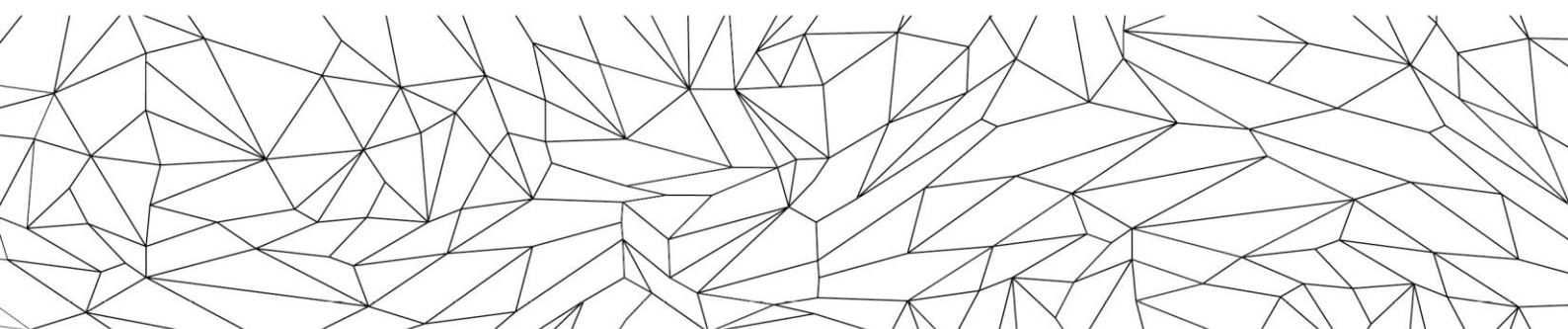




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The Gerschenkron Inversion: Industrial Policy in Deindustrialised and Financialised Economies

Costas Lapavitsas^{*}

Abstract

The Gerschenkron Inversion denotes a structural reversal at the core of mature capitalism. Where late industrialisers faced scarce capital and surplus labour, deindustrialised and financialised economies exhibit abundant capital detached from domestic production together with degraded institutions for the reproduction of skilled industrial labour. A simple model shows that skilled labour scarcity, external fragility, and suppressed private investment form a self-reinforcing circuit that defeats partial industrial policies. Taking Britain as the limiting case, the article shows how the destruction of industrial capacity, financialisation, and the defeat of organised labour produced this configuration. Breaking the Inversion requires simultaneous movement on several fronts, including rebuilding labour reproduction, a large investment wave, a public investment bank, public ownership at key junctures, trade regulation, and capital controls. The obstacle is ultimately social, rooted in the class structures of financialised accumulation.

Keywords: Gerschenkron Inversion; industrial policy; deindustrialisation; financialisation; skilled labour; Britain.

JEL classification: O25, O14, E44, J24, P16

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1. When capitalist development runs backwards

For much of the twentieth century the problem of capitalist development appeared to be how late developers could build manufacturing capacity since they lacked skilled industrial labour, technology, effective institutions, and, above all, capital. A striking phenomenon of the first quarter of the current century is that for several advanced capitalist economies this predicament has been reversed. Countries that industrialised early have undergone substantial deindustrialisation and now struggle to reconstruct the foundations of industrial accumulation. Yet, capital is abundant and everywhere. This configuration may be called the Gerschenkron Inversion and Britain provides its limiting case.

Gerschenkron's (1962) original contribution was to show that "backward" economies faced a particular configuration of binding constraints that determined the possibility, the tempo, and the form of industrialisation. Specifically, capital scarcity was decisive; labour had to be created as an industrial force out of the peasantry; technology had to be imported as a substitute for missing stages of development. These conditions imposed the need for institutional innovation, which could still vary greatly depending on ideological and cultural practices as, for instance, between Germany and Russia. However, "backwardness" could prove an advantage because countries could adopt appropriate institutions, such as a bank-based financial system, or a heavily interventionist state, to make a "Great Spurt" and leap over stages of development.¹

For Gerschenkron, in sum, development is driven by industrialisation, which in turn is shaped by a set of binding constraints, and must therefore be sustained by powerful institutions, above all, state authority. This insight underpins a large body of work on development, including the seminal contributions of Hirschman (1958), Kindleberger (1958), Amsden (1989), Wade (1990), and Chang (2002).

Deindustrialised Britain currently presents a set of inverted binding constraints. The abundance of capital goes together with weak commitment to long-term industrial

¹ The broad affinities of Gerschenkron's approach with Marxist political economy are not incidental. During his time in interwar Vienna, Gerschenkron was active in the Social Democratic Workers' Party of Austria (SDAPÖ) and maintained close links with leading Austro-Marxist theorists, even briefly joining the Austrian Communist Party before the Anschluss forced him into exile (van der Linden 2012). His notion of the "advantages of backwardness" bears the unmistakable imprint of Trotsky's theory of uneven and combined development and Hilferding's analysis of finance capital (Selwyn 2011).

activity; at the same time, the institutional mechanisms for reproducing labour skills and productive capabilities are undermined. Industrial reconstruction proves very difficult because the prevailing social relations of contemporary financialised capitalism systematically neutralise it. Tackling the problem requires a reversal of the common assumption that capitalist development always runs forward. Sometimes it runs backwards.

The Gerschenkron Inversion forces an alteration in the logic of industrial policy. Government interventions that might be appropriate for a developing country tend instead to generate novel pressures in deindustrialised and financialised countries. Preventing the blockage requires coordinated change across labour reproduction, finance, ownership of resources, and management of external transactions. The difficulty of designing appropriate industrial policy for deindustrialised advanced countries does not lie primarily in choosing and calibrating the instruments but in tackling a reversed developmental configuration embedded in existing class relations and institutions.

The article proceeds as follows. Section 2 draws on key contributions in the literature on industrial policy to begin constructing the required theoretical framework. Section 3 examines the political economy of Britain's deindustrialisation to establish the inverted constraint structure. Section 4 develops a formal model to capture the analytical mechanisms through which the Inversion is reproduced. Section 5 summarises the policy conditions and the social prerequisites necessary to break the Inversion.

Throughout this theoretical analysis, Britain is treated as the limiting case. Because the primary objective of the article is to identify and formalise this novel structural configuration, the argument relies on widely documented stylised facts rather than generating new empirical data.

2. Seeking an effective industrial policy

Over the last two decades the necessity of adopting an industrial policy has been recognised across the political spectrum by economists and governments. The change

is remarkable, as can be seen in the far-reaching survey by Ciafi, Deleidi, and Dorato (2025), whose tone is far more favourable to industrial policy than that by Pack and Saggi (2006). Yet, the difficulty of designing an effective industrial policy, with a focus on manufacturing, is also widely acknowledged. This is clear in the trajectory of Rodrik's work, which has been instrumental to re-establishing the credibility of industrial policy within mainstream economics.

In the 2000s, Rodrik (2004, 2008) reframed intervention as a process of discovery carried out through collaboration between firms and the state, supported by feedback, revision, and institutional learning. Subsequently, his attention shifted toward the growing difficulty of achieving broad-based industrialisation. Rodrik (2015) highlighted premature deindustrialisation in some developing countries, while Rodrik (2022) argued that industrial policy should be extended beyond manufacturing to encompass services capable of generating good jobs. More recently, Rodrik (2026a) openly questioned whether manufacturing can still perform the developmental role that it once did, claiming that technological change has reduced its capacity to absorb labour on a large scale while generating fresh possibilities for productivity growth in services.

The relevant literature has also steadily become aware of developed countries facing a different set of problems compared to developing countries. Thus, Aiginger and Rodrik (2020) explicitly considered the challenges facing mature economies; Juhász, Lane, and Rodrik (2024) assembled a substantial record of policy successes, which were more conditional for deindustrialised countries; the OECD approach, summarised in Criscuolo et al. (2022), also acknowledged the difficulty of the task for mature economies.

These difficulties are also addressed by the capabilities literature, which stresses that effective industrial policy requires coordinated intervention across multiple domains supported by institutions capable of managing structural interdependencies and political conflicts (Andreoni and Chang, 2019). Country-specific empirical work has brought granular texture to such approaches, showing how latecomer economies can climb technological ladders through successive stages of capability formation and public–private research collaboration (Lee, 2020). Even for Mazzucato (2013) – see also Mazzucato et al. (2020) – who strongly promotes the entrepreneurial role of the state, the difficulty of shaping markets in advanced capitalist economies is clear.

Nonetheless, even when addressing mature economies, the analytical background of these pivotal contributions remains fundamentally that of the catching-up economy. The implicit assumption is that, once the state decides to lead and takes appropriate action, the underlying economic structure would allow policy direction to translate into cumulative productive change.

In advanced economies that have undergone deep deindustrialisation, such as Britain, this assumption fails. The foundations of industrial capability have themselves been eroded. Capital is greatly detached from production; labour lacks the institutions that reproduce industrial skill and the shortages are not resolved simply through wages, training schemes, or migration; technological advance proceeds with only a fragile domestic anchor; finance is not a neutral intermediary awaiting direction by the state; and openness to international capital flows operates more as external constraint than as stimulus.

This is a qualitatively different set of constraints for industrial policy, characteristic of the Gerschenkron Inversion. The decisive factor behind the Inversion is precisely the decline of industry and particularly the shrinkage of manufacturing. This point relates directly to Rodrik's recently expressed scepticism about manufacturing, and indeed to his related claim that a "quiet revolution" is underway in ordinary consumer services, such as retail, food service, accommodation, logistics, where digital platforms and organisational innovation now permit the concentration and geographical replication once thought peculiar to manufacturing (Rodrik, 2026b).

The underlying evidence, principally Hsieh and Rossi-Hansberg (2023), points to an industrial reorganisation of parts of the service economy primarily by large firms in US retail, hospitality, personal services and medical services, thereby showing that manufacturing does not have an exclusive claim on productivity-raising reorganisation of the labour process. But the argument hardly applies in general. Azenui, Hlatshwayo and Spence (2025), taking a longer run of data that covers non-tradables, find that productivity increases much faster and persistently in tradables. Klein, León-Ledesma and Crafts (2026) find that unconditional convergence in US manufacturing productivity accounted for the vast bulk of aggregate American productivity convergence in 1958–2007, and that this convergence was driven fundamentally by the reproduction of a labour force capable of absorbing advanced technique. This finding is built on data specifically designed to avoid the informal-sector coverage

problems identified by Herrendorf, Rogerson and Valentinyi (2022), which undermined earlier cross-country convergence claims by Rodrik.

Furthermore, Fernald et al. (2024), using aggregate US data, show that there is no new productivity regime after the pandemic, and certainly no service-led one. Finally, Dao and Platzer (2024) locate the sole durable improvement in Information and Professional Services on the back of heavy intellectual-property investment, which is a very different mechanism from the reorganisation of retail and hospitality (see also Garga, Olivei and Wang, 2024; Fernald, Li and Ochse, 2021).

The evidence continues to point toward mature and deindustrialised economies exhibiting a sustained inability to create “good jobs” or systematically to raise the productivity of labour in recent years. Moreover, in Britain, the service sector is unable to cover the persistent shortfall in the balance of trade on goods caused primarily by the decline of manufacturing. Rodrik's scepticism about manufacturing is not matched by firm evidence that an alternative developmental engine has actually been found.

Further insight in this respect could be drawn from the Cambridge tradition in political economy, which stresses that structural change in advanced economies generates its own binding external constraints. Rowthorn and Coutts (2004, 2013) showed that deindustrialisation in mature economies tends to weaken the balance of payments by shrinking the tradable sector, creating a persistent external constraint that industrial policy must confront. Thirlwall (1979) has classically demonstrated that the balance of payments sets a binding limit on long-run growth in open economies, a result that is particularly powerful once manufacturing has contracted severely. Palma (2005) further showed that several advanced economies experienced premature deindustrialisation, losing their industrial base before developing high-value tradable services capable of supporting the external balance.

The vital point is that industrial strategy in deindustrialised mature countries must tackle a reversed developmental configuration embedded in existing class relations and institutions. The required industrial policy must certainly be broad, stretching across sectors, but overcoming the binding constraints must still be a priority. If they are not tackled, the result is policy ineffectuality and mounting pressure for transformation without obvious capacity to carry it through.

Gerschenkron's contribution is still pivotal in this regard. His approach implied a valid methodological principle, namely that the institutional form of development must comply with the historically specific configuration of constraints structuring capitalist accumulation. Put summarily, the strategy for industrialisation is endogenous to the constraint structure; therefore, a change in the historical constraints alters the institutional requirements. In deindustrialised mature economies the constraint structure has inverted and that sets the parameters of industrial policy.

3. The political economy of the Gerschenkron Inversion in Britain

The trajectory of Britain represents a stark instance of mature deindustrialisation together with financialisation. Examining it exposes the core economic relations of the Inversion, setting the terrain for the formal model in section 4. It also points to the key conclusion regarding industrial policy formation: Britain has no “advantages of backwardness” but several “disadvantages of financialised advance”. Government intervention is certainly necessary – and in this regard Gerschenkron remains highly relevant – but its first task should be to remove the disadvantages.

The British economy entered the twenty-first century with a productive structure that is both lopsided and fragile.² The share of manufacturing output has experienced a precipitous decline from 30% of GDP in 1979 to approximately 8.5% of Gross Value Added (GVA) in the third quarter of 2025 (ONS, 2025b). Manufacturing employment collapsed from 6.8 million in 1979 to 2.6 million in 2024, a contraction far exceeding that of other major European economies. British foundational industries, such as steel, aluminium, chemicals, and machine tools, have been reduced to marginal global capacity.

What has been lost is not simply manufacturing employment but the institutional infrastructure through which industrial labour used to be reproduced. The first binding constraint on British reindustrialisation, paradoxical as it may seem for an advanced economy, is skilled labour. Late developers typically struggle to form skilled industrial labour from agrarian populations or from surplus urban labour. Britain's deindustrialised economy destroyed previously existing industrial labour capacity and

² Both the discussion and the stylised facts in this section draw on Lapavitsas, Elliott and Nicholls (2026, ch. 3, 6, 9).

tilted the composition of its labour force toward services that typically have lower productivity (Wilson et al., 2020). Internal labour markets and long-term employment relationships were replaced by short-term contracts, subcontracting, and external hiring. The supply of skilled industrial labour has become a structural bottleneck in contemporary Britain (Deb and Li 2024).

Comparative political economy has long argued that skill formation depends on institutional complementarities linking firms, labour markets and the state. In the still influential work of Hall and Soskice (2001), vocational training endures only if corporate governance, bargaining systems and employer coordination support long commitments. Wolfgang Streeck (1992; 2009) similarly emphasised that once collective organisation weakens, firms rationally retreat from shared provision and short horizons prevail. The comparative work assembled by Bussemeyer and Trampusch (2012) shows that, if collective settlements fragment, poaching becomes a substitute for training and cumulative capability formation contracts.

In Britain, the institutions that in the past reproduced skilled industrial labour, such as systems of apprenticeship, vocational education, internal labour allocations, and workplace transmission of skill, were systematically disrupted, disorganised, and eliminated. The result is that shortages of skilled labour are not a temporary oddity of labour allocation but a stable pattern (Department for Education 2025).

The erosion of these skill-creating institutions is rooted in the neoliberal class settlement of the last five decades. Enterprises underinvest in broad-based training for fear of poaching, while the state fails to provide vocational skills as collective goods, thus reproducing the classic collective action problem that was early identified by Finegold and Soskice (1988). This failure is closely connected to the hollowing out of the demand for industrial skills as financialised accumulation took hold and managerial strategies prioritised short-term returns over skills utilisation and job quality (Keep and Mayhew 2010; Thompson 2003). Furthermore, Lloyd and Payne (2002, 2016) have shown that policies to improve supply-side skills often fail because of weak demand for such skills due to employer strategies, poor job design, and hollowed productive structures. This failure is compounded by the pathology of vocational training, based on a quasi-market logic that favours short, low-risk courses rather than the long

intermediate technical education required by manufacturing firms (Benassi et al. 2022).

The demise of industrial labour skills in Britain was conditioned by a class defeat. The confrontation with the miners in 1984–85 marked the decisive moment that determined the capacity of organised labour to resist the destruction of industrial skill reproduction systems. As Beynon and Hudson (2021) have shown, the defeat reshaped working-class power in ways that extended far beyond the coalfields. The British state mobilised its full apparatus of police, courts, media, and energy policy institutions to defeat a workforce whose organisational density and community roots made sustained resistance possible (Milne 2004). This class defeat consolidated the dismantling of the institutional infrastructure through which industrial skill used to be reproduced.

It ought to be stressed that the abundance of capital in mature and deindustrialised economies cannot dissolve the constraint of skilled labour. Money capital could perhaps pay higher wages, purchase advanced equipment, and import skilled labour from abroad. But higher wages cannot conjure experienced toolmakers, process engineers, or supervisors, if the institutional pathways that once formed them have disappeared. Migration can alleviate labour pressures at the margin but cannot recreate the dense environment of skill transmission across firms and generations. Not least, advanced technology also requires complementary skills that are scarce, such as installation, calibration, maintenance, and adaptation to local production chains. The availability of money capital by itself is no answer at all.

Still, there is no doubt that money capital is present on a vast scale in Britain in the form of retained profits, institutional savings, and liquid financial assets. The problem is that such capital remains structurally unavailable for long-term productive commitment. This is not a malfunction of finance but a defining feature of financialised capitalism for several decades now, whereby the making of profit proceeds heavily through financial operations, asset ownership, and claims on income rather than through the expansion of productive capacity (Krippner 2011; Lapavistas 2013). The transformation is epochal.

It is well known that in mature deindustrialised and financialised economies large corporations generate substantial cash flows yet deploy them through shareholder distributions, mergers and acquisitions, and treasury operations instead of productive

expansion (Lazonick and O'Sullivan 2000; Stockhammer 2004; Orhangazi 2008). Institutional investors value firms through asset prices and short-to-medium-term returns rather than productive capacity and have become a dominant force in corporate finance (Braun 2022). This structural detachment is not uniform across the core of the world economy, since it is less acute, for instance, in Germany and Japan. But it characterises deindustrialised and financialised economies.

Political economy writers have long argued that British finance tends to be separated from domestic production (Ingham 1984; Elbaum and Lazonick, 1984); Coates (2000) emphasised British short-termism and the pressure for quarterly returns; Singh (1997) showed, in an analysis that remains highly relevant today, that the very structure of stock-market-centred finance is fundamentally misaligned with the requirements of industrial accumulation. The point is, however, that the sustained financialisation of the economy has created an unprecedented autonomy for British finance.

By the 2000s, finance contributed 8–10% of British GDP, employed 1 million workers, and generated substantial tax revenues, yet its profitability bore no relation to domestic industrial performance. In the 2020s pension funds and insurance companies held trillions in assets but allocated minimal capital to long-duration manufacturing investment. Banks lent readily for property and consumption while treating industrial loans as high-risk, illiquid assets. In this light, public credit is required not to correct market failure but to impose a logic of accumulation aligned with production.

This configuration persists because finance's structural dominance translates into political influence, a point already made by Moran (1986) decades ago. Meanwhile, large British non-financial enterprises are continually active in financial markets, often with retained profits. At the same time, attempts at industrial policy, such as the National Enterprise Board in the 1970s and several regional agencies subsequently, faced opposition from established financial interests, typically summed up as the "City-Bank of England-Treasury" nexus. This institutional triangle has historically prioritised sterling's international status and capital mobility over industrial performance, viewing industrial policy as an imposition on the financial markets that provide the state's primary tax base.

Beyond labour and capital, the role of advanced technology – including information technology – completes and even exacerbates the Inversion. The constraint is not the

absence of technological innovation but its weak connection with domestic production. Mature and deindustrialised countries typically retain substantial scientific and technical capability embedded in universities, public research institutions, and specialist enterprises, which are often of leading quality and collectively generate significant volumes of patents, spin-offs, and research publications. But these outputs circulate within global networks rather than feeding into the processes that have historically driven manufacturing productivity, that is, cumulative, shop-floor-embedded technical advances.

Technological innovation today attaches primarily to global production chains rather than being anchored in domestic industry, a point long established in the Global Value Chain literature (Gereffi, Humphrey and Sturgeon 2005; Coe, Dicken and Hess 2008). It is often exported as intellectual property or is licensed to foreign producers rather than deployed in expanding domestic capacity (Milberg and Winkler 2013). Furthermore, corporations that are oriented toward shareholder returns seek to extract rents from innovation rather than deploying it domestically (Lazonick 2014).

The mechanism of disconnection is structural and rooted in financialised accumulation. As foundational industries – for instance, steel, aluminium, chemicals, machine tools, contracted or disappeared – the industrial substrate through which technology is converted into productive capacity was progressively hollowed out. Advanced manufacturing requires not only scientific prowess but dense networks of suppliers, fabricators, toolmakers, and process engineers, allowing technique to be generalised across production (for a related claim, see, Andreoni and Chang 2019; Chang and Andreoni 2020). In their absence, innovation remains encapsulated in isolated niches and depends on imported basic components, or on the strategies of foreign corporations, to be commercially realised in the domestic economy.

Britain produces cutting-edge research in materials, aerospace, and pharmaceuticals, yet its broader impact is limited by the absence of a foundational industrial base to absorb, deploy, and further develop the technological advances. Already in 2013, the Foundational Economy Collective (Bentham et al. 2013) argued that industrial strategy focusing on technology-intensive, tradable sectors with low employment would leave the regions of deindustrialised Britain in structural decline. The reason is the absence

of the productive substrate through which innovation would have to operate, if it were to generate broader benefits.

The Inversion, finally, also appears in connection with international transactions. The shrinkage of manufacturing forces the British economy to finance persistent current account deficits that stood at 3.8% of GDP in mid-2025 (ONS, 2025a). The weakened industrial base cannot generate sufficient tradable output, and the expanded service sector cannot make good the shortfall. The deficit is typically financed through the financial account, first, via volatile portfolio inflows, which create fragility that periodically prevents domestic economic expansion, and second, through the acquisition by foreigners of domestic assets, which often do not expand productive capacity but embed external claims on domestic income and infrastructure.

To be sure, Britain is not a subordinate financialised economy in the sense applied to peripheral countries (Bonizzi, Kaltenbrunner, and Powell 2020). Sterling sits high in global currency hierarchies, London remains a premier financial centre, and British state debt is denominated in domestic currency. But the country remains externally dependent: chronic current account deficits combined with globally integrated finance mean that external perceptions of risk pass through to domestic interest rates.

Dependence on the capital account in the context of free capital mobility, financialisation, and abundant capital exacerbates the distance between industry and finance. Banks and asset managers can relocate operations, book profits offshore, and move money capital across borders. Even without moving, they have the power to mark down prices and sharply change asset valuations. Whether by relocating, or by posing the credible threat of marking down assets, financial institutions can avoid the commitment that boosting domestic industry would require.

In a deindustrialised economy with a correspondingly weakened tradable sector, the possibility of capital outflows shapes exchange rate expectations, drives bond market pricing, raises refinancing costs, and compresses asset valuations in ways that subordinate domestic monetary and fiscal policy to the preferences of mobile capital. The freedom to leave disciplines the state continuously and prevents it from imposing the conditions that reindustrialisation requires on long-term investment. At the same time, persistent current account deficits ensure a continuous requirement for external

financing, which further tightens this discipline. The deficit creates the need for inflows, while the possibility of their reversal enforces the terms on which they are obtained.

The characteristic, interacting constraints of the Inversion identified in this section – skilled labour scarcity, financial detachment from production, technological disconnection, and external fragility – are formalised in a simple model in the following section. The purpose is not to generate forecasts or optimise behaviour, but to make transparent the causal mechanism through which these constraints reinforce one another. The mathematics simply renders explicit the underlying processes of political economy, demonstrating why an effective industrial policy must entail coordinated intervention across all these margins simultaneously.

4. A Structural Model of the Gerschenkron Inversion

The model draws on the structuralist tradition of circular and cumulative causation associated with Myrdal (1957) and Kaldor (1966, 1970, 1972) as well as relying on Marxist analysis of capitalist accumulation, in which investment, technical change and labour reproduction evolve through historically specific institutional relations rather than equilibrium adjustment. It is a reduced-form structural representation of a financialised capitalist economy, and it is not concerned with behavioural optimisation. Instead, it formalises the mechanism of the Gerschenkron Inversion, fixes the direction of causality, and establishes closure of the system. The aim is not to provide forecasts of economic performance but to represent the interaction of the constraints that characterise mature deindustrialised and financialised economies, such as Britain's.³

Note that the model does not seek to reproduce the historical genesis of the Inversion. As was argued in Section 3, the Inversion occurred through a complex historical process that pivoted on the defeat of organised labour and accelerated the deindustrialisation and financialisation of Britain, destroying the institutions through which industrial labour had previously been reproduced. The formal apparatus that follows takes the resulting configuration as its point of departure and asks a different question: once skilled industrial labour has become the binding constraint, through what mechanisms does the Inversion reproduce itself, and what would be required to

³ The model formalises the analysis and detailed proposals in Lapavitsas, Elliott, and Nicholls (2026).

break it? The model captures theoretically the reproduction, not the emergence of the Inversion.

The variables and parameters of the model represent institutional relations that evolve through historically specific configurations. Namely:

- L_M industrial labour
- Y_M manufacturing output
- Y_S services output
- Y total output
- K_M manufacturing capital
- λ labour capacity coefficient
- A labour productivity
- I^g public investment (policy variable)
- I_M^p private industrial investment
- δ_K capital depreciation rate
- r domestic market financing rate facing industrial investment
- r^g concessional public credit rate (policy variable)
- r^* world interest rate
- $\varphi(\frac{CA}{Y}, \kappa)$ the financial pressure function
- CA current account
- τ trade management parameter (policy variable)
- κ capital account management parameter (policy variable)
- f structural domestic financial bias against industrial credit allocation operating independently of interest rates; higher values indicating greater bias
- $s(Y_M)$ export capacity function
- $m(A, \tau)$ import propensity function
- η skilled workers generated per unit of public investment
- μ skilled workers generated per unit of private investment
- δ labour attrition rate

The policy instruments available to the government include public investment I^g , trade management τ , capital account dampening κ , and the concessional public credit rate r^g . The policy instruments must move jointly and at scale, if the Inversion is to be

broken. The social implications are inevitably profound, and the political economy of how these instruments might be deployed in Britain is briefly sketched in Section 5.

The core of the model comprises five equations:

$$(1) \quad Y_M = \lambda L_M$$

$$(2) \quad \frac{CA}{Y} = s(Y_M) - m(A, \tau), \quad s'(Y_M) > 0, m_A < 0, m_\tau < 0$$

$$(3) \quad r = r^* + \varphi\left(\frac{CA}{Y}, \kappa\right), \quad \frac{\partial \varphi}{\partial \left(\frac{CA}{Y}\right)} < 0, \quad \frac{\partial \varphi}{\partial (\kappa)} < 0$$

$$(4) \quad I_M^p = g(r, r^g, f), \quad \frac{\partial g}{\partial r} < 0, \frac{\partial g}{\partial r^g} < 0, \quad \frac{\partial g}{\partial f} < 0$$

$$(5) \quad \Delta L_M = \eta I^g + \mu I_M^p - \delta L_M, \quad 0 < \mu < \eta$$

And implicit capital accumulation:

$$\Delta K_M = I^g + I_M^p - \delta_K K_M$$

The economic content of the equations, reflecting the preceding analysis in section 3, is as follows:

Equation (1): Labour-binding output

This equation states that manufacturing output is determined by the available stock of skilled industrial labour through a fixed-coefficients relation. Over a reasonable reindustrialisation horizon of several years, capital can be rebuilt more rapidly than skilled labour, making labour the binding constraint. Output is capped by the physical and institutional availability of industrial labour rather than by capital or aggregate demand. The model does not claim that labour is typically the binding constraint in a capitalist economy – that would be nonsense. It claims instead that labour becomes the binding constraint under conditions of advanced deindustrialisation and financialisation following the prolonged destruction of labour-reproducing institutions.

Technically, the reduced form output relation is the labour-binding arm of a fixed coefficients (Leontief-type) production function:

$$Y_M = \min(\lambda L_M, \nu K_M)$$

where λ is the labour capacity coefficient (maximum output per unit of industrial labour) and ν is the capital capacity coefficient (maximum output per unit of manufacturing capital). The shortage of skilled industrial labour results in equation (1), valid over the horizon in which $\lambda L_M \leq \nu K_M$.

The model avoids the neoclassical formulation, $Y_M = F(L_M, K_M)$, with its smooth substitutability of production factors. The coefficient λ captures capacity determined by training systems, operational uptime, and sequencing of operations in industry. As was argued in Section 3, manufacturing requires not just trained individual workers but workplaces in which tacit knowledge circulates, techniques are learned collectively, and new cohorts of labour can be absorbed. Without sufficient L_M , no volume of capital raises Y_M .

This is not to deny that demand weakness, coordination failures, or market structure can constrain output in the short run, and nor is it claimed that labour is the only constraint on the economy. Rather, the aim is to isolate the binding constraint once skilled industrial labour has been structurally depleted. The model shows that skilled labour scarcity generates a circular reinforcement, a loop that traps the economy in a state of deindustrialisation, which cannot be broken through partial industrial policy.

It is trivially true that total output Y also includes value added through services and not simply manufacturing, $Y = Y_M + Y_S$. However, this accounting relation has no impact on the causal structure of the Gerschenkron Inversion, and the model focuses exclusively on the manufacturing subsystem.

The reason is not that services are economically irrelevant but rather that only the activities represented by Y_M have the capacity to lift the binding constraint endogenously, while also shifting the constraint of external transactions in a durable way. Certain tradable services, such as finance and legal support, generate substantial export revenues that partially offset the manufacturing trade deficit. Moreover, certain

service sectors, including finance, have substantial capacity to embody technical change, as was documented by the literature in section 2. Nonetheless, there is no true analogy with manufacturing in this respect. Finance and legal services facilitate the circulation, realisation and appropriation of value produced elsewhere rather than constituting productive labour. Their technical advance, however extensive, does not generate the productive linkages or the cumulative expansion of the value-producing base that would reverse the Inversion.

There is little generality lost by assuming that services affect the accounting balance without lifting the binding constraint or triggering a break with the Inversion. In this light, manufacturing output Y_M should be read as a proxy for the activities that produce the core of tradables in the model. These are characterised by embodied technical change, strong effects on productivity, dense supply chains, and a direct impact on the external balance.

Note also that the model postulates the endogenous evolution of labour productivity, A , occurring through capital deepening in the tradition of Verdoorn (1949) and Kaldor. Specifically, the model adopts a simple Kaldorian (1966, 1972) mechanism in which the growth of A is proportional to the investment rate. Embodied technical change is the channel through which public and private investment renew the capital stock, reorganise production, raise the capital–labour ratio and diffuse advanced technology.

This also formalises a core insight of Marxist origin, namely productivity growth results from the introduction of new means of production, including machines, processes, and workplace organisation, that embody technical advances. It does not arise from factor reallocation or marginal efficiency gains within existing techniques. Capital investment is the carrier of technical change, but higher productivity requires skilled labour capable of operating the advanced equipment. Productivity growth and labour reproduction are inseparable. The productivity parameter A rises as investment expands the stock of advanced equipment and as an appropriately sized skilled workforce makes fuller use of it.

Note further that technology does not enter the model as a separate constraint because, as was discussed in Section 3, the problem in deindustrialised mature economies is not the absence of innovation but its weak domestic absorption. In particular, the foundational industries through which innovation is converted into

productive capacity have been hollowed out, leaving technological capability confined to isolated niches rather than generalised across production.

In light of Section 3, then, technology enters the model through three channels: first, through productivity growth, A ; second, through the export capacity, $s(Y_M)$, which rises as a reconstructed manufacturing base provides the basis for incorporating technological innovation; third, through the import propensity $m(A, \tau)$, which falls as rising productivity reduces dependence on imports.

Equation (2): External balance and trade management

The second equation links manufacturing output to the current account by postulating that export capacity, $s(Y_M)$, is increasing in manufacturing output Y_M , that is, a larger industrial base generates more export capacity. At the same time, import propensity, $m(A, \tau)$, is decreasing in manufacturing productivity A , and therefore imports are high when productivity is low and the economy is dominated by services. A small manufacturing base cannot offset the import propensity of a service-heavy deindustrialised economy. Finally, the policy parameter, τ , reduces import propensity through procurement localisation and trade control rules. This is not autarky but strategic intervention in procurement, standards, and supply chain rules to reduce demand leakage to imports and to improve the multipliers of domestic expenditure. Without trade control, reindustrialisation cannot improve the external position as value leaks through imports of components, materials, and consumer goods.

Equation (3): External fragility

The third equation captures the financial pressure that a persistent current account deficit generates under conditions of free capital mobility. Britain issues its own currency, its state debt is typically denominated in sterling, and it occupies a high position in the international currency hierarchy. The mechanism at work is accordingly not that of a peripheral economy dependent on foreign-currency borrowing, in which an external deficit translates directly into a premium demanded on borrowing abroad. In Britain, external imbalance instead operates through sterling's valuation, the pricing of domestic assets, the composition and volatility of portfolio inflows, and the monetary

conditions required to sustain external financing on acceptable terms. Nonetheless, financialisation has tightened the links between domestic and international finance, increasing the sensitivity of domestic interest rates to external pressure. Capital controls, captured by κ , weaken this transmission.

The model shares the emphasis on the external constraint with Thirlwall's (1979) canonical contribution but departs from it in two respects. First, the constraint is not an equilibrium growth condition but the component of a circular mechanism in which the constraint itself is endogenously reproduced by deindustrialisation of production and financial allocation. Second, the response to the constraint is not limited to relative price adjustment but involves institutional transformation of production and capital allocation.

Equation (4): Interest rates, financial bias, and the logic of accumulation

The fourth equation captures private industrial investment as a function of three distinct features of the financing environment. First, the domestic market interest rate, r , which is market determined and subject to external financial pressure, as is shown in equation (3); second, a concessional public credit rate, r^g , which is a policy instrument; third, the structural bias of financialised accumulation against industrial credit allocation captured by f , which operates independently of interest rates by limiting the allocation of long-term finance to industrial activity.

A deterioration of the current account places upward pressure on the domestic interest rate and depresses aggregate private industrial investment, even if part of that investment may be sustained through concessional public credit. A lower concessional rate evidently boosts investment. However, lower interest rates do not by themselves ensure strong private investment, since the structural bias can continue to restrict the availability of industrial credit. Equation (4) therefore captures distinct ways in which a financialised economy can suppress productive accumulation, namely through the price of finance and through the structural allocation of credit.

Concessional public credit addresses the first constraint by providing long-term financing deliberately insulated from the market rate. The concessional rate can be

maintained below the domestic market rate, while capital controls, captured by κ , weaken the transmission of external financial pressure. The second constraint, by contrast, cannot be addressed through the price of credit. The way to tackle it is through public investment, since that does not depend on the allocation decisions of private finance. Public investment bypasses both the price constraint and the structural bias and contributes directly to the reproduction of industrial labour independently of the financing conditions facing private investment. The model treats it as a policy decision backed by the fiscal and monetary capacity of the state, while abstracting from the particular combination of taxation, borrowing and monetary arrangements through which it is financed.

The relevant variable is total private industrial investment. Concessional public credit does not replace private investment but sustains and expands it. The policy rate operates through a public financial institution that directly finances long-term investment. Lowering the public rate does not alter the borrowing costs of private enterprises that continue to borrow at the market rate; rather, it expands the volume of investment financed on concessional terms and thus insulated from market financial pressures. Finally, public investment can bypass the structural bias against industrial credit allocation by expanding productive capacity independently of private financial allocation.

Equation (5): Labour reproduction through public investment

Skilled industrial labour depends on complex systems discussed in Section 3, which embed labour reproduction in production, including workplace formation, learning-by-doing, retention, and absorption capacity. These tend to be dismantled or disarticulated in deindustrialised and financialised economies and cannot be fully regenerated by private investment alone. Therefore, public investment is the crucial means of rebuilding the institutional capacity required to expand the skilled workforce.

The coefficients η and μ should not be interpreted as technical rates at which investment expenditure is mechanically converted into skilled workers. Rather, they summarise the institutional capacity of, respectively, public and private investment to sustain the workplaces, training, supervision, and stable employment through which

industrial labour is reproduced. Once these institutions have been severely degraded, private enterprises alone cannot reconstruct them, since they individually underinvest in broad-based training for fear of poaching and have no incentive to bear the cost of collective capacity on which competitors can free-ride. In contrast, public investment can sustain the collective and long-horizon institutions that individual private enterprises have no incentive to provide. Consequently, $\mu < \eta$. At the same time, normal retirements and exits from the labour force reduce the stock of the available skilled labour, and the structural parameter δ captures the rate of attrition.

Equation (5) captures these relations simply. Public investment at appropriate scale can rebuild the institutional density required for labour reproduction, whereas weak public investment leaves the system below replacement. The equation implies the crucial threshold condition for the entire model, that is, public investment together with private investment must exceed the replacement requirement, if the stock of industrial labour is to expand. That is:

$$\eta I^g + \mu I_M^p > \delta L_M$$

This can also be written in intensity terms:

$$\frac{\eta I^g + \mu I_M^p}{L_M} > \delta$$

This, then, is the threshold condition: public investment per worker together with private investment per worker, scaled by their respective institutional capacities to reproduce skilled labour, must be higher than the natural attrition of the labour force. Since $\mu < \eta$, and since private investment is itself constrained by market financing conditions and structural financial bias, public investment is the decisive policy variable for carrying labour reproduction above the replacement threshold.

The circular mechanism

The dynamics of the Gerschenkron Inversion discussed in Section 3 are now transparent. The sequence begins with the binding constraint, that is, industrial labour limits manufacturing output (equation 1). The immediate consequence is that a small manufacturing base worsens the current account (equation 2). The resulting external fragility places upward pressure on the domestic market interest rate (equation 3) and discourages private industrial investment (equation 4). The structural bias of financialised accumulation against industrial credit allocation, f , independently depresses private industrial investment and reinforces this effect. Weak private investment is unable to boost the skilled labour force, and if public investment is also weak, labour remains the binding constraint (equation 5), closing the loop.⁴

$$\begin{aligned}
L_M \text{ low} &\rightarrow Y_M \downarrow \rightarrow \frac{CA}{Y} \downarrow \rightarrow r \uparrow \rightarrow I_M^p \downarrow \\
&\Rightarrow \eta I^g + \mu I_M^p < \delta L_M \Rightarrow \Delta L_M \downarrow \Rightarrow L_M \text{ low}
\end{aligned}$$

Partial public interventions leave the loop intact. In particular, a modest increase in I^g raises ΔL_M slightly, but without adequate scale or complementary intervention in τ and κ , external pressure and domestic bias continue to suppress private investment and the system remains below the threshold required to break the Inversion. Training programmes without coordinated investment create skilled workers but no new posts; public credit without trade management leaks through imports; trade protection without labour expansion merely redistributes scarcity; capital controls without public investment leave the productive base unchanged.

The model thus captures a configuration in which the binding constraint arising from the institutional reproduction of skilled industrial labour interacts with the external pressure and domestic bias governing domestic investment. The result is to entrench deindustrialisation. The constraint cannot be eliminated through standard market mechanisms, such as factor substitution, capital inflows, or labour reallocation,

⁴ There is no need to engage in a formal demonstration of dynamic stability here. The model does not seek to demonstrate the existence of a unique stable or unstable equilibrium in the neoclassical sense. Rather, it heuristically captures the path-dependent, cumulative causation typical of structuralist macroeconomics. It also illustrates why marginal or partial interventions are neutralised by offsetting feedback effects elsewhere in the system and supports its claims with historical and institutional analysis.

because the institutional conditions governing labour reproduction, external balance, and domestic financial allocation reproduce the low-investment, low-output configuration.

Cumulative adjustment and path dependence

The loop captures a structural trap in which each margin reinforces the others. Because each relation feeds into the next with reinforcing direction, a modest adjustment in any single margin is insufficient to reverse the system and is absorbed by the entrenched configuration. Breaking it requires the simultaneous, large-scale, and co-ordinated deployment of all four policy levers, that is, public investment, I^g , trade management, τ , capital account management, κ , and a maintained low concessional public credit rate, r^g . Public investment rebuilds labour reproduction while bypassing the structural bias of private finance; trade controls limit import propensity; capital controls weaken the financial transmission of external fragility; and concessional public credit supports private industrial investment.

The Gerschenkron Inversion is a systemic configuration, and escaping it requires altering several reinforcing mechanisms at once. With such a coordinated deployment, “circular and cumulative causation” in Myrdal’s and Kaldor’s sense operates in the opposite direction. That is, higher L_M expands Y_M ; improved external balance lowers r ; stronger private investment reinforces labour reproduction; and rising productivity validates further expansion.⁵ The Verdoorn–Kaldor relation underpins the process: faster investment and output growth induce higher productivity growth via economies of scale and learning-by-doing; improved productivity enhances competitiveness and the external balance; and a stronger external position sustains demand growth, feeding back into output growth.

In a financialised capitalist economy, however, the policy instruments are not independent levers. They can be moved at the required scale only if the state has control backed by enforceable rights over the institutions responsible for investment,

⁵ The system exhibits the familiar features of path-dependent development identified by Cambridge growth theorists. A persistent low-growth path can transition to a high-growth trajectory under coordinated intervention; partial policies fail because they operate within an entrenched low-growth regime (Setterfield 1997).

training, procurement and financial flows. Realistically, this requires that public investment and public credit acquire corresponding public rights over productive assets and financial circuits. In practice, such rights include equity stakes, board representation, conditional lending contracts, procurement rules tied to domestic capacity and training, and step-in or clawback provisions that prevent publicly funded activity from being redirected into uses that do not support breaking the Inversion. The model's results therefore assume (implicitly but necessarily) that public money buys public rights. This is the crucial institutional condition for the policy levers to function effectively. To break the Inversion, public money must secure public property rights, thus gradually rebuilding public wealth.

5. The return of industrial policy and its limits

Comparative political economy has long emphasised the path dependence of institutional configurations as well as the historically specific class settlements that tie enterprises, labour markets and the state together in different countries (Streeck 2009). These differences do not invalidate the Gerschenkron Inversion but more closely specify its conditions. The full circuit of the Inversion emerges most clearly where financial expansion coincides with deep industrial contraction and the political defeat of organisations capable of sustaining labour reproduction institutions. Britain represents the limiting case in which buffers were stripped away most thoroughly, isolating the underlying mechanism. It stands out because it reveals the logic of the process in an extreme and concentrated form.

Recognition of the symptoms of Britain's current predicament has become widespread. There is, for instance, near universal acknowledgement of the 'productivity puzzle', that is the inability of productivity to rise systematically since the crisis of 2007–09 (Williams et al., 2025). Parallel to this, policymakers and economists acknowledge that the country's malaise is inextricably linked to manufacturing decline. The UK government's Modern Industrial Strategy (HM Government, 2025) signals a growing consensus that market forces alone will not rebuild productive capacity, and industrial policy is necessary.

Yet despite this recognition, proposed interventions draw on an obsolete classical developmental problematic. Implicitly or explicitly, they propose familiar tools, such as

subsidies, tax credits, loan guarantees, support for technology research, and public procurement to de-risk private investment. Under contemporary conditions, these measures do not address the core of the problem.

The mechanisms analysed in Sections 3 and 4 explain why. The interacting constraints of labour scarcity, weak tradables, external imbalance, financial discipline and suppressed investment form a self-reinforcing circuit. Partial interventions are neutralised by pressures elsewhere in the system. Breaking the Inversion requires simultaneous movement across the margins that constitute the circuit.

This means, first and foremost, that Britain needs an integrated labour policy to train its youth and ensure the regular supply of necessary industrial skills. Such a policy will require the active involvement of sectoral and worker organisations themselves, including trade unions. There is no shortage of experience from other countries to draw on. The institutional core of collective vocational training in Germany, for instance, has proved resilient even as the broader industrial relations system has eroded. Industrial skills continued to be reproduced through employer coordination, residual sectoral bargaining in key manufacturing sectors, and publicly supported apprenticeship pathways (Baccaro and Pontusson 2016; Baccaro and Benassi 2017). Britain's institutional settlement imposed the systematic destruction of precisely these pathways.

Further, industrial policy will require a sustained, large-scale wave of public investment, together with a public investment bank providing long-term concessional credit. Public investment and public credit must acquire corresponding rights over productive assets and financial institutions, otherwise public resources will be absorbed into private balance sheets without altering the structure of accumulation. The problem is not simply the price of finance but also its allocation. Even cheap capital need not flow into long-term industrial investment in a financialised economy.

Britain also needs to discipline abundant capital rather than mobilising scarce capital. Capital controls must also be deployed to limit the freedom of capital flows, as is now increasingly recognised even by mainstream sources, for instance, Ostry et al. (2010), Erten, Korinek and Ocampo (2021), and Chang, Fernández and Martínez (2024). In highly financialised economies, such as Britain's, controls must also impose costs on organised financial interests that are globally mobile, politically embedded, and

capable of credible retaliation. Free capital mobility is the institutional form through which financial capital has consolidated its relative autonomy from domestic production over several decades (Grabel, 2017; Gallagher and Kozul-Wright, 2022).

Capital controls would also weaken the transmission of external financial pressure to domestic interest rates, while trade management should limit the current account deficit and protect nascent industrial capacity. Trade management would also create the space for sustained domestic investment alongside long-duration public finance and binding conditionality on firms receiving public support. In practice this means that both capital account management and trade management should be aimed at reducing chronic dependence on imports and volatile external financing.

Moreover, technology presents a categorically different task compared to the Gerschenkronian problematic. The challenge is not simply to generate more innovation but to reconnect technological capability with domestic production. That reconnection cannot be achieved through research subsidies, university-industry partnerships, or innovation vouchers that further support and promote technological advance. Rather, it requires rebuilding the foundational industries that provide the material environment in which technology can be absorbed, adapted, and generalised.

Finally, the structural conditions of mature deindustrialisation imply a fundamentally different tempo compared to Gerschenkron's "Great Spurt". Financial resources are abundant but must be disciplined and come under state control; skilled labour cannot be mobilised rapidly because the systems that reproduce it have been weakened or destroyed. Gerschenkron's logic is now reversed. Reindustrialisation must proceed gradually through the steady reconstruction of labour, finance, trade, and productive capacity. There will be no compressed wave of industrial expansion.

If the institutional route is analytically clear, the question arises why such intervention does not occur. The obstacles are not primarily technical but social and political. The measures outlined above directly challenge the power structures consolidated through financialisation and deindustrialisation. Financial capital resists constraints on mobility and the redirection of institutional savings; large corporations resist conditionality tying investment to domestic production and training; the state apparatus lacks both the capacity and the will to impose transformation against organised resistance; and

labour institutions weakened by declining union density struggle to mobilise sustained pressure for reconstruction.

The persistence of the Gerschenkron Inversion in Britain reflects a class configuration that has emerged after decades of neoliberal domination. For class forces whose power derives from liquidity, mobility and asset valuation, the maintenance of a weak productive base is not irrational but advantageous. What appears socially dysfunctional is privately consistent. The required industrial policy calls for the transformation of a class structure that will not yield to persuasion, subsidy, or technocratic design. Britain was the first country to industrialise and the first to deindustrialise as thoroughly as it has done. It remains to be seen whether it can muster the necessary social forces to be the first to reindustrialise.

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