

A Productivity-led Framework

for Correcting Premature Structural Transitions in

Resource-based Developing Economies: Evidence from Mongolia



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A PRODUCTIVITY-LED FRAMEWORK FOR CORRECTING PREMATURE STRUCTURAL TRANSITIONS IN RESOURCE-BASED DEVELOPING ECONOMIES: EVIDENCE FROM MONGOLIA

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A Productivity-led Framework for Correcting Premature Structural Transitions in Resource-based Developing Economies: Evidence from Mongolia

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FOREWORD

This paper is both timely and important for many Asian economies navigating complex structural shifts while seeking sustainable, inclusive productivity-led growth. For resource-based developing economies, the challenge is not only to move toward new growth sectors but also to ensure that such transitions are supported by strong productivity systems, workforce capability, technological readiness, institutional coordination, and market linkages. Against this background, Mongolia provides a relevant, practical case for examining how productivity can be positioned as a strategic anchor for correcting premature structural transitions and supporting long-term development planning.

In 2025, the Asian Productivity Organization (APO) supported the development of the National Productivity Master Plan (NPMP) for Mongolia (2026–2035) through a series of stakeholder consultations, validation processes, and analytical work. Building on that process, this paper introduces a productivity-led correction framework to address the risks of premature structural leapfrogging, where economies shift rapidly toward mining and services before sufficient productivity foundations are in place. The proposed framework emphasizes the need to realign sectoral transition with productivity readiness, including technology adoption, talent development, business environment reform, market access, and inclusive value creation.

Drawing on key insights from the NPMP and by presenting Mongolia's experience as both a diagnostic case and a policy solution, I hope that this publication will contribute to ongoing policy discussions and inspire renewed efforts to place productivity at the center of national development strategies of countries in similar situations.

Dr. Indra Pradana Singawinata
Secretary-General
Asian Productivity Organization

INTRODUCTION

This paper examines the economic and productivity losses associated with premature structural leapfrogging, where sectoral transitions occur faster than the readiness of productivity systems, workforce capabilities, technological foundations, and institutional capacity. Drawing on practical policy experience and structural transition patterns observed in Mongolia, it demonstrates how misaligned structural shifts can suppress value creation, weaken labor productivity, reduce employment absorption, and limit inclusive growth outcomes.¹ The central concern is not structural transition itself, but the risk that economies move into new sectors without first developing the productivity foundations required to sustain efficient, resilient growth.

A productivity-led correction model designed to realign skill development, technology adoption, institutional readiness, and sectoral productivity with the appropriate stages of economic development is introduced. By strengthening the alignment between structural change and productivity readiness, the framework aims to support more efficient economic transitions and reduce the risks of unproductive sectoral shifts. The key policy message is that productivity-driven correction mechanisms are essential to minimize economic losses, enhance transition efficiency, and ensure that structural transition contributes to sustainable, competitive, inclusive growth across developing economies.

The issue and correction model introduced in this paper offers important lessons learned for economies undergoing rapid structural transition while still facing productivity gaps across sectors. Economies such as Indonesia, I.R. Iran, Pakistan, and Bangladesh, which are endowed with natural resources or remain reliant on primary sectors, often pursue accelerated diversification

¹ In this paper, the concept of structural transition differs from structural transformation. Structural transition refers to Mongolia's rapid sectoral shift from agriculture toward mining and services, with manufacturing remaining relatively underdeveloped. Structural transformation refers to Mongolia's desired economywide upgrading process, where this sectoral shift is supported by stronger productivity, industrial capability, technology adoption, workforce skills, and broader domestic value creation.

toward manufacturing, services, and technology-driven industries. However, when such transitions occur faster than improvements in productivity capability, workforce skills, technological adoption, and institutional readiness, the result can be premature economic leapfrogging that limits value creation, weakens economic efficiency, and constrains long-term inclusive development.

LEAPFROGGING STRUCTURAL TRANSITION AND PRODUCTIVITY LOSSES

Structural transition is commonly expected to follow a sequential development path, moving from agriculture to manufacturing and later toward modern services. This pathway allows economies to build industrial capability, absorb labor into higher-productivity activities, and expand domestic value creation. However, in resource-based developing economies, this sequence can be disrupted when growth shifts rapidly from agriculture into mining and services before manufacturing capacity, workforce skills, and productivity systems are sufficiently developed. This condition can be understood as premature structural leapfrogging, where sectoral transition moves faster than the economy's underlying productivity readiness.

Mongolia provides a clear example of this pattern. Over the past two decades, the country's economic expansion has been increasingly shaped by mining and services, while manufacturing has remained relatively underdeveloped (Figure 1). Mining has supported export revenue and investment, while services have expanded through wholesale and retail trade, transportation, finance, public administration, and urban demand. Although this structural shift has contributed to growth, it has also increased Mongolia's exposure to commodity price cycles, weakened domestic value creation, and limited the productivity spillovers normally generated through industrial deepening.

The main productivity concern is that Mongolia has bypassed the industrialization phase that usually acts as a bridge between primary production and higher-value services. In many developing economies, manufacturing plays a critical role in raising labor productivity, absorbing skilled workers, developing supplier networks, strengthening export

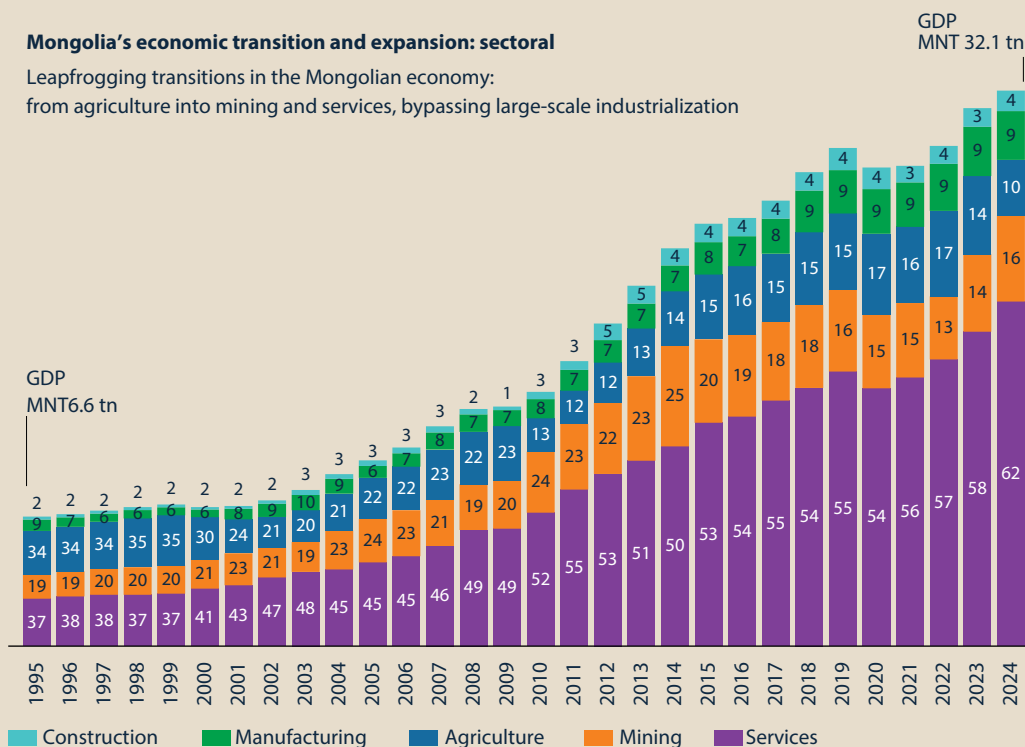
FIGURE 1

PERCENTAGE CONTRIBUTION TO GDP, 1995–2024.

Mongolia's economic transition and expansion: sectoral

Leapfrogging transitions in the Mongolian economy:

from agriculture into mining and services, bypassing large-scale industrialization



Source: Analyzed based on National Statistics Office of Mongolia database.

diversification, and supporting technology adoption. By contrast, Mongolia's transition has been concentrated in capital-intensive mining and service-based activities, creating the risk of a dual economy: one segment generates high output but limited employment absorption, while another expands employment but remains relatively low in productivity. This weakens the economy's ability to generate broad-based productivity gains across sectors, workers, and regions.

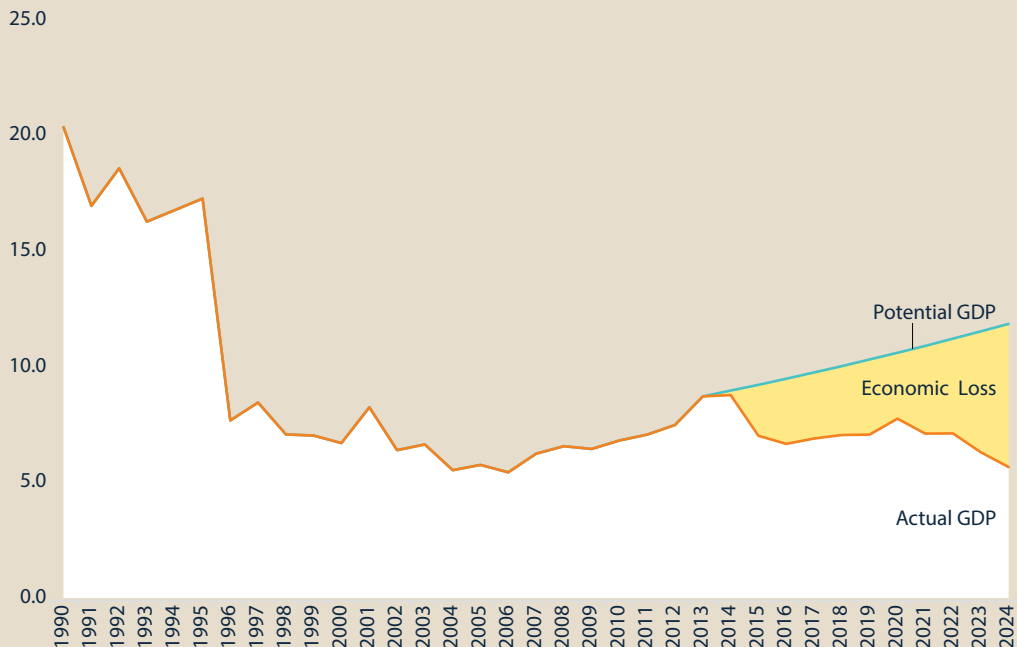
The economic losses from premature leapfrogging are measurable. This paper estimates a counterfactual scenario in which Mongolia's manufacturing share

of GDP continued along the industrialization trajectory observed between 2010 and 2014 (Figure 2). Under this scenario, manufacturing's potential share of GDP could have reached 11.9% by 2024, compared with the actual share of 5.7%. In 2024 alone, the estimated manufacturing output loss reached around MNT1.37 trillion, with an associated employment loss of more than 61,000 (Figure 3). These losses indicate that premature structural transition can suppress value-added creation, reduce productivity upgrading, and limit inclusive employment opportunities.

The policy implication is not that Mongolia should reverse its transition toward mining and services, but that the transition must be corrected through a productivity-led approach. Mining should be better connected to downstream processing, supplier development, logistics, engineering services, and local

FIGURE 2

ACTUAL AND POTENTIAL SHARE OF MANUFACTURING OUTPUT TO GDP, 2015–2024 (%).



Source: Modeled and analyzed based on the National Statistics Office of Mongolia database.

FIGURE 3**ECONOMIC LOSSES DUE TO PREMATURE STRUCTURAL LEAPFROGGING IN MONGOLIA, 2015–2024.**

Manufacturing sector GDP loss (million MNT)
(difference between actual and potential GDP).

Total actual GDP in 2024

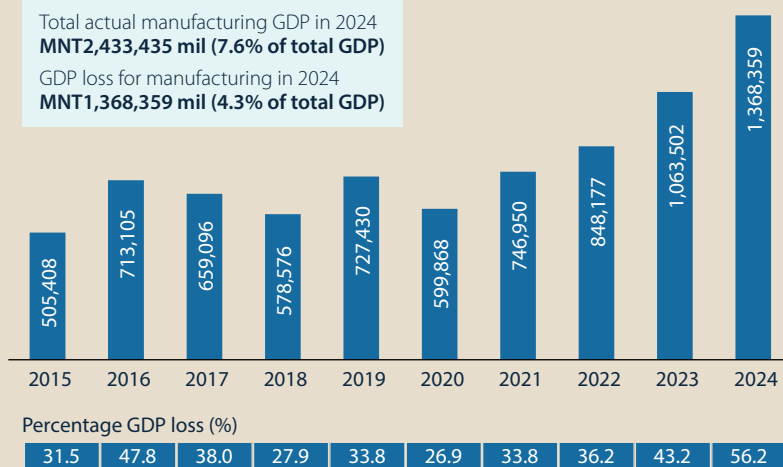
MNT32,053,862

Total actual manufacturing GDP in 2024

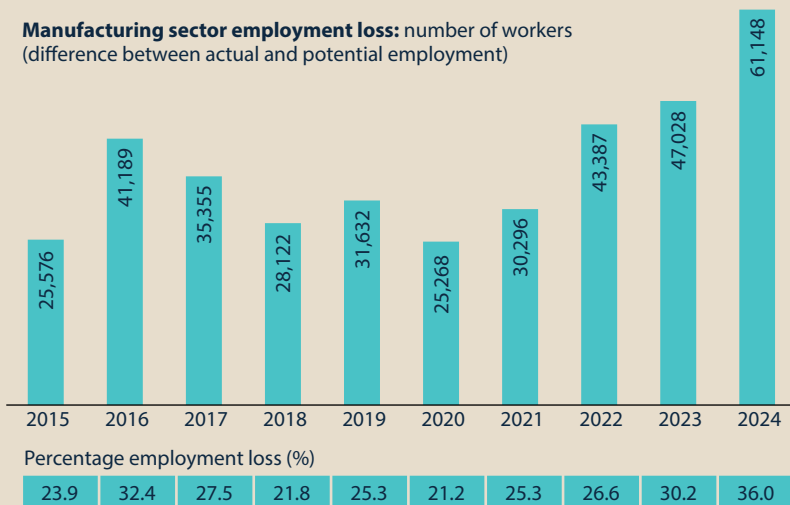
MNT2,433,435 mil (7.6% of total GDP)

GDP loss for manufacturing in 2024

MNT1,368,359 mil (4.3% of total GDP)



Manufacturing sector employment loss: number of workers
(difference between actual and potential employment)



Source: Modeled and analyzed based the National Statistics Office of Mongolia database.

technology capability. Services should be upgraded toward higher-productivity activities such as ICT, finance, professional services, tourism quality upgrading, and digital business services. Manufacturing should be rebuilt selectively in areas where Mongolia has resource-based advantages, domestic demand potential, and opportunities to integrate into regional value chains. In this sense, productivity-led correction is not a return to an old industrial model; it is a strategy to ensure that structural transition generates higher value, better jobs, stronger resilience, and more inclusive growth.

The next section documents the economic and productivity risks that may arise if premature structural leapfrogging remains uncorrected.

LONG-TERM GROWTH RISKS UNDER MONGOLIA VISION 2050

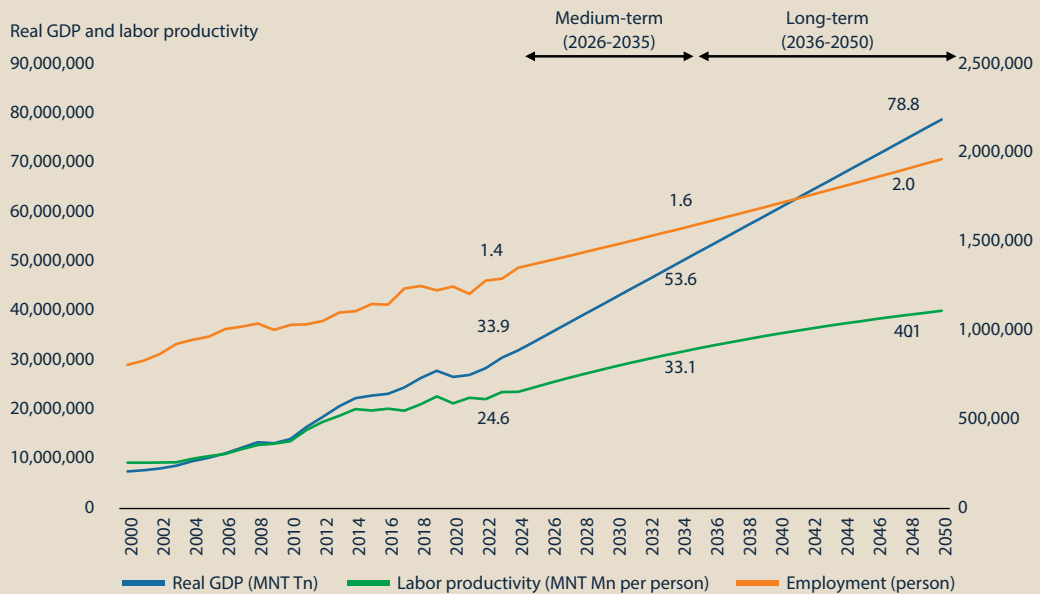
Mongolia Vision 2050 sets an ambitious, long-term development aspiration for Mongolia to become a more prosperous, competitive, inclusive economy by mid-century. However, the continuation of premature structural leapfrogging may place this ambition at risk. Under a business-as-usual (BAU) scenario, where current policies and structural conditions remain largely unchanged, Mongolia's growth trajectory is projected to weaken over time. The key concern is that the economy may continue expanding, but without sufficient productivity deepening, industrial diversification, and technological upgrading to sustain long-term improvements in income, employment, and competitiveness.

The Mongolian baseline projection shows that GDP growth is expected to decelerate from an annual average of 6.2% during 2000–2024 to 4.2% during 2026–2035, before slowing further to 2.8% during 2036–2050 (Figure 4). More importantly, the contribution of labor productivity is projected to decline from 4.0% during 2000–2024 to only 1.4% during 2036–2050, indicating that future growth may rely increasingly on limited labor expansion rather than stronger efficiency gains. By 2050, Mongolia's real GDP is projected to reach MNT78.8 trillion, with employment of around 2.0 million people and labor productivity of MNT40.1 million per worker. This suggests that without productivity-led correction, Mongolia may face slower wage growth, weaker competitiveness, and deeper structural imbalances.

The BAU outlook also shows that several Vision 2050 targets may remain out of reach (Figure 5). For example, GDP per capita is projected to reach only MNT16.2 million, or approximately USD4,672, by 2050, far below the national target of USD38,359. Labor force participation is expected to rise

FIGURE 4

BUSINESS-AS-USUAL FORECAST FOR GDP, EMPLOYMENT, AND PRODUCTIVITY, 2025–2050.



Average annual growth (%)	GDP	Employment	Labor productivity
2000–2024	6.2	2.2	4.0
2026–2035	4.4	1.5	2.8
2036–2050	2.8	1.4	1.4

Mongolia's economy is projected to see a gradual deceleration of growth toward 2050, depending on labor expansion and diminishing contributions from productivity.

With the economy remaining exposed to fluctuations in global commodity prices, Mongolia could face increasing vulnerabilities such as weakened competitiveness, greater reliance on imports, slower wage growth, and mounting structural imbalances.

This underscores the critical need to pivot toward a diversified, productivity-led growth strategy to sustain momentum, enhance living standards, and build economic resilience for 2050.

Business-as-usual

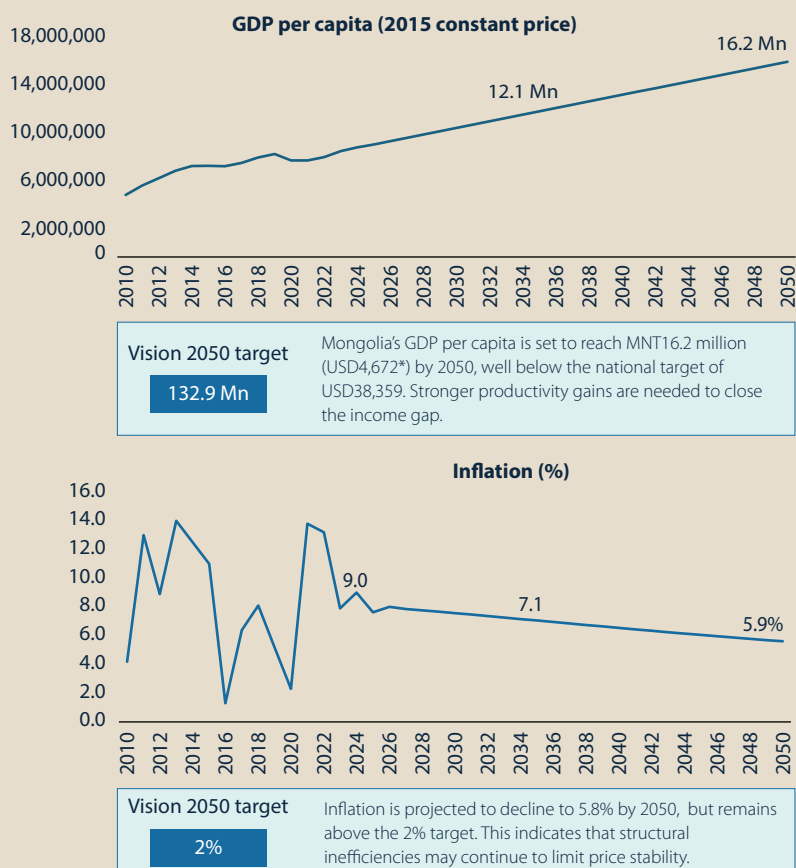
The business-as-usual (BAU) scenario reflects a baseline where current policies and trends continue without major interventions. It serves as a benchmark to assess the gap between Mongolia's existing trajectory and its national development targets, highlighting the need for productivity-driven reforms. Baseline projections for Mongolia's real GDP, employment, and labor productivity are estimated using time-trend regressions based on 2002–2024 data. All forecasts assume a business-as-usual scenario with no major policy shocks.

Source: Analyzed based on the National Statistics Office of Mongolia database.

only modestly to 63.6%, below the 70% target, while unemployment is projected to remain at 6.4%, more than double the 3% target. Inflation is also expected to decline but remain at 5.8%, above the 2% Vision 2050 benchmark. These gaps demonstrate that aggregate growth alone will not be sufficient; Mongolia requires stronger productivity gains, higher-value production, better labor market absorption, and more efficient domestic production systems to close the development gap.

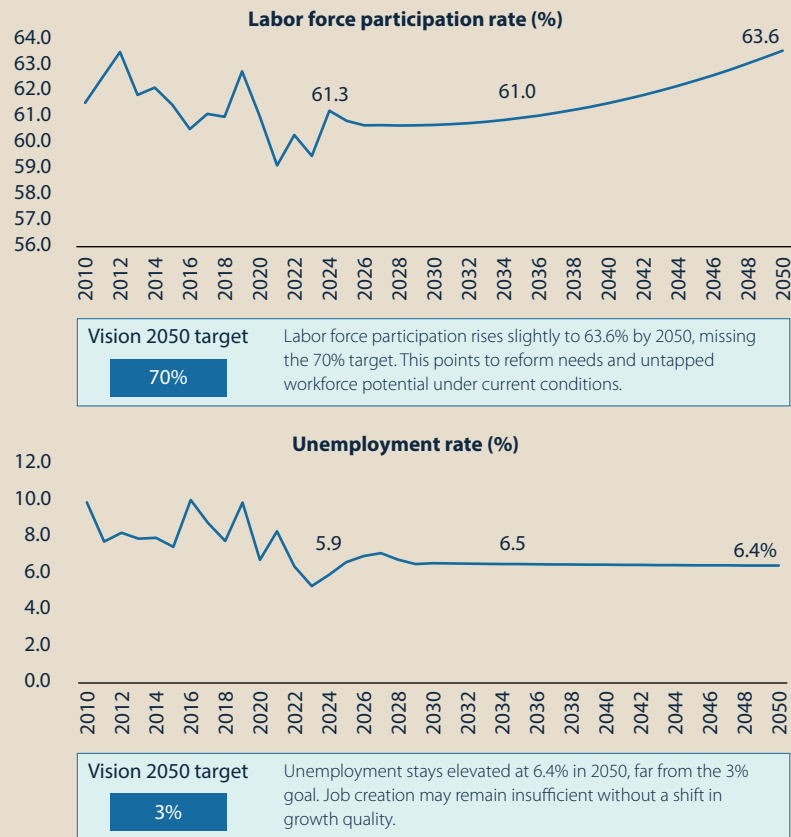
FIGURE 5

BUSINESS-AS-USUAL FORECAST FOR SELECTED MACROECONOMIC INDICATORS, 2010–2050.



(Continued on next page)

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**Source:** Modeled using data from the National Statistics Office of Mongolia database.**Note:** *USD conversions are based on an assumed exchange rate of MNT3,465 per USD.

These projections reinforce the policy urgency of correcting premature structural leapfrogging. If Mongolia continues to depend heavily on mining, low-productivity services, and weak manufacturing capacity, long-term growth may become increasingly vulnerable to commodity cycles, import dependence, and limited domestic value creation. The risk is not only slower GDP growth, but also a weaker quality of growth, where income gains, job creation, price stability, and inclusive development fall short of national aspirations. Therefore, a productivity-led correction model is essential to realign structural transition with technology adoption, workforce upgrading, business environment reform, and sectoral productivity readiness, ensuring that Mongolia's transition supports the achievement of Vision 2050 rather than undermining it.

PRODUCTIVITY-LED CORRECTION MODEL

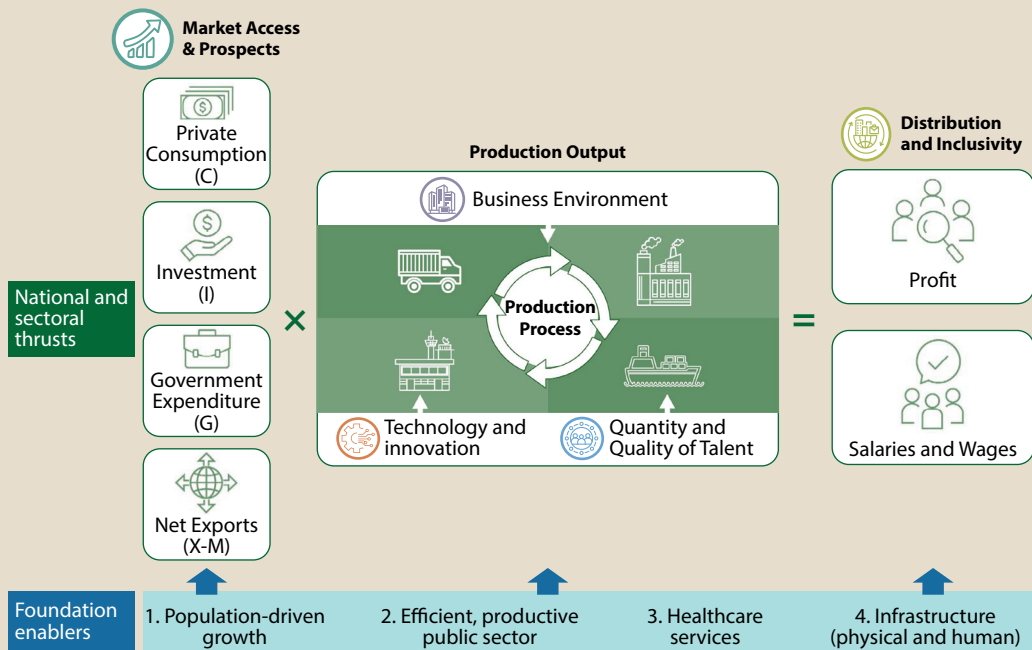
The central issue in premature structural leapfrogging is not the movement from agriculture or primary sectors into mining, manufacturing, or services, but the misalignment between sectoral transition and productivity readiness. The correction model therefore places productivity at the center of structural transition, ensuring that economic upgrading is sequenced, supported, and translated into stronger value creation.

In this paper, a Productivity Correction Framework is proposed and serves as its analytical foundation for advancing a productivity-led growth strategy (Figure 6). This framework is built on the principle of demand–productivity interdependence and is fully aligned with the System of National Accounts (SNA). It ensures that growth measurement and productivity gains remain consistent with internationally recognized GDP accounting standards. While the core sources of economic growth, private consumption, investment, government expenditure, and trade, continue to serve as traditional drivers, their contribution to GDP can be significantly amplified when reinforced by productivity improvements across the production process.

Productivity growth, however, can be constrained when producers have limited access to markets, as represented by the key components of aggregate demand. When market access expands through export diversification, stronger domestic consumption, higher-quality investment, or more efficient public expenditure, firms gain larger, more stable outlets for their goods and services. This increased access enhances economies of scale, stimulates innovation and technology adoption, and encourages higher resource efficiency, thereby unlocking greater productivity potential across sectors. As a result, output growth becomes increasingly driven by efficiency gains rather than by factor accumulation alone.

FIGURE 6

PRODUCTIVITY CORRECTION FRAMEWORK.



In this framework, productivity enhancement operates through the three reinforcing channels of technology and innovation, talent development, and a supportive business environment, all underpinned by the cross-cutting dimension of market access and prospects. Together, these elements ensure that demand-side growth drivers translate into higher competitiveness, efficiency, and resilience within the production process. The framework also integrates a distribution and inclusivity dimension, emphasizing that productivity gains must translate into tangible benefits, higher wages for workers, and improved profitability for enterprises, thereby fostering equitable, sustainable growth.

The framework depicts the concept of “multiplication” not as a mechanical demand-side effect, but as the amplifying influence of productivity on the growth responsiveness of aggregate demand. Higher productivity enhances

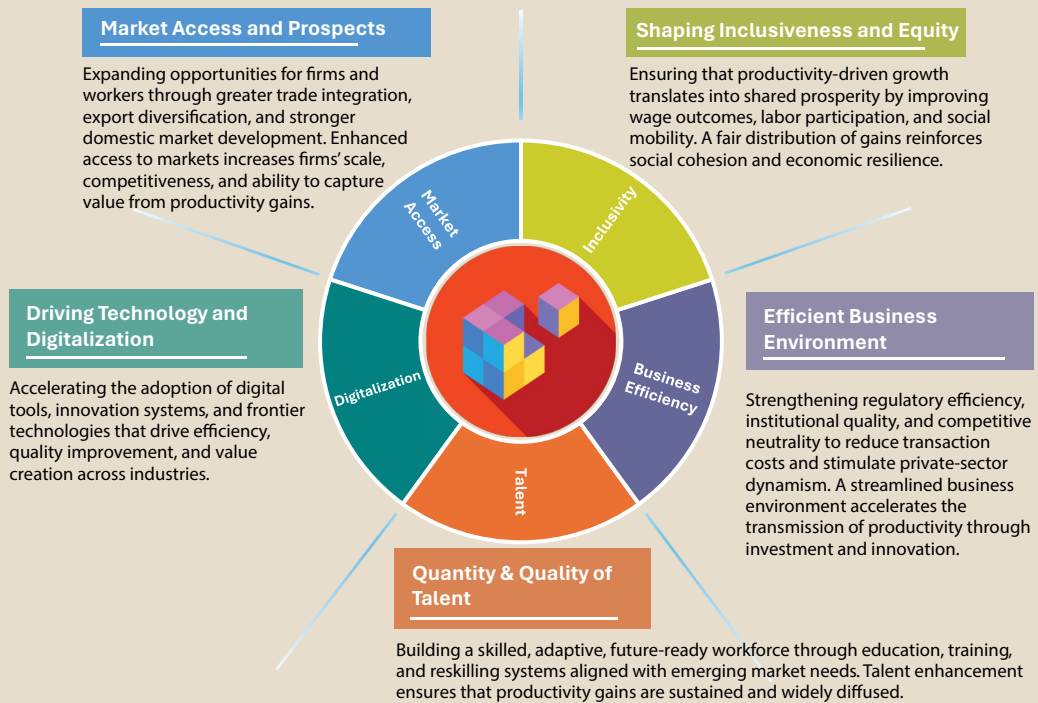
the elasticity of GDP to investment, exports, and consumption by lowering unit costs, improving competitiveness, and expanding real incomes, thereby strengthening the transmission of growth across sectors. In operational terms, the so-called productivity multiplier reflects the responsiveness, or elasticity, of output to productivity improvements, consistent with the KLEMS² growth accounting framework. This approach allows productivity gains to be systematically traced through input efficiency, technological progress, and sectoral linkages within the SNA, ensuring analytical consistency between productivity performance and overall economic growth.

Altogether, the productivity correction framework includes five key component assessments:

- i. Market access and prospects;
- ii. Technology and digitalization;
- iii. Business environment;
- iv. Quality and quantity of talent; and
- v. Inclusiveness and equity.

These five components are assessed and diagnosed for each sector. In this sense, priority sectors are being determined. Mongolia's separation of real and infrastructure sectors reflects the country's priority to accelerate the structural transformation of the whole economy (Figure 7). Real sectors directly generate value added, while infrastructure sectors provide the enabling systems, such as energy, transport, and ICT, that remove bottlenecks and support diversification beyond mining dependency. This distinction ensures that productivity gains in real sectors are effectively reinforced by targeted infrastructure investments, thereby fostering sustainable, inclusive economic growth.

² The KLEMS growth accounting framework is a comprehensive approach to measuring economic growth and productivity at the firm level. It is based on capital (K), labor (L), energy (E), materials (M), and services (S).

FIGURE 7**STRUCTURAL COMPONENT ASSESSMENTS AND PRIORITY SECTORS.**

1. Agriculture, forestry, fishing
2. Mining and quarrying
3. Manufacturing
4. Construction
5. Wholesale and retail trade, repair of motor vehicles and motorcycles
6. Accommodation and food service activities
7. Professional, scientific, and technical activities
8. Other service activities



9. Electricity, gas, steam and air-conditioning supply
10. Water supply, sewerage, waste management and remediation activities
11. Transportation and storage
12. Information and communication
13. Financial and insurance activities
14. Administrative and support service activities
15. Real estate activities
16. Public administration, defense, and compulsory social security
17. Education
18. Human health and social work activities
19. Arts, entertainment, and recreation

The prioritization of economic sectors within the correction framework is guided by six interlinked criteria, determined through a combined assessment approach. Criteria (i) to (iii) are assessed using descriptive sectoral calculations, criteria (iv) and (v) are derived from input–output analysis to capture sectoral linkages and multiplier effects, while criterion (vi) is assessed based on alignment with Mongolia’s Vision 2050 policy priorities. The criteria are summarized below:

- i. Low-productivity sectors with scope for catch-up gains that can drive efficiency improvements;
- ii. High GDP (value-added) contribution sectors with significant macroeconomic weight;
- iii. High employment-share sectors providing broad social and inclusivity impact;
- iv. High-linkage (backward and forward) sectors that generate spillovers across the economy;
- v. High-multiplier (value-added and employment) sectors with strong transmission of growth impulses; and
- vi. Vision 2050 alignment sectors explicitly prioritized under the national long-term strategy.

A distinctive feature of the framework lies in its emphasis on foundational enablers, which establish the preconditions for Mongolia’s long-term productivity growth. These enablers, e.g., population-driven growth (through demographic resilience and managed migration), an efficient, productive public sector, high-quality healthcare services, and comprehensive infrastructure development (both hard and social), serve as the backbone of sustainable, inclusive economic progress (Figure 8). Together, they form the structural capacity needed to strengthen human capital, enhance institutional efficiency, and improve the nation’s competitiveness. By reinforcing these foundations, Mongolia can create a resilient ecosystem that supports higher productivity, innovation, and shared prosperity across all sectors.

FIGURE 8

FOUR ENABLERS TO STRENGTHEN PRODUCTIVITY-LED CORRECTION MODEL.**Optimal population and demographics**

- Optimal population for productivity growth
- Stabilizing working-age population

Efficient, productive public sector

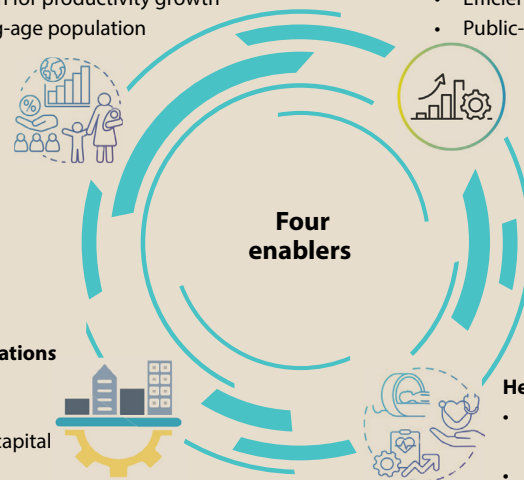
- Efficient public expenditure
- Public-sector productivity spillover

Infrastructure foundations

- Improved physical infrastructure
- Improved human capital and mindset

Healthcare improvement

- Healthcare financing system
- Protection system

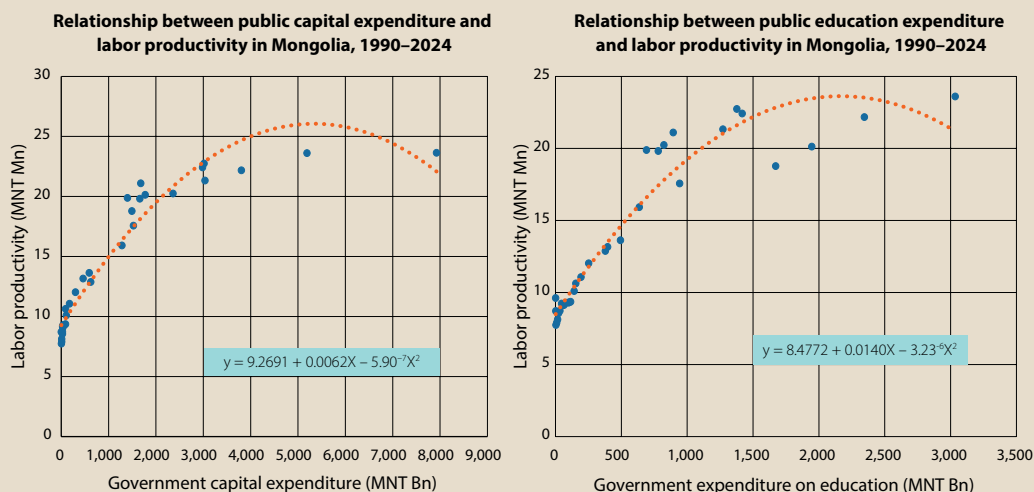


Two enablers, population-driven growth and an efficient public sector, illustrate why foundational conditions matter for Mongolia's productivity-led correction model. An efficient, productive public sector serves as the backbone of a nation's economic transformation. In the case of Mongolia, enhancing public-sector efficiency is crucial to ensure that fiscal resources are effectively translated into tangible development outcomes. A well-performing public administration not only drives policy implementation but also enhances investor confidence, supports fiscal sustainability, and accelerates infrastructure and service delivery.

The analysis indicates that Mongolia's public expenditure exhibits diminishing marginal returns to labor productivity (inverted U-shaped), highlighting efficiency constraints in the translation of fiscal spending into productive outcomes (Figure 9). While increases in current capital, education, and health expenditures are associated with productivity gains, the observed nonlinear trends, particularly the flattening and downward curvature beyond certain thresholds, suggest that additional spending would yield limited incremental benefits.

FIGURE 9

PUBLIC EXPENDITURE AND LABOR PRODUCTIVITY.



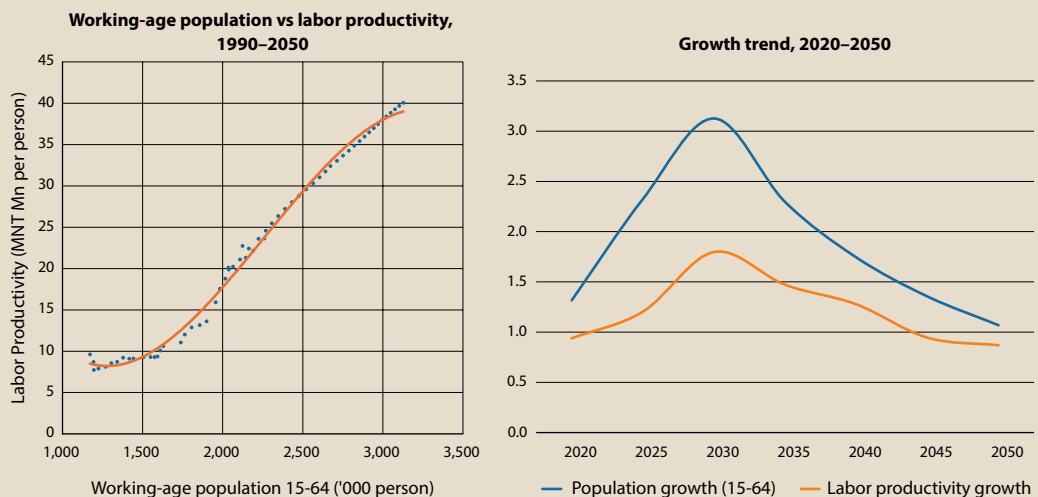
Public expenditure figures reflect general government outlays, reported in billions of local currency units (Bn) unless noted. Capital expenditure covers outlays that create or acquire fixed assets and major repairs that extend asset life (e.g., infrastructure, equipment, public investment projects). Education expenditure includes spending on preprimary through tertiary education and related services (instruction, support, teacher remuneration, materials, operations, and selected capital for education facilities).

Sources: Analyzed based on the National Statistics Office of Mongolia database.

Population dynamics form the cornerstone of a nation's economic and productivity trajectory. A growing, well-utilized population not only supplies the labor force that drives production but also sustains domestic consumption and investment cycles essential for long-term growth. The size, structure, and quality of a country's population determine how effectively resources are transformed into output and innovation. In this regard, population is both a source of productive capacity and a stabilizer of economic momentum, providing the demand base that fuels business expansion, the labor supply that supports industrial diversification, and the demographic balance that underpins fiscal sustainability. For Mongolia, understanding the interplay between population trends and productivity performance is crucial to unlocking the country's full growth potential and ensuring that demographic transitions translate into tangible economic gains.

The trajectory of Mongolia's working-age population (WAP) closely mirrors the trend in labor productivity, suggesting a strong demographic influence on

economic performance. Periods of expansion in the working-age share have generally coincided with higher productivity growth, indicating a positive correlation between labor supply and output efficiency (Figure 10). However, projections beyond 2030 reveal a turning point: as the share of the WAP begins to decline, labor productivity is also expected to moderate, reflecting the structural link between demographic dynamics and economic output. This parallel movement between the decline in WAP and productivity growth highlights the emerging challenge of maintaining production efficiency amid a tightening labor base. Without sustained improvements in human capital, technology adoption, and labor participation, Mongolia risks entering a phase where a shrinking workforce constrains productivity gains, eroding the momentum achieved during its demographic dividend period.

FIGURE 10
WORKING-AGE POPULATION AND LABOR PRODUCTIVITY.


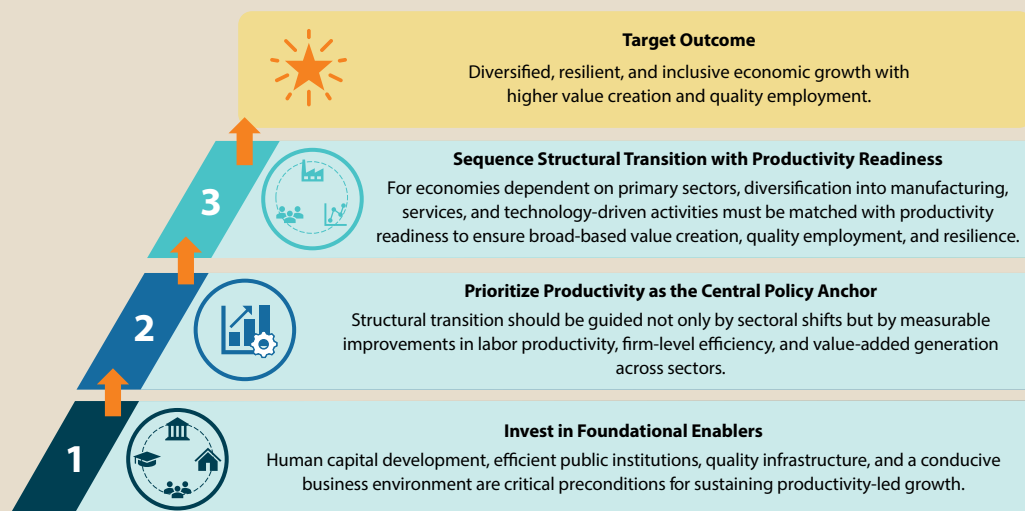
Source: Analyzed based on the National Statistics Office of Mongolia database.

RECOMMENDATIONS AND LESSONS LEARNED

The study of Mongolia offers several practical lessons for other resource-based developing economies undergoing structural transition. As illustrated in Figure 11, productivity-led structural transition should not be viewed as a simple movement from resource-based activities into manufacturing, services, or technology-driven sectors. Instead, it requires a sequenced, capability-based approach, where structural upgrading is supported by productivity readiness, strong institutional foundations, and clear policy alignment. The ultimate target is to achieve diversified, resilient, inclusive economic growth that generates higher value creation and quality employment.

FIGURE 11

PRODUCTIVITY-LED STRUCTURAL TRANSITION FOR RESOURCE-BASED DEVELOPING ECONOMIES.



Source: Authors' illustration.

First, economies must invest in foundational enablers before accelerating structural transition. Human capital development, efficient public institutions, quality infrastructure, and a conducive business environment are critical preconditions for sustaining productivity-led growth. Without these foundations, diversification efforts may remain fragmented and may not translate into broad-based economic gains.

Second, productivity should be positioned as the central policy anchor of structural transformation. Sectoral shifts alone are insufficient if they do not improve labor productivity, firm-level efficiency, and value-added generation. Therefore, development strategies should be guided by measurable productivity outcomes across sectors, particularly in areas with strong economic linkages and employment potential.

Third, structural transition must be sequenced with productivity readiness. For economies with significant natural resource endowments or strong dependence on primary sectors, diversification into manufacturing, services, and technology-driven activities must be matched with the necessary capabilities, skills, infrastructure, and institutional support. Without this alignment, diversification may produce short-term economic expansion but fail to generate sustainable value creation, quality employment, and long-term resilience.

CONCLUSION

Mongolia's experience demonstrates that structural transition does not automatically lead to higher productivity. When sectoral transitions move faster than the development of productive capacity, skills, technology, infrastructure, and institutional readiness, economies may experience premature structural leapfrogging. In Mongolia's case, the rapid shift toward mining and services, without sufficient industrial deepening, has created measurable losses in manufacturing output, employment potential, domestic value creation, and long-term productivity growth. The key lesson is that the quality and sequencing of structural change matter as much as the direction of change.

The productivity-led correction framework proposed here provides a practical approach for reducing the risks of unproductive sectoral shifts. It emphasizes that structural transition should be guided by productivity diagnostics, sectoral readiness, market access, technology and digitalization, talent development, business environment reform, inclusiveness, and foundational enablers such as public-sector efficiency and demographic resilience. The broader lesson for developing economies is clear: productivity must be placed at the center of the structural transition equation, not left to follow after sectoral change has occurred. When productivity is placed at the center of development strategy, economic upgrading can become more efficient, inclusive, and sustainable.

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