

Brain-Drain Phobia, Brain Circulation and Professional Emigration

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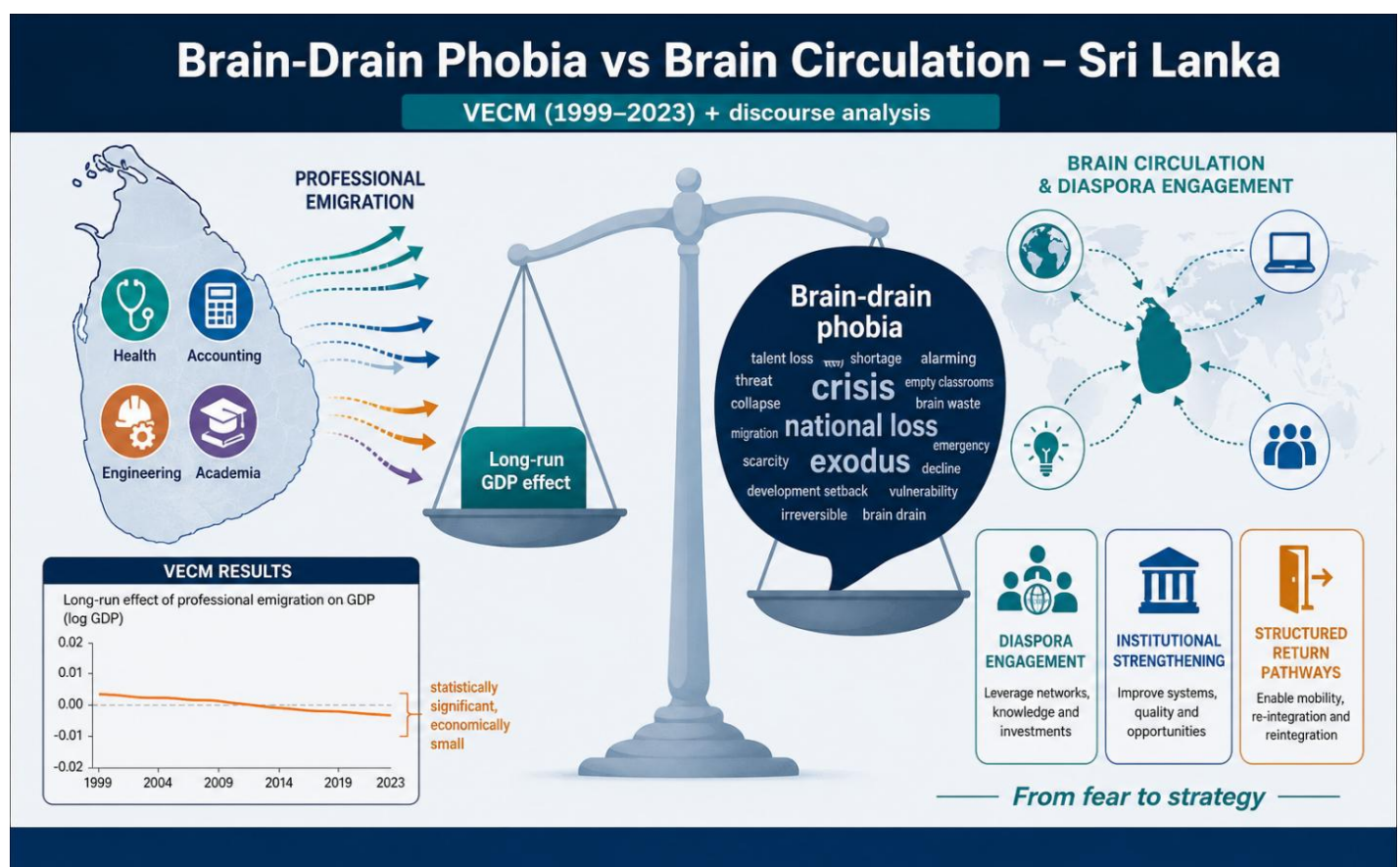
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ABSTRACT

Professional brain drain—the large-scale emigration of skilled workers—poses a complex development challenge for countries that fund professional training yet receive diminishing returns. This study is the first for Sri Lanka to jointly model cross-sectoral professional migration using time-series econometrics and to analyse how institutional discourse frames brain drain as a policy problem. Using a Vector Error Correction Model on annual data (1999–2023) for health, accounting, engineering, and academia, supplemented by Policy discourse analysis of institutional reports and media, it finds that professional emigration is statistically significantly and negatively associated with long-run GDP growth, but with small economic effects; the largest impact arises for university academics, and only accountants show a significant short-run effect. Lacking professional-specific remittance data, the dampening mechanisms remain inconclusive. Discourse analysis reveals pervasive *brain-drain phobia*, obscuring *brain circulation* and strategic skill export, and points to the need for diaspora engagement, institutional strengthening, and structured return pathways.

Keywords: Brain-drain phobia; brain circulation; skill export; professional emigration; economic growth; human capital; VECM.

Graphical Abstract



INTRODUCTION

Brain-drain, defined as the large-scale emigration of skilled and educated individuals, has long been a central concern within development studies. For countries such as Sri Lanka, where the state bears a substantial share of the cost of tertiary education and economic uncertainty persists, the outward migration of professionals in medicine, engineering, accounting, academia, and more recently, information technology, presents a complex dilemma. On the one hand, professional emigration reduces the domestic stock of human capital; on the other, it generates remittance inflows that support macroeconomic stability. This inherent tension between loss and gain renders the Sri Lankan experience particularly salient, especially against the backdrop of the country's recent political instability and economic crisis. Alongside these empirical questions, this study introduces and operationalises the concept of *brain-drain phobia*, defined as the systematic tendency in institutional and public discourse to frame professional emigration exclusively as national loss, thereby foreclosing policy engagement with brain circulation, diaspora engagement, and strategic skill export as viable development alternatives (Eaton, 2023). This discursive framing is shown to be as consequential as the economic phenomenon itself in shaping Sri Lanka's migration policy environment.

Historically, Sri Lanka has depended heavily on remittances from unskilled and semi-skilled workers employed in the Middle East. While these flows remain important, the past two decades have witnessed an unprecedented rise in the emigration of skilled professionals. Data published by the Sri Lanka Bureau of Foreign Employment (SLBFE) and the Central Bank of Sri Lanka indicate that in 2023 alone, nearly 300,000 Sri Lankans migrated for overseas employment, with more than two-thirds classified as skilled workers or professionals. This translates to over 20,000 departures per month, a scale previously unseen in the country's migration history. The increasing outflow of doctors, nurses, engineers, accountants, university lecturers, and other professionals reflects not only a quantitative escalation but also a qualitative transformation in Sri Lanka's human capital base.

The distribution of emigration across professions highlights the depth of the challenge. In the health sector, successive cohorts of medical graduates and experienced specialists have migrated to high-income countries, further weakening an already strained public healthcare system. In engineering, destinations such as the Middle East, Australia, Canada and New Zealand continue to attract professionals in civil, mechanical, and IT-related fields, despite substantial public investment in technical and tertiary education. The accounting profession has similarly experienced significant outward mobility, driven by political uncertainty, limited career advancement opportunities, and weak regulatory frameworks. Meanwhile, academia has been adversely affected by the migration of researchers and lecturers pursuing doctoral training and permanent appointments abroad, resulting in lower research output and diminished international competitiveness. Collectively, these patterns indicate that Sri Lanka's brain-drain is not confined to a single profession but represents a system-wide challenge affecting multiple pillars of the knowledge economy.

From an economic perspective, professional emigration generates both benefits and costs. Remittances have remained a crucial stabilising force, with migrant workers sending nearly USD 6 billion to Sri Lanka in 2023, thereby supporting the balance of payments and easing foreign exchange shortages. However, these gains are offset by longer-term losses associated with reduced innovation capacity, declining service quality, and a shrinking pool of skilled labour necessary for sustained development. The issue is further compounded by the country's commitment to free tertiary education, as individuals trained at public expense frequently deploy their skills and productivity abroad rather than contributing domestically. This dynamic raises persistent concerns regarding fiscal sustainability and equity in public investment in education.

Beyond economic outcomes, the consequences of brain-drain extend deeply into the social and institutional fabric of the country (Labonté et al., 2015). In healthcare, declining human resource capacity has led to longer waiting times, higher patient-to-doctor ratios, and compromised standards of care. Within higher education, the emigration of highly qualified academics has reduced mentoring opportunities and constrained professional development for future generations of scholars. In accounting and engineering, the loss of skilled professionals undermines regulatory oversight, corporate governance, and infrastructure development. At a broader societal level, sustained professional emigration shapes the aspirations of younger cohorts, normalising migration as the primary pathway to career success and potentially weakening civic engagement and trust in national institutions.

The international literature characterises brain-drain as both a developmental cost and a potential opportunity. Although important contributions emphasise the negative impact of human capital flight on source countries (Meyer & Shera, 2017; Docquier & Rapoport, 2007, 2012), other research show that remittances, diaspora mobilisation, and return flows can lead to net development benefits (Akinola et al. 2024; Azam, 2015; Gibson & McKenzie, 2012; Adams and Page, 2005). Furthermore, developmental consequences of skilled emigration depend less on simple headcounts of departures and more on how origin-country institutions, labour markets, and diaspora linkages mediate those flows (Ciumas & Fokkema, 2017; Sinatti & Horst, 2015).

The literature documents how highly skilled migrants sustain transnational professional networks, channel social remittances of norms and practices back to origin countries, and participate in forms of brain circulation that can, under supportive institutional conditions, offset some of the immediate fiscal and human-capital losses associated with brain drain. By juxtaposing small but statistically significant long-run GDP effects of professional emigration with a pervasive brain-drain phobia in Sri Lankan policy and media discourse, we examine the impact on sending-countries, whether loss-oriented or circulation-oriented, whether these transnational linkages are recognized and mobilized for development (Van Hear, 2014).

Countries such as India and China have actively pursued brain circulation strategies, encouraging temporary migration and facilitating knowledge and capital transfers through structured diaspora policies. In contrast, Sri Lanka's policy responses remain largely ad hoc and reactive, treating professional emigration primarily as a loss to be mitigated rather than a dynamic process to be strategically managed. Consequently, the country continues to grapple with the trade-off between short-term foreign exchange needs and long-term requirements for talent retention, innovation, and institutional strengthening.

Despite the centrality of migration in Sri Lanka's development trajectory, relatively few empirical studies have examined the macroeconomic consequences of professional brain-drain at the sectoral level. Existing research has predominantly focused on unskilled migration or aggregate remittance flows, offering limited insight into the differentiated economic and institutional effects of losing skilled professionals. This study addresses this gap by employing a VECM to analyse 25 years of data (1999–2023) across four key professional sectors: health, engineering, accounting, and academia. Existing literature has focused on either aggregate remittance impacts (Azam, 2015; Islam, 2022) or profession-specific studies in isolation (Chandradasa & Kuruppuarachchi, 2024; Gunawardena & Nawaratne, 2017). No study has simultaneously modelled cross-sectoral professional migration using time-series econometrics in the Sri Lankan context. This study seeks to fill this knowledge gap.

Drawing upon the human capital depletion model (Beine et al., 2001) and the brain circulation perspective (Gibson & McKenzie, 2012), the analysis combines econometric modelling with PDA in order to examine both the macro-level and institutional dimensions of professional emigration.

LITERATURE REVIEW

The concept of brain-drain has been extensively discussed in the domains of development economics, sociology, and migration studies, though its applicability varies with context and professional field. While the term typically denotes the emigration of highly qualified personnel, the quantity, diversity, and impact of such movements are far from homogeneous.

Global perspectives on brain-drain

International scholarship views brain-drain as both a threat and an opportunity. Traditional perspectives emphasise human capital depletion in source countries, documenting adverse consequences for productivity, innovation, and institutional performance (Docquier & Rapoport, 2007). Where professionals emigrate, source countries bear the full public cost of professional training while receiving none of the returns on that investment, an especially acute burden for low- and middle-income nations with limited fiscal capacity.

More recent literature complicates this picture by recognising countervailing benefits. Gibson and McKenzie (2012) argue that remittances, diaspora networks, and knowledge flows can offset or neutralise the negative impacts of professional emigration. Similarly, Akinola et al. (2024) found in Nigeria that a 1% increase in net

migration decreased GDP growth by only 0.543%, highlighting that economic consequences may appear negligible when measured solely in macroeconomic terms. Where labour markets are saturated or local conditions constrain opportunities, migration can also relieve unemployment pressure while generating foreign exchange inflows. This perspective re-conceptualises migration as brain circulation rather than a one-way loss.

There is also empirical evidence for regional variation. The migration of health workers from sub-Saharan Africa has been observed to reduce local service coverage and increase mortality rates (Mills et al., 2011). By contrast, India and China have leveraged diaspora activity to drive technology transfer and entrepreneurship (Sabharwal & Varma, 2016). This divergence indicates that outcomes depend not merely on the volume of migration but on state capacity, institutional adaptability, and policy innovation.

Sectoral insights

Health sector

The health sector has received particular academic attention owing to its direct implications for social welfare. Studies consistently report that medical brain-drain undermines the ability of health systems in developing countries to deliver adequate care (Adovor et al., 2021). In Sri Lanka, despite heavy public investment in free medical education, many graduates emigrate, creating gaps in specialties such as anaesthesiology and psychiatry (De Silva, 2023; Chandradasa & Kuruppuarachchi, 2024). The consequences extend beyond workforce numbers to patient care outcomes, public trust, and intergenerational equity, as taxpayers effectively subsidise health systems in destination countries.

Engineering and technology

Although engineering migration attracts less public attention than health-sector emigration, it carries significant implications for infrastructure development, technological capacity, and long-term productivity. Evidence from South Asia indicates that engineers frequently migrate to meet international demand in infrastructure, IT, and construction (Gherheş et al., 2020). Sri Lanka has experienced this pattern through the emigration of engineers to Australia, New Zealand, Canada and the Middle East (Gunawardhana & Jayalath, 2016). The long-term trade-off involves the erosion of local innovation capacity and technological self-determination alongside the macroeconomic stabilisation afforded by remittances.

Accounting and finance

Accountant migration has received less scholarly attention globally, although recent literature addresses how cross-border standard harmonisation facilitates professional mobility (Bloomfield et al., 2017). In Sri Lanka, political instability and limited career advancement have pushed many accountants to seek employment in high-income countries with stronger demands for financial disclosure and regulation (Ekanayake & Jackling, 2014). This reduces domestic regulatory capacity and corporate governance quality, with long-run effects on the investment climate and capital market development.

Academia

Brain-drain among university faculty has profound consequences for research capacity and higher education quality. Studies of African and South Asian universities illustrate how faculty losses undermine mentorship, reduce research productivity, and diminish international competitiveness (Odhiambo, 2013). In Sri Lanka, political-economic instability and the pursuit of doctoral education abroad have driven the emigration of university lecturers and researchers (Gunawardena & Nawaratne, 2017), depriving institutions of the intellectual capital necessary for context-specific research and the mentorship of future professional generations.

More recent bibliometric evidence confirms this pattern. Sanliturk et al. (2023) demonstrate, using Scopus data across 48 developing economies, that academic brain-drain is the most consequential form of professional emigration for long-run innovation capacity, because academics generate positive externalities, through publication, supervision, and knowledge spillover, that extend far beyond their individual output. In Southeast Asian universities, faculty emigration is associated with measurable reductions in institutional research output

with a lag of approximately five years, consistent with the long-run VECM coefficients observed in the present study. Horta et al. (2023) further demonstrate that the departure of senior academics is disproportionately damaging relative to junior faculty, as it removes mentorship capacity that cannot be quickly replaced, a finding of particular relevance to Sri Lanka's smaller university system.

Regional perspectives

Brain-drain in South Asia is both extensive and multifaceted. Research on India shows that while the emigration of IT and medical professionals initially led to shortages, diaspora engagement policies have produced long-term gains through reverse migration, foreign investment, and knowledge transfer (Docquier & Rapoport, 2012). Pakistan, by contrast, continues to struggle with retaining medical graduates, with surveys capturing high migration intentions attributable to poor working conditions and limited professional autonomy (Nadir et al., 2023). Nepal has experienced similar health worker and academic emigration, with mixed evidence on remittance gains relative to service deficits (Islam, 2022).

Vietnam and the Philippines offer instructive contrasts to the Sri Lankan experience. Vietnam, which experienced substantial academic and medical emigration in the 1990s and 2000s, implemented a structured brain circulation programme, the Overseas Vietnamese (Viet Kieu) initiative, that provided financial incentives, academic recognition, and administrative facilitation for diaspora professionals to contribute to domestic institutions on short-term or part-time bases (Waibel et al., 2021). The result was a measurable increase in co-authored international publications and technology transfer without requiring permanent return. The Philippines has similarly leveraged the professional diaspora through the Commission on Filipinos Overseas, establishing networks of physicians, engineers, and educators that channel skills and investment back to domestic institutions. Both cases demonstrate that brain circulation is not a natural market outcome but a policy achievement, one that requires deliberate institutional architecture that Sri Lanka has not yet constructed.

Sri Lanka's situation, while comparable, is distinctive in scale relative to population size. Political instability, macroeconomic volatility, and weak institutional incentives are identified as key migration drivers (Kaluarachchi & Jayathilaka, 2024). Compared with larger neighbouring countries, Sri Lanka lacks a well-formulated policy environment capable of converting professional migration into a development advantage, thereby exposing the country to long-term governance and innovation deficits.

Brain-drain and economic growth

The link between brain-drain and economic growth is not straightforward. Barro (2001) and Hanushek and Woessmann (2008) emphasise the contribution of human capital in growth regressions but caution that institutional quality is a critical mediating variable. Pritchett (2001) reinforces the argument that human capital accumulation, in the absence of sound governance and absorptive capacity, is not necessarily reflected in economic growth. These findings have parallels in the Sri Lankan context, where professional emigration exhibits statistically significant but economically modest effects on GDP growth. The paradox is that although professionals constitute an important component of human capital, their shortage at the macro level may not produce large measurable effects on GDP, even as the social costs remain high.

THEORETICAL FRAMEWORKS

Three broad theoretical paradigms prevail in the literature. The human capital flight model emphasises losses to the domestic economy when skilled workers migrate (Beine et al., 2001), highlighting fiscal expenditures, reduced service provision, and slowed innovation. The diaspora externalities model, however, emphasises remittances, skill transmission, and network externalities as potential gains (Mohamed et al., 2024). A third, more integrative perspective is the brain circulation model, which focuses on return movement and temporary migration, viewing emigration as participation in a dynamic global labour market (Gibson & McKenzie, 2012).

For Sri Lanka, elements of all three frameworks simultaneously apply: remittance inflows contribute to macroeconomic stability (consistent with the diaspora externalities model), sectoral shortages are evident in health and academia (consistent with human capital depletion), and return flows remain largely unrealised

(inconsistent with the brain circulation expectation). This coexistence of frameworks generates a specific and testable theoretical expectation for the Sri Lankan context. If human capital depletion is the dominant mechanism, the VECM should produce substantial negative long-run coefficients on all migration variables. If the diaspora externalities mechanism is also at work, with remittances offsetting productivity losses at the macroeconomic level, the coefficients should be statistically significant but economically modest. And if brain circulation remains underdeveloped due to policy inaction, the short-run coefficients should be weak across most professional groups, with structural effects accumulating only over the long run. Three propositions follow from this synthesis:

- P1: Professional emigration will exhibit a statistically significant negative long-run relationship with GDP growth across all four professional categories, consistent with cumulative human capital depletion.
- P2: Short-run effects will be weak for most professional groups, reflecting the lag with which structural losses manifest in aggregate output and the partial buffering role of remittances at the macroeconomic level.
- P3: The magnitude of long-run effects will vary across sectors, with university academics exhibiting the largest coefficient, reflecting the disproportionate role of higher education and research-based human capital in long-run productivity growth.

MATERIALS AND METHODS

This study is an integration of VECM and PDA: the VECM identifies statistical regularities in the relationship between professional emigration and GDP growth across time, while the discourse analysis reveals the institutional and ideological frameworks within which those regularities are constructed, interpreted, and acted upon. Neither method alone is sufficient. The VECM cannot explain why brain-drain is framed as it is in policy documents; the discourse analysis cannot establish whether migration produces measurable macroeconomic effects. Together, anchored in structured pluralism, they produce a more complete account than either could achieve in isolation.

The methodological framework is guided by two overarching objectives. First, it seeks to evaluate the net benefits and costs of professional migration for Sri Lanka, with particular attention to GDP growth, remittance inflows, and fiscal sustainability. Second, it aims to offer comparative insight into the economic and social consequences of brain-drain by explicitly accounting for professional heterogeneity across health, engineering, accountancy, and academia. Addressing these objectives necessitates an integrated research design combining econometric modelling with documentary review and discourse analysis.

Integrated methodological layers

Data collection

A systematic search of institutional reports, policy documents, media coverage and databases was conducted to establish the basis of the study. Principal data sources were the Sri Lanka Bureau of Foreign Employment (SLBFE), the Central Bank of Sri Lanka, and the World Bank Development Indicators. Annual professional migration flow data, covering health professionals, engineers, accountants, and university academics, alongside GDP growth data were collected for the period 1999–2023.

Econometric modelling

To capture the dynamic relationship between economic growth and migration, a VECM was applied with one year lag. This framework is well suited to the analysis of cointegrated time series, as it distinguishes between long-run equilibrium and short-run deviations. The baseline model is specified as:

$$\Delta \ln GDP = \beta_0 + \beta_1 \text{HealthMig} + \beta_2 \text{AccountMig} + \beta_3 \text{EngineerMig} + \beta_4 \text{UnivMig} + \varepsilon$$

A significant data limitation must be acknowledged at the outset. Although remittance inflows constitute a theoretically important offsetting mechanism, and aggregate Sri Lankan remittances are publicly documented at

approximately USD 6 billion for 2023, professional-specific remittance data disaggregated by occupational category are not available in any published source for the full study period. The SLBFE and Central Bank of Sri Lanka report remittance flows by destination country and broad skill category but do not distinguish remittances attributable to medical professionals, accountants, engineers, or university academics separately. Accordingly, remittances could not be included as a control variable in the VECM specification. This constitutes a limitation: the observed small GDP coefficients on migration variables may partly reflect remittance offset effects operating through the residual, but this cannot be confirmed or quantified from within the present empirical design. All interpretations of the magnitude of brain-drain effects on GDP should be read with this caveat in mind.

GDP growth is specified as the dependent variable, while migration flows from the four professional groups serve as key explanatory variables. A series of diagnostic tests was conducted to ensure the validity and reliability of the empirical specification. Stationarity was assessed using the Augmented Dickey–Fuller (ADF) test, which confirmed that all variables are integrated of order one, $I(1)$. Lag length selection was carried out using the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC). The presence of long-run equilibrium relationships among the variables was examined using Johansen’s cointegration tests. Standard residual diagnostics, including tests for normality, heteroskedasticity, and serial correlation, were performed to confirm model consistency.

Policy discourse analysis (PDA)

Rather than applying the full apparatus of Critical Discourse Analysis (CDA), which would require sustained close linguistic reading of primary texts, this study conducts a systematic thematic analysis of documentary sources to identify dominant narratives, recurring framings, and notable silences in the official discourse on professional emigration. The analytical focus is on the policy and institutional level: what is said, what is omitted, and what framing of brain-drain is thereby reproduced.

The study is informed by a critical-realist epistemological position (Bhaskar, 2015; Saliya, 2024, which situates professional migration as a structural phenomenon shaped by conjunctural economic, political, and institutional factors. By examining migration through the dimensions of policy, practice, people, purpose, and power, the framework brings to light institutional weaknesses and ethical concerns that are often obscured in more narrowly focused analytical approaches. This framework allows the study to conceptualise brain-drain not simply as a numerical outflow of skilled labour but as a multidimensional process shaped by economic conditions, policy choices, and issues of social justice.

The adoption of this integrated design reflects the recognition that Sri Lanka’s brain-drain must be examined from multiple disciplinary perspectives (Saliya 2023; 2023a). Econometric modelling provides statistical rigour but cannot illuminate the institutional constructions and policy contradictions embedded in migration decisions. Discourse analysis without quantitative grounding risks anecdotal generalisation. Combining the two positions the research on a structured pluralist foundation (Saliya, 2022, 2023b; 2023c), enabling both depth and breadth of analysis.

RESULTS

Findings are presented in two parts. First, the short- and long-run impacts of professional migration on Sri Lanka’s GDP. Second, the PDA findings examine how brain-drain is constructed in policy and institutional discourse, thereby contextualising the econometric results within broader narratives.

Model diagnostics

Unit root tests and lag selection

Augmented Dickey–Fuller (ADF) tests were applied to all variables to assess stationarity. Results indicate that none of the variables is stationary at levels; however, all become stationary after first differencing, confirming integration of order one, $I(1)$ (Table 1). Optimal lag length was determined using AIC, HQIC, and LR criteria

Table 2). All tests consistently identified two lags as the most appropriate specification, providing a balance between model fit and parsimony.

Table 1: ADF unit root test results

Variable	I(0)	I(1)
GDP	0.3404	0.0001
Accountants	0.7460	0.0006
Engineers	0.3461	0.0001
Health Sector Professionals	0.0502	0.0000
University Academics	0.0885	0.0000

p-values reported. Source: Author's calculations (Stata).

Table 2: Lag length selection criteria

Lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-363.625	,	,	,	7.0e+09	36.8625	36.9111	37.1114
1	-340.999	45.251	25	0.008	9.8e+09	37.0999	37.3915	38.5935
2	-304.974	72.05†	25	0.000	5.9e+09	35.9974	36.532	38.7357

† denotes optimal lag selected across LR, AIC, and HQIC criteria. Source: Authors calculations (Stata).

Lag 2 is selected across the LR, AIC, and HQIC criteria, providing the most appropriate balance between model fit and parsimony. All variables reject the unit root null at I(1), satisfying the prerequisite for cointegration testing.

Johansen cointegration test

Given that all variables are integrated of order one, Johansens cointegration test was applied to assess the presence of long-run equilibrium relationships. Trace statistics decisively rejected the null hypothesis of no cointegration, indicating at least one cointegrating relationship between GDP and the four professional migration series. These results provide a clear empirical justification for the use of a VECM (Table 3).

Table 3: Johansen cointegration test (Trace statistic)

Hypothesised No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value
None *	,	124.9335	68.52
At most 1	0.88808	76.7535	47.21
At most 2	0.76525	44.8706	29.68
At most 3	0.70882	17.7267	15.41
At most 4	0.41779	5.8262	3.76

* denotes rejection of the null at the 0.05 level. Source: Authors calculations (Stata).

The trace statistic (124.93) substantially exceeds the 5% critical value (68.52) under the null of no cointegration. The test supports the existence of at least one cointegrating relationship (rank = 1) among GDP and the four professional migration series. This confirms the empirical appropriateness of the VECM framework.

Residual diagnostics

To verify the statistical adequacy of the model, three standard diagnostic tests were conducted (Table 4).

Table 4: Residual diagnostics

Test	Statistic / Basis	p-value	Inference
Normality (Skewness/Kurtosis)	Joint test	0.3917	Residuals normally distributed
Serial Correlation (Breusch–Godfrey LM)	LM test	0.0723	No significant autocorrelation
Heteroskedasticity (Breusch–Pagan)	$\chi^2(1) = 0.03$	0.8674	Homoskedastic residuals

Source: Authors calculations (Stata).

All three tests fail to reject their respective null hypotheses at the 5% level. The VECM residuals satisfy the assumptions of normality, serial independence, and constant variance, supporting the reliability of the estimated coefficients.

VECM estimates

The estimated long-run coefficients indicate that professional migration exerts a persistent and statistically significant negative influence on GDP growth across all four occupational categories. The emigration of university academics generates the most pronounced adverse effect: a long-run coefficient of -0.00788 , implying that each additional academic emigrant is associated with a 0.00788 basis-point decrease in GDP growth.

Short-run dynamics reveal a more limited set of immediate effects. Only migration within the accounting profession shows a statistically significant short-run coefficient. A noteworthy and somewhat counter-intuitive result is the positive short-run coefficient for health professionals ($+0.00003$, $p = 0.730$). While statistically insignificant, the positive direction warrants comment. One plausible interpretation is that, in the short run, the emigration of medical professionals generates an immediate increase in household remittance income that marginally offsets the productivity loss from their departure, consistent with Adams and Page’s (2005) finding that remittances can produce short-run macroeconomic stabilisation even when long-run human capital losses accumulate. A second interpretation follows Akinola et al. (2024), who note that where public health systems are already constrained, the marginal short-run output loss from one additional physician emigrant may be absorbed by informal coping mechanisms (task-shifting, private sector expansion) without registering in aggregate GDP. The long-run coefficient, however, confirms that these short-run adjustments are insufficient to prevent sustained structural deterioration. For engineers, the short-run coefficient is negative (-0.00010 , $p = 0.107$), approaching but not reaching conventional significance thresholds, consistent with the view that engineering capacity gaps manifest gradually through project delays, reduced maintenance capacity, and slower technological adoption rather than through immediate output shocks.

Coefficients for health professionals, university academics, and engineers are statistically insignificant at conventional levels ($p > 0.10$), suggesting that the economic impacts of emigration for these groups operate primarily through longer-term structural and institutional channels rather than immediate macroeconomic mechanisms. Full estimation results are presented in Table 5.

Table 5: VECM estimation results

Variable	Long-Run Coefficient (p-value)	Short-Run Coefficient (p-value)	Interpretation
Health professionals	-0.00031 (0.003)	$+0.00003$ (0.730)	Significant long-run reduction in GDP growth; no significant short-run effect
Accountants	-0.00089 (<0.001)	-0.00066 (<0.001)	Strong negative effects in both long and short run
University academics	-0.00788 (<0.001)	-0.00230 (0.250)	Largest long-run impact; short-run effect not significant
Engineers	-0.00034 (<0.001)	-0.00010 (0.107)	Significant long-run reduction; short-run effect not significant

Note. Migration variable measured in units of annual registered migrant departures per professional category (SLBFE data). Cointegration confirmed by Johansen trace statistic = 124.93 ($p < 0.001$); see Table 3 for full results. Log-likelihood = -375.53. Residual diagnostics: normality, Skewness–Kurtosis test $p = 0.392$; serial correlation, LM test $p = 0.072$; heteroskedasticity, Breusch–Pagan test $p = 0.867$. Estimated using Stata.

Model robustness was evaluated using a comprehensive set of residual diagnostic tests. The skewness–kurtosis test yields a p -value of 0.392, indicating that residuals follow a normal distribution. The LM test for serial correlation produces a p -value of 0.072, suggesting that autocorrelation is not statistically significant. The Breusch–Pagan test for heteroskedasticity further supports model adequacy ($p = 0.867$), confirming that the error variance remains stable across observations. Taken together, these results demonstrate that the VECM is well specified, satisfying the assumptions of normality, independence, and homoskedasticity.

While the econometric estimates reveal statistically significant relationships between professional migration and GDP growth, the economic magnitude of these effects remains limited. The relatively small coefficients suggest that aggregate productivity losses associated with skilled emigration may be partially offset by broader macroeconomic stabilising forces, including remittance inflows, which amounted to approximately USD 6 billion for Sri Lanka in 2023. However, because disaggregated remittance data by professional category are unavailable, it is not possible within this study to directly attribute the dampening of GDP effects to professional remittances specifically. The small coefficients should therefore be interpreted with caution: they indicate a weak macroeconomic relationship, but the precise mechanism, whether offset by remittances, by labour market substitution, or by the limited absorptive capacity of Sri Lanka's economy (Pritchett, 2001), cannot be determined from the present specification alone. What can be stated with confidence is that the structural and institutional consequences of professional migration are considerably more substantial than the macroeconomic coefficients imply, particularly in academia and healthcare.

Policy discourse analysis findings

The following themes were identified through systematic thematic analysis of the documentary corpus, which comprised SLBFE Annual Reports (2000–2023), Ministry of Labour policy statements, Central Bank of Sri Lanka Annual Reports (selected years), and national media coverage from Daily Mirror, Daily FT, and Sunday Times archives. Documents were coded inductively for recurring frames, evaluative language, and policy prescriptions or omissions.

A third theme concerns the striking absence of policy engagement with brain circulation. References to return migration, diaspora engagement, or mechanisms for skills transfer appear only sporadically in official documents. Instead, migration is commonly discussed in binary terms, either as a phenomenon to be prevented or as an unavoidable problem to be endured. Finally, the discourse displays clear sectoral biases: while the emigration of health professionals receives considerable attention, the outward movement of engineers, accountants, and academics is comparatively marginalised, despite equally significant implications for long-term institutional capacity.

Taken together, these discursive patterns shape public perceptions of professional migration and contribute to policy inertia. By framing brain-drain primarily as a loss or moral failure, the scope of policy debate remains constrained, delaying the emergence of more mature strategies capable of leveraging professional mobility for development gains.

Synthesis

The integration of quantitative and qualitative findings reveals a clear contradiction. At the macroeconomic level, professional migration exerts only a limited effect on GDP growth, largely because, as revealed in many, more recent, research (e.g. Akinola et al. 2024; Mohamed et al., 2024; Azam, 2015; Gibson & McKenzie, 2012; Adams & Page, 2005), remittance inflows offset aggregate productivity losses. However, when examined at the sectoral and institutional levels, the consequences are far more substantial. Public hospitals face persistent shortages of

skilled personnel, university research capacity is steadily eroded, financial and regulatory institutions experience weakening oversight, and the pace of infrastructure development is slowed by the loss of technical expertise.

The PDA findings underscore how these sector-specific realities are amplified within policy and public discourse, reinforcing what may be described as a pervasive brain-drain phobia. This framing leaves little room for alternative narratives that recognise brain circulation or strategic skill export as viable development pathways. As a result, policy responses remain reactive and defensive, rather than forward-looking and strategically oriented toward harnessing the long-term potential of professional mobility.

DISCUSSION

The findings of this study point to a clear and instructive paradox. Although the econometric evidence indicates that professional migration exerts statistically significant yet economically negligible effects on Sri Lanka's GDP growth, its broader social and institutional repercussions are perceived as more substantial. Placing these results within the existing literature reveals that conventional macroeconomic indicators alone are insufficient to capture the full consequences of brain-drain.

Three central insights emerge from the analysis. First, the negative, albeit small yet statistically significant, long-run effects observed across all occupational groups suggest that brain-drain may function as a structural constraint on development, when taking its *cumulative impact* is considered, rather than a mere transitory shock. The relatively bigger impact associated with the emigration of university academics highlights the critical role of higher education and research-based human capital in sustaining productivity growth, innovation, and institutional capacity over time.

Second, the results reveal important asymmetries in short-run dynamics. While the effects of migration for most professional groups materialise gradually, the outflow of accountants produces an immediate reduction in GDP growth, reflecting the sensitivity of financial systems and regulatory functions to skilled labour shortages.

Third, the policy implications extend well beyond the narrow interpretation of GDP effects. Although negligible on annual basis, the *cumulative long-term costs*, particularly those arising from the erosion of academic, technical, and professional capacity, can be substantial. These findings underscore the need for policy frameworks that move beyond containment strategies and toward transforming brain-drain into brain circulation through mechanisms such as diaspora engagement, structured knowledge transfer, and institutional strengthening.

Brain-drain and economic growth

VECM results confirm that migration of health professionals, accountants, engineers, and academics is negatively associated with GDP growth in the long run, yet the coefficients are extremely small, echoing findings by many researchers, who observed that while brain-drain reduces GDP growth, the effect is often marginal.

These findings resonate with Pritchett's (2001) argument that investments in human capital do not automatically translate into growth unless institutions, labour markets, and innovation ecosystems can effectively absorb talent. In Sri Lanka, the loss of professionals may not register strongly in GDP figures because the economic system has limited absorptive capacity to begin with: the absence of doctors or academics is felt acutely in hospitals and universities, but macroeconomic indicators fail to capture these sectoral inefficiencies.

Sectoral impacts: beyond GDP metrics

Although GDP growth remains the most widely used indicator of economic performance, its inability to capture social and institutional losses is well recognised (Barro, 2001; Hanushek & Woessmann, 2008). The sectoral VECM results extend this recognition by quantifying the differential long-run exposure of four professional groups and revealing important asymmetries that aggregate analyses conceal.

For the health sector our finding of a significant long-run coefficient (-0.00031) confirms the qualitative evidence of De Silva (2023) and Chandradasa and Kuruppuarachchi (2024), and produces a measurable and sustained drag on aggregate output, not merely a service delivery problem.

For university academics, the largest long-run coefficient in the model (-0.00788) extends Gunawardena and Nawaratne's (2017) Sri Lanka-specific evidence and Sanliturk et al.'s (2023) cross-national findings by demonstrating that academic emigration is not merely institutionally disruptive but macroeconomically consequential over long horizons, a result that cannot be derived from cross-sectional or case-based approaches.

For accountants, the significant short-run coefficient (-0.00066 , $p < 0.001$) adds to Bloomfield et al.'s (2017) analysis of regulatory harmonisation and professional mobility by demonstrating that the economic consequences of accountant emigration are immediate rather than deferred, consistent with the hypothesis that financial and regulatory functions are highly sensitive to skilled labour shortages in ways that medical, engineering and academic functions are not.

For engineers, the significant long-run but insignificant short-run coefficient confirms Gunawardhana and Jayalaths (2016) account of gradual capacity erosion, while contradicting the implicit assumption of Gherheş et al. (2020) that engineering emigration effects are primarily short-term. Our results suggest the opposite: engineering effects accumulate structurally and are unlikely to register in any single year's output statistics.

Theoretical perspectives; human capital, externalities, and circulation

The seemingly contradictory nature of the findings mirrors the coexistence of competing theoretical perspectives in the brain-drain literature. First, from a human capital depletion standpoint, the results are consistent with the arguments of Beine et al. (2001), who contend that the emigration of skilled professionals diminishes domestic productivity and innovation capacity, most evident here in the academic sector's large negative coefficient. Second, the findings resonate with the diaspora externalities perspective, exemplified by the macroeconomic stabilising role of remittance inflows (Adams & Page, 2005; Azam, 2015). Sri Lanka's nearly USD 6 billion in professional remittances in 2023 cushions the economy against short-term pressures despite ongoing human capital losses.

A third perspective is offered by the brain circulation model (Gibson & McKenzie, 2012), which highlights the potential for migration to generate long-term development gains through return migration and diaspora engagement. Sri Lanka has yet to establish structured policy frameworks capable of harnessing such circulation effects, leaving much of the potential developmental benefit of professional mobility unrealised.

Migration discourses; the brain-drain phobia

The brain-drain phobia can be defined as the tendency in institutional and media discourse to frame professional emigration exclusively as national loss, thereby obscuring its potential as a strategically managed development resource. Policy discourse analysis findings reveal that institutional and media discourses in Sri Lanka consistently frame professional migration as a national crisis, depicting emigration as a betrayal of taxpayers' investment in free education. This aligns with similar rhetorical strategies observed in Greece (Ioannis, 2016) and Pakistan (Nadir et al., 2023), where emigrants are positioned as abandoning their national duties.

Such narratives obscure the reality that migration decisions are shaped by systemic governance failures, professional stagnation, and political instability (Kaluarachchi & Jayathilaka, 2024). By focusing exclusively on the loss, policymakers neglect opportunities for structured diaspora engagement, what Meyer and Shera (2017) call the hidden capital of migration.

Regional comparisons; lessons from South Asia

The Sri Lankan experience cannot be interpreted in isolation. India offers a prominent example of how emigration can be reframed within a brain circulation framework in which diaspora capital, skills, and knowledge transfers are actively leveraged for domestic development (Sabharwal & Varma, 2016). Pakistan continues to

face persistent medical brain-drain with limited compensatory mechanisms (Nadir et al., 2023). Bangladesh occupies an intermediate position, having successfully sustained foreign exchange reserves through large-scale labour migration while experiencing rising professional outflows that pose long-term risks to innovation and productivity (Islam, 2022).

In this comparative context, Sri Lanka's trajectory more closely resembles that of Pakistan and Bangladesh than of India. Migration policy in Sri Lanka remains largely reactive and fragmented, with insufficient coordination between short-term remittance objectives and longer-term development priorities linked to talent retention, innovation, and institutional capacity building.

Reconciling economic and social dimensions

The key contribution of this study is to highlight the disjuncture between economic metrics and social realities. While GDP growth figures suggest minimal impact, the depletion of professionals generates profound ripple effects: weakened health systems, underfunded universities, fragile governance structures, and declining trust in institutions. This reinforces the argument of Labonté et al. (2015) that migration cannot be analysed purely in terms of monetary flows but must be situated in broader political and social contexts.

Policy implications

The evidence carries several important implications for Sri Lanka's migration and development strategy. First, there is a need to move away from a narrow focus on loss prevention toward an approach centred on opportunity maximisation. Rather than attempting to restrict professional mobility, Sri Lanka could pursue a strategy of brain export supported by bilateral agreements that both safeguard migrant professionals and facilitate the transfer of skills, knowledge, and experience back to the domestic economy (Eaton, 2023).

Second, stronger and more systematic diaspora engagement mechanisms are required. India's experience with its global IT workforce demonstrates the developmental potential of well-organised diaspora networks. Establishing structured platforms for collaboration, mentoring, and investment could enable Sri Lanka to transform outward migration into a source of intellectual and technological gain.

Third, targeted investment in professional retention pathways remains essential. Improving compensation structures, expanding research funding, and strengthening career development opportunities, particularly in academia and high-skilled professions, would help address the push factors that drive emigration (Gunawardena & Nawaratne, 2017).

Finally, these policy shifts must be accompanied by a broader reframing of public discourse. Moving away from narratives that portray emigrants as deserters toward an understanding of them as contributors to both national and global development is critical for creating a more constructive and forward-looking migration policy environment.

CONCLUSION

This study investigated the economic and social impacts of professional brain-drain in Sri Lanka across four professional categories: health workers, accountants, engineers, and university academics. The results identify a consistent pattern of statistically significant negative associations between professional migration and GDP growth. Whilst all long-run estimates are statistically significant, the economic magnitude of these effects is small, reinforcing the view that professional emigration operates as a structural, rather than a primary, constraint on GDP growth.

The long-run coefficients confirm the direction of effects: health professionals (-0.00031), accountants (-0.00089), engineers (-0.00034), and university academics (-0.00788) are all negatively associated with GDP growth. Short-run estimates are similarly modest, with the only statistically significant short-run effect being

that of accountants. These findings accord with earlier work establishing that brain-drain, while symbolically and institutionally significant, exerts only minimal effects on aggregate GDP.

However, the primary consequences of professional migration in Sri Lanka are institutional and social rather than macroeconomic. Health services suffer from personnel shortages that undermine service delivery, while universities face constraints on research output and mentorship capacity. Comparative evidence from India and China demonstrates that brain-drain can be transformed into brain circulation when supported by deliberate, well-designed policies. A key limitation of the present study, however, must be restated here: because professional-specific remittance data disaggregated by occupational category are not available for Sri Lanka for the study period, the precise mechanism dampening macroeconomic effects, whether remittance offset, labour market substitution, or limited absorptive capacity, cannot be confirmed from within the present empirical specification. The small long-run GDP coefficients should be read as evidence of a structurally constrained but real relationship, not as evidence that brain-drain is macroeconomically inconsequential, positive or negative. Future research incorporating professional-level remittance estimates, potentially through survey-based imputation or household-level data, would substantially strengthen causal interpretation.

The policy implications are clear. Brain-drain should not be framed as an existential macroeconomic threat, and restrictive policies aimed solely at limiting migration flows are unlikely to yield meaningful benefits. Instead, policy efforts should prioritise strengthening domestic institutions, actively engaging the Sri Lankan diaspora, creating structured pathways for return migration, improving the productive use of remittances, and fostering international professional networks. These measures would enable Sri Lanka to reposition professional migration not as a liability but as a strategic asset for long-term development.

In conclusion, although professional emigration has statistically significant, albeit negligible, adverse macroeconomic consequences for GDP growth, the economic magnitudes are insufficient to warrant treating brain-drain as a critical macroeconomic risk. Sri Lanka's central challenge lies not in managing professional emigration per se, but in developing institutional capabilities to leverage professional mobility as a driver of domestic resilience and international engagement.

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AI Use Disclosure. Declaration on the Use of Artificial Intelligence Technologies

In preparing this manuscript, the authors used artificial intelligence tools (Perplexity AI and Chat GPT-Open AI) in a responsible and limited manner, in line with the journals guidelines on AI Technologies. Any such tools were employed only as companions to the writing process (for example, to support language polishing or to suggest alternative phrasings), and were not used to generate, alter, or manipulate original research data, quantitative results, or qualitative findings and interpretations. The authors have independently verified the accuracy of all AI assisted text and remain fully accountable for the content, arguments, and conclusions presented in the article. The use of AI tools complied with all applicable privacy, confidentiality.

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