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A Demand-Driven Spatial Model of Mass Return Migration in Cambodia

Authors / Xiao Jiang, Chan Mono Oum, Lehua Jin, Xi Kang





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Abstract

The abrupt closure of the Cambodia-Thailand border in 2025 triggered the return of an estimated 820,000 to 950,000 Cambodian migrant workers, a major sudden labour supply shock. This paper develops a new quantitative framework for migration-shock policy analysis, combining Harris-Todaro migration dynamics, a Lewis dual-economy structure, a demand-driven macroeconomic closure, and an empirical returnee identity wedge capturing access frictions relative to domestic workers. The model is calibrated to Cambodia's 2025 Labour Force Survey, 2022 Economic Census, 2022 Input-Output Table, and 2023 Socio-Economic Survey. Two findings emerge: over 90 per cent of the shock is absorbed into informal employment and non-employment, so the formal share falls even as formal employment rises in absolute terms; and identity-specific frictions shift returnees toward informality relative to domestic workers, with no detectable aggregate employment effect. Each policy lever, from credential recognition to demand-side measures, maps to an explicit model parameter, allowing policymakers to simulate mitigation strategies *ex ante* or evaluate them *ex post*.

Keywords: return migration, spatial labour market model, informality, demand-driven framework, Cambodia, reintegration policy, dual economy, and recognition of prior learning

JEL codes: J61, J46, O15, O18, R13, F22.

About the authors

Xiao Jiang is a Finance and Economic Development Specialist in the Office of the Chief Economist at the International Labour Organization (ILO). He applies quantitative methods to assess the social and economic impacts of policies and to support country-level policy analysis. He also leads the ILO's engagement with international financial institutions. His research has been published on a wide range of topics, including trade and employment, macroeconomics and development, economic modeling, demographics, and applied political economy. Before joining the ILO, he was an Associate Professor of Economics at Denison University in the United States.

Chan Mono Oum is a Cambodian economist, policy advisor, and researcher specializing in labour economics, labour market analysis, skills development, migration, economic modelling, and impact evaluation. He serves as an Advisor to the Ministry of Labour and Vocational Training, Co-Founder and Research Director of Analytics and Insights Asia, and university lecturer. Holding a PhD in Economics from the University of Waikato, he has led research for government agencies and international development partners, translating rigorous evidence into policy development.

Lehua Jin is a PhD candidate in Economics at the Geneva Graduate Institute (IHEID) and works as an External Collaborator with the International Labour Organization (ILO). Her research examines labour allocation, migration, structural transformation, and inequality in developing economies. Combining microdata with quantitative structural models, she investigates how mobility barriers, labour-market institutions, and sectoral risks affect employment decisions, household welfare, and the distributional consequences of economic change.

Xi Kang is a PhD candidate in Economics at the Geneva Graduate Institute (IHEID) and an External Collaborator with the International Labour Organization (ILO). His research interests include development economics, climate and environmental economics, social protection, and applied microeconomics. His research combines large-scale microdata and geospatial data with causal inference, microsimulation, and computational modelling to study how public policies, infrastructure, and environmental risks shape economic behaviour and welfare.

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Acronyms

ADB	Asian Development Bank
CDRI	Cambodia Development Resource Institute
CEV	Consumption-Equivalent Variation
CI	Confidence Interval
CSES	Cambodia Socio-Economic Survey
EC	Economic Census
ICLS	International Conference of Labour Statisticians
IHEID	Geneva Graduate Institute (Institut de hautes études internationales et du développement)
ILO	International Labour Organization
JEL	Journal of Economic Literature
KHR	Cambodian Riel
LFS	Labour Force Survey
MLVT	Ministry of Labour and Vocational Training
MSM	Household Microsimulation
NIS	National Institute of Statistics
RPL	Recognition of Prior Learning
SEIA	Socio-Economic Impact Assessment
TVET	Technical and Vocational Education and Training
UNDP	United Nations Development Programme

Executive Summary

In 2025, the abrupt closure of the Cambodia–Thailand border triggered the return of an estimated 820,000 to 950,000 Cambodian migrant workers within a few months, close to ten per cent of the national labour force, arriving almost at once and concentrated in provinces where formal employment capacity is limited. This working paper develops a new quantitative framework for analysing this kind of shock and the policy options available to respond to it.

The framework combines Harris-Todaro migration dynamics, in which workers weigh net returns across sectors, locations, and non-employment; a Lewis dual-economy structure, in which the informal sector absorbs surplus labour with no fixed ceiling; and a demand-driven macroeconomic closure, in which formal-sector output and wages respond to demand rather than being constrained by installed capacity. A novel returnee identity wedge captures the additional access frictions, such as credential non-recognition and lost domestic networks, that returnees face relative to comparable domestic workers. The model is calibrated to Cambodia's 2025 Labour Force Survey, the 2022 Economic Census, the 2022 Input-Output Table, and the 2023 Cambodia Socio-Economic Survey.

Two findings stand out. First, over 90 per cent of the shock is absorbed into informal employment and non-employment rather than formal jobs: the formal employment share falls even as formal employment rises in absolute terms. Second, identity-specific access barriers push returnees disproportionately into informality relative to domestic workers with similar skills and location, generating consumption-equivalent welfare losses of four to five per cent, with no noticeable effect on aggregate employment. Aggregate statistics can therefore look largely unchanged while returnees bear a substantial, hidden welfare cost.

Because each channel in the model maps to an explicit policy lever, including credential recognition, skills-bridging training, mobility support, social transfers, demand-side measures such as public investment, employment policy and social protection, policymakers can use the framework to simulate alternative interventions before committing resources, or to evaluate programmes already under way. The paper also sets out a concrete agenda for sharpening these estimates, including an expanded returnee sample and a planned household microsimulation module.

► Introduction

In 2025, the abrupt closure of the Cambodia–Thailand border triggered the return of between 820,000 and 950,000 migrant workers, according to the Ministry of Labour and Vocational Training (MLVT) and the Cambodia Development Resource Institute (CDRI) (MLVT, 2025; CDRI, 2025). The scale of this inflow, equivalent to roughly ten per cent of the country's labour force, represents one of the largest sudden labour supply shocks in Cambodia's recent economic history. The central challenge is not simply its size, but its structure: most returnees are young, low-educated workers with informal sector experience¹, and more than seventy per cent arrived in border provinces where formal employment capacity is severely limited (MLVT, 2025; CDRI, 2025).²

Analysing this shock and the demanded policy response requires tools that existing frameworks do not readily provide. While general equilibrium approaches to return migration exist, none combines the three elements essential for the Cambodian case: an informality margin (since most of the shock's absorption occurs outside formal employment); spatial mismatch between arrival regions and formal employment centres (since returnees are concentrated far from where formal jobs exist); and a demand-driven closure (since many consequential policy levers operate on the demand side). The latter is especially important given the structural features of the Cambodian economy, and the case for which is developed in Section 3.

This paper presents a spatial labour market model designed to fill this gap. Drawing on the intellectual traditions of Lewis's dual economy and Harris and Todaro's spatial migration dynamics, and embedding these within a demand-driven macroeconomic closure (in plain terms, one in which output responds to spending and demand conditions, rather than being constrained by technology and cleared only through price adjustment) the framework is intended as a practical policy-simulation tool to assess impacts in the labour market: one that allows policymakers to diagnose labour market bottlenecks and simulate ex-ante the employment and welfare impacts of alternative interventions, both for the current shock and for comparable shocks in the future. A novel returnee identity wedge captures the additional barriers returnees face relative to comparable domestic workers, including credential non-recognition and the loss of Thai labour market networks. The model is calibrated using Cambodia's 2025 Labour Force Survey, the 2022 Economic Census, the 2022 Input-Output Table, and the 2023 Cambodia Socio-Economic Survey. The incumbent baseline is calibrated to a pre-shock sample from which recent Thailand returnees have been excluded; the identity wedge estimation remains preliminary because the recent-returnee subsample is thin. Accordingly, this paper is positioned as an operational framework and an initial calibration rather than a definitive quantitative assessment. Section 6 sets out the concrete policy-simulation and data agenda through which the framework will be sharpened in subsequent work.

The remainder of the paper is organised as follows. Section 1 describes the context and data. Section 2 presents the conceptual framework. Section 3 develops the model. Section 4 covers

¹ Throughout this paper, *informal sector* follows the 15th ICLS definition: “a group of production units comprised of unincorporated enterprises owned by households, including informal own account enterprises and enterprises of informal employers (typically small and non-registered enterprises)” (International Labour Organization, 1993). This is a sectoral concept, distinct from the broader 17th ICLS notion of *informal employment*, which also includes informal employment relationships within formally registered enterprises. Because the model allocates workers across sectors, its informality margin corresponds to the 15th ICLS informal sector, and the text refers throughout to *informal sector employment* rather than *informal employment* accordingly.

² We use “capacity” descriptively, following the cited sources, rather than as an independently measured construct: the underlying constraint could reflect demand conditions, supply-side factors (capital, technology), or both, and disentangling them is beyond this paper's scope.

calibration. Section 5 presents simulation results. Section 6 concludes with policy implications and research priorities.

► 1 Context and Data

The 2025 Return Migration Shock

Thailand has historically been the dominant destination for Cambodian labour migrants, with an estimated 724,000 Cambodian migrant workers holding legal working status, employed predominantly in construction, agriculture, and manufacturing, according to the International Organization for Migration (IOM) (IOM, 2020). The migration flow has historically been informal: less than a third used regular migration channels, and the majority circulated without formal contracts or recognised credentials, a feature that proves consequential on return.

The profile of the 2025 returnee population reflects this pattern. Survey evidence indicates that 42.5 per cent completed only primary school, 33.3 per cent never attended formal schooling, and 89 per cent reported not having acquired any formally recognised skills while in Thailand (MLVT, 2025). Prior to the conflict and border closure, occupations were concentrated in construction (35%), manufacturing (29%), services (19%), and agriculture (16%), sectors where experience accumulates informally in Thailand but without credentials recognised by Cambodian employers (MLVT, 2025; CDRI, 2025).

The shock arrived in a structurally constrained labour market. MLVT (2026) reports that, in the context of emergency reintegration measures, around 350,000 returnees were linked to formal-sector jobs, approximately 310,000 entered informal sector employment, and nearly 120,000 remained at risk of unemployment.³ The rapid assessment by MLVT (2025) identifies three overlapping barriers⁴ that constrain returnee absorption: a skills gap between returnee experience and domestic employer requirements; a geographic mismatch, as formal employment is concentrated in Phnom Penh and Kandal while most returnees arrive in border provinces; and limited enterprise capacity, with the majority of SMEs, which account for over 70 per cent of national employment, operating informally and reluctant to expand hiring (MLVT, 2026). Against this backdrop, this paper develops a spatial labour market model to quantify how the unexpected large inflow of migrant workers reshapes labor market and household living standards, with the ultimate goal of simulating targeted policy responses.

To place the size of the shock in context, Cambodia's labour force numbers approximately ten million (MLVT, 2025; CDRI, 2025), so the return of 820,000 to 950,000 workers within a few months represents close to an additional ten per cent of the labour force arriving almost at once, a shock with few parallels in Cambodia's recent economic history, and one that implies most returnees must, at least temporarily, be absorbed outside formal employment.

The shock also carries household-level dimensions the model does not capture directly. Many returnees financed migration through loans, often from microfinance institutions, and returned still owing this debt: Human Rights Watch interviews describe households choosing between

³ This 780,000 total is based on an initial assessment, smaller than the 820,000–950,000 range estimated in later reports (MLVT, 2025; CDRI, 2025). The formal-job figure is treated here as a policy-influenced administrative benchmark, not as a target for the no-policy simulations in Section 5.

⁴ The model represents these barriers at different levels of detail. Geographic mismatch and demand-side capacity enter explicitly, while skill mismatch is captured only indirectly through education-based skill groups and returnee access wedges, not through occupation-specific human capital or productivity. The occupational dimension is left to the subsequent MSM stage.

food, loan repayments, and school fees, with some at risk of losing pledged land ([Human Rights Watch, 2025](#)). Return also cuts off remittances that had financed household investment and Cambodia's foreign exchange earnings. Both channels strengthen the case for the demand-side and social-protection measures discussed in Section 6, which complement the model's core focus on how the labour-supply shock itself is absorbed.

Data Sources

The model draws on five calibration data sources. The Cambodia Labour Force Survey 2025 (LFS 2025), conducted by the National Institute of Statistics (NIS) and made available through the ILO Microdata Repository, provides the microdata foundation: person-level employment status, sector, wages, education, province of residence, and international migration histories for a weighted sample representing approximately 13.1 million working-age individuals. It is the primary source for employment shares, wage moments, worker type classification, and the returnee migration module used to estimate returnee access wedges. The Economic Census 2022 (EC 2022), also produced by NIS, supplies establishment-level formal employment by sector and province; it is used to allocate formal demand regionally and to estimate wage-productivity elasticities where cell sizes are adequate. The Input-Output Table 2022 produced by the Asian Development Bank (ADB) provides national final-demand components by sector, including external demand, government expenditure, and investment. The Cambodia Socio-Economic Survey 2023 (CSES 2023) provides household consumption shares and outside-option consumption by skill and region. NIS poverty-line inputs are used where relevant for informal earnings floors and lower-bound consumption inputs.

The LFS-derived baseline moments are constructed from an incumbent sample: individuals in the LFS 2025 international migration module are excluded from baseline moments if their most recent foreign destination was Thailand and their return date was May 2025 or later. This avoids double counting the returnee cohort both in the pre-shock baseline and in the simulated shock. The returnee wedge sample is drawn from the same international migration module and includes individuals who previously lived abroad, had Thailand as the most recent destination, and returned in or after May 2025. Because this recent-returnee subsample is thin, the returnee wedge is preliminary and is estimated as a sectoral, skill-blind, and region-blind wedge. The IOM (2020) and MLVT (2025) surveys offer valuable evidence on returnee characteristics, but as they are not yet weighted to the population they inform qualitative dimensions of the returnee profile rather than the structural calibration.

► 2 The Conceptual Framework

Modelling how workers sort across sectors and locations requires some account of individual decision-making under uncertainty. The framework therefore combines three complementary mechanisms. The Harris-Todaro component captures workers' spatial and sectoral choices under uncertainty, as returnees compare expected net returns across formal employment, informal sector employment, and non-employment in different locations. The Lewis dual-economy component captures the role of the informal sector as a residual absorber of labour when formal employment opportunities are limited. The demand-driven structuralist component captures the fact that formal labour absorption depends not only on the number of workers available, but also on sectoral demand, enterprise capacity, and the level of economic activity.

This is developed formally through the Harris-Todaro framework ([Harris and Todaro, 1970](#)), in which workers compare expected returns across options, accounting for wages, employment probabilities, and the costs of moving, and allocate accordingly. This expected-utility migration mechanism remains the workhorse for spatial labour market models in developing countries, and it is the micro-level behavioural foundation of the present framework. Specifically, workers compare net returns across formal sectors, informal sector employment, and non-employment in two regions, subject to entry costs and mobility costs.

The structure of the Cambodian economy, however, demands additional structure that Harris-Todaro alone does not provide. Cambodia's labour market is characterised by a large pool of informal workers, low barriers to informal entry, and a labour constraint that is rarely binding in the aggregate. These are precisely the conditions described in Lewis's dual economy model ([Lewis, 1954](#)): a modern formal sector coexisting with a traditional informal sector that absorbs surplus labour at or near subsistence wages, with no fixed ceiling on informal sector employment. Incorporating this margin is not optional: without an informal-sector employment option, the model would force excess labour either into formal jobs or non-employment, and would miss the dominant pattern in the simulations, where most of the 2025 shock is absorbed outside formal employment, especially through informal employment in absence of any policy influence.

Both Harris-Todaro and Lewis, however, share a supply-side logic: output and employment in the formal sector adjust to meet whatever labour supply presents itself. This approach is not best suited to economies like Cambodia's, where output capacity is shaped by demand conditions and income distribution rather than labour availability alone, and where the most consequential policy levers operate on the demand side. The framework therefore embeds the migration and dual-economy mechanisms within a demand-driven macroeconomic closure, drawing on the tradition of structuralist macroeconomics, in particular the insights of [Kalecki \(1971\)](#) and their operationalisation in structural macroeconomic modelling by [Taylor \(1983\)](#) and [Taylor \(2004\)](#). Structuralist macroeconomics treats a model's causal structure as a choice rather than a universal law: modellers must specify which quantities adjust to clear the economy and which are held fixed, a choice known as the model's *closure*, justified by the institutional and empirical features of the economy at hand rather than assumed on theoretical grounds ([Taylor, 1990](#)). The closure used here is demand-driven: output adjusts to meet demand, firms operate with spare capacity, and labour productivity absorbs fluctuations, rather than employment adjusting instantaneously to a fixed supply-side optimum – the full mechanics are developed in Section 3.6. This is not merely a theoretical preference: it is what allows the model to simulate the effects of public

investment, demand subsidies, and fiscal transfers: interventions that a supply-side closure would offer limited analytical traction for.

Our conceptual framework extends further to capture barriers through a returnee-specific identity wedge, since returnees are not necessarily equivalent to domestic incumbent workers. Even with similar education or work experience, they may face additional barriers arising from weak recognition of foreign work experience, limited domestic labour market networks, lack of certification, or employer uncertainty.

► 3 Model Description

Geography and Labour Market States

The model divides Cambodia into two regions:

(1)

$$r \in \{B, C\}$$

where B denotes the border provinces along the Cambodia–Thailand frontier, and C denotes inland urban centres, principally Phnom Penh.

Each worker chooses from the option set:

(2)

$$\mathcal{J} = \{B, C\} \times \{H_C, H_A, H_M, H_S, L, \mathcal{U}\}$$

The four formal sectors are construction (H_C), agro-industry (H_A), manufacturing (H_M), and services (H_S). Each formal sector is subject to entry costs. Informal sector employment (L) is freely accessible with no entry barrier. Non-employment ($\mathcal{U}$) yields an outside-option income $b_r^a > 0$. Because population masses $N_{a,h}$ are drawn from the total working-age population rather than the labour force (Section 3.3), non-employment $\mathcal{U}$ is not restricted to the unemployed: it corresponds to the working age population who is neither formally nor informally employed, i.e. the unemployed together with all those outside the labour force (including discouraged workers, students, homemakers, and others not seeking work).

Frictions: Entry Costs and Mobility Costs

Two frictions govern access to labour market options.

Entry costs. Entering a formal sector may involve fees, certification costs, equipment requirements, search frictions, and matching or network frictions. These costs are summarised by a skill- and sector-region-specific effective entry cost,

(3)

$$K_{j,r}^a, a \in \{U, S\}$$

where $K_{j,r}^a$ can differ by skill, sector, and region. It should be interpreted as an effective access cost rather than through a base-plus-skill-penalty structure. The informal sector has no formal entry barrier. Although $K_{j,r}^a$ will later enter workers' utility as an access cost, it is best interpreted as a reduced-form, utility-equivalent wedge calibrated to match observed employment shares through the logit inversion (Section 3.4). Because this inversion has no separate channel for vacancies, hiring, or rationing, it necessarily absorbs into $K_{j,r}^a$ whatever combination of worker-side access barriers (e.g. certification, search, matching, networks) and other unobserved determinants of

realised formal employment generated the observed allocation, potentially including baseline employer-side tightness, since such tightness most likely exists in the data, the calibration has no other parameter to route it through. These components are not separately identified, only their net effect on the baseline allocation. Thus, instead of interpreting $K_{j,r}^a$ as a hard hiring-capacity constraint, it is a composite wedge. In counterfactuals, this composite wedge is held fixed unless it is directly varied by the policy experiment.

Mobility costs. Workers incur a cost when working outside their home region:

(4)

$$\tau_{h \rightarrow r} = \begin{cases} 0, & r = h \\ \tau_{BC} > 0, & r \neq h \end{cases}$$

where τ_{BC} is symmetric: $\tau_{B \rightarrow C} = \tau_{C \rightarrow B}$.⁵ It is a broad reduced-form barrier, not transportation cost alone, and may include relocation, housing, job search, information, family, cost-of-living, and network costs.

Earnings and Skill Premium

Workers are indexed by skill $a \in \{U, S\}$, unskilled (up to upper-secondary) or skilled (tertiary and above), and home region $h \in \{B, C\}$. Population masses $N_{a,h}$ are drawn from LFS 2025, giving a total working-age population $N = \sum_{a,h} N_{a,h}$.

Formal wages. The base (unskilled) wage in formal sector j , region r is:

(5)

$$w_{j,r} = \mu_{j,r} \xi_{j,r}^{\alpha_j}$$

where $\xi_{j,r} = Y_{j,r} / L_{j,r}$ is the output-to-labour ratio, $\alpha_j \in [0, 1]$ is the sector-specific elasticity, and $\mu_{j,r}$ is a formal wage shifter that scales the wage-productivity relationship to observed sector-region wage levels. The output-to-labour ratio serves as a reduced-form measure of labour market tightness: when demand is high relative to employment, $\xi_{j,r}$ rises and wages are bid up; when the labour market is slack, $\xi_{j,r}$ falls and wages compress. The numerical scale of $\mu_{j,r}$ depends on the units used for annual wages and output-to-labour ratios, so it should not be read as a directly comparable institutional markup across sectors.

Formal-sector skill premium. The skill premium applies only to formal-sector wages. The two-tier skill classification is empirically grounded rather than an arbitrary simplification. Sector-by-sector Mincer regressions on LFS 2025 show a near-zero wage premium between unskilled and semi-skilled workers across all formal sectors, while the tertiary premium is substantial and precisely estimated. This justifies collapsing the skill distribution into binary groups. The resulting log skill premium $\eta_{S,j}$ below is therefore empirically estimated from these regressions, in contrast to the wage-productivity shifters $\mu_{j,r}$ and elasticities α_j , which are calibrated in the solved baseline (Section 4.1).

⁵ τ_{BC} is calibrated to approximately 9.0 million KHR per year, equivalent to roughly seven months of average unskilled formal earnings. Entry costs $K_{j,r}^a$ are calibrated from LFS 2025 sectoral choice shares; calibrated values are reported in Section 5.

Skill enters wages through a sector-specific efficiency weight applied to the base wage:

(6)

$$w_{j,r}^a = e_j(a) \cdot w_{j,r} \cdot e_j(a) = \begin{cases} 1, & a = U \\ \exp(\eta_{S,j}), & a = S \end{cases}$$

where $\eta_{S,j} > 0$ is the log skill premium in sector j . The premium varies across sectors, reflecting differences in the returns to tertiary education: it is highest in construction and agro-industry, where tertiary workers are rare and command a sharp earnings advantage, and lowest in services, where the larger share of tertiary workers compresses the marginal premium. Skill affects earnings but not how the output-to-labour ratio is measured, preserving a clean separation between the wage and output blocks of the model. Informal-sector earnings are region-specific and not differentiated by skill.

Informal earnings. Informal-sector earnings⁶ in region r are:

(7)

$$w_{L,r} = \max\{\bar{w}_r, \mu_{L,r} \xi_{L,r}^{\alpha_L}\}$$

where $\bar{w}_r$ is the region-specific subsistence floor. In the spirit of the Lewis model, the subsistence floor $\bar{w}_r$ anchors informal earnings at a near-constant level as long as labour supply is abundant. The second term allows for departures from this floor: rapid shifts in informal labour demand can temporarily generate an informal income premium above subsistence, consistent with episodes of labour market tightening even in the informal sector.

Worker Income and Sectoral Choice

Each worker of type (a, h) evaluates options by their net income: the wage or transfer they would receive, minus any costs incurred. For a worker choosing formal sector j in region r , net income is the formal wage net of entry and mobility costs:

(8)

$$c_{a,h}(r, j) = w_{j,r}^a - K_{j,r}^a - \tau_{h \rightarrow r}$$

Informal sector employment requires no entry cost, since the sector freely absorbs whoever chooses it, so net income is simply informal earnings net of any mobility cost:

(9)

$$c_{a,h}(r, L) = w_{L,r} - \tau_{h \rightarrow r}$$

Non-employment yields the outside-option income net of mobility cost:

⁶ We use *earnings* rather than *wages* for the informal sector because informal sector employment includes both wage employment and own-account/self-employment, and “wages” technically refers only to compensation for employment under a contract of service. *Earnings* here is restricted to income from wage employment and self-employment; it excludes other income sources such as social transfers or rental income.

(10)

$$c_{a,h}(r, U) = b_r^a - \tau_{h \rightarrow r}$$

where $b_r^a > 0$ is the skill- and region-specific outside-option income, capturing household transfers, home production, and subsistence activity.

These net income expressions capture a key insight from the Harris-Todaro tradition: workers do not simply move to the sector with the highest gross wage. Entry costs and mobility costs erode net returns, and workers weigh these frictions alongside wages when making location and sector decisions. This is precisely why a large wage gap between formal and informal sectors can persist in equilibrium: the costs of crossing into the formal sector are high enough to keep many workers out, even when formal wages are attractive in principle.⁷

Workers derive utility from net income according to:

(11)

$$u(c) = \log(c + \varepsilon)$$

where $\varepsilon > 0$ is a small consumption floor ensuring utility is defined when net income approaches zero.

Given wages and costs, each worker chooses among all options in $\mathcal{J}$ to maximise expected utility. Following the multinomial logit framework of [McFadden \(1974\)](#), this yields choice probabilities⁸:

(12)

$$\pi_{a,h}(q) = \frac{\exp[u(c_{a,h}(q))/\sigma]}{\sum_{k \in \mathcal{J}} \exp[u(c_{a,h}(k))/\sigma]}, \quad q \in \mathcal{J}$$

$\pi_{a,h}(q)$ converts utility into choices: it is a probability bounded between 0 and 1, and sums to 1 across all options. It allocates workers to labour market states in proportion to their expected returns: options with higher net income attract larger shares of workers. The dispersion parameter $\sigma > 0$ governs the sensitivity of choices to income differences: a lower σ implies stronger sorting toward the highest net-income option, while a higher σ reflects greater heterogeneity in worker preferences. Since there is no rationing, realised employment equals logit probabilities directly, and the full working-age population N is allocated across all states in $\mathcal{J}$. This equality is a maintained reduced-form assumption: the model does not include a separate application, vacancy, hiring, or rejection stage. Observed limits to formal absorption therefore enter through calibrated wedges and wage-demand feedback, not through an explicit hiring-capacity constraint.

⁷ This does not compete with a productivity-based explanation of the same gap: absent frictions, mobility would already have equalised wages as workers reallocate and marginal products adjust, so the persistence of a gap is itself evidence of frictions blocking that equalisation (Section 4.2).

⁸ Like any multinomial logit specification, this choice model assumes independence from irrelevant alternatives (IIA): the relative odds between any two labour-market states are unaffected by the availability or attributes of a third. This is a standard simplification in this literature; [McFadden et al. \(1977\)](#) propose and illustrate a set of diagnostic tests for its validity using urban travel-mode choice data.

Employment Aggregation and Consumption Feedback

Employment aggregation. Given choice probabilities, sectoral employment headcounts follow directly by aggregating over all worker types and identities:

(13)

$$L_{s,r} = \sum_{a,h,d} N_{a,h,d} \pi_{a,h,d}(r,s), \quad s \in \mathcal{H} \cup \{L, U\}.$$

For formal sectors $j \in \mathcal{H}$, this gives $L_{j,r}$; for informal employment and non-employment it gives $L_{L,r}$ and $L_{U,r}$ respectively. In the incumbent baseline, $d = D$ only, so this reduces to the two-dimensional aggregation over skill and home region, with employment aggregating directly from realised choices rather than from any separate hiring decision (Section 3.4). The population identity $\sum_r (\sum_j L_{j,r} + L_{L,r} + L_{U,r}) = N$ holds by construction.

Consumption and effective demand. Workers spend their income locally: net resources associated with a choice in region r are consumed in region r . Writing the expression in the general form used for returnee simulations, aggregate regional consumption is:

(14)

$$C_r = \sum_{a,h,d} N_{a,h,d} \sum_{s \in \mathcal{H} \cup \{L, U\}} \pi_{a,h,d}(r,s) c_{a,h,d}(r,s) + \sum_{j \in \mathcal{H}} \chi_{\Pi,j} \Pi_{j,r}$$

$$H = \{H_A, H_C, H_M, H_S\}.$$

In the incumbent baseline before the identity extension, $d = D$ only. For formal choices $s \in \mathcal{H}$, c is formal income net of entry and mobility costs; for informal work $s = L$, c is informal earnings net of mobility cost; for non-employment $s = U$, c is outside-option income net of mobility cost. The final term captures locally recycled profits, where $\chi_{\Pi,j} \in [0,1]$ is the share of sector- j profits consumed locally. Consumption then feeds back into effective demand:

(15)

$$D_{j,r} = X_{j,r} + G_{j,r} + I_{j,r} + s_{j,r} C_r$$

where $X_{j,r}$, $G_{j,r}$, $I_{j,r}$ are exports, government expenditure, and investment, and $s_{j,r}$ is the household expenditure share on sector j in region r .

This consumption-demand feedback loop is the Keynesian multiplier at the core of the structuralist closure. In the tradition of [Taylor \(1983\)](#) and [Taylor \(2004\)](#), output is determined by effective demand rather than factor supply, and income distribution, through the split between net labour income, outside-option resources, and locally recycled profits, shapes the size of the multiplier. A rise in employment and wages raises household resources, which raises consumption, which raises demand, which in turn raises output and wages further. Conversely, a negative shock that pushes workers into low-wage informality or non-employment compresses household resources and can amplify the original contraction.

Output and the Output-to-Labor Ratio

Formal output. Formal sector output is demand-determined. Firms take sector-region demand as given and produce to meet it:

(16)

$$Y_{j,r} = D_{j,r} = X_{j,r} + G_{j,r} + I_{j,r} + s_{j,r} C_r$$

The only ceiling on output here is demand: as the equation above shows, output is pinned to demand exactly, with no separate capacity constraint operating on top of it. Since the model does not have an explicit hiring-capacity constraint; the employment $L_{j,r}$ entering this equation is the realised allocation implied by worker choices, calibrated wedges, and wage-demand feedback. Informal output is similarly demand-driven:

(17)

$$Y_{L,r} = s_{L,r} C_r$$

Endogenous Output-to-Labor Ratio. Since output is demand-driven and employment is determined by worker choice, the output-to-labour ratio $\xi_{j,r} = Y_{j,r} / L_{j,r}$ adjusts endogenously. This is the key departure from neoclassical production frameworks, where output-to-labor ratio is technologically fixed and employment adjusts to a supply-side optimum.

This treatment draws on the post-Keynesian tradition of labour hoarding and variable capacity utilisation (Kalecki, 1971; Okun, 1962; Taylor, 1983; Taylor, 2004), in which firms retain their workforce and allow output per worker to vary with the level of activity rather than adjusting employment instantaneously. When demand is high relative to the workforce, $\xi_{j,r}$ rises, reflecting fuller utilisation of installed capacity; when demand falls, $\xi_{j,r}$ declines, capturing underutilisation. In the present static framework, this mechanism is represented in reduced form: output responds one-for-one to demand while employment adjusts through worker choice, so $\xi_{j,r}$ absorbs the residual.

This endogeneity has an important implication for policy analysis. In a neoclassical framework, adding workers to a sector with fixed technology necessarily lowers their marginal product and wages. Here, a demand expansion that raises $D_{j,r}$ also raises $\xi_{j,r}$, which through the wage equation (5) raises wages alongside employment, a feature consistent with the empirical observation that output-to-labor ratio⁹ and wages tend to move together during expansions in labour-abundant developing economies.

Equilibrium and Adjustment Mechanism

An equilibrium is a fixed point of four coupled relations:

(18)

$$Y = D(C) \quad w = f(Y, L) \quad L = g(\pi(w)) \quad C = h(w, L, \Pi)$$

⁹ Similarly for labor productivity and the rate of capacity utilization

Formally, an equilibrium is a collection of sector-region demand, output, employment, productivity, wage, profit, consumption, and choice probability objects satisfying simultaneously: output equals demand; employment aggregates from logit probabilities; the output-to-labour ratio $\xi_{j,r}$ is derived as $Y_{j,r}/L_{j,r}$; wages follow the wage-shifter rule; profits are the residual of output over the wage bill; consumption aggregates option-level net household resources and recycled profits; and the population identity holds.

Three feedback loops operate simultaneously. The **output-to-labor loop**: wages shape worker choices, choices determine employment, employment together with output determines output-to-labor ratio, which feeds back into wages. The **income multiplier loop**: wages and employment determine household net resources, which determine consumption, which feeds back into demand, output, and productivity. The **profit-recycling loop**, active when $\chi_{\Pi,j} > 0$: profits recycled locally feed back into consumption and demand. These loops are the structural expression of the demand-driven closure: adjustment operates through wages and output-to-labor rather than job-slot rationing.

When a large inflow of workers crowds a sector, the output-to-labour ratio $\xi_{j,r}$ falls, wages compress, and the logit redirects workers toward informal sector employment and non-employment until no worker can improve their net return by reallocating. Since there is no rationing, the informal sector and non-employment absorb all workers, but the adjustment compresses wages across the affected region. Existence of the fixed point follows from continuity and compactness; convergence is guaranteed when locally-produced goods do not exhaust the consumption basket, a condition satisfied in the Cambodian data.

The Returnee Identity Wedge

The model as described so far allocates domestic workers across regions and labour market states, and is calibrated on this basis. However, the central focus of this paper is the labour market integration of returnees, a population that is distinct from typical domestic workers in ways that have direct bearing on their sectoral allocation.

Survey evidence indicates that returnees are systematically placed below their prior occupational level upon return, suggesting that skills accumulated in Thailand exist but are often not formally recognised by the Cambodian labour market (CDRI, 2026; IOM, 2020). Beyond credential non-recognition, returnees may also face network disadvantages, having been absent from domestic labour markets for extended periods, or conversely, may carry a Thai-experience advantage in sectors where their prior work experience is directly applicable, such as construction and agro-industry. These are identity-specific frictions that the baseline model, calibrated entirely on domestic workers, cannot capture.

To accommodate this, the model extends each worker's type from (skill, home region) to (skill, home region, identity), where identity $d \in \{D, R\}$ distinguishes domestic incumbents from returnees:

(19)

$$(a, h, d) \in \{U, S\} \times \{B, C\} \times \{D, R\}$$

All returnees arrive in the border region in the central shock scenario, so $N_{a,C,R} = 0$ in that case. The identity-specific entry cost is:

(20)

$$K_{j,r}^{a,d} = K_{j,r}^a + \Delta_j^R \mathbf{1}\{d = R\}$$

where Δ_j^R is the returnee identity wedge. A positive Δ_j^R is an additional returnee-specific access cost, a zero value indicates no identity friction, and a negative value indicates easier access or a returnee advantage. The notation can accommodate more disaggregated wedges, but the current calibration estimates the sectoral, skill-blind, and region-blind version because the weighted returnee sample is thin.

In the simulations below, this wedge is used in two ways. The post-shock no-identity experiment sets $\Delta_j^R = 0$ for all formal sectors, so returnees differ from incumbents only through skill composition and location. The post-shock with-identity experiment uses the LFS-calibrated sectoral wedge reported in Section 4.3. Policy counterfactuals can then modify specific model objects, such as reducing positive returnee access wedges under recognition-type interventions or the cross-region mobility cost under mobility-support interventions.

► 4 Calibration

Baseline Calibration

The calibration proceeds in two stages. The first stage constructs the pre-shock incumbent baseline. LFS-derived baseline moments exclude the post-May-2025 Thailand-returnee cohort, so that the returnee shock is not counted both in the baseline and again in the simulation. The second stage estimates returnee-specific formal access wedges on top of the fixed incumbent baseline; these wedges are reported separately in Section 4.3.

The baseline calibration combines five data sources. LFS 2025 provides worker masses, baseline employment and wage moments, informal earnings, skill premia, and the choice shares used to calibrate entry costs. EC 2022 allocates formal demand across regions and supports wage-productivity elasticity estimates where cell sizes are adequate. The 2022 Input-Output Table provides national final-demand components by sector. CSES 2023 provides household consumption shares and outside-option consumption. NIS poverty-line inputs anchor informal earnings floors and lower-bound consumption objects where used.

The calibrated objects are organized into four groups. Some are constructed directly from data; some are externally anchored because a single cross-section does not separately identify preference dispersion, mobility barriers, and access costs; some are estimated in first-stage micro regressions; and the remaining wage shifters and entry costs are internally calibrated so that the solved baseline matches targeted wage, informal earnings, and choice moments. Table 1 reports the full set of baseline calibration objects. High-dimensional sector-region and skill-sector-region parameters are summarized in the main text, with cell-level values reported in Appendix B where relevant.

► Table 1. Baseline calibration objects and methods

Object	Model role	Source and construction	Target or baseline treatment
(1) Direct data construction			
$N_{a,h}$	Worker masses by skill and home region	LFS 2025 pre-shock incumbent sample	Four population cells by (a,h)
$X_{j,r}, G_{j,r}, I_{j,r}$	Exogenous formal demand	2022 Input-Output national totals, regionally allocated with EC 2022 formal employment shares	Sector-region demand block
$S_{j,r}, S_{L,r}$	Consumption-demand feedback by region	CSES 2023 expenditure shares, mapped to model sectors	Local consumption shares by sector and region
b_r^a	Non-employment outside option	CSES 2023 household consumption per working-age person, by region and household-head education	Four cells; 6.71–10.75M KHR/year

(2) Externally anchored or imposed

Object	Model role	Source and construction	Target or baseline treatment
w_r	Informal earnings floor	NIS poverty-line-related inputs	B: 0.30; C: 0.31M KHR/month
σ	Logit dispersion	Central benchmark from the migration-choice literature	$\sigma=1.0$
τ_{BC}	Cross-region mobility barrier	External anchor, interpreted as a broad migration and job-search barrier	9.00M KHR/year
x_{n_i}	Locally recycled profit share	Conservative main baseline; EC ownership shares used only as robustness	Main baseline sets $x_{n_i}=0$
(3) First-stage estimates			
$\eta_{s,j}$	Formal-sector skill premium	LFS 2025 sector wage regressions, with skill defined by tertiary education	Four sectors; 0.31–0.48
α_j	Formal wage-productivity elasticity	EC 2022 firm-province regressions	Four sectors; 0.55–0.65; α_{H+}
α_L	Informal earnings-productivity elasticity	LFS 2025 informal earnings regression	$\alpha_L=0.115$
(4) Internal equilibrium calibration			
$\mu_{j,r}$	Formal wage shifter	Co-iterated inside the solved baseline	Matches LFS unskilled formal wages by sector and region
$K_{j,r}^a$	Formal entry/access cost	Berry inversion of LFS 2025 choice shares, anchored to non-employment	Matches formal-vs-non-employment choice odds; 16 cells
$\mu_{L,r}$	Informal earnings shifter	Inverted after the baseline solve using model-consistent $\xi_{L,r}$	Matches LFS informal earnings; B: 2.01, C: 2.17M

Note: Values are in 2025 KHR unless otherwise stated. Normalizations such as $\varepsilon = 0.01$, zero same-region mobility costs, and the absence of returnees in the incumbent baseline are model setup choices rather than separate calibration parameters.

Several calibration choices are especially important for interpreting the simulations. The logit dispersion parameter is fixed at $\sigma = 1.0$, and the cross-region mobility barrier is set at $\tau_{BC} = 9.00$ M KHR/year. This mobility parameter is treated as a broad reduced-form barrier, not a transport cost alone. Outside-option values are calibrated from CSES 2023 household consumption data:

$$b_B^U = 6.71, b_C^U = 7.10, b_B^S = 10.62, b_C^S = 10.75$$

in M KHR/year. Informal earnings floors are anchored to poverty-line-related inputs: 0.30M KHR/month in the border region and 0.31M KHR/month in the city region.

Formal-sector skill premia and wage-productivity elasticities are estimated before solving the model, while the formal wage shifters $\mu_{j,r}$ and informal earnings shifters $\mu_{L,r}$ are calibrated inside the solved baseline to reproduce targeted wage and informal earnings moments. The entry costs $K_{j,r}^a$ are skill-specific effective access costs. They summarize certification, search, matching,

network, and other formal-entry barriers, and should not be interpreted as a base cost plus a skill penalty. The calibration uses the same-region non-employment option as the anchor:

(21)

$$\log \frac{\pi_{a,h=r}(r,j)}{\pi_{a,h=r}(r,U)} = \frac{1}{\sigma} \log \frac{w_{j,r}^a - K_{j,r}^a + \varepsilon}{b_r^a + \varepsilon}$$

This yields one effective access cost per (a,j,r) cell, calibrated inside the solved equilibrium rather than imposed through a fixed skill-penalty structure.

Baseline Fit

The baseline fit is evaluated along two dimensions. Targeted wage moments (unskilled formal wages by sector and region, and informal earnings by region) are reproduced within numerical tolerance by construction; full details are reported in Appendix C. The more informative diagnostic is the untargeted employment structure. Table 2 reports model-implied aggregate employment shares against LFS 2025 for both regions.

► Table 2. Aggregate employment share diagnostics: model vs. LFS 2025

Margin	LFS	Model	Gap (pp)
Border formal share	13.4	16.5	+3.1
Border informal share	63.4	57.5	-5.9
Border non-employment share	23.2	26.0	+2.8
City formal share	24.0	25.7	+1.7
City informal share	52.6	48.9	-3.7
City non-employment share	23.4	25.4	+2.0

Note: Shares are per cent of the corresponding regional working-age population. These aggregate shares are diagnostic rather than directly targeted moments.

The model reproduces the broad three-way split between formal employment, informal sector employment, and non-employment with gaps of two to three percentage points across most cells. The border formal share is overstated by 3.1 percentage points relative to LFS, driven primarily by over-allocation of workers to formal services in the border region, a consequence of the thin (H_C, B) cell discussed in Section 4.1. The city region fits more closely, with gaps below two percentage points in all three margins. These diagnostics confirm that the model provides a coherent pre-shock benchmark for simulation, while the share deviations are a reminder that counterfactual magnitudes should be read as directional rather than precise. Solved baseline employment headcounts by sector and region are reported in Appendix C for reference.

Returnee Wedge Estimation

The returnee identity wedge is calibrated after fixing the incumbent baseline. The returnee sample is drawn from the LFS 2025 international migration module and includes individuals who previously lived abroad, had Thailand as the most recent destination, and returned in or after

May 2025. Because this sample is thin, the current wedge is estimated as sectoral, skill-blind, and region-blind. Non-employment is the anchor option and agro-industry is normalised to zero as the transferability anchor. Because the agro-industry returnee cell is a singleton, this should be read as a normalization rather than as a separately estimated advantage. The outside-option and informal-sector wedges are set to zero, so informal sector employment and non-employment responses arise through equilibrium reallocation rather than direct returnee-specific penalties.

Table 3 reports the calibrated values. The negative construction wedge ($\Delta_{H_C}^R = -0.54\text{M KHR/year}$) implies a relative access advantage for returnees in construction. The positive services wedge ($\Delta_{H_S}^R = +1.55\text{M KHR/year}$) implies a stronger returnee access barrier in services. The manufacturing wedge is small and positive ($\Delta_{H_M}^R = +0.20\text{M KHR/year}$). These wedges summarise returnee-specific access differences, potentially reflecting skill transferability, information, networks, location, or employer-side barriers, without separately identifying each channel.¹⁰

► **Table 3. LFS-calibrated returnee identity wedges Δ_j^R**

Sector	Returnee share (%)	Incumbent share (%)	Δ_j^R	90% CI
H_A	0.35	1.33	0.000	Anchor
H_C	2.24	0.53	-0.542	[-1.107, -0.207]
H_M	9.01	9.72	0.201	[-0.817, 1.018]
H_S	2.30	7.49	1.547	[0.974, 1.899]

Note: Wedges are in M KHR/year. Returnee and incumbent shares are unconditional formal-sector choice shares and therefore do not sum to 100 per cent. Confidence intervals are bootstrap intervals from the returnee subsample.

The negative construction wedge implies relatively easier access for returnees in construction. The services wedge is positive and large, indicating a substantial access barrier. Manufacturing is close to neutral. These wedges are access costs, not productivity losses. The estimates should be interpreted with caution because they are calibrated to a thin LFS returnee sample; the sign pattern is the more stable feature, while precise magnitudes should be updated as dedicated returnee survey weights become available.

¹⁰ One further confound is worth flagging: because returnees are, by construction, also the entire new or marginal cohort in this shock, a queue-rationing effect – newcomers losing out to already-filled positions – could in principle generate the same reduced-form signature as a genuine identity friction. Current data cannot rule this out; disentangling the two would require a comparison group of non-returnee new labour-market entrants, which the LFS module does not provide.

► 5 Simulation Results

The shock is modelled as an inflow of 910,000 workers, a round-number central estimate consistent with the 820,000–950,000 range reported in the literature (MLVT, 2025; CDRI, 2025), of whom approximately five per cent are classified as skilled, consistent with the educational profile documented in Section 1.1. The simulations are designed to separate two distinct channels through which the returnee inflow affects the labour market, each with different policy implications. The first is the **labour-supply effect**: the impact of a sudden large increase in the working-age population, assuming returnees identical to domestic workers in all respects. This channel captures congestion: wage compression, displacement into informality, and reduced formal employment shares that would occur regardless of who the returnees are. The second is the **identity-wedge effect**: the additional impact arising from returnee-specific access frictions, namely credential non-recognition, network loss, and the mismatch between Thai work experience and domestic employer requirements. This channel determines whether returnees, beyond simply adding to labour supply, face systematically worse integration outcomes than comparable domestic workers. Distinguishing the two matters for policy: the labour-supply effect calls for interventions that expand formal sector hiring capacity, while the identity-wedge effect calls for measures that reduce returnee-specific barriers, such as recognition of prior learning.

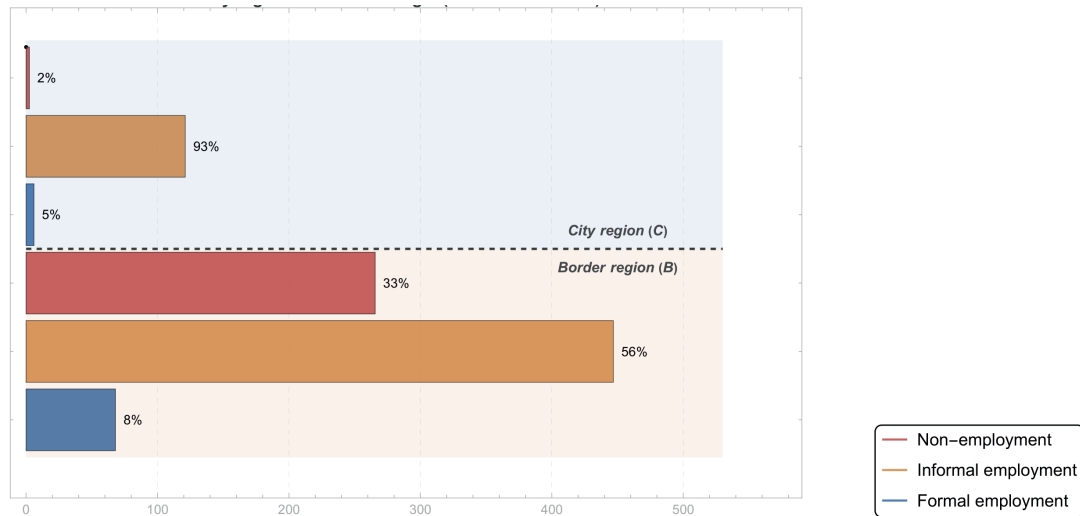
Three experiments operationalise this decomposition. The pre-shock baseline describes the economy before the returnee inflow. The post-shock no-identity experiment adds the labour supply shock while treating returnees as otherwise comparable to domestic workers. The post-shock with-identity experiment keeps the shock fixed but adds the LFS-calibrated identity wedge. The labour-supply effect is the difference between the second and first experiments; the identity-wedge effect is the difference between the third and second.

The results that follow should be read as a structural counterfactual: they describe how the labour market would absorb the returnee inflow given the economy's demand-side capacity and returnees' LFS-observed characteristics, in the absence of additional job-placement or matching support. Administrative and survey-based accounts of post-shock absorption, including MLVT's own monitoring, draw on returnees who engaged with government employment services (Section 6.1 discusses specific MLVT interventions already operating through this channel). While such accounts report higher formal absorption than the baseline simulation, this is consistent with rather than contradictory to the model: it suggests the scale of impact that active matching and placement support can have, which is precisely what the policy simulation agenda in Section 6.2 is designed to quantify.

Absorption of the Returnee Shock

The main finding is clear: the returnee shock is absorbed primarily in the border labour market, and primarily through informal sector employment and non-employment rather than formal job creation. Figure 1 shows employment changes by broad margin and region.¹¹

¹¹ The identity-wedge effect is omitted from this figure. At the scale of the labour-supply effect, which ranges up to 447,000 workers, the identity-wedge effect, which affects at most 15,000 workers in any single cell, is not visible at this scale. The compositional reallocation driven by the identity wedge is the subject of Figure 2.

► **Figure 1. Labour-supply effect: change in employment by region and broad margin (thousand workers).**

Percentage labels show each margin's share of total regional absorption. Border region = *B*; city/inland region = *C*. Source: LFS-based simulation results.

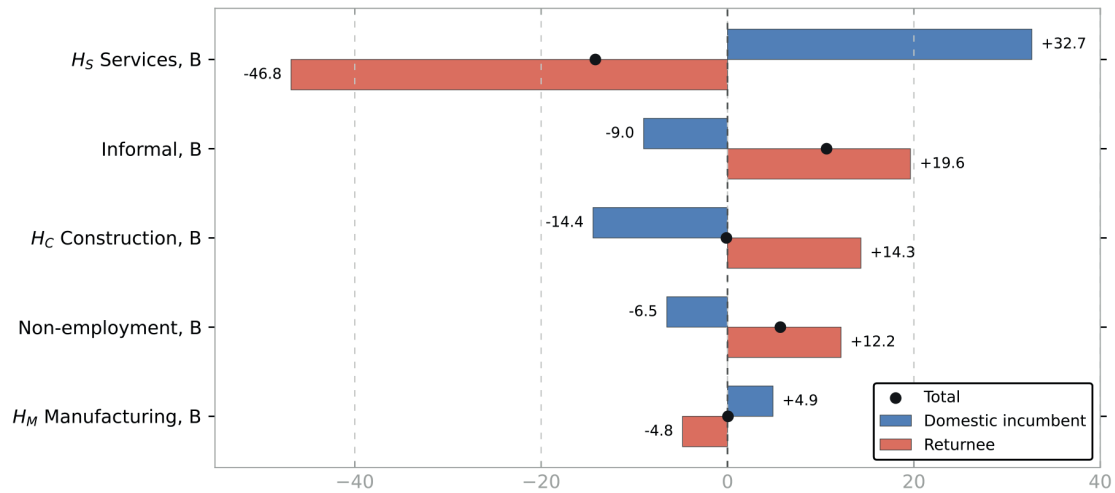
In the border region, informal sector employment rises by 446,800 workers and non-employment by 265,600, compared with only 68,000 additional formal jobs. Despite the level increase in formal jobs, the formal employment share in the border region falls, from 16.5 to 15.1 per cent, because informal sector employment and non-employment expand by far larger amounts.

The city region absorbs a smaller but policy-relevant share of the shock, as the upper panel of Figure 1 shows. Informal sector employment rises by 121,100 workers and formal employment by 6,000, while non-employment increases by 2,500. These numbers are modest relative to the border, but they are not negligible: 121,100 additional workers absorbed into urban informality represents a meaningful allocation toward less secure, lower-protection jobs relative to the formal alternative in a labour market where formal employment capacity is larger but not unlimited. The spatial logic of the model, where high mobility costs $\tau_{B \rightarrow C}$ limit cross-regional reallocation, means the city absorbs the shock not as a sudden influx but as a diffuse pressure operating through the informal sector. Urban informal earnings fall slightly, while aggregate city consumption remains broadly stable across the relevant scenarios.

Across both regions, informal sector employment and non-employment together account for over 90 per cent of total absorption, while the four formal sectors combined absorb less than 10 per cent. This pattern is a direct expression of the Lewis mechanism: when formal sector capacity is limited by demand conditions, informal sector employment serves as the residual absorber. Formal sector absorption is present but limited and uneven: services and manufacturing account for the bulk of formal job gains, while construction and agro-industry change very little.

Returnee Integration and the Identity Wedge

The absorption results describe where workers end up in aggregate. They do not reveal whether returnees and domestic incumbents access the same jobs. To isolate this channel, Figure 2 compares the post-shock equilibrium with the identity wedge to the post-shock no-identity equilibrium, holding the 910,000 returnee inflow, skill composition, location, and demand environment fixed. It therefore reports the identity-wedge effect only, not the broader labour-supply effect.

► **Figure 2. Identity-wedge effect by worker identity and destination state (thousand workers).**

Values are post-shock with-identity minus post-shock no-identity, holding population and demand fixed. The full sector-region decomposition is reported in Appendix D. Source: LFS-based simulation results.

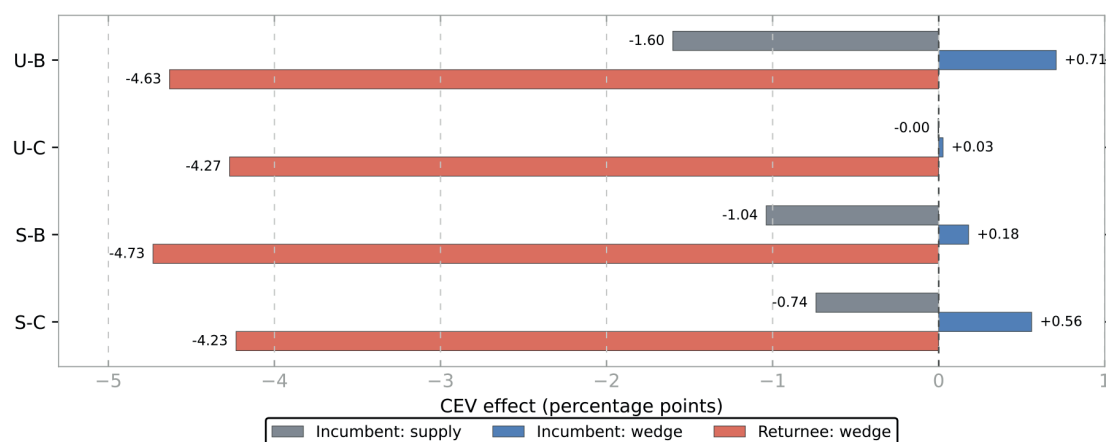
The figure shows that the wedge primarily changes who occupies employment states. In border services, returnees lose 46,800 positions while incumbents gain 32,700. The positive services wedge therefore excludes returnees from the main formal destination rather than reducing services employment one-for-one. In border construction, the negative construction wedge works in the opposite direction: returnees gain 14,300 positions while incumbents lose 14,400, leaving aggregate construction employment almost unchanged.

The displaced returnees are redirected mainly into informal sector employment and non-employment. In the border region, returnee informal sector employment rises by 19,600 and returnee non-employment rises by 12,200, while incumbents move in the opposite direction on both margins. These offsetting movements explain why aggregate employment statistics understate the identity wedge: the wedge is not primarily an aggregate job-loss mechanism, but an identity-composition mechanism. This distinction matters for the welfare analysis in Section 5.3, because a small aggregate employment effect can still generate sizeable returnee welfare losses.

Welfare Incidence

The allocation changes translate into welfare effects through the same counterfactual sequence used above. Figure 3 therefore separates the welfare effect of the returnee inflow from the additional welfare effect of the identity wedge. For incumbents, the labour-supply effect compares the pre-shock baseline with the post-shock no-identity equilibrium, while the identity-wedge effect compares the post-shock no-identity equilibrium with the post-shock with-identity equilibrium. For returnees, only the identity-wedge effect is defined, because returnees do not exist in the pre-shock baseline.

► Figure 3. Per-worker CEV effects by channel and identity (percentage points).



Incumbent supply effect = pre-shock baseline to post-shock no-identity; incumbent wedge effect = post-shock no-identity to post-shock with-identity; returnee wedge effect = post-shock no-identity to post-shock with-identity. Bars are not additive across identities; they report per-worker effects for different reference populations. Worker type notation: skill (U = unskilled, S = skilled) and home region (B = border, C = city). Source: LFS-based simulation results.

The comparison clarifies the scale of the two mechanisms. The labour-supply shock lowers incumbent welfare modestly, with losses of 1.60 per cent for unskilled border incumbents, 1.04 per cent for skilled border incumbents, 0.74 per cent for skilled city incumbents, and almost no effect for unskilled city incumbents. The identity wedge has a much smaller and mostly positive welfare effect for incumbents, ranging from 0.03 to 0.71 per cent. This follows directly from the reallocation documented in Figure 2: because incumbents pick up much of the formal employment that returnees lose access to, their welfare rises slightly rather than falls.

For returnees, the same identity-wedge comparison generates much larger welfare losses: 4.23 to 4.73 per cent across skill and home-region groups. This is the welfare counterpart of the allocation pattern in Section 5.2. The wedge does not mainly reduce aggregate employment; it reallocates access to employment states, pushing returnees away from formal services and into informal sector employment and non-employment. The welfare cost is therefore driven primarily by where returnees end up, rather than by a general deterioration in formal wages.

This decomposition also sharpens the policy implication. Policies that address only the labour-supply channel can reduce aggregate pressure, but they need not close the returnee welfare gap if identity-specific access frictions remain. Conversely, recognition, credential validation, matching support, and other measures that reduce the identity wedge are targeted at the channel that generates the large returnee welfare losses in Figure 3. These themes are developed in Section 6.

► 6 Policy Implications and Research Priorities

What the model implies for policy design

The simulation results point to two complementary classes of intervention, each targeting a distinct channel of the income and employment gap documented in Section 5. The labour-supply effect, over ninety per cent of the returnee inflow absorbed into informal sector employment and non-employment, calls for policies that expand the economy's capacity to absorb the shock into formal employment — mainly demand-side measures, since access-easing alone cannot create formal jobs that do not yet exist. The identity-wedge effect, a further compositional shift against returnees that leaves aggregate employment totals largely unchanged but generates consumption-equivalent welfare losses of four to five per cent relative to the no-identity post-shock allocation, calls for policies that reduce returnee-specific frictions directly. The welfare incidence results are explicit on this point: a policy that expands formal job supply without removing identity-specific barriers will benefit incumbents disproportionately, leaving returnees concentrated in informality. This incumbent-favouring pattern plausibly reflects network effects, referral hiring through existing domestic labour-market ties, at least as much as skill or credential recognition: returnees have lost exactly these networks while abroad (Section 2), which is why an expansion in the number of formal jobs available does not translate automatically into proportional access for returnees, and why credential recognition alone should not be expected to fully close the gap.

Recognition of prior learning and credential reform. The calibrated identity wedge identifies services as the single largest source of returnee-specific exclusion ($\Delta_{HS}^R = +1.55\text{M KHR/year}$), while the construction wedge is already negative: Thai construction experience generates a relative access advantage, not a barrier. This asymmetry has a direct policy implication: recognition of prior learning (RPL) programmes should prioritise the sectors where the gap is largest, namely services and manufacturing, rather than construction where informal transferability is already rewarded. In the model, an RPL intervention that moves Δ_{HS}^R toward zero reduces formal entry costs for returnees in services, shifting their allocation away from informality: the mechanism by which the identity wedge was shown to operate as a compositional rather than aggregate force. This reading treats Δ_{HS}^R as a nameable, credential-recognition-type friction; as noted in Section 4.3, to the extent the wedge also blends in other unobserved determinants of realised formal employment, an RPL intervention narrows the services gap by less than the full Δ_{HS}^R would suggest.

Skills development and bridging training. RPL addresses the recognition of skills already held; skills development addresses the gap where those skills are genuinely insufficient. The bimodal absorption pattern in Table 10 is instructive: among skilled returnees roughly half secured formal employment, almost entirely in services; among unskilled returnees, over ninety per cent of the inflow, only one in eight did. This disparity reflects differences in skill-specific effective entry costs and wage opportunities rather than an absolute shortage of formal jobs. Targeted short-cycle vocational training and skills-bridging programmes that raise the effective skill composition of the returnee population correspond in the model to a partial reclassification from unskilled to skilled, changing the relevant wage and entry-cost schedule for affected workers. As with recognition of prior learning, this reading treats the $K_{j,r}^U \rightarrow K_{j,r}^S$ reclassification as a genuine reduction in skill-specific access costs; to the extent $K_{j,r}^a$ also blends in other unobserved determinants of realised formal employment (Section 3.2), the simulated employment gain from skills upgrading should be read as an upper bound on what training alone would deliver. RPL and skills development are

complementary: RPL provides immediate access relief for workers whose skills are already market-relevant; skills development extends that relief to workers whose skills require upgrading. Both connect directly to MLVT's existing vocational training infrastructure and the national TVET qualification framework under development.

A caveat applies to both instruments. RPL and skills development are designed with wage employment in mind, and their benefit is correspondingly weaker for returnees who end up in own-account or self-employed work within the informal sector rather than as employees of informal firms. The present calibration does not separately identify the wage-employed from the own-account share of informal absorption, so the extent of this limitation cannot yet be quantified; to the degree that own-account and self-employment account for a meaningful part of informal absorption, however, it would weaken the reach of skill-recognition-based instruments for those workers, and credit and microfinance access would be a natural complementary instrument, supporting capital investment in the small-scale, self-employed activity many returnees fall back on.

Mobility support and spatial reintegration. The mobility cost τ_{BC} is calibrated at approximately nine million KHR per year, roughly seven months of average unskilled formal earnings, while the non-border region has substantially higher formal employment shares. The model's spatial logic implies that reducing τ_{BC} through relocation grants or transport subsidies would redirect a share of the returnee inflow toward the city's larger formal labour market, partially relieving congestion in the border economy. This is a transitional rather than structural instrument, most effective when combined with RPL and skills development, since workers who have cleared the credential barrier are those most likely to convert a mobility subsidy into a formal job rather than informal sector employment in the city.

Existing interventions already operating through the model's access-cost channel. MLVT has already launched several measures that map directly onto the entry-cost object $K_{j,r}^a$ in the model rather than requiring new instruments. The 1297 hotline matches returnees to formal vacancies, directly reducing the search and matching frictions summarised in $K_{j,r}^a$. Issuing national identity documents to returnees who lack them removes a literal registration barrier to formal employment. Employer and factory partnerships reduce information frictions on both sides of the match, and commune-level job fairs together with provincial department outreach bring formal-sector access closer to where returnees already live, softening, in effect, the mobility cost τ_{BC} for the portion of the inflow these programmes reach, without requiring relocation to the city. This offers a plausible account of the gap discussed in Section 5 between the model's no-policy structural baseline and administrative reports of higher realised formal absorption: rather than a shortcoming of the calibration, the gap is consistent with these interventions already lowering $K_{j,r}^a$ in practice for returnees they reach. It also constitutes an early, if informal, validation of the model's central comparative static, namely that formal absorption responds to access costs, using a real intervention rather than a simulated one. Formally estimating the size of this effect, once hotline and job-fair participation can be linked to individual outcomes, is a natural candidate for the policy simulation agenda in Section 6.2 and the expanded survey effort described in Section 6.4.

Labour income protection and social transfers. Non-employment absorbs approximately 265,600 additional workers in the border region following the shock. However, the case for income support is not limited to the non-employed: the large majority of returnees are absorbed into informal sector employment, where earnings are anchored near the subsistence floor $\bar{w}$, and provide limited protection against household income shortfalls. Targeted transfers to both non-employed and informally employed returnees, through cash assistance, in-kind support, or wage subsidies targeted at informal workers, raise the effective income floor and sustain local consumption demand. In the model, raising b_θ^a or $\bar{w}$, activates the income multiplier embedded in the

demand-driven closure: higher household income raises consumption, which raises effective demand $D_{j,B}$, and through the endogenous output-to-labour ratio raises wages in the border economy, partially offsetting the initial compression. Social transfers are therefore not only a distributional instrument but a macroeconomic stabiliser. A statutory minimum income or earnings subsidy directed at informal-sector workers operates through the same channel, affecting $\bar{w}$, in equation (7), with the additional benefit of narrowing the formal-informal earnings gap that keeps many workers on the wrong side of the entry cost barrier.

Demand expansion. The simulation results establish that the formal employment share in the border region falls after the shock, from 16.5 to 15.1 per cent, even as formal employment rises in levels, because informal sector employment and non-employment expand by far larger amounts. No combination of credential reform, mobility support, and social transfers can reverse this dynamic if formal sector capacity in the border region remains structurally limited: reducing entry costs shifts workers across the formal-informal margin only if formal jobs exist to move into. The model makes this constraint visible through the output-to-labour ratio $\xi_{j,B}$: when demand $D_{j,B}$ is low relative to employment, $\xi_{j,B}$ falls, wages compress, and the logit redirects workers toward informality regardless of entry cost reductions. Raising $D_{j,B}$ through targeted public investment in border infrastructure, agro-processing, or construction, including labour-intensive public works programmes as a direct and rapidly deployable form of such investment, raises $\xi_{j,B}$, raises wages, and expands the formal employment pool that access-side policies can then fill. This effect is quantifiable within the present framework precisely because output is demand-driven: public and infrastructure investment enter as a component of aggregate demand $D_{j,B}$ (Section 2), rather than as a supply-side production input. This is a *jobs-expansion* policy in the sense used throughout this section: it enlarges the pool of formal positions available.

Enterprise formalisation. Enterprise formalisation is a distinct, complementary firm-side channel and is better kept separate from demand expansion rather than bucketed with it: registering an informal firm does not by itself create additional formal jobs. It is more accurately described as a *jobs-quality* policy than a *jobs-expansion* one, since its primary benefit is extending labour and social protection to workers who already hold a job, rather than enlarging formal-sector labour demand. Over seventy per cent of SMEs operate informally and have been hesitant to expand hiring or offer formal contracts under current uncertainty (MLVT, 2026). Incentives that lower the cost of formal registration and employment contracting shift the effective demand for formal labour upward, while simultaneously improving job quality for returnees and incumbents alike, and are worth pursuing on those job-quality grounds even where they do not directly expand the pool of formal jobs. Demand expansion and enterprise formalisation are therefore complementary rather than substitutable interventions targeting different margins: without demand expansion, the employment gains from RPL, skills development, and mobility support are bounded by a formal sector that remains too small relative to the inflow; without enterprise formalisation, an expanding formal jobs pool does not on its own translate into improved labour and social protection coverage for the workers who fill it.

Research priorities: policy simulation

A distinctive feature of the framework developed in this paper is that each policy prescription above corresponds to an explicit model object: RPL maps to Δ_j^R , skills development to worker reclassification across the K^U – K^S margin, mobility support to τ_{BC} , social transfers to b_f^a and $\bar{w}$, and demand expansion to the components of $D_{j,B}$. This means policy discussions need not remain at the level of general recommendations: the model can translate each intervention into quantitative predictions for employment composition, wages, and household income, and rank

alternative interventions under an explicit budget constraint. The immediate priority is to run five policy scenarios through the full framework: formal access support in services, interpreted broadly as RPL, credential validation, matching, and network support (S1); returnee mobility support reducing the broad cross-region mobility barrier (S2); border services demand expansion through procurement, public works, or related demand-support instruments (S3); a formal-employment conditional transfer that raises the payoff to formal work for returnees without making non-employment more attractive (S4); and a combined package pairing the formal-employment transfer with border services demand support (S5). The demand-driven closure is essential for this exercise: it captures how public investment in the border economy propagates through the income multiplier into wages and consumption, a transmission that determines the relative effectiveness of demand expansion versus access-side interventions and that a supply-side framework cannot replicate.

Research priorities: household microsimulation

The present framework produces aggregate employment headcounts and wages but cannot by itself identify which households bear the adjustment costs. The household microsimulation (MSM) provides this distributional detail through a two-stage macro-micro bridge. In the first stage, equilibrium wages and employment totals from the present framework are passed to the MSM, which assigns each individual in the LFS 2025 microdata to a sector and region via Monte Carlo draws from the logit probabilities. In the second stage, household net income is computed by aggregating earnings across all members, and poverty headcount (P_0) and the Gini coefficient are measured, decomposed by region, identity (returnee versus domestic), skill, and household structure, including female-headed and single-earner households. This decomposition provides the targeting map that programme design requires: aggregate income changes mask the fact that returnee households, single-earner households, and female-headed households in the border region are likely to bear disproportionate shares of the adjustment. Once a policy scenario is re-solved through the present framework, updated wages and employment totals pass directly to the MSM for household-level re-computation, so the cost-effectiveness comparison across S1–S5 is available both in aggregate employment and income terms and in poverty and inequality terms simultaneously.

The MSM stage is also the natural place to introduce a gender dimension that the present macro framework abstracts from. Occupational sex segregation means that the reallocation of workers across sectors and employment states implied by the shock is unlikely to fall evenly across men and women; a sex-differentiated extension of the MSM assignment step, drawing on LFS 2025 occupational and sectoral composition by sex, is planned to capture this margin and to feed into the female-headed-household decomposition already described above.

Data priorities

The most important data priority is a larger weighted returnee sample that records timing of return, destination country, prior occupation, skills acquired abroad, current job search, and current employment outcomes. The LFS international migration module is sufficient to construct a preliminary sectoral access wedge, but it is too thin to support separate wedges by skill, region, and detailed occupation. Future survey rounds or linked administrative data from employment-service registration would allow the returnee wedge to be estimated at a finer level while preserving the population consistency of the baseline.

In parallel with expanding any single survey, we are also exploring techniques to integrate multiple existing survey sources on returnees, including the LFS international migration module, the MLVT rapid assessment, the CDRI rapid policy note, and the IOM displacement tracking survey, so as to construct a fuller and more representative picture of the returnee population than any one source can support on its own. Each of these surveys covers a different slice of the returnee population with different sampling frames and weighting schemes; data fusion or statistical matching methods that combine them, rather than treating each as a stand-alone qualitative input, could substantially increase the effective sample available for wedge estimation while better representing the diversity of returnee experiences across sectors, regions, and skill levels.

► Conclusion

This paper has developed a demand-driven spatial labour market model to analyse the 2025 mass return migration shock in Cambodia, combining Harris-Todaro migration dynamics, a Lewis informality margin, and a structuralist macroeconomic closure calibrated to various micro and macro country data. The simulation results establish two central findings. The returnee shock is absorbed overwhelmingly through informal sector employment and non-employment in the border economy, with formal employment shares falling despite absolute gains in formal headcounts. And returnees face identity-specific access frictions, concentrated in services, that generate consumption-equivalent welfare losses of four to five per cent relative to the no-identity post-shock allocation without generating a detectable aggregate employment effect. Because each friction maps to an explicit model object, policy interventions need not be evaluated in general terms: the framework can translate RPL, skills development, mobility support, social transfers, and demand expansion into quantitative predictions for employment composition, wages, and household income, and rank them under an explicit budget constraint. Completing the policy simulation and household microsimulation stages, and expanding the returnee sample to sharpen the identity wedge estimates, are the immediate next steps.

The broader implication is equally clear. In absence of any policy intervention, hundreds of thousands of returnees would be concentrated in informal sector employment and non-employment, facing access barriers that aggregate employment statistics cannot detect. While the shock is most acute in border provinces, the city region is not insulated: spillovers through informal sector employment and the spatial reallocation of workers mean that reintegration policy cannot be designed for the border alone. Demand expansion, enterprise formalisation, credential reform, skills development, mobility support, and social transfers are complementary rather than substitutable, and their relative effectiveness varies by region in ways that only a spatially explicit framework can resolve. The present model is designed to support that policy process: not as a description of the shock, but as a practical simulation tool for the decisions that will determine the plausible long-term consequences of the shock for workers and their households.

Annex

A: Notation Summary

► Table 4. Key notation

Symbol	Definition
B, C	Border / inland urban region
$a \in \{U, S\}$	Skill: unskilled / skilled
$h \in \{B, C\}$	Home region
$d \in \{D, R\}$	Identity: domestic / returnee
$K_{j,r}^a$	Baseline formal-sector entry cost
Δ_j^R	Sectoral returnee identity wedge
$K_{j,r}^{a,d}$	Total entry cost, worker (a,d), sector j, region r
$w_{j,r}^a$	Formal wage, skill a, sector j, region r
$\mu_{j,r}$	Formal wage shifter
$\xi_{j,r}$	Output-to-labour ratio (endogenous)
$\tau_{h \rightarrow r}$	Mobility cost from home h to work region r
σ	Logit dispersion parameter
P_0	Poverty headcount ratio

B: Calibration Parameter Tables

► Table 5. Entry costs $K_{j,r}^a$ by skill, sector, and region (M KHR/year, $\sigma=1.0$)

Sector	Unskilled (a=U)		Skilled (a=S)	
	Border (B)	City (C)	Border (B)	City (C)
H_A Agro-industry	9.34	12.91	14.66	20.81
H_C Construction	13.89	17.27	22.23	26.60
H_M Manufacturing	12.17	10.18	19.33	20.67
H_S Services	11.46	13.30	1.16	1.32

Note: Values are skill-specific effective entry costs calibrated from LFS 2025 conditional choice shares with $\sigma = 1.0$. They summarise certification, search, matching, network, and access frictions and should not be interpreted as a base cost plus an unskilled penalty.

► **Table 6. Formal wage shifter $\mu_{j,r}$, output-to-labour elasticity α_j and log skill premium η_{sj}**

Sector	Wage shifter $\mu_{j,r}$		Elasticity		Skill premium
	$\mu_{j,B}$	$\mu_{j,C}$	α_j	η_{sj}	Wage premium
H _A Agro-industry	58.47	112.34	0.59	0.45	+57%
H _C Construction	138.16	120.83	0.65	0.48	+62%
H _M Manufacturing	122.74	157.56	0.65	0.44	+55%
H _S Services	1386.16	1142.96	0.55	0.31	+36%
Informal L		–	0.115		–

Note: $\mu_{j,r}$ enters the formal wage rule $w_{j,r}^U = \mu_{j,r} \varepsilon_j^{\alpha_j}$. Its numerical scale depends on the units used for annual wages and output-to-labour ratios. Formal α_j are estimated from EC 2022 where feasible; the baseline imposes $\alpha_{H_C} = \alpha_{H_M}$ because the valid construction cell is too small. Skill premia come from sector-by-sector Mincer regressions on LFS 2025.

► **Table 7. Outside-option income b_r^a and mobility cost τ_{BC}**

Parameter	Value (M KHR/year)	Source
b_B^U (unskilled, border)	6.71	CSES 2023
b_C^U (unskilled, city)	7.10	CSES 2023
b_B^S (skilled, border)	10.62	CSES 2023
b_C^S (skilled, city)	10.75	CSES 2023
τ_{BC} (mobility cost)	9.00	External anchor

Note: b_r^a estimated from CSES 2023 household consumption data by skill-region cell. $\tau_{BC} = 9.0$ M KHR/year ≈ 7 months of average unskilled formal earnings; symmetric $\tau_{B \rightarrow C} = \tau_{C \rightarrow B}$. See [Caliendo et al. \(2019\)](#) and [Bryan et al. \(2014\)](#) for literature anchors on internal migration costs.

C: Baseline Fit Diagnostics

Aggregate employment shares are reported in Table 2 in the main text. The tables below report the targeted wage fit and solved baseline employment headcounts for reference.

► **Table 8. Targeted wage fit: model vs. LFS 2025**

Sector/state	Region	LFS	Model	Gap (%)
H _A formal unskilled	B	9.49	9.49	0.00
H _A formal unskilled	C	13.40	13.40	-0.00
H _C formal unskilled	B	14.05	14.04	-0.10
H _C formal unskilled	C	17.43	17.43	0.00
H _M formal unskilled	B	12.98	12.98	0.00
H _M formal unskilled	C	13.91	13.91	-0.00
H _S formal unskilled	B	13.70	13.70	0.00
H _S formal unskilled	C	15.57	15.57	-0.00
Informal earnings	B	10.83	10.83	-0.03
Informal earnings	C	12.49	12.49	0.01

Note: Wage units are M KHR/year. Gaps are model relative to data. These wage moments are targeted by the calibration.

► Table 9. Solved baseline employment by region and state

State	Border B	City C	Total
H _A Agro-industry	21.5	162.1	183.6
H _C Construction	18.4	71.3	89.7
H _M Manufacturing	108.6	1,214.5	1,323.1
H _S Services	447.4	991.3	1,438.7
L Informal	2,079.3	4,645.4	6,724.7
U Non-employment	939.8	2,418.0	3,357.9

Note: Units are thousand workers. Formal-sector entries sum over unskilled and skilled employment.

D: Simulation Results: Supporting Tables

► Table 10. Skill-disaggregated absorption of returnee shock (thousand workers, labour-supply effect)

Destination state	Skilled returnees (45,500)		Unskilled returnees (864,500)	
	(k)	share	(k)	share
Formal services	22.7	50%	69.7	8%
Formal manufacturing	0.6	1%	27.1	3%
Formal construction	0.3	1%	3.6	<1%
Formal agro-industry	0.2	<1%	5.1	1%
Formal total	23.8	52%	105.5	12%
Informal sector employment	11.6	25%	516.9	60%
Non-employment	10.0	22%	242.1	28%

Note: Post-shock no-identity experiment minus pre-shock baseline. Shares are percentage of the respective skill group's returnee population. Components may not sum exactly to skill totals because of rounding.

► **Table 11. Incumbent-returnee decomposition of the identity-wedge effect (thousand workers)**

State	Region	Incumbent effect	Returnee effect	Total wedge effect
Agro-industry	B	-0.28	+0.22	-0.07
Agro-industry	C	-0.07	+0.00	-0.07
Construction	B	-14.43	+14.31	-0.12
Construction	C	-0.03	+0.00	-0.03
Manufacturing	B	+4.88	-4.83	+0.05
Manufacturing	C	-0.32	+0.00	-0.32
Services	B	+32.66	-46.84	-14.18
Services	C	+0.18	-0.87	-0.69
Informal emp.	B	-9.00	+19.63	+10.63
Informal emp.	C	-5.79	+6.14	+0.35
Non-employment	B	-6.51	+12.18	+5.67
Non-employment	C	-1.29	+0.07	-1.22

Note: Identity-wedge effect = post-shock with-identity minus post-shock no-identity. Positive values indicate employment gains; negative values indicate losses. Incumbent and returnee effects sum to the total by construction.

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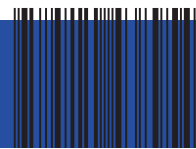
Contact details

Research Department (RESEARCH)

International Labour Organization
Route des Morillons 4
1211 Geneva 22
Switzerland
T +41 22 799 6530
research@ilo.org
www.ilo.org/research



I S B N 9789220438954



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