

THE AGENTIC ECONOMY

Technological renewal and the distribution of prosperity

Dominic Marrocco

Independent researcher

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Abstract

Active labour market intervention has traditionally been assessed by its contribution to employment. Lange and Marrocco's earlier chapter argued that prolonged support for obsolete activity can delay creative destruction and economic catch-up. Its chronological strategy combined initial wage increases and high-technology investment subsidies with subsequent wage restraint to support reinvestment and skilled labour demand, accepting an initial unemployment cost. This chapter continues the investment and learning argument while withdrawing that wage sequence as a general prescription. Artificial intelligence connected to tools and delegated authority can alter the relationship between productive investment and human work. A task-based analysis distinguishes output growth from employment, earnings and household participation in returns. A demand-and-task decomposition, incorporating labour savings, price pass-through, demand elasticity and new-task creation, exposes the conditions under which renewed production fails to restore labour income. Two jointly designed policy functions replace the earlier wage stages: creating dependable productive capability and securing participation in its benefits. Ownership rights, financed distributions, guaranteed AI access, verified task-output profiles and effective public control are examined within an institutional framework for computational productive capacity. The chapter formulates five testable hypotheses and quasi-experimental comparison designs oriented towards productive renewal with durable economic participation.

Keywords: active labour market policy; artificial intelligence; technological renewal; agentic production; ownership; income distribution; computational productive capacity.

JEL classifications: J23, J24, O33, D31, H11.

1 INTRODUCTION

The growth of unemployment following the global financial crisis raised a difficult question for governments and their advisers. Measures designed to preserve employment appeared immediately attractive, yet their longer-term consequences depended on whether the activities receiving support remained economically viable. In *Unemployment and Active Labor Market Intervention: Pay for Delay?*, Lange and Marrocco (2012) argued that prolonged support could obstruct restructuring and delay economic catch-up. Their alternative gave priority to investment in more advanced production, learning through its use and the subsequent expansion of sustainable employment. The distinction between immediate protection and dynamic renewal remains important. The relationship between renewal and employment now requires closer examination.

Artificial intelligence brings this relationship into sharper focus. A technology which helps an employee complete a task more effectively may increase the value of that employee's work. A system which undertakes the task itself may change the number of employees required. Where such systems can use tools, initiate transactions and coordinate sequences of activity, their contribution extends beyond the production of information. They participate in the execution of work previously organised around human attention and working time. This is the productive possibility considered here as the agentic economy.

The central question is whether investment can increase productive capacity while weakening the channel through which households receive income from employment. Technical capability, practical adoption and aggregate employment describe different stages of that process. A policy can succeed in renewing production yet fail to provide broad participation in its benefits. Economic catch-up remains a legitimate objective; its social transmission requires an explicit mechanism.

The earlier argument rested on Schumpeter's concept of creative destruction (Schumpeter, 1950; Lange and Marrocco, 2012). During its first stage, high, unsubsidised wages combined with subsidies for high-technology investment were intended to make obsolete methods uncompetitive, accelerate restructuring and renew learning. The authors accepted that this strategy would initially increase unemployment. During the second stage, wage restraint would widen the gap between productivity and labour costs, supporting profitability, investment from retained earnings and demand for skilled workers. The original chapter presented employment recovery as a consequence of that sequence. The present chapter retains the investment, learning and reinvestment argument, makes the employment link conditional, and withdraws the wage sequence as a general policy prescription. Figure 1 distinguishes the inherited mechanism from that revision.

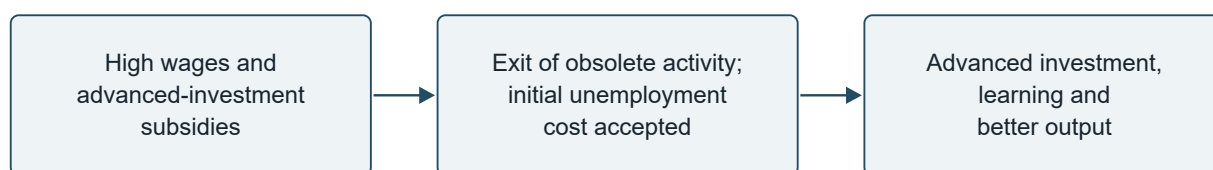
The distinction matters because several outcomes can coexist. A business can improve productivity and reduce its payroll. A sector can expand output while employing fewer people per unit produced. Employment can grow while labour's share of income falls. Conversely, lower costs can stimulate demand and create new activities in which people remain indispensable. Task-based economic analysis provides a disciplined way to investigate these possibilities without selecting an inevitable outcome in advance (Acemoglu and Restrepo, 2019). The chapter's contribution is to connect this employment mechanism explicitly to ownership, household purchasing power and the practical capacity of institutions to govern delegated production.

The analysis follows the earlier chapter's sequence: the limits and side-effects of intervention, the conditions for productive renewal, and the resulting policy implications. Section 2 reassesses both employment protection and technology subsidies. Section 3 replaces the chronological wage policy

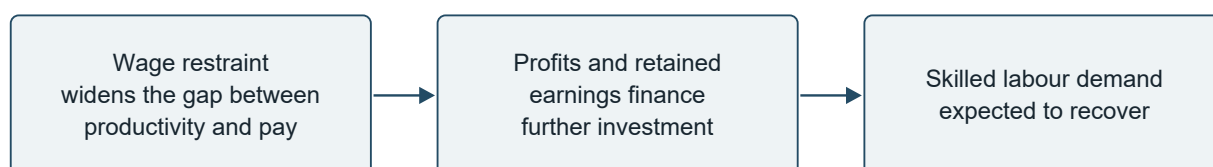
with two interdependent policy functions, productive capability and economic participation. It develops their links through tasks, demand, measurement, ownership and public control, then specifies hypotheses and research designs. Section 4 returns to the earlier objective of sustainable recovery.

The chapter is conceptual. It reports no new data or causal estimates: its empirical claims rest on the cited studies, its accounting relations organise the argument rather than test it, and its hypotheses are research designs for future work. The 2012 chapter is the coauthored starting point; this extension is Marrocco's sole-authored proposal.

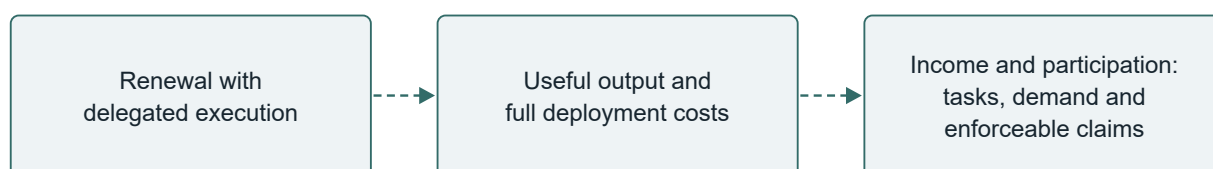
ORIGINAL STAGE 1: CREATIVE DESTRUCTION



ORIGINAL STAGE 2: WAGE RESTRAINT AND REINVESTMENT



CONTINUATION: THE EMPLOYMENT LINK IS TESTED



Solid: original proposed sequence. Dashed: conditional links in the continuation.

Figure 1. Creative destruction, wages and the revised employment question

Source: Conceptual reconstruction of Lange and Marrocco (2012), followed by this chapter's extension. The original sequence is an argument, not an estimated causal effect. The successor does not retain either wage stage as a general prescription.

2 THE DAMAGING SIDE EFFECTS OF INTERVENTION

Lessons from the past

The original criticism concerned additionality, signalling and time. Training can develop productive skills, but completion may also serve mainly as a signal which improves a participant's rank in a queue. Lange and Marrocco (2012) distinguished these channels; this continuation retains that distinction without attempting a new model of screening. Individual employability and aggregate employment are separate outcomes. A subsidy can preserve a relationship which would otherwise have survived, replace an unsubsidised worker or displace activity elsewhere. A favourable short-term count may also conceal the cost of preventing adjustment. These questions apply equally to investment in new technology.

However, the evidence does not support treating all training or retention measures as equally ineffective. Card, Kluve and Weber's (2018) meta-analysis finds substantial variation across programmes, participants and evaluation horizons. Average effects are less favourable soon after participation and improve over longer horizons, with stronger later results for programmes emphasising human capital. This requires a more discriminating conclusion than a general dismissal of intervention. Programme duration, employer demand, participant circumstances and the period over which outcomes are measured belong inside the assessment. An intervention can be poorly designed without rendering its entire category redundant.

The earlier chapter applied the same reasoning to short-time working. It accepted wage subsidies for reduced hours as a temporary social measure, but warned that subsidising jobs which are no longer viable only postpones adjustment and can block the movement of workers from declining to expanding activities (Lange and Marrocco, 2012). The pandemic evidence below qualifies that warning without removing it.

Temporary interruption and structural unviability require different responses. Dissolving a viable employment relationship during a temporary shock can destroy accumulated knowledge and impose avoidable recruitment costs. Using harmonised payroll-based evidence across 12 countries, Calligaris et al. (2023) find that pandemic retention schemes cushioned employment and firm survival without overturning the productivity-enhancing nature of reallocation in their analysis. In Belgium, however, the OECD (2026, executive summary, pp. 7-8) finds that support protected employment during the acute crisis while persistent use beyond that phase, concentrated among less productive firms, likely slowed reallocation towards more productive firms. The duration, institutional setting and identification differ. These findings support a time-sensitive assessment of retention, not a universal verdict for or against it.

The appropriate question is therefore what a measure preserves, for how long, and at what opportunity cost. A temporary bridge to recovered demand differs from repeated support without a credible adaptation pathway. Training connected to real opportunities differs from certificates which only rearrange a queue. Income protection can facilitate adjustment rather than obstruct it when people can afford to move, retrain or search. The policy challenge is to support people through change without making the survival of every existing production arrangement the measure of success.

New technology and familiar additionality problems

The same scrutiny must apply to AI investment. A subsidy can finance equipment which a business would have purchased anyway. A grant may transfer revenue towards a supplier while producing little useful additional output. A demonstration can appear impressive because the most difficult verification work has been performed by people outside its reported cost. The label of artificial intelligence does not resolve deadweight, substitution or displacement; it changes the activity through which those problems appear.

This point qualifies a simple continuation of the earlier investment prescription. High-technology capital is not automatically socially productive capital. A system which reduces labour costs but introduces expensive errors may lower a firm's visible payroll while raising costs elsewhere. An automated claims process can benefit an organisation while transferring the burden of correction to customers. More generated material can increase the work of finding trustworthy information. Public evaluation must therefore distinguish a private saving, additional value added and a wider social benefit. Their alignment is a possibility to investigate, rather than a property conferred by the technology.

Complementary investment is equally important. Brynjolfsson, Rock and Syverson (2021) explain how general purpose technologies depend on intangible changes in processes, business organisation and skills. Their productivity J-curve framework helps explain why installing a system need not immediately generate measured gains. It also cautions against treating early disappointing results as proof of permanent failure. Yet the existence of an adjustment period cannot justify unlimited support: a credible investment case must identify the complementary changes, their costs and the conditions under which benefits should emerge.

In practical terms, the unit of assessment should be the deployed workflow. The costs include integration, security, data preparation, human supervision, correction, maintenance and service failure. The relevant alternative may be a simpler digital process, better management or additional skilled staff. A comparison confined to the price of an AI subscription and the wage of an employee omits the organisation which makes either productive. Evaluation should count the full change in resources and outcomes against a credible alternative.

What the evidence can establish

Worker augmentation provides a clear case of productive improvement, within a bounded setting. Brynjolfsson, Li and Raymond (2025) study a staggered rollout involving 5,172 customer-support agents. Their journal article reports a 15% average increase in issues resolved per hour, with stronger gains for less experienced workers and smaller or mixed gains for the most experienced. The intervention assisted people in an existing organisation. It establishes a relevant example of augmentation, while leaving the employment consequences of different workflows and more extensive delegation open.

Humlum and Vestergaard (2025, revised March 2026, pp. 3-4) link adoption surveys to Danish administrative records through December 2024. Their difference-in-differences estimates of earnings, recorded hours and wages are centred on zero, with confidence intervals ruling out average effects larger than 2%. These are precisely estimated null average effects over the period examined, alongside substantial changes in tasks. Adopters were also more likely to change occupation; adopters who switched saw earnings grow about 12 percentage points faster than other

employed workers. That subgroup comparison is not a causal estimate of the return to switching, and the subgroup remained too small to move average adopter earnings. The study separates task reorganisation, mobility and average income effects; it does not establish their longer-run outcomes.

Occupational exposure is another distinct object. Gmyrek et al. (2025) estimate the task exposure of occupations to generative AI. Exposure identifies where transformation is technically plausible; it is not a count of redundancies. Acemoglu's (2025) task-based macroeconomic analysis further shows why impressive effects on selected tasks cannot be transferred directly into aggregate growth forecasts. The share of affected activity, achievable savings and the difficulty of applying systems to less tractable tasks constrain the inference. This chapter consequently uses scenarios and mechanisms rather than a headline forecast of national employment.

Entry routes deserve separate attention. In the August 2026 revision of their working paper, Brynjolfsson, Chandar and Chen (2026, p. 1) find no evidence of widespread economy-wide job displacement in their data. Employment of workers aged 22-25 in AI-exposed occupations is nevertheless 19% below a counterfactual tracking their less-exposed peers. The shortfall operates mainly through reduced hiring, and declines are concentrated where AI use substitutes for tasks; complementing uses show different patterns. The authors describe these as descriptive indicators, not causal estimates, and note attenuation with education controls, some pre-existing divergent trends and differences from national benchmarks. This evidence does not contradict the possibility of novice productivity gains in a particular organisation. It raises a separate question about who is hired and given opportunities to learn; the findings do not resolve that question without a joint account of performance, recruitment and progression.

Taken together, the evidence requires neither complacency nor a presumption of mass unemployment. It requires a framework capable of accommodating augmentation, substitution, new activities, uneven adoption and delayed adjustment. The older chapter warned against confusing protection with recovery. The present continuation adds a parallel warning: neither technical exposure nor investment spending should be confused with productive renewal, and productive renewal should not be confused with shared prosperity.

Table 1. Different observations answer different questions

Object	What is observed	What it does not establish
Technical exposure	Tasks assessed as potentially affected	Actual adoption, useful output or job losses
Adoption	A system used within an organisation	Net productivity gains after full costs
Useful production	Accepted output, quality and resource costs	Employment recovery or broad income gains
Labour outcomes	Hiring, hours, earnings and progression	Capital receipts, services or welfare in full
Participation	Real resources and effective claims of affected groups	That every household benefits or retains control

Source: Author synthesis of distinctions developed in Section 2. Gmyrek et al. (2025), Brynjolfsson, Li and Raymond (2025), and Humlum and Vestergaard (2025, revised 2026) measure different objects.

3 REALISING TECHNOLOGICAL RENEWAL

Replacing the chronological wage stages

The following conceptual analysis retains the earlier distinction between static costs and dynamic benefits. Investment can impose immediate adjustment costs while creating future opportunities. Learning and complementary innovation take time; their absence from an early employment count does not make them valueless. However, the fact that future benefits are possible does not establish their size, distribution or sufficiency. The question is which mechanisms make them credible and which institutions connect them to people affected by the transition.

The two functions proposed here replace the earlier chronological wage stages. The first concerns the creation and deployment of productive capability; the second concerns participation through employment, prices, ownership, public services and transfers under institutions capable of exercising control. Both require attention from the outset. Negotiating participation only after production is reorganised can leave those bearing adjustment costs without effective claims on gains. Promising distributions before a productive surplus and financing exist creates an unfunded commitment. Figure 2 presents these functions as a joint design problem, not a temporal sequence.

This revises the wage sequence of the earlier chapter. Wage growth can influence investment incentives, but its effects depend on production conditions and the available technologies. Brynjolfsson et al. (2026), in a working paper on manufacturing, provide evidence connecting minimum wage increases with robot adoption. Their setting cannot establish the employment or welfare effects of a general AI-era wage strategy. It illustrates precisely why inducing technical substitution and increasing workers' subsequent demand are different links. An economy-wide second stage of wage restraint is therefore not adopted here as a default. Investment finance, bargaining, demand and the distribution of returns require their own assessment. The chapter does not test the remaining links of the original second stage, from wage restraint through retained earnings to reinvestment; that would require firm-level data on costs, finance and investment which

the cited studies do not supply. The first link, from labour costs to the adoption of labour-saving capital, can be tested, and the fifth hypothesis below addresses it.

From labour-saving capability to labour income

A simple decomposition makes the contested employment link explicit. Let Q denote accepted output and a the paid labour hours required per unit, so that $L = aQ$. Taking log changes gives $\Delta \ln L = \Delta \ln a + \Delta \ln Q$. Output growth offsets labour saving only when it expands demand for paid hours sufficiently.

Task reassignment moves a in two directions. Let g and r be non-negative first-order contributions to the change in hours per unit, measured relative to the initial requirement: displacement reduces it by g , while new tasks in which people have a productive role increase it by r . Thus $\Delta \ln a \approx r - g$. For a fixed-quality output basket and an unchanged demand curve, let $d = -\Delta \ln p$ denote the observed proportional price reduction and ε the local absolute price elasticity of demand. Since $\Delta \ln Q \approx \varepsilon d$,

$$\Delta \ln L \approx -g + r + \varepsilon d.$$

The price response reflects full deployment costs, competition and markups. It is measured separately from the change in labour requirements; creating new tasks need not raise prices by the same amount that automation lowers them. In the restricted case where the price reduction is $d = \theta g$, with other price influences held fixed, the expression becomes

$$\Delta \ln L \approx (\varepsilon \theta - 1)g + r.$$

At fixed prices, reinstatement adds to labour demand and displacement subtracts from it. Under the restricted price response, hours rise when r exceeds $(1 - \varepsilon \theta)g$. This workflow comparison separates task reassignment from the demand response, following the distinction between displacement, reinstatement and productivity effects in Acemoglu and Restrepo (2019).

Labour earnings require a further step because the wage may change. Paid hours, wage rates, labour's share of value added and household real resources must therefore be reported separately. Changing quality, market entry, investment and intersectoral expenditure can alter the partial-equilibrium comparison. The chapter does not aggregate the expression into a national forecast. Its use is to specify which demand and production conditions a continuation of the original employment argument must establish.

Productive capability: investment and deployment

An agentic system joins a model's ability to generate or interpret information with tools, state, permissions and a process for acting. A conventional assistant may suggest a purchase; a delegated agent may select a supplier and initiate the purchase within a spending limit. The economic difference concerns the allocation of execution, not a presumption of consciousness or independent legal status. A company can operate agents while remaining the institution contracting with customers, owning assets and receiving revenue.

The relevant continuity with the earlier chapter is capital embodied in a productive organisation. Advanced equipment was valuable because its use could improve output and support learning. Computational systems likewise become productive through integration into actual activities. Their capabilities may complement judgement in one part of a workflow and substitute for labour in

another. A service business might use agents to collect information, prepare a draft, arrange delivery and monitor payment, while people retain responsibility for defining the service and resolving difficult cases. Whether it needs more or fewer employees depends on demand, error costs and the tasks remaining.

This interpretation does not require abandoning established theories of the firm. Coase (1937) directs attention to the costs of coordinating activity through markets and organisations. Agentic systems may reduce some search and coordination costs while introducing verification, security and delegation costs. If external contracting becomes easier, some boundaries may narrow. If dependable operation requires integrated data and proprietary infrastructure, other boundaries may widen. The chapter therefore treats organisational form as an outcome of comparative costs and control, not as a forecast that firms necessarily disappear or become entirely autonomous.

An institutional framework for computational productive capacity connects investment finance and allocation to ownership, household participation and practical control. Task economics explains how production is reassigned; theories of the firm and ownership explain who can direct that production and receive its returns. Examining those relationships together reveals why successful deployment can coexist with weak household gains, and identifies the institutions a policy comparison must measure.

The physical foundation remains consequential. Computation requires hardware, dependable energy, networks and supporting infrastructure. The IEA's *Energy and AI* (2025, chapter 2, section on the outlook for data-centre electricity demand) distinguishes uncertainty about adoption and efficiency from energy-system bottlenecks. It notes that grid and generation infrastructure can require longer planning and construction periods than data centres. These are constraints and scenario assumptions, not a forecast used here to estimate employment. Low processing costs do not guarantee dependable capacity at the required place and scale. Electricity consumption remains an input, not a measure of value created.

This has an accounting implication. A firm purchasing a compute service purchases an intermediate input; the supplier's equipment and electricity are part of producing that service. An analysis which adds the service revenue, the hardware contribution and the energy used as though each independently measures the same final output risks double counting. Likewise, the value of an agent's activity cannot be inferred by adding every transaction in its supply chain. The appropriate production boundary and treatment of intermediates must be stated before an aggregate measure is proposed.

Resource sharing supplies a concrete design possibility. Households or businesses could contribute processing capacity, storage or connectivity to a network in return for payment, service entitlements or an ownership interest, depending on the contract. This hypothetical arrangement requires useful demand and dependable delivery. Utilisation, coordination, security, latency and depreciation determine whether nominal capacity creates a surplus. A distributed technical network can still have concentrated finance and control. The example illustrates the distinction between supplying a resource and owning its returns; it supplies no evidence of adoption or profitability.

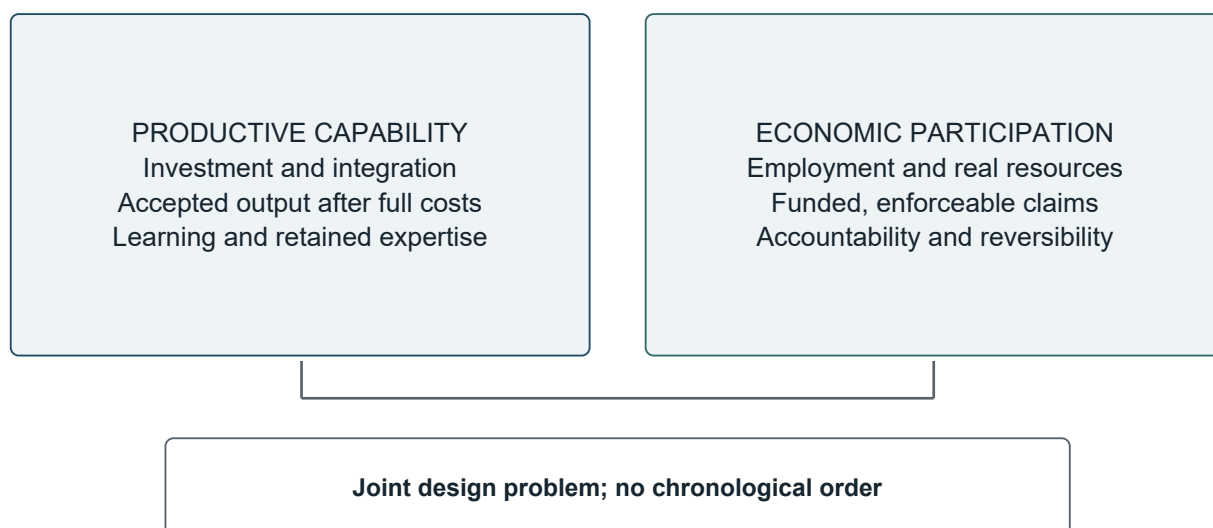


Figure 2. Two interdependent policy functions replace the wage stages

Source: Author proposal. The connecting bracket denotes joint design, not causation or sequence. Distribution is considered when investment arrangements are formed.

Learning by doing when execution is delegated

Learning occupied a central position in the earlier catch-up argument. New equipment created opportunities for workers and managers to acquire experience, improve processes and support further innovation. This remains a plausible source of dynamic benefits. Arrow's (1962) analysis supplies the classic rationale for considering experience and accumulated knowledge within growth. A further possibility, offered here as a conjecture rather than an established finding, is that learning effects may be divided among people, deploying organisations and the suppliers of computational systems, because operational feedback can improve a supplier's service as well as a worker's judgement.

For example, an employee who examines an agent's proposals and resolves exceptions may acquire judgement more quickly. Another may become dependent on recommendations without learning how to assess them. A supplier may improve its service using operational feedback, while the deploying organisation loses internal expertise. These are distinct possibilities, not necessary consequences of automation. The distribution of learning depends on workflow design, access to information and incentives to maintain expertise.

There is a further intertemporal problem. Entry-level tasks often provide the experience from which more advanced judgement develops. Automating them can yield an immediate saving while weakening the future supply of expertise required to supervise difficult cases. It would be premature to assume that every former task must be retained, but equally premature to assume that expertise will reproduce itself without a route to acquisition. Paid supervised projects, apprenticeships and intentional exposure to exceptions are candidate arrangements. Their merit depends on whether they create additional learning and later competence rather than merely subsidising existing recruitment.

Evaluation should consequently follow cohorts through hiring, supervised practice, progression and subsequent performance. Current output per employee cannot establish whether a learning pathway survives. Nor does the presence of a human reviewer establish that review is informed. The

dynamic benefit sought by the earlier chapter becomes a design requirement: productive renewal should renew the capacity to understand and direct production, not simply increase throughput during the present period.

Measuring useful cognitive production

At first sight, computation appears unusually measurable. Providers can record tokens, processor time, calls and electricity. These quantities describe processing activity and inputs. They do not establish that a useful problem was solved, that an output meets the required standard or that its use improves welfare. A system can consume more resources while producing an unacceptable result. Conversely, a small computational operation can provide substantial value when applied to the right problem.

A verified task-output profile would record task success, error severity, reliability and required human assistance separately, under stated deployment conditions. Its purpose is to compare accepted productive services and predict subsequent workflow performance. Chollet (2019) distinguishes skill acquisition from performance on particular tasks; the profile therefore measures delivered work within an assessment basket. Market value and welfare require the separate observations set out in Table 2.

A pilot would fix the task basket, difficulty, acceptance criteria and independent assessment before observing results, then reserve unseen tasks and later deployments for validation. The test is whether the joint profile predicts deployment outcomes across providers more accurately than a simple task-success score. A profile which adds no reproducible predictive value should be simplified. Aggregation is justified only when weights remain stable across the activities being compared. Supervision and verification costs enter the deployment assessment alongside the measured output.

Crucially, energy must remain separate from the definition of output. An index which already rewards lower energy use cannot subsequently provide an independent measure of energy efficiency without explaining its construction. Report accepted output, total cost, energy and latency alongside one another. Monetary price also reflects scarcity, bargaining and demand, while social value includes effects outside the transaction. A scalar output index may facilitate a narrow comparison; a multidimensional profile may be more informative across activities. Aggregation requires explicit weights, sensitivity checks and limits on comparability.

This measurement discipline protects the connection to the labour question. More recorded AI activity establishes productivity only when accepted production rises after full costs. Correction work displaced to customers or other staff belongs in the labour assessment. If net output rises while labour income weakens, the distributional problem becomes observable. A verified task-output profile helps examine that transmission alongside independent measures of costs, prices and household resources.

Table 2. Separate measurement domains

Domain	What it records
Verified task output	Task success, error severity, reliability and required human assistance
Resources and costs	Energy, latency and full deployment expenditure
Market value	Prices, demand, bargaining and net financial returns
Welfare and distribution	Household resources, external effects and agency

Source: Author proposal, informed by Chollet (2019). Each domain requires its own data and assumptions; a task-output profile does not measure price, efficiency or welfare.

Economic participation: transmitting the gains

Economic participation concerns the channels through which people benefit from productive renewal. Employment remains a major channel where new tasks, complementary skills and expanding demand sustain wages and hours. A policy assessment must examine who gains employment, at what earnings, and whether those bearing adjustment costs can reach the opportunities. National job growth can coexist with substantial losses for particular communities or cohorts.

For this purpose, a simple household accounting relation is useful. Disposable cash income can be represented as labour earnings plus net capital income plus cash transfers, less taxes and other mandatory contributions; asset sales and borrowing are not income. Public services, lower consumer prices, wealth changes and unpaid activity affect welfare through additional routes. Counting them separately prevents the analysis from treating a wage, a capital gain and a cheaper service as interchangeable benefits available to every household.

Korinek and Stiglitz (2017) distinguish innovation surplus from redistribution through changing factor prices and examine policy responses to technological change. The ability in principle to compensate losses differs from institutions actually delivering compensation. For the continuation of the labour argument, the substantive question is whether particular arrangements improve the net resources of affected households after financing costs, losses and behavioural responses. An opportunity to buy an asset does not establish the resources, risk tolerance or enforceable rights needed to benefit from it.

This brings ownership to the centre of the continuation. Grossman and Hart (1986) distinguish specific contractual rights from residual rights of control, showing why asset ownership affects incentives and authority. In agentic production, five dimensions should be recorded separately: ownership of productive assets; operational control; authority to act; liability for consequences; and rights to benefit. An agent may possess technical credentials to operate an account while a company owns the assets and receives the returns. Technical access does not itself determine entitlement or responsibility. The discussion does not require independent AI personhood and offers no conclusion that a software-controlled wallet settles legal ownership.

Different distributional arrangements then become comparable. Access to useful AI can improve an individual's capacity to work or create a business. A cash transfer can sustain purchasing power

without conferring control of production. A dividend distributes receipts from an asset or fund under specified rules. Productive ownership can supply exposure to returns and sometimes governance rights, but also exposes its holder to financing costs and losses. Public provision can deliver valuable services without paying cash. Each instrument addresses a different constraint; none should be treated as a synonym for the others.

A guaranteed minimum of capable AI access could support work or enterprise, depending on service quality, privacy, continuity and people's capacity to use it. Its contribution is a productive capability. Cash transfers meet spending needs; citizen dividends distribute funded receipts; public or cooperative ownership allocates returns and sometimes control, together with financing obligations and risk. Each arrangement should be assessed on what it provides, who pays and what happens when returns fall. Service credits confer ownership only when their substantive terms establish an enforceable claim.

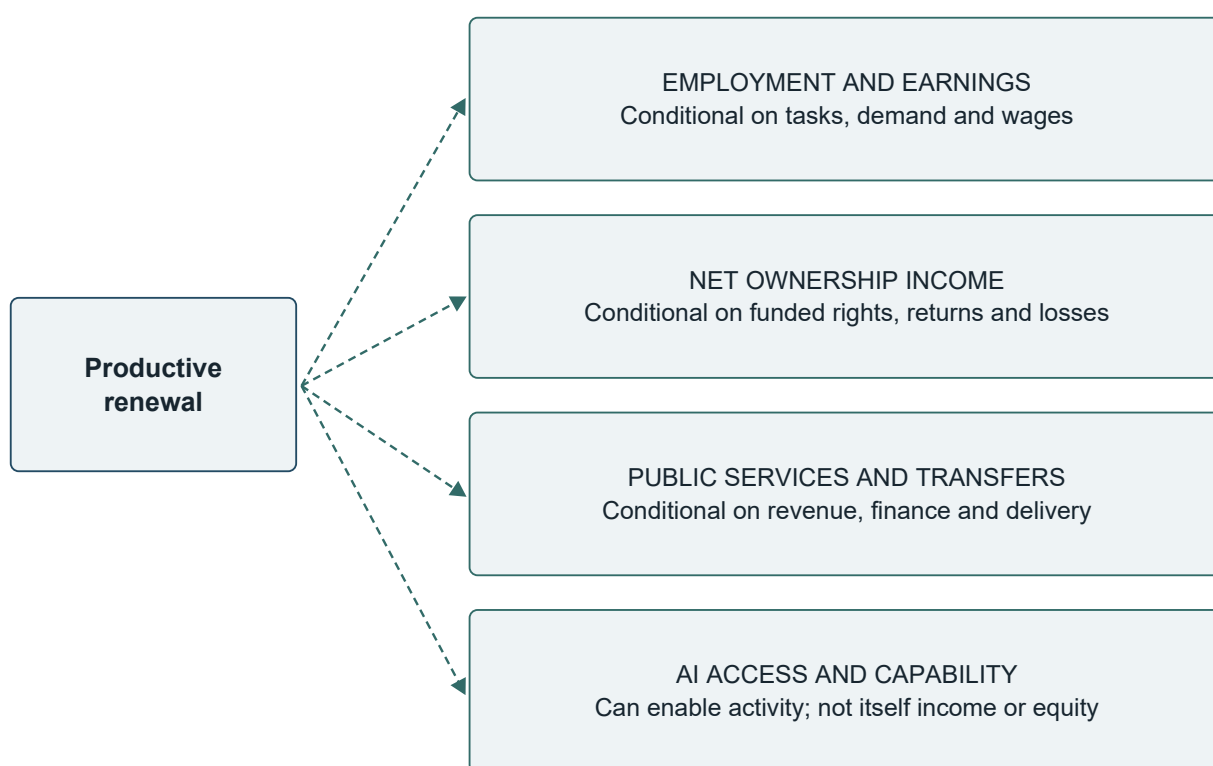


Figure 3. Conditional routes from renewal to participation

Source: Author conceptual account related to Korinek and Stiglitz (2017). Every dashed link requires a mechanism and evidence. Positions and line widths encode no shares or relative importance. Access is shown separately because it is a capability rather than a direct cash flow.

Purchasing power and the demand for additional output

If employment income weakens, the question of demand cannot be postponed. Additional output must be purchased, invested in, exported or supplied through publicly funded arrangements. Lower prices can increase real purchasing power, but their incidence depends on competition, household expenditure and the goods affected. Cheaper digital services do not necessarily offset the loss of income needed for scarce housing or care. Capital receipts can support demand, but concentrated receipts need not reproduce the expenditure pattern of displaced wages.

Investment can absorb some additional resources while productive capacity is expanding. Its continuation depends on expectations of future use and returns. Exports can support a particular economy, but not every country can resolve a common distributional problem by relying on foreign demand. Public purchases and transfers require financing, administrative capacity and decisions about incidence. The chapter therefore does not assume that every unit of saved labour cost reappears automatically as broadly distributed demand. It identifies the channels through which that result would have to occur.

The earlier paper stressed profitability as both a means and an incentive for reinvestment. That insight remains valuable. However, where profitable investment itself substitutes for labour, reinvestment may reinforce output growth without restoring the same wage channel. The appropriate policy test consequently includes both investment additionality and the transmission of net gains. Support may be justified by learning spillovers, public service improvements or wider participation, but the objective and its opportunity cost must be explicit. Funding an AI asset and hoping for a subsequent employment dividend is an incomplete mechanism.

An accounting observation fixes the starting point: holding output, costs and distributable surplus constant, changing entitlement shares changes the allocation of that surplus. The economically substantive comparison allows ownership arrangements to affect financing, risk, investment, governance and productivity, then asks whether affected households receive greater net resources. The evaluation must count acquisition costs, capital losses, dilution and public liabilities as well as distributions.

Delegated payment and settlement

Delegated spending requires an identifiable principal, defined authority, reliable settlement and a procedure for failed delivery. Payment and productive performance remain distinct events: settlement does not establish an acceptable service, and successful execution does not establish authority to commit funds. These operational requirements follow from the distinction among control, liability and benefit developed above.

Governing delegated production

Authority affects whether delegation is dependable. A workflow must identify who sets objectives, which actions are permitted, what requires escalation and who can revoke access. Verification and correction impose costs but can make delegation usable. The design proposed here connects bounded execution with retained human capacity to inspect and intervene. Its effectiveness requires testing; adding a control layer does not by itself establish reliable behaviour.

NIST's (2023) voluntary AI Risk Management Framework organises attention around governance, mapping, measurement and management. It offers a useful reference for systematic assessment, not certification that any particular design eliminates risk. Applied to productive delegation, the economic question is whether the expected benefits survive the costs of reliable control. An inexpensive agent requiring continuous expert repair may not substitute for the labour it appears to replace. An auditable system with effective escalation may create a service that could not otherwise be offered. Both results require observation.

Government adoption raises a related problem at a different scale. Operational capture is proposed here to mean the loss of practical independent capacity to inspect, override or replace a system despite retained formal public authority. This is a conditional failure mechanism. It can arise

through the atrophy of expertise, dependence on proprietary interfaces, costly exit or fiscal reliance on an arrangement whose terms become difficult to contest. Efficiency gains and attractive distributions can make delegation popular without establishing that public capacity remains adequate.

The test should be practical. Can an authorised institution obtain meaningful records, identify a failure and suspend the relevant action? Can it restore essential services or move them to another provider at an acceptable cost? Does it retain expertise capable of evaluating the alternatives? A contract which reserves these powers has value, but its economic significance depends on the ability to exercise them under realistic conditions. Recovery and switching exercises can reveal dependencies that a routine audit misses. Successful, affordable override and replacement would weaken a claim of operational capture.

Ownership concentration raises a parallel question. Concentrated productive assets can create unequal claims on output, while control of infrastructure can influence the terms on which others participate. The presence of capable agents does not itself determine either outcome. Open interfaces, competitive supply, broad ownership and public expertise can change the result, and technically decentralised systems may still have concentrated governance. The comparison that matters is between observable rights, dependence and net returns.

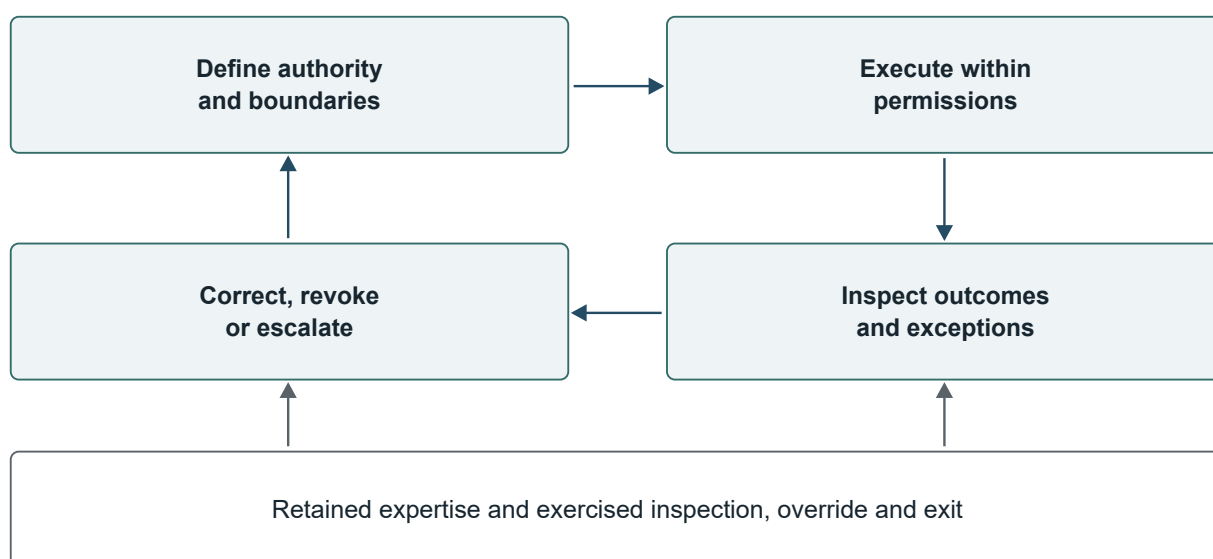


Figure 4. Delegation with an exercised capacity to intervene

Source: Author design, informed by NIST (2023). Arrows describe the proposed operating loop; the lower links locate public capability within inspection and correction. Effectiveness must be tested through observed recovery and exit performance.

A conditional programme for intervention

The two policy functions can be delivered through temporary retention, productive adaptation and arrangements for participation in gains. Their balance should change with evidence rather than follow a fixed calendar. A business facing temporary interruption needs a different response from an activity whose output no longer meets demand. A worker requiring income during retraining needs a different instrument from an owner financing a socially valuable investment.

Retention support should have a stated rationale, review dates and criteria for continuation. Ending assistance should be connected to support for people, so that the apparent fiscal saving is not simply a transfer of hardship. Training should be assessed over appropriate horizons and linked to capabilities employers or public services can use. Investment support should identify additional output, learning or public value against a credible alternative, including non-AI alternatives. Programmes should record who receives assets and enduring rights when public funds absorb early risks.

Distributional design should accompany productive investment. Worker participation, public stakes, collective funds, competitive service access and transfers are options with different costs and incentives. A public stake can share returns but also place losses on taxpayers; a cooperative can distribute control but face financing constraints; a transfer can support demand while leaving productive control concentrated. The chapter selects no universal institutional winner. It argues that comparisons must include ownership and household outcomes, rather than treating them as secondary to a productivity target.

The human objective also extends beyond earnings. Shorter working time, safer work, care, learning and meaningful influence over shared institutions can be valuable outcomes. Their importance is a normative choice, not a prediction that human creativity or judgement will remain technically beyond automation. Public evaluation should make these objectives explicit and avoid claiming that a rise in measured output automatically compensates people for losses in agency or security. Equally, the desire to preserve purpose does not justify requiring economically unnecessary work as the only route to participation.

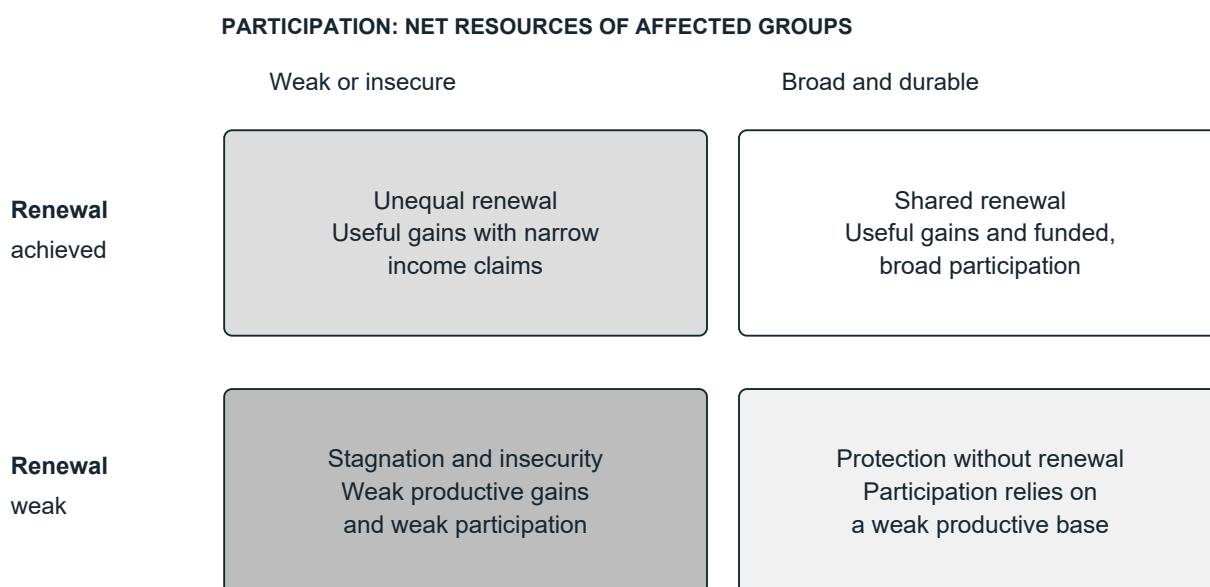


Figure 5. Renewal and participation as distinct evaluation criteria

Source: Illustrative classification. Renewal means sustained quality-adjusted value added above a credible comparator after deployment costs. Broad participation means real net resources improve across pre-specified affected groups over the study horizon, supported by funded and enforceable arrangements. These are study-specific criteria, not calibrated thresholds or observed positions. Labels and contrasting grey fills carry the classification without colour.

Hypotheses and an empirical research agenda

The accounting relations above motivate five hypotheses about behavioural mechanisms and institutional performance. Each requires a comparison with a credible alternative; a negative coefficient without an adequate identification strategy would not establish causation. The proposed study horizons below are research-design choices, not predictions of when AI effects will appear.

First, for comparable workflows with verified labour-saving deployment, lower independently estimated demand elasticity and lower price pass-through should predict weaker growth in labour hours and real labour earnings, controlling for output quality and new-task creation. A panel could compare a twelve-month pre-deployment baseline with outcomes over the following twenty-four months, tracking both retained and displaced workers. The signed interaction between independently measured labour savings and the demand-response terms is the test; elasticity must not be inferred from the very employment outcome being explained. A sufficiently precise absence of the predicted relationship, or stronger labour-income recovery in the activities predicted to be most vulnerable, would challenge this mechanism in that setting. Shorter or longer horizons and spillover boundaries should be specified before results are inspected.

Second, introducing broader enforceable claims on productive assets should increase the real net resources of the affected lower-wealth households relative to a comparable transition without those claims. Measure distributions less acquisition and financing costs, realised losses, dilution and any displaced benefits; report wealth and public contingent liabilities separately. Phased entitlement changes or eligibility discontinuities may supply comparisons, subject to their assumptions. A higher count of nominal owners is not evidence of success. Precise non-positive net effects would reject the claim that the particular arrangement improved household participation over the specified horizon. This tests an institutional intervention, not the arithmetic of distributing a fixed surplus.

Third, organisations combining independently retained expertise with exercised exit and recovery procedures should restore a defined service more quickly and at lower full switching cost than comparable organisations lacking those capacities. Pre-deployment capability measures, matched service complexity and standardised recovery exercises can reduce the risk of mistaking an easy service for effective governance. Record override success, continuity and audit access alongside time and cost. Failure to improve these outcomes, or costs exceeding a predeclared service-resilience standard, would count against the particular capacity strategy. It would not prove that oversight in general has no value.

Fourth, the proposed task-output profile should predict subsequent deployment performance beyond simpler baselines such as tokens, compute expenditure and an unweighted task-success score. Construct the profile using a fixed assessment basket, then predict accepted customer deliverables per paid staff hour on unseen deployment work at a fixed error ceiling. Evaluate on held-out providers and tasks, include supervision and verification costs, and prohibit outcome leakage into basket weights. Compare out-of-sample prediction errors and the stability of provider rankings. No reproducible improvement over the simpler task metric would remove the empirical case for the additional index.

Fifth, the inherited link from labour costs to technological renewal should be tested directly. Where a wage floor rises, exposed firms should adopt labour-saving capital more often than comparable firms across a policy boundary, as Brynjolfsson et al. (2026) find for industrial robots in US manufacturing. The 2012 renewal claim requires more than adoption: it requires that adoption is

followed by productivity growth and hiring into skilled roles. A study using a comparable boundary design should therefore track adoption, subsequent output per hour, skilled hiring and total paid hours over a pre-specified horizon. Adoption followed by fewer hours without productivity or skilled-hiring gains would count against the renewal mechanism in that setting. Such a study would test the first stage of the original strategy, not the economy-wide wage restraint of its second.

Each study should state its estimand, population, comparator, time horizon, attrition and spillover treatment, and its minimum substantively meaningful effect before analysis. Power and confidence intervals must distinguish imprecision from evidence against a useful effect. Where equivalence is claimed, justify the equivalence margin using service requirements or household outcomes rather than selecting an arbitrary percentage. Table 3 summarises the designs and disconfirming observations.

Selection must include unsuccessful deployments and non-adopters. Worker outcomes should follow people beyond the initial employer; ownership evaluation should include non-participation and losses; governance comparisons should account for complexity and substitute availability. Task performance, firm value added, household resources and aggregate demand belong at different analytical levels. Linking them requires explicit assumptions about prices, competition, migration, investment and public finance.

Table 3. Hypotheses, comparison designs and disconfirming evidence

Mechanism	Observable test	Comparison requirement	Evidence against the specific claim
Labour-income transmission	Interaction of labour saving with independently estimated demand and price response	Pre/post workflow panel; new tasks and worker mobility observed	Precise absence or reversal of the predicted demand-related income pattern
Ownership intervention	Real household net resources after costs, losses and displaced benefits	Phased rights or eligibility changes; matched transition	Precise non-positive net effect for affected households over the chosen horizon
Public capability	Recovery time, switching cost, continuity and override success	Comparable service complexity; standard exercises	No improvement, or performance outside the declared resilience standard
Output profile	Prediction of subsequent unseen deployment performance	Held-out providers and tasks; simple success-score baseline	No reproducible predictive gain over the simpler metric
Wage floor and renewal	Adoption, output per hour, skilled hiring and paid hours after a wage-floor rise	Firms across a policy boundary; pre-specified horizon	Adoption with fewer hours but no productivity or skilled-hiring gain

Source: Author research design, not completed estimates. Pre-specify the population, horizon, material effect or equivalence margin, statistical power and identification assumptions. A noisy null is not evidence of equivalence.

4 CONCLUSION

In this chapter, the analysis of active labour market intervention has been carried forward into agentic production. The earlier creative-destruction strategy accepted initial unemployment while relying on advanced investment, learning, wage restraint and reinvestment to restore skilled labour demand. Its concern with dynamic benefits remains valuable. Its wage sequence is not retained as a general prescription, and its employment recovery conclusion is made conditional on task allocation, demand and the distribution of returns.

The continuation therefore changes the status of the employment link. Productive renewal can support human work through complementary tasks, new demand and learning. Under other conditions, output can expand while labour income fails to recover sufficiently. Neither possibility should be selected by assertion. The relevant questions concern the allocation of tasks, the costs of dependable deployment, the response of demand and the institutions which transmit returns. Employment, wages, capital receipts, services and human authority must be examined as related but distinct outcomes.

Two jointly designed policy functions replace the original wage stages: creating dependable productive capability and securing economic participation and control. The institutional framework connects investment to the allocation of tasks, returns and authority. A verified task-output profile supplies one proposed measurement component; its predictive contribution can be tested against simpler baselines. Public control is assessed through exercised inspection, override and replacement capability, with observable standards and costs.

Employment remains a strong route to participation where new tasks and demand restore labour income broadly. Where they do not, the distributional and institutional arrangements become part of the productive strategy itself. The choice among them turns on the real resources they deliver, their financing and risks, and the authority people retain over the resulting production.

The policy choice is consequently more demanding than preserving old jobs or accelerating new investment. Measures which obstruct necessary renewal can prolong economic weakness. Investment which increases output while leaving participation unresolved can produce a different form of failure. The objective is to avoid both. The enduring question from the earlier chapter concerns what public policy enables over time. In the agentic economy, its answer must include not only the capacity to produce, but also people's effective claims on the prosperity and authority that production makes possible.

Author note

Dominic Marrocco is the sole author of the new material in this chapter; Thomas Lange was not involved in developing it. The chapter builds on their jointly published work (Lange and Marrocco, 2012), without implying Lange's endorsement of the extension. AI assistance was used in drafting and in preparing the conceptual illustrations.

About the author

Dominic Marrocco is an independent researcher and entrepreneur. He was named a Visiting Fellow at Bournemouth University Business School in 2010, and was an Honorary Fellow and Entrepreneur in Residence at the Howard R. Hughes College of Engineering, University of Nevada, Las Vegas. At UNLV he developed and taught the course Technology Commercialization as a volunteer from 2013 to 2015, and served on the College's Industrial Advisory Board from 2012 to 2016, chairing it from 2014.

REFERENCES

- Acemoglu, D. (2025). The simple macroeconomics of AI. *Economic Policy*, 40(121), 13-58.
<https://doi.org/10.1093/epolic/eiae042>
- Acemoglu, D., and Restrepo, P. (2019). Automation and new tasks: How technology displaces and reinstates labor. *Journal of Economic Perspectives*, 33(2), 3-30. <https://doi.org/10.1257/jep.33.2.3>
- Arrow, K. J. (1962). The economic implications of learning by doing. *Review of Economic Studies*, 29(3), 155-173. <https://doi.org/10.2307/2295952>
- Brynjolfsson, E., Chandar, B., and Chen, R. (2026). Canaries in the coal mine? Six facts about the recent employment effects of artificial intelligence. Working paper, August version. Stanford Digital Economy Lab. <https://digitaleconomy.stanford.edu/publications/canaries-in-the-coal-mine/>
- Brynjolfsson, E., Li, D., and Raymond, L. (2025). Generative AI at work. *Quarterly Journal of Economics*, 140(2), 889-942. <https://doi.org/10.1093/qje/qjae044>
- Brynjolfsson, E., Li, J. F., Miranda, J., Seamans, R., and Wang, A. J. (2026). Minimum wages and rise of the robots. NBER Working Paper 34895. <https://doi.org/10.3386/w34895>
- Brynjolfsson, E., Rock, D., and Syverson, C. (2021). The productivity J-curve: How intangibles complement general purpose technologies. *American Economic Journal: Macroeconomics*, 13(1), 333-372.
<https://doi.org/10.1257/mac.20180386>
- Calligaris, S., Ciminelli, G., Costa, H., Criscuolo, C., Demmou, L., Desnoyers-James, I., Franco, G., and Verlhac, R. (2023). Employment dynamics across firms during COVID-19: The role of job retention schemes. OECD Economics Department Working Papers 1788. <https://doi.org/10.1787/33388537-en>
- Card, D., Kluve, J., and Weber, A. (2018). What works? A meta analysis of recent active labor market program evaluations. *Journal of the European Economic Association*, 16(3), 894-931.
<https://doi.org/10.1093/jeea/jvx028>
- Chollet, F. (2019). On the measure of intelligence. arXiv preprint 1911.01547.
<https://arxiv.org/abs/1911.01547>
- Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16), 386-405.
<https://doi.org/10.1111/j.1468-0335.1937.tb00002.x>
- Gmyrek, P., Berg, J., Kamiński, K., Konopczyński, F., Ładna, A., Nafradi, B., Rosłaniec, K., and Troszyński, M. (2025). Generative AI and jobs: A refined global index of occupational exposure. ILO Working Paper 140. <https://doi.org/10.54394/HETP0387>
- Grossman, S. J., and Hart, O. D. (1986). The costs and benefits of ownership: A theory of vertical and lateral integration. *Journal of Political Economy*, 94(4), 691-719. <https://doi.org/10.1086/261404>
- Humlum, A., and Vestergaard, E. (2025, revised 2026). Still waters, rapid currents: Early labor market transformation under generative AI. NBER Working Paper 33777, March 2026 revision. Previously circulated as *Large language models, small labor market effects*. <https://doi.org/10.3386/w33777>
- International Energy Agency (IEA) (2025). *Energy and AI*. Paris: IEA.
<https://www.iea.org/reports/energy-and-ai>
- Korinek, A., and Stiglitz, J. E. (2017). Artificial intelligence and its implications for income distribution and unemployment. NBER Working Paper 24174. Subsequently published in *The Economics of Artificial Intelligence: An Agenda* (2019), pp. 349-390. <https://doi.org/10.3386/w24174>

- Lange, T., and Marrocco, D. (2012). Unemployment and active labor market intervention: Pay for delay? In H. P. Wang and B. Y. Ma (eds.), *Unemployment: Issues, Trends and Perspectives*, Nova Science Publishers. <https://novapublishers.com/shop/unemployment-issues-trends-and-perspectives/>
- National Institute of Standards and Technology (NIST) (2023). *Artificial Intelligence Risk Management Framework (AI RMF 1.0)*. NIST AI 100-1. <https://doi.org/10.6028/NIST.AI.100-1>
- Organisation for Economic Co-operation and Development (OECD) (2026). *An Assessment of Job Retention Support During the COVID-19 Pandemic and its Aftermath in Belgium*. Paris: OECD Publishing. <https://doi.org/10.1787/e138e541-en>
- Schumpeter, J. A. (1950). *Capitalism, Socialism and Democracy*. Third edition. New York: Harper & Brothers.