

The Race to the Bottom and the Climb to the Top

Commoditization, the Migration of Production, and the Contested Question of Why Some Nations Prosper

Introduction

Two observations about the modern economy appear, at first glance, to sit comfortably together. The first is that technology relentlessly becomes faster, better, and cheaper, and that this trajectory is what builds great companies. The second is that manufacturing perpetually migrates toward the lowest-cost producer, hopscotching from country to country as wages rise, in a race to the bottom that never reverses. Both observations are substantially correct as descriptions of how the world works. Yet when examined closely, each contains a paradox: the forces they describe rarely enrich the parties who ride them. The companies that deliver commoditization are frequently destroyed by it, and the countries that win the race for cheap labor find that the prize expires the moment they win it.

This paper traces those two dynamics, the corporate and the national, and shows that they are governed by the same underlying law. It then turns to the harder question that sits beneath both: why some countries manage to step off the cost treadmill and into durable prosperity while others remain stuck. On that question, three great schools of thought contend — geography, institutions, and culture — and this paper attempts to represent each fairly, including the criticisms each levels at the others, without declaring a winner. The honest state of the field is that each school explains cases the others cannot, and the debate remains genuinely open.

Part One: Faster, Better, Cheaper — and Who It Bankrupts

The technological cost curve is among the most reliable patterns in economic history. Memory chips, hard drives, bandwidth, flat-panel displays, solar panels, and genome sequencing have all fallen in price by orders of magnitude, often within single careers. Sequencing a human genome cost roughly three billion dollars at the turn of the century and costs a few hundred dollars today. Solar panel prices have fallen more than ninety percent. In this sense, the proposition that technology trends toward faster, better, and cheaper is not a thesis but a near-law.

The complication arrives when one asks who profits from it. The historical record suggests that the companies delivering the commoditization are usually its casualties. Nearly every Western solar manufacturer went bankrupt as panel prices collapsed, followed by successive waves of Chinese manufacturers, because when a product races down a cost curve, the gains flow overwhelmingly to customers rather than shareholders. The dozens of memory-chip makers of the 1980s were winnowed to three survivors. Television manufacturing, personal computers, and airline seats tell the same story. Being the low-cost producer of a commodity is a treadmill: the reward for winning is the obligation to keep winning, at ever-thinner margins, forever.

The great fortunes of the technology era were built not by winning that race but by positioning adjacent to it. Several distinct mechanisms allow a company to sit beside the cost curve without being crushed by it. Network effects protect businesses like operating systems, search engines, and payment networks, where the software can be copied but the network cannot. Switching costs protect products like the Bloomberg Terminal, enterprise software, and hospital record systems, which can remain expensive and even clunky for decades because customers' entire workflows are embedded in them. Extreme complexity can produce monopolies in which the "cheaper" leg of the trend actually inverts: leading-edge lithography machines and semiconductor wafers grow more expensive with each generation, because the physics became so difficult that competition died. Regulation and intellectual property protect pharmaceuticals and aerospace, where products that are trivially cheap to reproduce remain expensive by law. And luxury dynamics protect firms that deliberately restrict the supply of goods they

could easily mass-produce, because scarcity is the product.

Apple deserves particular attention because it is often cited as the exception to commoditization when it is more accurately its greatest exploiter. Apple purchases commodity components riding the very cost curves described above, then captures the margin at the layers that resist commoditization: integration, design, brand, and ecosystem lock-in. Its assembly partners operate on low single-digit margins while Apple books margins an order of magnitude higher. Stan Shih, the founder of Acer, called this the “smiling curve”: value pools at the two ends of the production chain — intellectual property on one side, brand and distribution on the other — while the manufacturing middle is flattened.

A useful synthesis is the observation, associated with Simon Wardley’s mapping framework, that the commoditization of one layer is precisely what creates the fortune at the next layer up. Commodity electricity enabled the appliance industry; commodity personal computers enabled the software industry; commodity computing enabled the cloud; commodity cloud infrastructure enabled software-as-a-service. The best-positioned companies are not those that win the race to cheap but those that anticipate which layer is about to commoditize and build the toll booth directly above it.

One boundary condition should be noted. The faster-better-cheaper law applies to what can be manufactured and replicated. Sectors dominated by irreducible human labor — healthcare, education, housing construction — have moved in the opposite direction, a phenomenon economists call Baumol’s cost disease. The law is a law of manufacturing and information, not of the economy in general.

Part Two: The Factors of Production and the Flying Geese

The national version of the same dynamic is the perpetual migration of low-cost manufacturing. After the Second World War, Japan was the world’s source of cheap labor and inexpensive transistor goods. As Japanese growth produced a middle class and rising wages, labor-intensive production moved to Korea and Taiwan, then to Hong Kong and Singapore, then to Thailand and Malaysia, then to China, and now from China’s coastal cities to its interior provinces and to Vietnam, Bangladesh, and beyond. Development economists have formal names for this pattern: Kaname Akamatsu described it in the 1930s as the “flying geese” model, in which each economy follows the leader, inherits the industries the economy ahead of it sheds, and eventually sheds them in turn; Raymond Vernon later formalized a version as the product life cycle theory.

Two refinements to the basic pattern matter greatly. The first is that the moment of transition has a name and a failure mode. The Lewis turning point arrives when a country exhausts its surplus rural labor and wages begin rising rapidly. At that moment the country must leap from cheap-labor work to high-value work, and the leap is not automatic. The failure to make it is called the middle-income trap, and it has claimed far more countries than have escaped it. Japan, Korea, Taiwan, and Singapore made the jump, in Korea’s case through almost brutal state-directed investment in heavy industry and engineering education. Malaysia, Thailand, Brazil, Mexico, and South Africa largely stalled: too expensive to compete with poorer countries on labor, not yet sophisticated enough to compete with rich countries on engineering. The list of economies that have traveled from poor to rich since 1960 is strikingly short.

The second refinement concerns the claim that departed industries never return. This is correct with an important asterisk: they return transformed. American manufacturing employment fell from roughly nineteen million to thirteen million, and the sewing and assembly jobs are gone permanently, because the economy repriced labor. Yet American manufacturing output is near all-time highs, produced in capital-intensive, heavily automated form. The precise law is that labor-intensive production never returns to a high-wage economy, but capital-intensive production can, because automation renders labor cost a rounding error.

High-value industries illustrate the top of the ladder. Commercial aircraft are not built in low-wage countries, because the moat is not merely educated labor but certification regimes, tacit knowledge accumulated over decades, supplier ecosystems, and safety track records that cannot be purchased. China’s COMAC required two decades and enormous state backing to produce an aircraft roughly

comparable to a 1990s Airbus, and it still depends on Western engines. Aerospace is arguably the stickiest industry in existence, which is why it anchors the high end of the value chain.

Three contemporary forces complicate the classic model. First, automation may be removing the ladder's bottom rungs. Dani Rodrik has documented what he calls premature deindustrialization: manufacturing's share of employment now peaks at progressively lower income levels with each successive wave of developers. Korea's manufacturing employment peaked near twenty-eight percent of the workforce; later developers peak in the mid-teens and begin deindustrializing while still poor. If a garment can be sewn by machine in a rich country at the same cost as by hand in a poor one, the labor-arbitrage phase that industrialized East Asia may simply not be available to Africa. Second, China is attempting something the model does not anticipate: holding the entire goose formation within one country, shifting low-end assembly to its interior provinces rather than losing it abroad while simultaneously pushing into electric vehicles, batteries, solar, shipbuilding, and aviation. Whether a single country can span the full curve is one of the open questions of the coming decades. Third, national security has begun to override cost logic entirely. Semiconductor fabrication plants built in Arizona at a large cost premium over Taiwan violate every rule of comparative cost, and are being built anyway, because states have concluded that certain capabilities are too strategic to leave to the lowest-cost producer. For most goods the race to the bottom still governs; a carve-out category now exists in which governments knowingly pay substantial premiums for ownership of capability.

Part Three: The Cluster — Why China Is More Than Cheap Labor

China's manufacturing advantage today is frequently misdescribed as a labor-cost advantage when it is primarily an agglomeration advantage. Chinese coastal wages surpassed Mexican wages years ago. What firms purchase in Shenzhen and Zhengzhou is density: as Apple's Tim Cook famously observed, a meeting of tooling engineers in the United States might not fill a room, while in China it would fill multiple football fields. Alfred Marshall described the underlying economics in the 1890s — industrial clusters generate a shared labor pool, specialized suppliers in close proximity, and knowledge that circulates, in his phrase, "as it were in the air." Shenzhen is Marshall's model at a scale he could not have imagined. A hardware company can prototype, source components, engage a mold-maker, and iterate within days; the same loop takes months anywhere else on earth.

The cluster also functions as insurance. When suppliers of the same component line the same district, a vendor who fails on quality or delivery can be replaced by a competitor down the street. This redundancy is arguably worth more than low unit cost, because supply reliability compounds while unit savings do not. It is also why the cluster resists relocation: a factory can be moved to Vietnam or India, but an ecosystem cannot. Final assembly of consumer electronics is migrating; the web of component makers, tooling shops, and engineers who can reach a production line within hours remains overwhelmingly Chinese. The tradeoff is that concentration is also concentrated fragility, as pandemic-era lockdowns in Zhengzhou demonstrated — which is precisely why multinationals now pay premiums to diversify even while acknowledging that the cluster cannot truly be replicated.

Part Four: Corruption — Its Structure Matters More Than Its Quantity

Official corruption indices fail to capture a distinction that anyone with firsthand business experience in the developing world recognizes immediately: corruption differs not only in amount but in architecture, and the architecture may matter more.

Yuen Yuen Ang's research provides a useful taxonomy. She distinguishes petty extortion and "speed money" — bribes extracted by police, customs officers, and permit clerks simply to allow routine activity — from "access money," in which elites pay for deals, privileges, and project approvals. Her argument is that China exhibits enormous corruption, but of the access-money type, which functions almost as grease on growth because officials enrich themselves by making projects happen. For decades, a local party secretary's career and fortune depended on GDP growth in his district: corrupt, but aligned with development. The corruption that strangles economies is the decentralized, extractive kind, in which a

business owner faces a hundred independent toll collectors, none of whom benefits from his success. In this framing, top-down corruption amounts to a monopoly on extraction, while decentralized corruption is a free market in extraction, and monopolized extraction is, perversely, less destructive than competitive extraction. Countries where cartel violence adds a parallel taxing authority face the harshest version of the decentralized form.

This framework carries a forward-looking implication for China itself. The growth-aligned equilibrium worked when officials were graded on economic performance. To the extent that anti-corruption campaigns and a shift toward political-loyalty metrics have made deal-making riskier for officials than inaction, the alignment that made Chinese corruption productive may be dissolving, and some economists attribute the current paralysis in local-government investment to exactly this change. Whether China's model can survive the dismantling of its own incentive structure is an open empirical question.

Part Five: Why Nations Diverge — Three Schools, Fairly Stated

Beneath everything above lies the oldest question in economics: why are some nations rich and others poor? Three major schools of thought contend, and each deserves its strongest statement.

The Geographic School: Jared Diamond

Jared Diamond's *Guns, Germs, and Steel* (1997) argues that the deep divergence among continents was set by geography and biology operating over roughly thirteen thousand years. Eurasia possessed thirteen of the fourteen large mammal species suitable for domestication and the most nutritious domesticable grains. Its east-west axis allowed crops, animals, and innovations to spread along similar latitudes from the Fertile Crescent to Europe and China, while the north-south axes of the Americas and Africa blocked such diffusion through intervening climate zones. Dense agricultural populations generated surplus, specialization, states, writing, and metallurgy — and, through proximity to livestock, the epidemic diseases that did much of the actual conquering when Eurasians reached other continents. Diamond's account explains with great power why the conquest of the Americas ran in the direction it did, and it displaced the racial explanations that preceded it. Its defenders add that geography's effects are not confined to antiquity: landlocked position, tropical disease burden, and soil quality measurably affect development today.

The standard criticism is that geography is constant while outcomes change. Korea's geography did not change in 1953, yet North and South Korea diverged twentyfold. The two halves of Nogales, one in Arizona and one in Sonora, share land, climate, and ancestry, and differ enormously in income. Diamond's framework explains why Eurasia entered the modern era holding the advantages; it has little to say about why Japan is rich and Burma is poor.

The Institutional School: Acemoglu and Robinson

Daron Acemoglu and James Robinson's *Why Nations Fail* (2012), written partly as an explicit rebuttal to Diamond, locates the explanation in institutions. Nations prosper under inclusive institutions — secure property rights, enforceable contracts, broad political participation, rewards for success — and stagnate under extractive institutions, in which a narrow elite siphons the surplus and visible success invites expropriation. Their signature evidence is the "reversal of fortune": among former colonies, the regions richest in 1500, such as Mexico, Peru, and India, are relatively poor today, while the backwaters of 1500, such as North America and Australia, are rich. If geography ruled, the ranking should have persisted; instead it inverted, because colonizers built extractive institutions where there was wealth to extract and settler institutions where there was not. Acemoglu, Robinson, and Simon Johnson received the 2024 Nobel Prize in economics for this body of work. Diamond reviewed their book critically, conceding the importance of institutions while charging them with neglecting geography's ongoing effects; the exchange between the camps was pointed and remains unresolved.

The institutional school's own difficulties should be stated with equal candor. Its greatest anomaly is

China, which produced history's largest growth episode under institutions the framework would classify as extractive. The school's response — that growth under extractive institutions is real but ultimately unsustainable without inclusive transition — is coherent but conveniently unfalsifiable in the short run; the coming decades of Chinese performance constitute a live experiment. Critics also note that "good institutions" risk being defined by outcomes, and that the theory struggles to explain precisely why some countries achieve institutional reform while most do not.

The Cultural School: Landes and the Practitioner's View

David Landes' *The Wealth and Poverty of Nations* (1998) represents the third position: that culture — attitudes toward work, thrift, education, time, and trust — is the decisive variable. This school draws strength from lived experience: practitioners who do business across borders consistently report differences in fatalism, time horizon, and the radius of trust that formal statistics never capture, and they reasonably object to theories that dismiss what they observe firsthand. Informal norms plainly influence economic behavior, and some societies do sustain commercial cultures across centuries and continents.

The criticism of the cultural school is its predictive record. In the 1950s, Western scholars explained confidently that Confucian culture doomed East Asia to stagnation — too hierarchical, too backward-looking, contemptuous of merchants. After Japan, Korea, Taiwan, and Singapore boomed, the same Confucianism was repackaged as the secret of Asian success. Max Weber argued that Catholic cultures were unsuited to capitalism, shortly before Catholic Europe's long boom and Ireland's ascent from Europe's poorhouse to one of its richest members without a change of religion. Chinese culture did not change between 1975 and 1995; the rules changed, and the same people who had been planting rice built Shenzhen. Skeptics conclude that what reads on the ground as culture is often the rational response to institutions: where contracts go unenforced and visible success attracts predation, keeping enterprises small, informal, and family-bound is intelligence, not tradition.

Toward Synthesis, Without a Verdict

A fair reading of the scoreboard might run as follows. Geography best explains the deep past — why Eurasia entered modernity holding the cards. Institutions best explain the last five hundred years, and especially the last seventy — why, among countries dealt similar hands, some became Denmark and some became Venezuela. Culture is either an independent force, as Landes held, or the shadow that institutions cast, as the institutionalists hold — and the honest answer is that culture and institutions lock together into self-reinforcing equilibria that are extraordinarily difficult to escape, which is precisely why the list of escapees is so short. In a society where everyone expects bribery, refusing to bribe is a losing move, and the expectation sustains itself long after formal laws change. Whether one calls that stickiness "culture" or "equilibrium" may matter less than recognizing that it is the central obstacle to development, and that no school has produced a reliable recipe for dissolving it.

Conclusion: One Law, Two Scales

The corporate story and the national story turn out to be the same story observed at different scales. Any advantage based on cost is temporary by construction, because cost advantages are self-destroying: success raises wages, and rising wages destroy the advantage. The company that wins on price invites the competitor who wins on a lower price; the country that wins on cheap labor creates the middle class that ends its cheapness. Durable advantage — for firms and for nations alike — comes only from what cannot be quickly copied or purchased: networks, switching costs, monopolies on complexity, accumulated tacit knowledge, ecosystems of suppliers and skills, and the institutional arrangements that reward building them. The race to the bottom and the climb up the value ladder are the same escalator viewed from opposite ends, and the enduring question — contested among the schools of geography, institutions, and culture, and unresolved to this day — is why some riders manage to step off at the top while most never do.

Prepared July 2026. This paper synthesizes a discussion of technological commoditization, the flying geese model of industrial migration, agglomeration economics, corruption typologies, and the geography-institutions-culture debate, drawing on the work of Kaname Akamatsu, Raymond Vernon, Alfred Marshall, Stan Shih, Simon Wardley, Dani Rodrik, W. Arthur Lewis, Yuen Yuen Ang, Jared Diamond, Daron Acemoglu, James Robinson, Simon Johnson, and David Landes.