The UN Fund on Science and Technology for Development was absorbed by the UN Development Programme. Only the UN Commission for Science and Technology for Development survived the purge and was integrated into the UN Conference on Trade and Development. The UN created a variety of science and technology advisory mechanisms, but they were hardly effective, partly because they were providing advice that nobody asked for or acted on when provided.71

Recasting Schumpeter: Policy Implications

Schumpeter’s prescient ideas laid a firm basis upon which researchers and policymakers are now reshaping development policies in the context of innovation.

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68 See H.W. Singer, “Dualism Revisited: A New Approach to the Problems of the Dual Society in Developing Countries,” Journal of Development Studies 7 (1) (October 1970): 63. It is notable that Singer uses the word “appropriate technology.” This is not accidental. According to D.J. Shaw, “He admired the work of E.F. Schumacher, the chairman of the Intermediate Technology Development Group in London, who first introduced the concept of ‘intermediate technology’ in a report for the Indian Planning Commission in 1963. Schumacher emphasized that ‘small is beautiful’ and stressed the importance of smaller-scale, labour-intensive, and the more natural or organic, technologies developed for Third World countries.” Shaw, Sir Hans Singer, 177–178

69 The Sussex Group helped to prepare a “World Plan of Action on the Application of Science and Technology to Development” for the United Nations. Ibid., 174–179.


As Fagerberg rightly notes, “Students of long-run economic change used to focus on factors such as capital accumulation or the working of markets, rather than on innovation. This is now changing. Research on the role of innovation in economic and social change has proliferated in recent years…and with a bent towards cross-disciplinarity.”

The most elaborate international effort to bring Schumpeterian ideas to bear on development efforts is the Global Network for Economics of Learning, Innovation, and Competence Building Systems (Globelics), which held its first conference in Denmark in 2002. Since then Globelics conferences have been held on nearly all continents, and the first Globelics Academy was convened in Lisbon in 2005. More than 2,000 scholars have participated in Globelics conferences and over 300 doctoral students have been part of the Globelics Academy. Regional Globelics chapters are being created around the world to foster interactions between researchers and policymakers.

In seeking to recast Schumpeter to reflect contemporary economic decision-making, it is important to spell out a few key elements of his thinking that enjoy universal appeal. These critical elements should have been the basis upon which to genuinely assess the relevance of his ideas for emerging countries. The most important limitation of many of Schumpeter’s critics is that they failed to review his work in its totality but instead tententiously selected ideas that could be debated outside his overall conceptual framework.

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**Innovation as creative destruction**

Schumpeter’s relevance to emerging countries is his disruptive model that provided the basis for his theory of economic development. Neither entrepreneurs nor markets can function without the existence of basic infrastructure that allows them to produce and transport goods. But building such infrastructure disrupts the existing economic system.

Schumpeter’s disruptive model was railroads, a key infrastructure that had profoundly transformed the world he studied. For Schumpeter, railroads were not just a source of economic development per se, but a driving force in improving human welfare, ironically in the same way as advocated by his critics: “While a new thing is being built and financed, expenditure is on a supernormal level, and through a normal state of incomes we get all those symptoms which we associate with prosperity.”

Railroad expansion did not involve creating new technologies but deploying existing ones. In Schumpeter’s view, “getting things done” was “pure entrepreneurship stripped of all accessories.” It involved the “leadership of groups, in successfully dealing with politicians and local interests, in the solution of problems of management and of development in the regions of the roads opened up.” The entrepreneurial function was performed by either individuals or groups of people whose tasks were unrelated to the act of taking financial risks.

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76 Ibid., 327.
In fact, Schumpeter contended that it was funders, not entrepreneurs, who took financial risks, as evidenced by the emergence of innovations in credit-providing institutions and other approaches for underwriting the risks such as state enterprises.

Critics of the application of the Schumpeterian model to emerging economies pointed out that these countries are often dominated by peasant farming, which in their view is not entrepreneurial because farmers tend to be perceived largely as producers whose output is then processed elsewhere. By their very nature, however, farmers are engaged in the constant creation of new combinations that involve discontinuous adaptations. Like in many industries they engage in routine practices that use established methods. But there are frequent occasions when farmers are forced to creatively respond to changes in their conditions. Under those circumstances their behavior is hardly different from that of entrepreneurs in other sectors.77

Over the centuries, agriculture has shown remarkable capacity for entrepreneurial activity where key foundations for economic transformation and critical support systems such as research and development, infrastructure, technical training, credit, and improved policy environment are available to farmers. The great agricultural transformations of the last 150 years occurred in the United States, India, Brazil, China, and Mexico, among others, and resulted from efforts to increase foundations and support systems upon which entrepreneurship thrives. It is precisely the absence of these types of investments and the application of “derived development” models in the form of food aid that largely explain the low level of entrepreneurship in African agriculture. It is not just the years of neglect that affected African agriculture.78

It is therefore notable that these foundations were also the only ones that received little policy attention in the “derived development” model. The challenges of emerging countries were compounded by international trade policies that punished them with tariff escalation if they tried to add value to their exports. In effect, they were structurally discouraged from creating new combinations.

Schumpeter’s example of railroads has two important policy implications for the current discourse of innovation policy. First, it underscores the importance of physical infrastructure in emerging countries. Such infrastructure, and the associated institutional changes, creates opportunities for entrepreneurs not only to participate in its construction but also to expand opportunities for new businesses. Second, infrastructure transforms the economic system in a discontinuous way by not only disrupting previous economic practices, but also by expanding opportunities for new economic combinations. Infrastructure projects serve as centers of origin and diffusion of technical capabilities into the wider economy. It is these same radical transformations that Schumpeter’s critics wished to see in emerging countries but rejected the approaches that would have allowed for their advancement.


We return to the importance of system-wide technological and economic discontinuities. Schumpeter foresaw and articulated clearly the political and social implications of such discontinuity in his later works, especially *Business Cycles* and *Capitalism, Socialism and Democracy*—very much in the spirit of the systems approach that he first sketched out in the “missing Chapter 7.” Schumpeter’s idea of “creative destruction” has its roots in the very nature of capitalism.79

The disruptive nature of these events is evident and consistent with the logic of endogenous and system-wide discontinuous change. These changes are not driven by demand, but instead are “forced by producers on consumers.”80

A broader societal view brings up additional policy concerns such as the welfare impacts of “the gales of creative destruction,”81 that have been expressed in the form of organized resistance to new technologies. A contemporary example of this phenomenon is the global debate on the adoption of transgenic crops.82

**Human Capabilities**

An equally important source of system-wide disruptive force arising from Schumpeter’s theory is the role of human capabilities. The various tasks that Schumpeter ascribes to the entrepreneur cannot be performed without paying special attention to this role. Similarly, the illustrative case of railroads was an example of the importance of technical competence. Such capabilities are equally needed where society is simply adapting to change. But according to Schumpeter, human capabilities are even more critical when a society is engaged in creative economic responses.83

To Schumpeter, the quality of human resources was critical to the execution of the entrepreneurial function. Models of “derived development” would not appreciate the significance of building capacity in emerging countries. Indeed, when they did, the emphasis was on building up a cadre of functionaries for the public service. Technical fields such as science, technology, and engineering were largely considered irrelevant to emerging countries except in limited areas where they supported assimilation of imported products or inevitable areas of adaptive research such as plant breeding. Even more critical was the low priority given to higher education in general and higher technical education in particular.

The three areas raised here—systems approaches to economic development; inspirational and practical roles of infrastructure investments in development; and the role of human capabilities—were evident challenges in the early phases of development studies.

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79 Schumpeter, *Capitalism, Socialism and Democracy*, 83.
Schumpeter offered a superior starting point for thinking about development. However, the preoccupation with planning, which is a narrow function of the state, resulted in the rejection of important ideas that would later help to drive East Asian economies. Japan, which adopted a different approach to economic recovery, demonstrated congruence with Schumpeter’s ideas.84

One key aspect of building technological capabilities is the growing interest among developing countries to use existing technologies but to pursue alternative development pathways. To some extent this is driven by the desire to break out from some of the technological paradigms that have come with a wide range of social and ecological costs.

Role of Government

Schumpeter displayed a fascinating lack of interest in discussing the policy implications of his work. Schumpeter’s understanding of the place of government in his theory of development is particularly important in light of efforts by his critics to view government as a substitute for the entrepreneur.

Schumpeter viewed the role of the state as belonging to the wider context of system-wide “economic sociology” and subject to the same principles covering the creation of new combinations. He avoided the deterministic discussion on the relationships between economic and political actors. In fact, “economic sociology” dealt largely with “economically relevant institutions, including habits and all forms of behavior in general, such as government, property, private enterprise, customary, or ‘rational’ behavior.”85

Economic sociology gave Schumpeter the opportunity to explore institutional innovations that accompany technological change and economic transformation. These innovations are driven by internal interests that may or may not align with entrepreneurial activities in the private sector.86 In addition, Schumpeter was acutely aware of institutional persistence: “Social structures, types and attitudes are coins that do not readily melt. Once they are formed they persist, possibly for centuries…”87 The implications of institutional persistence for development are quite evident but were not the subject of much intellectual interest among Schumpeter’s critics.88

The fundamental implication of Schumpeter’s view is that government institutions have their own evolutionary dynamics that may not necessarily align with development objectives. Moreover, when established, such institutions are self-replicating. Many of the structural reform programs promoted by the World Bank and the International Monetary Fund in emerging countries were aimed at dealing with the issue of institutional persistence.

The real question, however, is not so much about substituting government for the entrepreneur. It is about finding ways

87 Schumpeter, Capitalism, Socialism and Democracy, 12.
88 For example, despite being acknowledged as important, the issue is relegated to an appendix in Bonné, Studies in Economic Development, 261–271.
in which the state could perform entrepreneurial functions either in its own right or in support of the private sector or some combination thereof. In other words, recognizing the importance of innovation in economic development requires a broader view of the sources of entrepreneurship beyond the private sector. Assigning the state an entrepreneurial role would resolve the false dichotomy sketched out by Wallich and his supporters.

In examining the emergence of the entrepreneurial state in East Asian economies, Ebner has noted key functions that include identification of emerging techno-economic paradigms; creating open economies that are part of global competitiveness strategies; formation of entrepreneurial capacity; promotion of knowledge flows among actors in national innovation systems; and creation of conditions that support business incubation and scale-up.\(^9^9\)

The rising focus on innovation for economic development creates opportunities for emerging countries to revisit the work of Schumpeter.\(^9^0\) Unlike their predecessors who had to contend with a limited reading of Schumpeter’s work, emerging countries have a much larger pool of knowledge to draw upon. First, they have access to Schumpeter’s prescient works, thanks to advances in technology. Second, they have access to experiences arising from the earlier applications of Schumpeter’s work. Third, and more important, there is a growing body of neo-Schumpeterian scholarship that offers an untapped reservoir of ideas that can be adapted to their contemporary needs.\(^9^1\)

Getting the state to perform these entrepreneurial functions requires a better understanding of the systemic nature of the public policy process.\(^9^2\) It entails a level of institutional orchestration that cannot be achieved through simplistic notions such as correction of market failures. Taking this approach will also involve developing new policy instruments that reflect the structure and functions of innovation systems.\(^9^3\) As emerging economies increasingly recognize that fostering innovation requires significantly different approaches, they might just become the flag bearers of policy approaches inspired by Schumpeter over a century ago.

**Conclusion**

The aim of this paper is to explore the rejection of Schumpeter’s ideas by the founders of development economics. Contrary to popular perceptions, the absence of Schumpeter in contemporary development policy discourse is not a historical oversight. It is a result of nearly a decade of debate starting in the 1950s. The debate

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represented a clash between Schumpeter’s systems approach to economic development and dominant equilibrium theories that dominated economic thought. Schumpeter's detractors institutionalized their theories in various international organizations, especially the United Nations, the World Bank, and the International Monetary Fund. They were therefore able to lock in their ideas in ways that made Schumpeterian creative destruction a long and tedious process.

Schumpeter laid out the foundations for understanding how economies change over time. That was a century ago. Several enduring themes of his theory remain valid today and should be part of the core of the policies of emerging nations. First, priority should be given to the role of innovation not only in transforming economic systems to new levels of performance, but also in spreading prosperity. Second, emphasis should be placed on the role of entrepreneurs in the private and public sectors as critical agents of innovation. Third, reducing all types of risks associated with innovation should be a central feature of economic governance. Finally, private entrepreneurs and public servants should undertake important but complementary leadership roles. Elaborating on these themes and adjusting them to reflect contemporary circumstances will help to advance our understanding and management of economies as complex systems.