

Debate

Structural Change**Servaas Storm**

ABSTRACT

Development economics appears to have come full circle, as interest in and concern for industrialization have made a comeback, echoing major concerns of the early development economists. However, when it comes to the practice of industrialization strategy and industrial policy, the default recommendation is still the market and static comparative advantage — the main task of governments, in the new view, is to impose institutional reforms and improve governance so as to allow markets to perform more efficiently. History is thus about to repeat itself, but this time as farce, because no country has managed to climb the industrial ladder just by ‘getting prices and institutions right’. We have to re-learn the old lessons of how to industrialize, learning from past mistakes and taking into account new challenges posed by today’s global realities.

THE LIFE, DEATH AND REBIRTH OF A STRATEGY

Writing in 1968, at a time when industrialization and structural change in the developing world were still proceeding at unprecedented pace,¹ Albert Hirschman (1968: 32) noted a growing disappointment, as ‘industrialization was expected to change the social order and all it did was to supply manufactures’. Hirschman was right. Industrialization had carried high hopes of economic emancipation, social change and political autonomy for the newly independent developing countries, partly on the assumption that the aspiring middle classes created by industrial capitalism would bring about accountable, representative and stable governments. However, it failed to deliver on those promises. Actual industrialization was turning excessively capital- and

I am very grateful to three referees for useful and open-minded comments on this essay, the writing of which was inspired by Mark Twain’s maxim: ‘whenever you find yourself on the side of the majority, it is time to pause and reflect’.

1. For empirical evidence, see Bruton (1989); Chenery and Syrquin (1975); Chenery et al., (1986); Lawrence (2005); Ocampo et al., (2009); Sen (1983).

import-intensive, increasingly dominated by a coalition of big metropolitan multinational corporations and a domestic bourgeoisie, and un-equalizing (Chenery et al., 1974; Taylor and Bacha, 1976), creating a more insidious, namely domestic, dependency. 'Hence one is only too ready to read evidence of total failure in any trouble it encounters', predicted Hirschman (1968: 32), and so it happened: when the 'easy' phase of industrialization, based on import substitution, had been exhausted in the early 1970s, disenchantment turned into disillusion, feeding and reinforcing (often predictable) critiques. On the left, a rejection of industrialization was part of the denunciation of the externally imposed, mechanically modernist 'discourse on development' (Escobar, 1995; Seers, 1979). The disenchantment of the left dovetailed — history sometimes makes for strange bedfellows — with the equally fundamentalist critique coming from neoclassical free-market economists (Balassa, 1971; Krueger, 1974; Little et al., 1970), who had long been sharpening their knives for an assault on the (in their view) misguided state activism and development planning which had been pushing industrialization for the domestic market in defiance of static comparative advantage.

The case was settled and, as Hirschman had feared,² industrialization was decried a total failure when it became clear that many developing countries could no longer maintain their growth rates, had become structurally dependent upon (capital goods) imports, foreign aid and capital inflows, and had accumulated unmanageable foreign debts (often denominated in dollars). These countries, mostly in Latin America (Bertola and Ocampo, 2013; Peres and Primi, 2009) and Africa (Lawrence, 2005), were pushed into a de-facto default and a prolonged debt crisis after the US Federal Reserve, trying to bring down domestic inflation, tripled interest rates to a debilitating 21 per cent in 1981. In what has become a watershed moment, the IMF and the World Bank were called in to 'rescue' the debt-ridden countries,³ which were diagnosed to suffer from too much — and misconceived — state intervention, corruption and rent-seeking, inefficiency and misguided economic incentives. The neoliberal policies they imposed followed the Washington Consensus (WC), which ensured that the developing world could no longer go against but rather had to follow its static comparative advantage — determined by the relative abundance of unskilled labour and/or natural resources and the relative scarcity of capital. At the same time, the few successful late-industrializers, all in East Asia, were hailed as 'developmental miracles' based on the 'right' policy model: market-led, outward-oriented and efficient (World Bank, 1993).

2. Hirschman (1968) coined this *fracasomania* or a 'failure complex'; see Özçelik (2014) for a fuller diagnosis.

3. In actual fact, it was the creditors (US banks) that were rescued rather than the debtors, who were forced into a painful contractionary structural adjustment — the main purpose of which was to generate the forced savings to pay off the debts.

Table 1. Share of Manufacturing in GDP: Selected Countries and Regional Averages 1950–2005

	1950	1960	1980	2005
Bangladesh	7	5	14	17
Brazil	19	30	33	18
China	14	27	40	34
India	10	14	17	16
Kenya	11	9	13	12
Nigeria	2	4	8	4
Mexico	17	15	22	18
Pakistan	7	12	16	19
South Korea	9	10	24	28
Taiwan	15	19	36	22
Tanzania	3	4		7
Thailand	12	13	22	35
South Africa	16	20	22	19
Asia	10	14	22	22
Latin America	15	17	20	15
Africa	11	8	12	10
Developing countries	12	13	17	15
Advanced economies	29	30	23	16

Source: UNIDO (2013: Table 1.1).

There was no longer any lofty talk of ‘industrialization’ as such — it was, often rather uncomfortably, taken for granted that ‘getting market prices right’ (as per the WC), and (a decade later) ‘getting institutions right’ (as per ‘good governance’ dogma in the Post-Washington Consensus⁴) would be enough to guide private initiative (as by an invisible hand) towards ‘development’ (Saad Filho, 2010). It did not happen: instead there were frequent ‘growth collapses’ and two ‘lost decades’ especially for Latin America and Africa — as is now a familiar story (Moreno-Brid et al., 2005; Ocampo et al., 2009). However, the greatest damage of trade and financial liberalization, which Erik Reinert (2007: 295) calls ‘a crime against a considerable percentage of humanity’, concerns ‘the perhaps irreversible deindustrialization — the killing of the increasing returns sector — of the periphery’.

Table 1 illustrates the point: Latin America was the most industrialized region in the developing world until 1975 when its manufacturing sector started to contract, the share of manufacturing in GDP reverting back to its 1950 level (of 15 per cent of GDP). There was not just deindustrialization, but also a drastic intra-industry restructuring, in line with static comparative advantage, with the southern-cone countries going for natural resource-processing industries, while Mexico and some of the small Central American economies went for assembly manufacturing — *maquiladoras* — by catering to US markets. These activities, featuring low

4. ‘Getting institutions right’, *pace* Acemoglu and Robinson (2012), is a matter of ensuring the legal and political protection of property rights for the private sector. Storm (2014) evaluates their reductionist claims.

domestic knowledge generation and meagre value-added creation, wrote Cimoli and Katz (2003: 387), pushed 'Latin American economies into a "low development trap"'. The already low share of manufacturing in GDP in Africa declined from 12 per cent in 1980 to a pathetic 10 per cent in 2005, and this decline was accompanied by a general downgrading of the technology structure of its manufacturing (Lawrence, 2005; McMillan and Rodrik, 2011; Tregenna, 2009). As in Latin America, African countries deindustrialized prematurely, at levels of income per capita which were significantly lower than the levels at which the advanced countries had deindustrialized (Palma, 2005; Tregenna, 2011).

This painful failure led to a renewed interest in industrialization and structural transformation in the early 2000s,⁵ after economic growth started to rise again in Africa and Latin America as a result of windfall export gains (caused by the commodity price boom) and the surge in natural resource-seeking foreign direct investment. 'Massive industrialization based on commodities in Africa is imperative, possible, and beneficial', states the 2013 edition of the *Economic Report on Africa*, co-authored by the United Nations Economic Commission for Africa (UNECA) and the African Union. The World Bank's Commission on Growth and Development (2008), chaired by Nobel laureate Michael Spence, rediscovered the developmental importance of industrialization, pointing to the thirteen economies that managed to sustain very rapid growth of at least 7 per cent for twenty-five years after World War II, with growth in most of them driven by manufacturing. UNIDO's flagship *Industrial Development Report 2013* expresses the 'firm conviction of industry's role as a dynamic instrument of growth essential to the rapid economic and social development of the developing countries' (UNIDO, 2013: xi–xii).

The revived policy interest coincides with a renewed concern for industrialization and structural change in the mainstream of development economics. Dani Rodrik has been a leader of this *renaissance* (e.g. McMillan and Rodrik, 2011; Rodrik, 2007, 2008, 2013), theorizing (in a pragmatic way) the notion of 'growth-enhancing structural change' and empirically demonstrating that it is the sole explanation for accelerated growth in the developing world. Joseph Stiglitz has made the argument that industrial and financial policies are needed as 'intrinsic fundamental ingredients of all development processes: witness to that, every successful industrialization, ranging from Germany and the USA, almost two centuries ago, all the way to Korea, Taiwan, Brazil, China and India nowadays' (Cimoli et al., 2009: 2). Perhaps the most powerful mainstream economist rekindling the notion of 'structural change' is Justin Yifu Lin (2009, 2012), the former chief economist of the World Bank, who is grandiosely calling for a paradigm

5. *Development and Change* picked up this trend early on, when in 2005 it published its first Forum issue featuring a Debate on 'Putting Industrialization Back into Development'; see Nicholas (2005).

change in development economics towards what he calls, ‘New Structural Economics’.

This renewed recognition of the developmental importance of growth-enhancing structural change does not, however, imply a rejection of the neoliberal approach to development (Shapiro, 2007). Far from it, as we will see; the thrust of these mainstream authors remains firmly respectful of the central role of markets and (price) incentives in the industrialization process and heedful of the far greater danger of government failures as compared to shortcomings of the private sector. Government policies, in their view, should just facilitate the private sector through supply-side support, while keeping incentives in line with comparative advantage. This is clearly a far cry from the ideas of the old development economists, as well as deeply at odds with major non-mainstream approaches, viz Nicholas Kaldor’s (1967) Keynesian growth laws (further developed by Anthony Thirlwall and co-authors), Luigi Pasinetti’s (1983, 1991) demand-driven structural economic dynamics, Lance Taylor’s (1983, 1991, 2004) structuralist macroeconomics, Erik Reinert’s (2007) historical school approach inspired by List and Schumpeter, and the institutionalist approach to late industrialization of Alexander Gerschenkron (1962), developed further by Alice Amsden, Ha-Joon Chang and Robert Wade. What can we learn from the ‘new’ development economics that is different from what these non-mainstream development economists have been arguing all the time?

KALDOR’S GROWTH LAWS

In any assessment of the developmental importance of industrialization and structural change, a long-run perspective helps us to look past short-run fluctuations and see the underlying trend. Taking a long-run view, Kaldor (1966, 1967) identified three empirical regularities, now fondly known as Kaldor’s Growth Laws.⁶ His ‘First Law’ states that industrialization is both the key to structural transformation and the engine of growth, and hence: the faster the growth of manufacturing output, the faster the growth rate of real GDP. The reasons are that industry has the strongest (backward and forward) input–output linkages, while at the same time offering greater opportunities (than the other sectors) for capital accumulation, acquiring new technologies, exploiting economies of scale and scope, and generating positive knowledge spillovers to other sectors of the domestic economy.⁷ Kaldor’s point is not just that as long as labour and capital are transferred from agriculture to manufacturing, the average productivity *level* in the economy must rise (which entails a temporary structural change bonus) — but rather that this shift must raise average productivity *growth* over time (which is called a

6. Targetti (2005) reviews Kaldor’s contributions to development economics.

7. The point has been recently rediscovered by Rodrik (2013).

Figure 1. *Economic Growth and Changes in the Share of Manufacturing Value Added in GDP, Selected Regions and Country Groups, 1970–2007*



Notes:

Commonwealth of Independent States: Russian Federation and Ukraine; *Eastern Europe:* Bulgaria, Czech Republic, Hungary, Poland and Slovakia; *First-tier newly industrialized economies:* South Korea, Singapore and Taiwan; *Low- to middle-income Latin America:* Bolivia, Ecuador and Peru; *Middle East and Northern Africa:* Algeria, Egypt, Iran, Jordan, Morocco, Saudi Arabia, Tunisia and Yemen; *South Asia:* Bangladesh, India, Pakistan and Sri Lanka; *Semi-industrialized countries:* Argentina, Brazil, Chile, Colombia, Mexico, South Africa, Turkey and Venezuela; *South-East Asia:* Indonesia, Malaysia, Philippines, Thailand and Viet Nam; *Sub-Saharan Africa:* Cameroon, Ethiopia, Kenya, Mozambique, Tanzania, Uganda and Zimbabwe.

Source: UNIDO (2013: 23, Figure 1.5).

dynamic structural change bonus). Kaldor's first law is backed up by a large body of empirical research that has demonstrated a close positive link between economic growth and structural change towards manufacturing.⁸ Figure 1 illustrates the stylized fact that the greater the increase in manufacturing's share in GDP, the higher (annual per capita) income growth will be. Figure 1 also highlights considerable regional diversity — ranging

8. Recent studies confirming the 'manufacturing as an engine of growth' hypothesis include Felipe (2010); Felipe et al. (2009); Pacheco-López and Thirlwall (2014); Rodrik (2007, 2008); Szirmai (2011); Szirmai and Verspagen (2011); Tregenna (2008, 2011); UNIDO (2013).

from rapidly industrializing and fast-growing China and the first-tier NICs to the prematurely deindustrializing and stagnating Latin American and other semi-industrialized economies.⁹ If one wonders why Eastern Europe (1995–2007) has been doing so well, the answer is that its reindustrialization is driven by Germany's outsourcing (Storm and Naastepad, 2015). We can also see that in South Asia, where the manufacturing sector has remained relatively undersized and where, especially in India,¹⁰ recent growth has been 'services-led', growth performance has been disappointing.

Kaldor's 'Second Law', known as the Kaldor-Verdoorn law, states that there is a strong causal relationship between the growth of manufacturing output and the growth of manufacturing (labour) productivity. Kaldor's reasoning is persuasive: higher manufacturing output growth allows an economy-wide deepening of the division of labour, greater specialization and more rapid learning-by-doing (in firms) — and all these processes eventually get reflected in higher productivity growth. Additionally, higher manufacturing output growth, to the extent that it is due to higher investment, also raises productivity. This is because, through the simple act of investment, new equipment will be installed which embodies the latest technology and will therefore be more productive than older vintages of capital stock.¹¹ Manufacturing offers greater opportunities for embodied technological progress and economies of scale or scope than other sectors, if only because the capital goods that are used in other sectors are produced in the industrial sector. It is precisely for this reason that the first development planners (Mahalanobis, 1955; see Chakravarty, 1987) gave priority to the sector 'producing the machines to produce machines'.¹²

The second law has important implications for job growth: the more productivity grows as a by-product of manufacturing output expansion, the lower the direct employment growth generated by it. This is illustrated by Tregenna (2009) who observes for South Africa that the employment multipliers of manufacturing have been falling during 1980–2005, especially for semi-skilled/unskilled work, due to industrial upgrading, labour-displacing technological change and capital deepening. In extreme cases, as in India's organized manufacturing from 1981 onwards, it may have led to what Kannan and Raveendran (2009) have called thirty years of 'growth sans employment'. Hence, while manufacturing output continues to grow, manufacturing

9. On Latin American deindustrialization, see Palma (2005).

10. See Chakravarty and Mitra (2009); Dasgupta and Singh (2005); Kucera and Roncolato (2012).

11. For empirical evidence, see McCombie et al. (2002) and Storm and Naastepad (2012) and references therein.

12. The key importance of the machine tool sector was highlighted by Rosenberg (1963: 416), emphasizing that the 'highly developed facility in designing and production of specialized machinery is, perhaps, the most important single characteristic of a well-developed capital goods industry and constitutes an external economy of enormous importance to other sectors of the economy'.

employment continues to vary between 15 and 20 per cent (UNIDO, 2013), because of the ‘systematic tendency of productivity in manufacturing to grow faster than in services’ (Rowthorn and Ramaswamy, 1999: 1). But (as is well known) through its strong productive linkages with other sectors, manufacturing creates and induces a lot of indirect employment, both in formal and informal activities. Evidence suggests that for every job created in manufacturing, there will be two to three jobs created outside manufacturing (Lavopa and Szirmai, 2012; Park and Chan, 1989).¹³ In addition, the higher productivity jobs in manufacturing are normally associated with higher wages (compared to those earned elsewhere).

Kaldor’s ‘Third Law’ holds that when manufacturing grows, the rest of the sectors (not subject to increasing returns) will transfer labour to manufacturing, and in the process overall productivity in the economy will rise. Kaldor made a point of emphasizing that industrialization leads to rising productivity levels in agriculture and services — through absorbing underemployed rural ‘surplus’ workers, providing more productive capital goods, spreading technological knowhow, and creating markets for new modern services that are complementary to manufacturing (in transport, distribution, and finance). This is very much what we have seen in recent years: while manufacturing generally has been contributing most to labour productivity growth (mostly through its increased weight in total employment), modern (or ‘market’) services have been found to contribute almost as much.¹⁴ There has been a recent debate on whether services can be a *leading sector*, spearheading the process of structural transformation and economic development (Dasgupta and Singh, 2005; Kucera and Roncolato, 2012; Timmer and de Vries, 2009), but I think this debate is a red herring: manufacturing has far greater backward production and employment linkages than modern services, and services depend on manufacturing (as a source of demand) to a far greater extent than vice versa.¹⁵ The debate was partly fuelled by the success story of especially financial services which featured unparalleled dynamism and productivity growth during the period up to 2008; but we now know (after the bursting of the bubble) that this dynamism was largely fictitious and its social

13. In 2009 there were almost 388 million formal and informal manufacturing jobs worldwide, employing 13.4 per cent of the world’s workforce of 2.9 billion people (UNIDO, 2013). In addition, manufacturing indirectly created another 950 million manufacturing-related jobs in services, in total employing around a third of the global workforce.

14. See Kucera and Roncolato (2012); Ocampo et al. (2009); Pieper (2000); Timmer and de Vries (2009). This finding is much less surprising than it looks, because as manufacturing becomes more sophisticated, high-tech and skills-intensive in the more advanced stages of industrialization, the demand for specialized producer services complementary to the leading manufacturing sector does indeed markedly increase (see Andreoni and Gregory, 2013; Guerrieri and Meliciani, 2005; Park and Chan, 1989).

15. On this asymmetric dependence of services on manufacturing, see Park and Chan’s (1989) input-output analysis for twenty-six countries; see also Guerrieri and Meliciani (2005), Tregenna (2008) for South Africa (1980–2005), and UNIDO (2013).

efficiency dubious (Epstein and Crotty, 2013). For the other part, the idea¹⁶ that development could be led by growth of services such as ICT, design and business support was epitomized by India, which has been lionized by the international press as the exemplar of a new growth model, but demonized by others as brutally exploiting the ‘cyber coolies of our global age, working not on the sugar plantations but on flickering screens, and lashed into submission through vigilant and punitive monitoring, each slip in accent or lapse in pretense meaning a cut in wages’.¹⁷ However, India has already reached the end of that road, with its growth declining and balance-of-payments imbalances increasing (Ghose, 2014; Nabar-Bhaduri and Vernengo, 2012), and its government re-emphasizing (green) industrialization. Indeed, one cannot help wondering why India should have had the unique privilege of leapfrogging over a phase of manufacturing-led growth.¹⁸

Structural change is not just about the shift from agriculture to manufacturing (the first stage, see Timmer and Akkus, 2008); what is equally if not more important are the later stages in which countries climb the technological ladder by diversifying and upgrading their manufacturing structure toward more technologically advanced activities. This second (more difficult) stage begins when a country has run out of room for further structural change along broad inter-sectoral lines, and growth becomes dependent on within-sector enhancements in productivity (Rodrik, 2013). This means climbing the ladder by shifting from low-tech industries (which are often labour intensive, but technologically quite static) to medium-tech and high-tech industries (which offer the biggest opportunities for innovation, skills development and productivity growth, but generate less employment). The point is that, for developing countries, growth and development are not about pushing the technology frontier, but rather about changing the structure of production towards activities with higher productivity — and this means absorbing existing technologies, catching up with the technological leading countries (as described mostly clearly by Gerschenkron, 1962), and learning how to manufacture by just doing it and keep on doing it (as described most forcefully by Amsden, 2001).

OF VERY GOOD OLD WINES ...

Historically, no country — not even Britain (Parthasarathi, 2012; Reinert, 2007; Storm, 2014) — has industrialized without the state providing

16. For the details, see the OECD's *Growth in Services Report* (2005).

17. Trivedi (2003), cited by Nabar-Bhaduri and Vernengo (2012).

18. Ghose (2014) traces the foundations of India's services boom, based on comparative advantage in skills-intensive software services, directly to the Nehru-Mahalanobis industrialization strategy.

directional thrust to structural change and economic diversification.¹⁹ Accordingly, the debate about industrialization in the economic development literature, always charged and often heated, centres around the issue of what governments should and should not do. The early development economists were very clear on the issue. They shared a perception of development as a ruthlessly disruptive and conflictive process of dynamic, *non-marginal* change, of ‘creative destruction’ — and argued that given the degree of relative backwardness to be overcome, the degree of ‘disruption’ of traditional structures required (which would certainly arouse the resistance of established interests) and the amount of investment finance to be mobilized, the process of latecomer industrialization needed deliberate fostering and planning by the state. They understood perfectly well what the price mechanism could do (providing adequate signals for marginal changes in the short-run allocation of resources), and could not do (providing the required directional thrust to processes of ‘big’, non-marginal change). Rather, the price mechanism would reinforce the existing pattern of specialization based on static comparative advantage, locking the backward countries into a ‘low development trap’.²⁰ For Lewis (1954) and Gerschenkron (1962), only the state had the capacity to mobilize the capital to finance the leap into modern capital-intensive manufacturing, going against comparative advantage; the catching-up effort — in terms of resource mobilization — would exceed the capacities of private capital, and the risks involved were too big to carry for the domestic banking system and the entrepreneurial class. Rosenstein-Rodan (1943), Mandelbaum (1945) and Nurkse (1953) argued that the *social* returns to industrial investment projects, all large, lumpy and risky, did by far exceed the *private* returns to private investors — creating new opportunities and benefits downstream and upstream, which could not be adequately captured in an individual investor’s profit and loss calculus.²¹ Hence, governments should invest themselves and co-ordinate (private) investment decisions, preferably in a ‘Big Push’. Myrdal (1957), Hirschman (1958) and Kaldor (1966), taking their lead from Young (1928) and Schumpeter (1939), emphasized the fact that the dynamic heart of structural change is a process of *cumulative causation*, reinforcing and accelerating growth — basically because industrial expansion will create extra employment, incomes and demand, while raising productivity and profitability (through the Kaldor-Verdoorn law) and furthering investment. Industrial investments, in this view, move the system away from equilibrium in ways that comparative static (‘marginalist’) equilibrium analysis could never take into account. For Singer (1950) and Prebisch (1959) it was clear that an escape from the primary commodity specialization trap was possible only by means of

19. See Amsden (2001); Chang (2002); Gerschenkron (1962); Mazzucato (2013); Shapiro (2007); Shapiro and Taylor (1990); Wade (2014).

20. This holds true especially for countries rich in natural resources.

21. See Singer (1979) for an appreciation of Mandelbaum.

infant industry protection and import substitution. Finally, Kuznets (1971: 348), going beyond economics narrowly defined, argued that because industrialization required disruptive ‘shifts in population structure, in legal and political institutions, and in social ideology . . . without which modern economic growth would be impossible’, it would be a conflictive process that required new public mechanisms for conflict resolution (Syrquin, 2010).

While I think this early understanding of the process of structural transformation is still unrivalled in terms of its depth, span and vision, it is also true that the early development literature offered (and I am generalizing here) limited practical guidance as to how to blueprint industrial growth, portraying growth as the result of capital accumulation and embodied technological progress (imported from abroad), and attributing the state with sufficient political autonomy and a benevolent technocratic omniscience. ‘State planners, armed with input-output tables from industrialized countries . . . could simply allocate resources [so as to] leapfrog into the modern industrial era’, summarizes Shapiro (2007: 2). Actual industrialization experiences made apparent that the early exaggerated optimism was misplaced — in the neutrality of the state, in the effectiveness of its policies, in the easy transferability of technologies, and in the independence of the national growth project from global capital markets. And because the optimism and *élan* had been so strong, and the early hopeful phase of industrialization had been so smooth and successful, the disappointment was bigger and more widespread when the second part of the road to industrial modernity turned out to be steeper and rockier than expected (Hirschman, 1968). Here I can flag only three issues.

1. The state was found wanting, lacking the requisite political autonomy and (often) the administrative capabilities to act as an effective agent of change. Industrial strategies created new, or changed existing, incentives through protection, taxation and public spending, and for reasons both intended and unforeseen, advantaged some (the industrial capitalists catering to the domestic market) and disadvantaged others (for example, the landholding and/or the financial classes, the exporting manufacturers, or rural labourers). Distributional conflicts led to political crises and economic and social setbacks (as in Brazil in the 1960s and Chile and Argentina in the 1970s). In the eyes of neoclassical economists, this was evidence of unproductive rent-seeking behaviour (Krueger, 1974; Little et al., 1970), or, because the industrialization strategy often turned the terms of trade against agriculture, of an ‘urban bias’ (Lipton, 1977), or even the ‘plundering of agriculture’ (Schiff and Valdés, 1992).
2. Import substitution (often) ended in tears as, in many cases, inward-oriented industrialization of the early phase led to chronic foreign-exchange shortages, high import-dependency and rising foreign (dollar-denominated) debts, forcing countries to shift towards more

outward orientation and export growth — a process which proved too difficult in the context of the global stagflation of the late 1970s and the two oil price shocks of 1973 and 1979. It turned out that it took much longer than expected for the infant industries to pass the so-called Mill test, that is, to grow up into ‘adult’ productive activities that could survive international competition without protection. Protected industries were found to be inefficient — in some cases, value added evaluated at ‘free trade’ world prices was found to be negative,²² and more generally, incremental capital-output ratios in protected industry were rising.²³ These inefficiencies were argued to amount to a cumulative welfare loss that could not be outweighed by the discounted future benefits of protection (that is, future industrial exports).²⁴

3. Rapid (but often capital-intensive) industrialization did not create as many jobs as expected and did not ‘trickle down’ to the poor, while income and wealth inequalities did increase. Growing distributional tensions motivated governments and international agencies to reconsider their development strategies, as captured by the World Bank motto ‘redistribution with growth’ (Chenery et al., 1974) and the ILO’s ‘basic needs’ strategy (ILO, 1976). But rising inequality also undermined domestic demand and, by limiting the size of the home market, put a brake on industrial investment, output and productivity growth (Kalecki, 1955; Taylor and Bacha, 1976). In various cases, especially in large, populous and foreign-exchange constrained countries such as India, domestic demand for manufactures was eroded by wage-goods inflation, caused by the fact that under-prioritized agriculture was unable to produce enough food and raw materials for the growing industrial workforce and ditto manufacturing sector (more on this below).

The neoclassical mainstream jumped the gun, concluding that these problems were all epiphenomena of ‘government failure’, and specifically of the misguided wish to go against the forces of the market as captured by the notion of ‘static comparative advantage’. The state could only do wrong,

22. This means that if the final product were to be sold against the free trade price, the producer would incur a loss.

23. The rising incremental capital-output ratios in India were not due so much to inefficiency as to underutilization of productive capacity, caused by stagnating domestic demand. Domestic demand stagnated because of rising inequalities. See Chakravarty (1987: 53–59).

24. This condition is known as the Bastable test. Those desiring protection, Charles Bastable (1903: 142) wrote, must not only be able to prove ‘that the industry to be favoured will after a time be self-supporting’, they must also be able to show ‘that the ultimate advantage will exceed the losses incurred during the process. [This will involve] a careful computation of the different elements involved in the loss in each year of protection, with interest on the losses during earlier years, the estimated amount of gain to accrue when the time for independence is reached . . .’. However, the Bastable test is no hard-and-fast rule, as should be obvious, since passing it depends wholly on the value of the discount rate one chooses.

as it is seen — in neoclassical public choice and in line with the neoliberal ideology of the Mont Pèlerin Society²⁵ — as a passive instrument captured and used by (coalitions of) interest groups to extract rents from the private sector through trade and fiscal policies and regulation (Lal, 1983). The only way to discipline the state was allowing it as little discretion as would be feasible. ‘Read between the lines, [the neoclassical mainstream] advocated *laissez faire* as the only viable alternative to an incentive mare’s nest’, write Shapiro and Taylor (1990: 863). This critique was bolstered by the developmental success of South Korea and Taiwan, which were both held up as combining non-interventionist states and rapid, market-led, outward-oriented industrialization. Export-led growth, based on ‘getting prices right’ (in line with static comparative advantage under conditions of free trade) became the development strategy of choice — according to the Washington Consensus, that is.

.... AND NEW BOTTLES

These ‘vicissitudes in the career of a strategy’, as Chakravarty (1987) labelled the ups and downs of the early industrialization strategies, motivated the younger generation of non-mainstream economists to rethink their theories and models, as well as reinterpret the much-hyped East Asian ‘market miracle’ (Storm and Naastepad, 2005). This generated a large body of new work that reinterprets, updates and productively revises the ‘old’ ideas, all starting off from the fundamental insight that more than a price signal is required to displace the previous equilibrium, to generate structural change and to alter the way developing countries are inserted into the global economic system — that is, to redefine the international division of labour. This literature is beyond reviewing here, but permit me to cherry-pick.²⁶

First, building on Gerschenkron and Myrdal, new work explored why some states turn into successful ‘developmental states’ and why others fail. This venture created a clearer political economy which puts at centre stage the state’s capacity to guide the market and resolve distributional conflicts — highlighting the importance of ‘embedded autonomy’ of the state (Evans, 1995), the use of ‘reciprocal control mechanisms’ by which governments impose performance targets on big conglomerate firms in exchange for special favours such as subsidies (Amsden, 1989), the active presence of a ‘nationalist incitement to develop’ (Johnson, 1982), the establishment of a national development bank, and the power of a ‘pilot agency’ responsible

25. Its members include(d) James Buchanan, Gordon Tullock and Deepak Lal.

26. Most of this literature is not included in the lengthy review chapters in the latest *Handbook of Development Economics* (Rodrik and Rosenzweig, 2010). Useful reviews of the non-mainstream literature are Andreoni and Gregory (2013); Ocampo et al. (2009); Shapiro (2007); and Shapiro and Taylor (1990).

for long-term planning and coordination (Johnson, 1982; Wade, 1990). Developmental states in East Asia were found to defy static comparative advantage by creating price distortions so that economic activity was directed towards greater investment in strategic sectors. Hence, following Amsden (2001), it is all about 'getting prices wrong', for example, in the form of tax concessions, subsidies, temporary trade protection and heavily subsidized interest rates on long-term loans, while making sure that industrial firms would not waste these resources; Scitovsky (1985) aptly called this a 'forced investment' and 'forced savings' regime. Competition between domestic firms was managed by imposing restrictions on entry, the coordination of capacity expansions, and the promotion of cartels for specific purposes such as standardization, specialization and exports (Chang, 1999). Japan, wrote Rosovsky (1972: 244), 'must be the only capitalist country in the world in which Government decides how many firms should be in a given industry and sets out to arrange the desired number'. This is no longer so: Korea and China followed Japan's example. In Korea, 'every major shift in industrial diversification in the decades of the 1960s and 1970s was instigated by the state' (Amsden, 1989: 80). The *state's hand* (not the invisible hand) generally provides the vision and the dynamic push to make things happen that otherwise would not have happened, writes Mazzucato (2013: 5), who — in Gerschenkron style — understands the state as 'willing to take risks that business won't', as an 'entrepreneurial agent' — taking the most risky and uncertain investments in the economy' (ibid.: 9).

Second, taking clues from Schumpeter but also Hirschman, technology is no longer treated as a mere factor of production, but conceived as a cumulative and path-dependent process of learning and discovery, in which managerial and technological capabilities are accumulated that allow firms in late-industrializing countries to master, adapt and upgrade existing technologies (Amsden, 2001; Shapiro, 2007). This has changed the way we look at rents and rent-seeking behaviour — from the neoclassical view that rents are just a politically derived deadweight welfare loss (Krueger, 1974) to the neo-Listian or neo-Schumpeterian view that oligopolistic rents are at the heart of technological change driving upgrading and innovation. Free trade, as argued by Amsden (2001), Chang (2002) and Reinert (2007), rather than forcing firms to innovate, will force them out of business by wiping out their rents. Echoing Prebisch's earlier justification for infant industry protection, the more recent literature argues in favour of industrially oriented, mercantilist trade policies that promote 'dynamic and knowledge-producing rent-seeking' (Reinert, 1999: 276). Theoretically, the quest is for 'dynamic efficiency' — the ability of an economic system to *reconfigure* itself by constantly creating new dynamic activities characterized by higher productivity, positive spillover effects and increasing returns to scale (Ocampo, 2005) — not the static Pareto optimality implied by neoclassical general equilibrium thinking. Empirically, the point made was that in almost all industries in almost all late-industrializing countries, import substitution (whatever its

static efficiency costs) was a prerequisite for export-led growth, because it would not have been possible without the technological capabilities accumulated during the infant-industrialization effort which preceded it (Amsden, 2001; Bruton 1989; Chakravarty, 1987; Ghose, 2014; Wade, 1990).

Thirdly, deviating from most of the early theories (e.g. Lewis, 1954; Mahalanobis, 1955; Rostow, 1960) in which structural change was driven by supply-side variables (basically by a step-up in national savings, an increase in the skilled labour force, and a greater availability of foreign modern technology), more recent theorists such as Taylor (1983, 1991, 2004) and Pasinetti (1983, 1991) emphasize that secular growth and structural change are propelled by aggregate demand, and through Engel effects, by the distribution of incomes.²⁷ Taylor's structuralist macroeconomics conceptualizes the rate and the pattern of growth as being demand-determined by the distribution of incomes over wages and profits and across (agricultural and industrial or tradable versus non-tradable) sectors — and always subject to some constraint, be it Kalecki's (1955) wage-goods inflation barrier (Storm, 1995, 1996), Prebisch's foreign-exchange constraint, or a political-economy fiscal constraint on public investment (Rada, 2007; Taylor, 1994, 2004). Dynamic feedback effects are crucial: if industrialization raises productivity growth (as Kaldor had emphasized) and if the system allows real wages to rise in line, this will stimulate the home market, raising demand and further increasing productivity growth (Rada, 2007). If real wage growth is kept below productivity growth, this will depress the home market but help exports — what happens to aggregate demand is an empirical matter, but if the home market is substantial, aiming for low wages is not a viable industrialization strategy. Because demand matters for long-run growth (*pace* Kaldor's second law), industrialization can be promoted by domestic demand management (through taxation and public investment), an undervalued exchange rate in combination with capital controls, and public control over the interest rate and the banking sector, for example, through priority-sector lending (Naastepad, 2001; Taylor, 1991). For Thirlwall (1979, 2011), who follows Kaldor (1967), long-term growth is constrained by export growth (given the foreign trade multiplier), because developing countries cannot permanently run (and finance) a trade deficit. Perhaps the most ambitious recent attempt to revive, update and extend the ideas of the old school development economists is by CEPAL economists Cimoli and Porcile (Cimoli and Porcile, 2014; Cimoli et al., 2010) who propose a synthesis of Latin American (Prebisch-Furtado) structuralism, Thirlwall's balance-of-payments constrained growth model, Pasinetti's structural dynamics and Kaldor's second growth law. Their concern is with what they call the 'Schumpeterian' and 'Keynesian' efficiency of the growth process — the first defined in terms of a sector's capacity to create more technological externalities, the second defined in terms of a

27. On the close connection between Taylor's work and Pasinetti's processes, see Taylor (1995).

sector's capacity to bring about stronger production and investment stimulus (via backward and forward linkages).

THE AGRARIAN ROOTS OF INDUSTRIAL FAILURE AND SUCCESS

There is one further lesson learned that warrants special attention: industrialization requires parallel, or prior, agricultural growth. More specifically, there could be no industrial development until food security was established as a 'mindset' among urban workers and capitalists. This became clear from the successful industrialization of South Korea and Taiwan, and later on of China, which was preceded by significant increases in agricultural labour productivity, food production and food security (Storm and Naastepad, 2005; Timmer and Akkus, 2008; Wade, 1983, 2003), whereas industrialization attempts elsewhere were often stalled by inadequate agricultural growth (Mathur, 1990; Saith, 1990; Singh and Tabatabai, 1994).

For most neoclassical economists, the failure to step up agricultural growth (prior to or parallel with industrialization) had just one single cause: 'urban bias' in policy making (Lal, 1983; Lipton, 1977; World Bank, 1982), or the 'plundering of agriculture' (Schiff and Valdes, 1992), through the over-taxation of (export) agriculture in the form of export taxes, monopoly procurements through parastatal marketing boards at low and distorted prices, and overvalued exchange rates (as part of industrial import substitution protection). The neoclassical remedy was straightforward and in line with its preoccupation with markets and static comparative advantage: stop discriminating against farming and 'get prices right' for agriculture (Timmer, 1986) — 'rational' profit-maximizing farmers (along Schultizian lines) will do the rest by raising farm efficiency (moving up to the production possibility frontier) and adopting new higher yielding technologies (shifting the production possibility frontier outward). The state could and should help the 'efficient but poor' (and not backward) farmers by providing the basic public goods (infrastructure, extension, and some crop research) that make the private farm sector secure and profitable. This logic, which underlies most of the agricultural policy changes after around 1970, including India's New Agricultural Strategy (Chakravarty, 1987; Saith, 1990), the World Bank structural adjustment policies in sub-Saharan Africa (Karshenas, 2001), and agricultural liberalization in Latin America (Kay, 2002), goes back at least to Pyotr Stolypin's 'wager on the strong and sober' — a gamble in which incentives to raise yields and speed up (green revolution) technological change are concentrated on commercial crops produced by the larger (surplus) farmers in selected regions well-endowed with (irrigation and other) infrastructure. It was a wager, as argued by Saith (1990), on 'agricultural trickle-down': growth of agricultural GDP, spearheaded by the commoditization of the surplus-controlling rural propertied classes, was hoped to spill over first into more broad-based rural development, while later on firing the engine of

(rural) industrialization — and all this was supposed to happen within the prevailing grossly inequalitarian institutional and land-ownership structures that characterize most developing countries. This neoclassical take on the role of agriculture in the process of economic development was wrong — in diagnosis, prescription and impacts (Akram-Lodhi, 2008; Rao, 2009; Saith, 1990).²⁸

The early development economists, building on the insights of Ricardo, Malthus and Marx but also of Lenin, Preobrazhensky and Bukharin (see Saith, 1985, 1990; Storm, 1993), understood perfectly well that in a poor economy with a large subsistence agricultural sector, successful industrialization needed a parallel effort of increasing food production to avoid the danger of running into the Ricardian trap. ‘Everyone knows’, wrote Nurkse (1953: 52–3), ‘that the spectacular industrial revolution [in England] would not have been possible without the agricultural revolution that preceded it’. Lewis (1954: 173) concurred:

Now if the capitalist sector produces no food, its expansion increases the demand for food, raises the price of food in terms of capitalist products, and so reduces profits. This is one of the senses in which industrialisation is dependent upon agricultural improvement; it is not profitable to produce a growing volume of manufactures unless agricultural production is growing simultaneously. This is also why industrial and agrarian revolutions always go together and why economies in which agriculture is stagnant do not show industrial development.

In what is perhaps the most fully developed early structuralist argument on the issue, Kalecki (1955) argued in favour of ‘balanced growth’ between agriculture and industry — with the balance being dictated by the need to keep wage-goods inflation within socially acceptable bounds — not unlike Chairman Mao Zedong’s strategy of ‘walking on two legs’. Kalecki’s key insight was that this could be achieved by careful management of the terms of trade between agriculture and industry, so as not to depress them too much (in order not to kill the agricultural goose which lays the golden eggs for the industrial sector), nor to let them increase too much (as this would hurt industrial real wages and profits, and prematurely stall industrial expansion).²⁹ In this account, the inter-sectoral terms of trade emerge as the

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28. In relatively land-abundant sub-Saharan Africa, a large part of the taxation of agriculture through state marketing boards was in fact a redistribution of income within agriculture from large export farmers to smallholders. This strategy did raise smallholders’ productivity and output provided they had the complementary infrastructure. Where the strategy failed, it was due to an utter lack of man-made infrastructure, where subsistence farmers were facing prohibitively high transport and storage costs and a low degree of market integration. In these conditions, price incentives lose their significance (see Karshenas, 2001).
29. Kalecki’s thinking inspired a vast structuralist literature (see Dutt, 1990; Rao, 1993; Rao and Caballero, 1990; Storm, 1993; Wuyts, 1988), which explores the conditions for a virtuous cycle in which (i) a growing agricultural sector provides sufficient wage goods at affordable prices to the growing industrial workforce; (ii) expanding farm incomes provide a growing domestic market for the infant industrial sector; and (iii) the expanding manufacturing sector supplies ever more productivity-enhancing intermediates (fertilizers) and capital goods

pivotal political-economy variable in the power battle, mediated by the state, between the surplus-controlling landlords and peasants, on the one hand, and urban industrial capitalists and rural and urban workers on the other — which reflects a political-economy (and class-analysis) interpretation of food pricing of which neoclassical economics is completely oblivious.

Unmistakably, the political drift of Kalecki's analysis went against the landlord class and in favour of agrarian reform to ensure an adequate agricultural output response at food prices benevolent to industrialization (Saith, 1990). Land reforms were critical in breaking the obstructive political power of landlords, and their added advantage was that they would be productivity-enhancing (Bowles and Gintis, 1995), because peasants exhibit a great capacity for self-exploitation (à la Chayanov) — which got reflected in the inverse relationship between farm size and yields. Accordingly, many developing countries attempted land reform — often in combination with cooperative farming, rural public banks, national extension and irrigation development — as exemplified by India's (thwarted) land reforms and Community Development Programme in the 1950s (Chakravarty, 1987), the (far more thoroughgoing) land reforms in South Korea and Taiwan in the early 1950s (Kay, 2002), the (largely ineffectual) Chinese land reforms of 1947–52 followed by the collectivization of farming later on (Bramall, 2004), and the (restricted-in-scope and often reversed) land reforms in Latin America of the 1960s to 1980s (Thiesenhusen, 1995). Macro-economically, a more equitable ownership of productive assets, especially land, was expected to lead to a more egalitarian income distribution, and in turn to structures of domestic demand and of industrial production which were both more labour-intensive and less foreign-exchange dependent than otherwise would have been the case (Kay, 2002; Taylor and Bacha, 1976). The expanded domestic market, in turn, would allow for a greater domestic division of labour and a greater exploitation of economies of scale — and, hence, productivity growth in manufacturing would turn out higher as well.

In those countries where agriculture failed to live up to these — structuralist — expectations, this failure had nothing to do with a supposed 'plundering of agriculture', either via adverse terms of trade for agricultural products so that resources are artificially channelled away from agriculture or through the starving of rural areas of investment in infrastructure. At its core, the failure was a political one: to reform land ownership and institutional structures fundamentally enough to break the political power of the kulak lobbies (Saith, 1990) and thereby free the hands of the state to effectively manage the rural economy in the interest of industrialization. Everywhere where fundamental rural reforms were thwarted, be it in India (Saith, 1990) or most of Latin America (Kay, 2002), the possibilities for the state to

(tractors and pump sets) to farmers (Rao, 1993; Storm, 1995; Taylor 1991, 2004). Along similar lines, Chakravarty (1987) and Adelman (1984) proposed agricultural-demand-led-industrialization (ADLI) strategies.

intervene in order to extract resources from agriculture turned out to be severely circumscribed (Karshenas, 1994, 2001). 'Feeble' land reforms led exactly to the deadlock feared by Kalecki: these created a new kulak class endowed with the political power to shift the inter-sectoral terms too much in favour of agriculture (Saith, 1990). In addition, in both Latin America and India, the resulting distribution of rural incomes prevented the widening of the domestic market, created a distorted industrial structure and contributed to chronic balance-of-payments problems (Chakravarty, 1987; Kay, 2002).

In these circumstances, the inter-sectoral terms of trade could only be shifted against the farm sector if at the same time farm profitability and farmers' inducement to invest were maintained. This paradoxical combination of falling (relative) agricultural prices and constant farm profitability could only be achieved as long as there was a fast enough rate of (land-augmenting) technological progress and labour productivity growth in the sector (Karshenas, 2004). The failed land reforms, in other words, made the fate of industrialization critically dependent upon the pace of technological progress in agriculture, which would, no doubt, have required a *gross* inflow of resources into agriculture in the form of investment in irrigation and land infrastructure and new biochemical inputs (fertilizers) — much in line with Kaldor's third law. However, the vital importance and heavy resource intensity of agricultural technological progress were not appreciated initially, as development planners were extremely over-optimistic as to what an unobtrusive rationalization of traditional agriculture, given available conventional technologies, institutional structure and deep-seated social stratification based on land ownership, could actually achieve. Agriculture was, mistakenly, treated as a 'bargain sector' (Chakravarty, 1987) — a sector with large unexploited potential which could quickly provide the requisite surplus at low prices and with relatively low investment.³⁰ It took until the mid-1960s before development planners finally woke up from 'the deep slumber of a decided opinion' (to use John Stuart Mill's phrase) and came to realize that the attempts to finance industrial investment through a forced extraction of resources from a technologically stagnant agriculture was dissipating in inflationary spirals — along Kaleckian lines. The instant availability of land-augmenting green revolution technologies offered governments an easy way out. From then onwards, the politically vocal surplus-controlling farmers could enjoy the best of both worlds: high — incentivizing — crop prices in combination with heavily subsidized inputs. The implication for inter-sectoral resource flows was that agriculture's *net contribution* to the industrialization process (as a proportion of non-agricultural value added) was generally minor and often *negative*.³¹

30. The felicitous expression 'bargain sector' is due to S.R. Sen, as explained by Chakravarty (1987: 94, fn. 2).

31. As shown by estimations for various countries, for example, Ishikawa (1967); Karshenas (1994, 2004); Storm (1993).

The few developmental success stories, in contrast, are cases in which the state managed to pitilessly discipline its surplus farmers. The agrarian modernization which preceded the industrial revolutions in South Korea and Taiwan, exactly as Lewis had argued, was guided by the visible effective hand of the repressive state, which replaced the expropriated landlords and used heavy taxation to squeeze out the wage good surpluses necessary for industrialization (Kay, 2002; Wade, 2003).³² Korea and Taiwan did *not* use high producer prices to stimulate agriculture — public crop procurement prices were often lower than the cost of production (Wade, 1983), which is as clear a violation of the neoclassical dictum ‘get the prices right’ as one can get. Instead of ‘incentivizing’ only the strong and the sober, the East Asian *dirigiste* states relied on direct interventions through (a) a more egalitarian technology policy (hybridization and chemical fertilizers); (b) public investment in infrastructure and irrigation; (c) provision of rural credit (over which the state held a monopoly); and (d) institutional reform which forced peasants — who from tenants had been turned into owners — into membership of farmers’ cooperatives, irrigation associations and peasants’ associations which were instrumental in spreading new technical knowledge. It was understood that agricultural modernization was not for free,³³ resources were transferred *to agriculture* on a massive scale, which explains why in many years the *net* finance contribution of agriculture to industrial growth was negative in East Asia (Karshenas, 1994). However, Korea and Taiwan did not ‘solve’ their agricultural problem — the land reforms, the massive scale of policy intervention and the consequent rise of agricultural productivity notwithstanding. Rather, they bypassed the problem: industrial goods were exported, and farm products were imported in return, also with help of US foreign aid (Bramall, 2004). Only this way could food prices and real wages be kept down, which (it must be said) allowed industry to have more internationally competitive costs than otherwise (Wade, 2003). The take-away message from this long digression is simple: successful agrarian modernization requires the visible hand of the state.

NEOCLASSICAL CHAOS, NOT COSMOS

Meanwhile, while neoliberal authors like Little et al., Balassa, Krueger and Lal were still celebrating winning the debate on *laissez-faire* versus

32. One must recognize the idiosyncrasies of Korea and Taiwan: a combination of the US strategic interest and the rise of Maoist China motivated the US to force through radical land reforms in both; they received foreign aid from the US at unprecedented levels; and they could step into the textile and other low-tech export markets which Japan had left vacant circa 1960. See Saith (1990).

33. Agriculture’s net finance contribution to industrialization has generally been found to be small when expressed as a proportion of non-agricultural capital formation. Industrialization is mostly self-financed (Karshenas, 1994).

dirigisme, a younger generation of neoclassical ‘revisionists’ began undermining their ‘general’ conclusions, as cracks were discovered in the Walrasian general equilibrium paradigm within which this debate had been framed. Walrasian general equilibrium theory, to wit, was the jewel in the crown of neoclassical economics and the economist’s justification of the free market system — or, as Schumpeter (1939: 41) expressed it, Walras’s system is ‘the magna carta of economic theory as an autonomous science, assuring us that its subject matter is a cosmos and not a chaos’. But then, circa 1980, it became undeniable that there was nothing within this clock-work system that would make it in and of itself converge, in an economically meaningful and stable manner, to a general equilibrium (the proof of this is the Sonnenschein-Mantel-Debreu theorem). Consequently, general equilibrium theory was declared a ‘grand but total failure’, ‘still dead after all these years’ (Ackerman, 2001). Forced to abandon Walras, mainstream economics turned to analysing micro behaviour, using non-cooperative game theory, in fragmented disparate models exhibiting a great variety — if not arbitrariness — in institutional settings; chaos, in Schumpeter’s words. This was a major paradigm shift: from a generalizable ‘first-best’ Walrasian world of Pareto optimality, to a non-generalizable ‘second-best’ world full of market failures and replete with multiple equilibria (Kirman, 2010). The full force of this shift is not often appreciated (Kaldor, 1972).

In development economics, this paradigm shift led to a tsunami of partial equilibrium models incorporating ‘market failures’ — be they increasing returns to scale, Marshallian externalities arising out of localized industry-level knowledge spillovers, coordination failures, or information asymmetries. Harrison and Rodríguez-Clare (2010) summarize this proliferating literature. Many of these partial models simply re-packaged the ‘old’ rationales for an industrialization strategy of what Paul Krugman (1993) has wrongly called ‘high but discursive, non-mathematical development theory’.³⁴ Let me just give a few spotlight examples. Murphy et al. (1989) and Matsuyama (1991, 1995) formalize Rosenstein-Rodan’s Big Push programme as a case of ‘pecuniary externalities’ and ‘co-ordination failure’. Acemoglu et al. (2006) build a model around Gerschenkron’s insight that a country’s ‘distance to the frontier’ matters for the selection of appropriate growth strategies, and show that interventionist policies, such as limits on product market competition or investment subsidies, raise growth in the medium term (but not in the long run). Rodrik (2004), Hausman and Rodrik (2003) and Stiglitz and Greenwald (2014) provide new — formal — rationales for

34. This is what Krugman (1993) writes: ‘Like it or not, however, the influence of ideas that have not been embalmed in models soon decays. . . . Myrdal’s effective presentation of the idea of circular and cumulative causation, or Hirschman’s evocation of linkages, were stimulating and immensely influential in the 1950s and early 1960s. By the 1970s (when I myself was a student of economics), they had come to seem not so much wrong as meaningless. What were these guys talking about? Where were the models? And so high development theory was not so much rejected as simply bypassed’.

industrial policy, while Krugman (1991), Rodrik (2007) and Melitz (2005) formalize the argument for infant industry protection based on the presence of agglomeration externalities and/or increasing returns. Stiglitz and Weiss (1981) show how it may be rational for banks to ration credit, reduce the volume of lending and discriminate against small, new and informal borrowers in credit markets featuring asymmetric information, thus providing a rationale for public intervention in the credit markets.

The list of examples continues forever but, taken together, the message of these models appears to be that industrialization cannot be left to market forces, but needs strong state guidance via incentives, regulation and public investment. However, most mainstream economists³⁵ shy away from this conclusion and return to the default position that what counts is the market and static comparative advantage. This kind of schizophrenia is perhaps clearest in the case of Justin Yifu Lin (2009, 2012), who argues that the state should only play a facilitating role in the process of industrial upgrading ‘by addressing externality and coordination issues’ and ‘follow’ static comparative advantage.³⁶ Government’s role should be restricted to narrow supply-side economics: infrastructure improvements; providing incentives for education and skills; subsidizing R&D (which has positive domestic spillovers); promoting links between universities, research institutions and firms; promoting standardization; attracting and placating (high-tech) foreign direct investment; and protecting private property rights and maintaining law and order.³⁷

Lin is by no means exceptional. Consider Krugman (1987: 143), who claims that it ‘is possible . . . both to believe that comparative advantage is an incomplete model of trade and to believe that free trade is nevertheless the right policy’. The status of free trade, Krugman (ibid.: 132) concludes, ‘has shifted from optimum to reasonable rule of thumb. There is still a case for free trade as a good policy, and as a useful target in the practical world of politics’. Harrison and Rodríguez-Clare (2010: 4111), after reviewing hundreds of studies on trade policies and growth, concur: ‘our review suggests that the conditions needed for infant-industry protection to produce higher growth in developing countries are not often satisfied. . . . [Moreover the] necessary conditions are not easy to identify for policy makers *ex ante*. . . . It is also likely that protection has been used as a tool to protect sunset instead of sunrise industries’. Dani Rodrik (2007), perhaps more than anyone else, has been trying to ‘normalize’ and ‘mainstream’ industrial policy, pointing out that it can be made to work by proper tailor-made institutional design (these are his ‘many recipes’). But even he is getting nowhere close to

35. Stiglitz is the exception and goes further, for example, Cimoli et al. (2009).

36. Fine and Van Waeyenberge (2013) have done us the service of critically scrutinizing the logic of Lin’s argument, only to reveal a flawed and incoherently applied neoclassical economics.

37. This is roughly the agenda of UNECA (2013) and UNIDO (2013) as well.

structuralist insights, arguing that the distinction between static and dynamic comparative advantage is not relevant because, as he writes (Rodrik, 2011: 228–9), market failures distort the relative prices that signal comparative advantage, but whether ‘these distortions are introduced into intertemporal relative prices or today’s relative prices is largely secondary’. Rodrik (*ibid.*: 229) agrees with Lin, that today’s industrial policies ‘need to have a softer touch than that which the structuralists of old tended to recommend. They must be more respectful of markets and incentives [and] they must focus specifically on market failures rather than vague shortcomings of the private sector’. Being respectful of markets may mean that employment conditions are ‘too rigid’, ‘say because of firing costs that are *too high*’ (*italics added*), which McMillan and Rodrik (2011: 26) claim inhibits growth-enhancing structural change. The role of industrial policy, as McMillan and Rodrik (*ibid.*: 27) conclude, is to give the process of structural change ‘a *nudge* in the appropriate direction . . .’ (*italics added*). In the neoclassical canon, nudging has a specific, libertarian paternalistic connotation: behavioural economists Thaler and Sunstein (2008: 6) define a nudge as ‘any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting fruit at eye level counts as a nudge. Banning junk food does not’. How Rodrik thinks industrialization can take off by gently prodding firms and investors is an open issue — but what he appears to be talking about is a different universe from that of the late-industrializers.

There is a reason why the default recommendation of the revisionist neoclassical theorists is still the market. It lies in the fact that they *cannot* formulate general principles, based on their chosen methodology, for a ‘second-best’ non-Walrasian world. In a ‘second-best world’ with multiple market failures, correction of one market failure (for example, a coordination failure, or increasing returns) is not necessarily welfare improving, it could make matters worse and reduce overall efficiency. Worse, they have no clue what happens to ‘welfare’, because as Lipsey (2007) — who first explored the economics of the second-best (Lipsey and Lancaster 1956) — writes, in such a world, a statically or a dynamically optimal allocation of resources is not even a defined concept. Or, as general equilibrium theorist Kirman (2010) puts it, “[c]omparative statics” in which one makes comparisons between equilibrium and another one, which results from a change in the parameters of the first, makes no sense in the presence of multiple equilibria’. That the spate of formalizations ultimately results in fundamental indeterminacy — bordering on ‘anything goes’ — would have pleased Albert Hirschman: a denial of a ‘one best way’ lies at the heart of his theory of development and his concept of ‘possibilism’ (Lepenies, 2007). But for neoclassical economists, the indeterminacy represents just *χάος* — and their

Pavlov reaction, under strong peer pressure, is to fall back on the market.³⁸ It is a tribute to the sterility of these neoclassical theoretical investigations that they have led to almost no insight worth mentioning concerning the actual historical process of structural transformation in developing economies.

NEW GLOBAL REALITIES AND PROSPECTS FOR STRUCTURAL CHANGE

East Asia, China and a few other countries such as Turkey managed to successfully industrialize, starting off from import-substitution and later changing over into more export-oriented growth. But the rise of these economies has shrunk the space to successfully industrialize for the late-late industrializers in Africa, or the re-industrializers in Latin America. At the same time, new, more liberal trade rules and deregulated capital markets limit the room for industrial and trade policies to a much greater extent than previously. The global financial crisis which started in the US in 2007–08 and the consequent ‘secular stagnation’ of the OECD keep world trade growth depressed and limit the scope for exports-driven structural upgrading in the developing world. Taken together, these new global realities imply that it will be harder to industrialize and that even the most successful industrializers of the future are likely to fall short of the industrialization levels achieved in the recent past. Pressures for de-industrialization remain. In addition, there are two *non-marginal* realities that will impact the future of industrialization.

The first is the coming of the second machine-age which will bring accelerating productivity growth based on digital innovation and robotization (Brynjolfsson and McAfee, 2014; Rifkin, 2011). Manufacturing will become more capital-intensive, displace more labour and generate massive technological unemployment (as Keynes predicted long ago), not just of routine (blue-collar) workers but also of non-routine workers and service-sector jobs. Jobless growth is going to be the norm in manufacturing, also in the developing world, while there is a real risk of increasing underemployment and stultifying, ‘working-poor’ employment in low-wage services and in agriculture. Table 2 illustrates this latter point: it shows long-run trends in

38. Most authors take their refuge in ‘new growth theory’ which is, in essence, a return to the Walrasian general equilibrium model on the assumption that the economic system consists of just one aggregate sector and features just one single, representative, agent (Acemoglu, 2008). The key insight here is that growth is driven from the supply side by technological progress which, in turn, depends on human capital, ‘knowledge’, institutions (private property rights), and R&D spending (Jones and Romer, 2010). Demand factors and income distribution do not play any role. Moreover, growth is conceptualized as balanced, steady growth, approximating growth in the developed economies: it is not about unbalanced growth or structural transformation in developing countries, writes Acemoglu (2008: 697): ‘we have not offered a framework that can do justice to Kuznets’s vision largely because the current growth literature is far from a satisfactory framework that can achieve this objective’.

Table 2. *Agricultural Workers per Hectare of Arable Land, 1950–2012*

	Africa	Asia	within which:				Latin America	World
			China		South Korea			
1950	n.a.	1.31	n.a.	0.74	3.60	0.36	n.a.	
1960	0.66	1.48	n.a.	0.81	n.a.	0.41	0.66	
1970	0.70	1.65	2.79	0.86	n.a.	0.33	0.70	
1980	0.72	1.74	3.93	1.09	2.61	0.30	0.72	
1990	0.80	1.98	3.94	1.28	1.78	0.27	0.83	
2000	0.88	2.05	4.29	1.47	1.28	0.26	0.90	
2010	0.96	2.19	4.71	1.69	0.85	0.20	0.96	
2012	0.96	2.21	4.74	1.74	0.76	0.19	0.95	
Average annual growth rates (%):								
		Africa	Asia	China	India	South Korea	Latin America	
		1960–2010	1950–2010	1970–2010	1950–2010	1950–2010	1960–2010	
Agricultural labour productivity growth (g_{YL})		1.64	2.73	4.05	1.54	5.08	1.69	
Growth of income per hectare (g_{YI})		3.28	3.59	5.36	2.93	2.71	0.72	
Minus growth of workers per hectare (g_{LA})		1.64	0.86	1.32	1.38	−2.38	−0.97	
							n.a.	
							n.a.	
							0.74	

Note: Let g_{YL} = the growth rate of agricultural value added per agricultural worker; g_{YI} = the growth rate of value added per hectare of land; and g_{LA} = the growth rate of the economically active labour force in agriculture per hectare of land. By definition, $g_{YL} = g_{YI} - g_{LA}$. In (land-scarce) South Korea, there has been a continuous decline in workers per hectare of land (even as the arable area base itself considerably declined because of urbanization). This decline in agricultural workers per hectare (of −2.38% per year) contributed almost as much to agricultural labour productivity growth (of 5.08% per annum) as the growth of income per hectare (of 2.71% per year). In stark contrast, in Africa and India, the number of workers per hectare has been rising over time, rather than declining, and this has offset about one third to half of the contribution to agricultural labour productivity growth g_{YL} due to higher crop yields — captured by g_{YI} .

Sources: FAO STAT (<http://faostat3.fao.org/home/E>); FAO (2000); Storm and Naastepad (2005); and the Maddison-Project, <http://www.ggdc.net/maddison/maddison-project/home.htm> (2013 version).

the number of agricultural workers per hectare of arable land between 1950 and 2012. Successful ‘early’ industrializers, exemplified here by South Korea, have been able to steadily reduce the number of workers per hectare over time — a decline which has directly *added* to the growth of agricultural labour productivity (see the note to Table 2 for details). Less successful or ‘later’ industrialization experiences such as those of sub-Saharan Africa, India and China are characterized by long-term increases in the number of workers per hectare — a worrisome increase which has reduced agricultural labour productivity growth by as much as a third (in India) to a half (in sub-Saharan Africa). The increasing absorption of workers on the land as in Africa, China and India, which will likely accelerate in future, suggests that the main lesson of Geertz’s (1963) ‘shared-poverty’ agricultural involution hypothesis still holds true. Techno-fixes that raise yields may not be enough to raise agricultural income per hectare if more and more workers are forced back to till the land for want of non-agricultural employment — especially when agricultural operational holdings become so fragmented and small-sized as to prevent the effective absorption of further land-augmenting technological change (Akram-Lodhi, 2008; Rao, 2009; Saith, 1990). Inequalities can only go up when things are left to the market mechanism. The point, of course, is not to stop the next technological revolution in manufacturing (in Luddite fashion); the point is to manage it well in terms of working time reductions, employment sharing and wage-profit distribution — and since the market cannot do this, it needs new non-market modes of planning and co-ordination.

The same holds true for managing the second new reality: climate change. In a carbon-constrained world, industrialization needs to be carbon-efficient and perhaps even ‘green’. UNIDO (2013) writes about ‘green industrialization’, a ‘decoupling’ of industrial development from resource use and environmental impact, and the creation of green manufacturing jobs. This, obviously, needs a separate technological revolution, with fundamental revisions of production and consumption structures. Yet, techno-fixes in combination with economic incentives — Rodrik’s nudge — will never do it alone, as argued by Li (2009), Lohmann (2009) and Storm (2009), because what is needed to avoid disastrous climate change and the accompanying inequality, poverty and destitution altogether is a systemic transformation of fossil-fuel capitalism, which for the rich countries would certainly imply coming to terms with *de-growth* (Spash, 2015). The only reasonable alternative is to attempt to begin and manage this transformation in a way which establishes a learning (and discovery) process that would lead to a dismantling of failed policies and botched structures and the extension of successful policies until they bear their full fruits.³⁹ If it is to work, this learning process must

39. I am thinking here of Adolph Lowe’s (1977) notion of ‘instrumental inference’, which starts from a vision of, or ‘imagining’, the desired outcomes, goes on to derive the economic, social, technical and environmental path(s) by which those outcomes might be achieved,

build upon the structuralist-institutionalist approaches reviewed above — equilibrium economics is simply irrelevant in the face of these new forces of disruptive, non-marginal change.

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and finally tries to 'discover' the behavioural and motivational patterns and policies capable of setting the system onto a suitable path. Lowe's key point is that policy formulation is a process of deliberate, deliberative, participative and collective discovery where the intervention creates new knowledge which is then used to re-assess the effectiveness and desirability of the policy intervention.

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