ISSN E: 3006-1466
ISSN P: 3006-1458
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
CJSSR
CONTEMPORARY JOURNAL OF SOCIAL SCIENCE REVIEW
Vol.04 No.01 (2026)

BRAIN DRAIN AND ECONOMIC DEVELOPMENT OF PAKISTAN

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Abstract
Background. *Pakistan is one of the world's important labour exporters and loss of educated and skilled labourers, popularly known as "brain drain", is a part of the national economic discourse for a long time.* ***Objective.*** *This study explores the correlation between skilled migration, human capital and remittances in Pakistan from 1990 to 2025.* ***Methodology.*** *This study is based on the narrative and literature analysis. It brings together peer-reviewed studies on the economics of the brain drain as well as secondary data from recognized institutions such as the State Bank of Pakistan (SBP), the Bureau of Emigration and Overseas Employment (BEOE), the World Bank/KNOMAD, and the International Organization for Migration (IOM). No primary data were collected.* ***Major findings.*** *It is apparent from the available evidence that the Pakistani expatriates are mostly semi-skilled and unskilled but the number of doctors, engineers and information-technology professionals leaving Pakistan has increased significantly in recent years (BEOE, 2025; Shah, 2023). Remittances have emerged as an important source of external funding with current fiscal year (2024-25) reaching a record US$38.3 billion, as reported by SBP (2025). The literature theory and empirical evidence suggest that the net impact of skilled migration is not always negative, as remittances, return migration and diaspora networks can mitigate the human-capital loss, albeit in relation to domestic conditions (Beine et al., 2001; Docquier & Rapoport, 2012).* ***Conclusion.*** *But skilled emigration is not only a loss of a valuable asset for Pakistan, but it also means that a significant flow of money is generated and this needs to be managed by smart policies in education, health and economic management to keep the talent within the country and not losing it.*

Keywords: *The study aims to examine the brain drain issue, its impact on human capital, remittances, and economic development of Pakistan in a broader context.The study will seek to explore the issue of brain drain in broader perspective and its impact on human capital, remittances, and economic development of Pakistan.*

1. Introduction

1.1 Background of Brain Drain

Brain drain is the movement of skilled, educated or professional people from one country to another, primarily from low-income to high-income countries (Docquier & Rapoport, 2012). The migration of qualified staff has been one of the oldest phenomena in history, but the worry about the lack of skilled workers increased in the second half of the twentieth century when advanced economies' demand for skilled workers has increased. In general, early scholarships have viewed

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skilled emigration as a simple loss for the sending country, because educated people who migrate are ones whose education has been funded, at least in part, by public funds (Haque & Kim, 1995). More recent studies, however, have added the possibility that the threat of migration also increases the desire to acquire education at home, so that the net impact on a country's human-capital stock may be positive or negative (Beine et al., 2001).

1.3 Economic Loss in Pakistan due to Brain Drain

Pakistan is one of the biggest labour exporting countries in South Asia. The total number of workers who have registered for emigration in 2024 is 727,381 which is the highest number recorded since 2015 (BEOE, 2025). Historically, the majority of this outflow have been semi-skilled and unskilled workers with highly qualified professionals making up a relatively small group, approximately eight per cent of registered emigrants in 2023 (Shah, 2023). Despite that, the absolute figures of those who have left the medical profession, engineering and technology industries have increased and the public is increasingly worried about the loss of the very skills that Pakistan requires the most.

1.3 Why Brain Drain Remains a Concern

There are multiple factors which are interconnected and are responsible for the continuation of skilled migration from Pakistan. On the "push" side, there are fewer jobs than desired at home, pay differences between countries of origin and of destination, economic uncertainty, and a lack of advanced research and innovation infrastructure. On the "pull" side, there is an increasing demand for labour in the Gulf states and in Europe and North America, with more stable employment and higher wages in these regions (Shah, 2023). Physicians or engineers would be trained for years and the loss of them is not easy to replace, usually, with ease.

1.4 Research Gap

The economics of the brain drain is a subject that has received much attention in a vast international literature, although many of the pieces written are either global or theoretical in scope. Research on country-specific linkages between skilled migration, human-capital effects and remittances over a long time frame is relatively limited for Pakistan. The available statistics are also skewed: official statistics do not capture many skilled migrants who either move via education or migrate straight to Europe and North America and so are likely to be underestimates of the actual numbers of skilled migrants who depart (BEOE, 2025). This article fills that void by summarizing the published evidence in one Pakistan-centric review.

The purpose of the Article is outlined below:

1.5 Objectives of the Article

The article aims at the following:

To understand the migration trends and the skilled people that migrate from Pakistan from 1990 to 2025;

2. To analyze the impact of skilled emigration on human capital of Pakistan;
3. To explore the importance of remittance in economic development of Pakistan; and
4. To assess the evidence that skilled migration on balance is a "brain drain" or a potential "brain gain"; and

To determine feasible policy options for the migration management in the country's benefit.

2. Literature Review

Brain Drain as a loss or gain: a study of the economics

The literature is dominated by two general views. According to the traditional thinking, the net outflow of skilled migrants from the country results in a decrease in human capital in that

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country and hampers economic growth, especially when the state has paid for the migrants' education (Haque & Kim, 1995). A newer point of view separates two conflicting impacts. Beine et al. (2001) identify an ex-ante 'brain effect' of being able to migrate to higher paying economies, leading people to invest in education, and an ex-post 'drain effect' of the people who actually migrate. It's the difference between these two effects that determines whether or not a country has a net gain or a net loss. A century of research, summarized by Docquier and Rapoport (2012), indicates that high-skilled emigration does not have a negative impact on the human capital reserves of a country, and it can lead to positive network externalities via linkages with emigration countries, trade, and investment by emigrants.

2.3 Pakistan as a source of skilled migrants to the UK

As per the studies conducted on Pakistani migration, the majority of registered emigrants are unskilled and semi-skilled workers with the countries of Gulf region, particularly Saudi Arabia and the United Arab Emirates, as the major destinations (Shah, 2023). Doctors, engineers, accountants, IT specialists, etc. – highly qualified and highly skilled workers – have been less than 10% of the total workforce for most of the last 10 years. Despite this, the recent data from the government shows that the rate of professional emigration is on the increase, with the Pakistan Economic Survey 2023-24 revealing that the number of professionals emigrating from the country has increased by about 100% from 2022 to 2023 (Government of Pakistan, 2024). This has been a source of a lot of the current concerns about brain drain.

2.3 Socio-economic and institutional drivers

A few well-known drivers are identified in the literature: significant wage differentials between the labour market in Pakistan and in the destination countries, under-employment of educated individuals in Pakistan, macroeconomic instability, and lack of research and development initiatives in the destination countries for advanced labour force (Shah, 2023). This kind of latent demand for exit identified by survey work in migration studies could start to be realized in the form of more skilled migrations in the future. These structural features are intertwined, as domestic opportunities are reduced, so are the opportunities for foreign employment, and the cost and risk of migration are reduced by established networks.

2.4 Human Capital and Development

Education is a key to development, and the absence of trained people is seen as a loss of national capacity, particularly in key areas like health and the departure of physicians can place a strain on already limited services (Haque & Kim, 1995). Meanwhile, the "brain effect" discovered by Beine et al. (2001) suggests that the opportunity/demand for migration may stimulate further commitments of resources to schools and skills. The net result is, therefore, an empirical question, which is subject to the answers one may give depending on the numbers of educated people who do end up leaving and the numbers who are induced to become educated in the first place, and how the economy absorbs the educated.

2.5 Remittances as a Development Channel

The most explicit and best documented channel of migration's benefit to Pakistan is remittances. Empirical evidence from the national time-series reveals a positive and statistically significant correlation between the flow of remittances and economic growth, in general. Ahmad et al (2013) found remittance to have a positive relationship with Pakistan's GDP, while Hussain and Anjum (2014) also found a positive significant relationship. Remittances contribute to the external account, help build foreign-exchange reserves, and augment household incomes. But

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these studies usually only detect correlations and their findings are subject to the time and analysis they use.

2.6 Diaspora, Return Migration, and Networks

In addition to remittances, the diaspora can make a contribution via knowledge transfer, foreign direct investment, trade relations and potential return migration. Skilled emigration can reap payoff for development of the home country, as illustrated by the role of the Indian diaspora in the development of India's information-technology sector, Docquier and Rapoport (2012) point out. These benefits are only realized if the Provincial Government is able to engage the Pakistanis abroad and if the domestic economy and political environment are conducive to return and investment.

3. Methodology

This article is not a systematic review or a primary empirical study, but rather an analysis of the literature in a narrative fashion. No surveys, interviews, or original statistical modelling were conducted. The analysis, however, is based on two classes of sources. The first one is peer-reviewed research on the economics of brain drain, which includes fundamental research and Pakistan specific research.The first is the peer-reviewed research on the economics of brain drain, including fundamental research and Pakistan specific research. The second is authoritative institutional and governmental information like data and reports by the State Bank of Pakistan, the Bureau of Emigration and Overseas Employment, the World Bank/KNOMAD, the International Organization for Migration and the Government of Pakistan.

The sources were chosen based on their relevance to Pakistan and South Asia, credibility of the publisher and the timeliness of the publication, with keeping some seminal older studies which continue to be conceptually significant. Primary institutional statistics were preferred for factual claims on volumes of migration and remittances. Since the study is based on information published in other sources, it is subject to limitations mentioned in Section 9 and it cannot be said to establish causal relationships.

4. Results of existing literature review.

4.1 Scale and Composition of Migration

The number of people who emigrated from Pakistan reached a recent peak in 2023, and is projected to level off in 2024 due to hiring restrictions in some of the Gulf economies (BEOE, 2025). The annual totals are summarised in Figure 1. During these years the overwhelming majority of workers were identified as unskilled or semi-skilled, in line with the trend that has been observed by Shah (2023).

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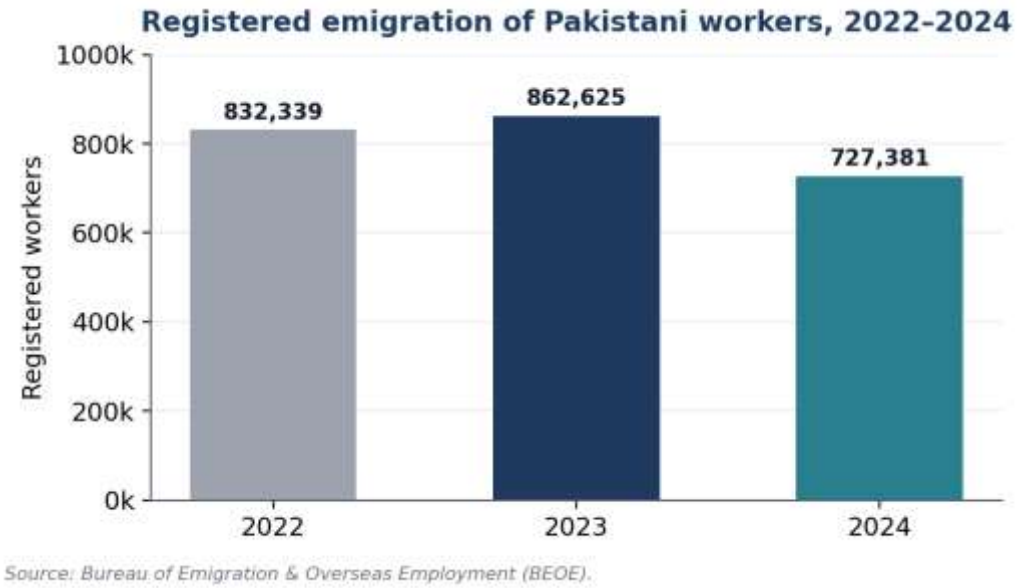


Figure 1. Emigration of Pakistani Workers from 2022 to 2024 (BEOE, 2025).

4.2 Skilled and Professional Emigration

The loss of certain skills in the narrower skilled group is notable in the context of domestic shortages. Registered emigration for the selected highly qualified occupations is presented in Table 1. In addition to doctors, engineers, accountants, and teachers, Pakistan has experienced approximately a two-fold increase in the numbers of the highly skilled professionals that have left Pakistan between 2022 and 2023 (Government of Pakistan, 2024).

Table 1. Registered emigration - Selected highly qualified professionals, 2023-2024

Profession	2023	2024
Doctors	3,486	3,642
Engineers	8,741	8,018
Accountants	7,390	—
Teachers	1,533	—

Note. The year indicated by "—" did not have numbers reported separately for that year. Data obtained from Bureau of Emigration and Overseas Employment (BEOE, 2025).

4.3 Human-Capital Implications

There are two readings of the evidence that are not conflicting. The shortage of trained doctors can be exacerbated by the loss of trained doctors, as occurs in critical services like healthcare, in line with the human-capital-flight issue raised by Haque and Kim (1995). However, the same migration opportunities can motivate more youths to undertake professional education, following the "brain effect" of Beine et al (2001). While the literature does not allow precise statements on the net quantum of skilled migration to and from Pakistan, it does warn that skilled emigration should not be regarded as an unambiguous loss.

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CJSSR
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Remittances and Macroeconomics 4.4

The most obvious economic gain of migration is the remittances. The inflows stood at a new high of US$ 38.3 billion in FY 24-25, up by approximately 27 per cent from last fiscal year (SBP, 2025). The World Bank/KNOMAD classifies Pakistan as a top-five recipient of remittances in the world, placing it in the list for the past six years (World Bank & KNOMAD, 2024; IOM, 2026). Recent inflows are plotted in Figure 2, while remittances are compared with other headline indicators in Table 2.

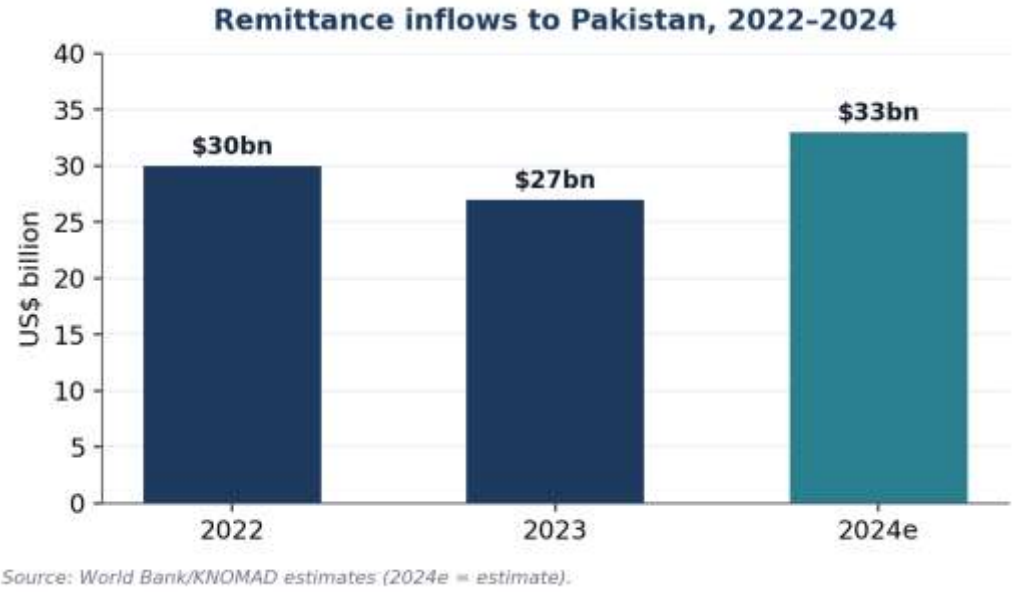


Figure 2. A report by the World Bank and KNOMAD, 2022-2024, shows that remittance inflows to Pakistan for 2022-2024 are expected to be Rs. 1216 billion, representing 10% of the country's GDP.

Table 2. Selected indicators of migration and remittances for Pakistan in 2013.

Indicator	Value	Source
Remittances, FY 2024–25	US$38.3 billion (record; +27% YoY)	SBP (2025)
Position in the global remittance ranking, 2024	In top 5 of remittance recipients, worldwide (2024)	World Bank & KNOMAD (2024)
Registered emigrants, 2024	727,381 workers	BEOE (2025)
Highly skilled share of registered emigrants, 2023	≈ 8% of registered emigrants	Shah (2023)

Note. FY = fiscal year (July – June), YoY = year on year.

4.5 Net Effects: Drain or Gain?

Overall, the findings highlight that Pakistan is witnessing both sides of the migration. It loses valuable professional skills, especially in health and engineering but gains a heavy and increasing financial flow that propels macro-economic stability. Based on the theoretical literature, the outcome of the balance is influenced by domestic factors such as education systems, labour markets and the utilization of remittances (Beine et al., 2001; Docquier & Rapoport, 2012).

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CJSSR
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5. Discussion

Skilled emigration from Pakistan has continued because there is a structural imbalance between supply and demand for educated workers in the domestic economy, where they can be paid a competitive wage. For those who are unable to find fulfilling positions in the local labour market, migration is a logical answer and within a period of time, networks are formed that ease migration over time. This is because the health and human capital impacts are linked to economic impacts and not a standalone issue.

The two outcomes of migration are intimately connected. The downward trend in remittances, which cushions the external account and bolsters household spending, is the same trend that brings worry about lost expertise. This interchangeability implies that a policy limiting emigration would also be likely to diminish an important avenue of foreign exchange without dealing with the root cause of the shortage of domestic opportunity. The other, more positive, view is that migration can actually support development, provided it is managed properly and provided remittances and diaspora connections are directed to productive investment (in the positive sense, Docquier & Rapoport, 2012). Here it is important to differentiate between evidence-based conclusions and interpretation; the positive remittence–growth relationship is supported by evidence (Ahmad et al., 2013; Hussain & Anjum, 2014), and the precise cost of net human-capital losses is still uncertain due to data limitations.

The role of education, economy and institutions

Ultimately, to keep good employees on board, you'll need to make it a place where they can do well at home. This involves increasing the research and innovation infrastructure to ensure scientists and engineers have viable career pathways, better compensation and working environments for key public services like healthcare, and better quality and relevance of higher education. The costs of emigration can be lowered, and benefits raised, by skill certification agreements with countries of destination, organized programmes on engagement with the diaspora and incentives for return and circular migration (Shah, 2023). Educators and professional groups can do their part by adapting their training to local requirements, financial institutions can do their part by reducing the costs of remittance transfers and directing remittances into savings and investment.

7. Legal and Policy Context in Pakistan

The overall management of overseas employment in Pakistan is in the hands of Pakistan's central machinery of registration and regulation of labour migration and related welfare institutions for the overseas Pakistanis (BEOE, 2025). In recent years, there has been growing policy attention with respect to migration and the welfare of migrants, including the development of a national emigration and welfare policy (Shah, 2023). Readers are reminded that legal provisions, registration requirements and institutional arrangements may vary, and change over time, from jurisdiction to jurisdiction and should not be relied upon as authoritative legal advice, but rather for general context; existing provisions should be checked against official government sources.

8. Recommendations

Based on the evidence reviewed, the following practice directions are recommended:

7. Increase investment in research, innovation, and competitive public-sector job opportunities for professionals, particularly in health and engineering.
7. Make education more quality and relevant, and better prepare graduates for the domestic and international job markets.

Engage in negotiations on skill certification and bilateral labour agreements with host countries for migrants and to regularise skilled labour exports.

Minimize cost of remittance transfers and improve formal channels to increase receipts and the developmental impact of remittances.

20. Invest in funds for productive investment instead of consumption, by taking the form of saving instruments and diasporic bonds.

Systematically involve the diaspora in knowledge transfer, mentoring and foreign direct investment.

Encourage return and circular migration through incentives to motivate skilled expatriates to return to their country of origin.

Update migration data systems, capturing more of migration through education and non-Gulf routes to facilitate evidence-based policy.

9. Limitations

There are a few restrictions to be noted. The analysis is a literature-based study, which means that the research undertaken relies on coverage and quality of the previous published research, as well as on official statistics which may underestimate migration through non-registered channels (BEOE, 2025). Studies reviewed are limited to direct comparison since there is a variance in period, method and population. The most reliable information is provided by detailed disaggregated data, which are available for the most recent period, for which long-run claims are therefore more qualitative. Finally, associations cannot be proven from observational studies—like the remittance–growth association—and provincial and rural–urban variation is not well documented.

10. Conclusion

Brain drain continues to be a real worry for Pakistan, but it is not such a straightforward problem as it appears. While a high net migration out of the country is still mostly driven by semiskilled and unskilled workers, the higher rate of migration of doctors, engineers, and technology specialists does have cause for concern about home skills, especially in healthcare. Meanwhile, migration also brings in remittances which have become one of the largest sources of external financing for the country and, at the current time, are on the rise to unprecedented levels in 2024–25. This relationship between skilled migration, human capital and remittances is thus double-sided – the same phenomenon that takes away valuable human capital also provides a financial stream of support. Addressing this tension, through enhancement of domestic opportunities, education and health, and redirecting remittances and diaspora connections to development, is the most promising way for Pakistan to mitigate the costs of brain drain without losing its benefits.

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ISSN E: 3006-1466
ISSN P: 3006-1458
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