The lost money: study of India’s inward foreign remittances and its related factors – a panel data approach

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Abstract: Remittance serves as a very important component of income in GDP levels of many countries. As per the latest World Bank report on remittances, India is the largest recipient of foreign remittance. Although there are many remittance service providers (RSPs) operating in the market, yet a lot of remittance amount is lost in transaction owing to various costs associated with transferring such amount. The current study is an attempt to understand the competitive landscape of the remittance marketplace operating in the various migrant origin countries selected for analysis and compare their cost of sending money to India over a period of time (2014-Q1 to 2018-Q2). The study also identifies major cost transfer determinants using panel data analysis. The study has major policy implications.

Keywords: India; remittance cost; remittance service provider; RSP; panel data analysis; fixed and random effect.


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1 Introduction

Remittance is defined as the sum of personal transfers of cash or in-kind benefits between resident and non-resident individuals, together with any compensation granted to workers who are employed in an economy where they are not resident [IMF, (2009), p.272]. Migrant remittance is an age-old concept that has gained immense significance in development studies (Rapoport and Docquier, 2006; Mundaca, 2009). With an increase in migration, internationally and internally, remittance is acknowledged as a significant and a stable source of external development finance for various families in different regions (Ratha, 2003), ultimately lowering transient and structural poverty (Kapur, 2005).

Remittance flow is in-fact “larger than official development assistance and more stable than private capital flows” (World Bank Group and KNOMAD, 2018). McCracken et al. (2017) estimated remittances to be the second-largest source of net financial flows to developing countries surpassing external aids and direct investments in some countries. Remittance has thus unsurprisingly been featured in three of the migration-related Sustainable Development Goals (SDGs), pertaining to increasing the volume of remittances as a percentage share of GDP, reducing the cost of transactions, as well as lowering the recruitment costs of migrant workers (World Bank Group and KNOMAD, 2018).

Remittances are not only an important source of external funding but also have the potential to, directly and indirectly, contribute to the process of development of low- and middle-income countries. The inflow of these remittances is found to be sensitive to the costs associated with sending these remittances from the host country and receiving costs in the home country (Aycinena et al., 2010; Gibson et al., 2006). In fact, high remittance costs are one of the main factors that cause migrants to use informal channels of transferring money (Ahmed and Martinez-Zarzoso, 2016; Kakhkharov et al., 2017; Gibson et al., 2006; Yang, 2011). It is estimated that the informal remittances could be 50% or more of the officially recorded balance of payment statistics (Freund and Spatafora, 2008). The need for empirical research focusing on determinants of remittance costs for various corridors to help achieve the goal of reducing the remittance costs is highlighted by Beck and Martínez Pería (2011), Kakhkharov et al. (2017) and Ratha et al. (2018).

Regularly featuring in the top five remittance-receiving countries in the world, India’s remittance in 2017 was USD68.96 billion up from USD68.91 billion in 2015 bringing it to the top position (World Bank Group and KNOMAD, 2018). Worker’s remittances to India are observed to display counter-cyclicality, especially during major economic shocks (Jadhav and Singh, 2006). Thus, reducing India’s reliance on external aid and has provided support to BOP (Singh, 2010). Remittance has had a multiplier effect on the Indian economy and plays a crucial role in the economies of many states (Pande, 2018, 2014; Pradhan, 2016; Sutradrhar, 2020). Though the inward flows of remittance are at a growth trajectory but a report published by World Bank highlighted that the remittances would have hit a new record in 2017. However, due to the costs of transferring funds, it could not reach the desired levels is a cause of concern. If due attention towards policies and framework governing the remittance is given, it may become an important instrument for the sustainable development of the economy. To work towards cost reduction, it
becomes crucial to understand what factors affect the remittance cost structure. Such that the efforts of cost reduction can be directed towards the desired factors that will have a substantial impact and thus enable the end beneficiaries to capture a larger share of these external resources. Further, an understanding of the competitive landscape of RSPs can highlight the importance of each type of RSPs which can again help align the efforts of reducing the remittance costs. However, in India, limited academic attention is garnered to this important dimension of remittances inflows, i.e., role of costs and efficiency in influencing the overall remittances (Singh, 2010; Afram, 2011).

Generally, the literature on determinants of remittance costs can be divided into two broad groups; microeconomic approach utilising the household survey data (Amuedo-Dorantes and Pozo, 2006; de la Brière et al., 2002; Yang, 2008) and macroeconomic approach (Adams, 2009; Vargas-Silva and Huang, 2006). The current study is based on the second approach; we take into consideration GDP, migrant stock, political stability, geographical distance and operators characteristics. The literature on the cost of remittances is still inconclusive. Further, several studies in literature incorporate geographical distance as a proxy for the cost of remitting to overcome the paucity of data on remittance cost. This kind of studies are limited in terms of non-inclusive of other factors like technological changes, financial innovations, migration concentration, etc. (Ahmed et al., 2020).

To address the need to reduce the cost of remittances and bridge the gap in terms of methodology, scope and data used by the existing literature, this study uses bilateral data on remittance flows and exploits the global dataset of transaction costs for six remittance sending nations for the time period (2014-Q1 to 2018-Q2). The competitive landscape of the remittance marketplace operating in the various migrant origin countries is also analysed. Thus, our paper contributes to the literature by

1. departing from the existing literature that applies gravitational models and uses geographical distance as the proxy for costs of remittances
2. reporting the various factors affecting remittance costs using the latest cost data from World Bank (2014–2018) in the context of one of the largest remittances receiving country – India.

The rest of the paper is organised as follows. Section 2 gives a brief overview of empirical findings in the area of remittance highlighting the need to study cost structure and then moving towards understanding the various possible factors affecting the remittance costs. Section 3 describes the data and related variables along with the methodology used. Section 4 presents empirical results and Section 5 concludes.

2 Literature review

In a report produced by the SDGs in 2016, the key significance of remittances for the agenda of global development is recognised. One of the targets highlighted is to reduce the average cost of remittance from 7.40% to as low as 3% (Edwards, 2016). Studies report that one of the main obstacles to deter the use of foreign remittance for the country’s developmental process is high transaction cost (Orozco, 2003; World Bank, 2014).
A remittance service provider (RSP) is defined as “an entity, operating as a business, which provides a remittance service for a price to end users, either directly or through agents” [Bank for International Settlements, World Bank, (2007), p.54]. To put in simple words, RSPs mediate money transfers from remitters to recipients (Pieke et al., 2007) and in turn charge a fee for the services.

RSPs in the formal sector generally charge around 10–15% of the principal amount for transferring small remittance typically made by poor migrants (Ratha, 2006). These costs put an unwanted financial burden both on the sender and receiver of the remittance. Further, major international banks are likely to focus on high-value remittance services rather than catering to migrant workers with smaller value and a high number of remittance transactions (Ratha and Riedberg, 2005). Furthermore, poor migrants are less likely to be confident in approaching banks for their remittance services and high costs may further reduce the incentives to use other formal channels and are thus more inclined to cater to informal services. It has also been reported that remittance flows are very sensitive to cost and have the potential to increase with the decrease in the remittance costs (Gibson et al., 2006). Similar findings are reported by Aycinena et al. (2010) based on their field experiment in Washington, DC (USA)-El Salvador corridor where a $1 reduction in the remittance cost resulted in an increase of remittances by $25. To put simply, reduction in the remittance costs encouraged new remittances through that source.

Thus, the target of reducing remittance transaction costs have potential long-term socio-economic consequences especially for developing countries for whom remittances are a source of debt financing, the balance of payment adjustments and access to international capital markets. Empirical work in this field provides evidence that remittance inflow can reduce poverty (Adams, 2004, 2006; Adams and Page, 2003, 2005; Kapur, 2005; Yang, 2008); lead to greater gender equality (Van Naerssen et al., 2016); enhanced investment in human capital (Calero et al., 2009; Yang, 2008), enhanced economic growth (Feeny et al., 2014; Siddique et al., 2012) contribute in financial development (Aggarwal et al., 2011; Azizi, 2020; Giuliano and Ruiz-Arranz, 2009); increase investment (Adams and Cuecuecha, 2010, 2013; Vaaler, 2011) and can help to reduce growth volatility (Bugamelli and Paterno, 2011). It is also related to higher schooling (Alcaraz et al., 2012; Borraz, 2005; Calero et al., 2009; Edwards and Ureta, 2003), lower infant mortality (Kanaiaupuni and Donato, 1999) and higher birth weight (Frank and Hummer, 2002). The lower transaction costs can also encourage flows through formal channels thus increasing the home country’s foreign account balance which helps in improving financial access to the poor and thereby expanding the formal financial sector (Ahmed and Martínez-Zorzoso, 2016; Freund and Spatafora, 2008; Beck and Martínez Pería, 2011). Therefore, a closer look at the factors that determine these costs can be instrumental for policymakers in designing appropriate regulations and intervention policy (McCracken et al., 2017). The subsequent lowering of costs will also encourage the use of formal channels of sending remittances back home.

Numerous reasons can be attributed for high costs of remitting funds from one nation to the other. Manghat (2014), Deputy CEO of the UAE Exchange (foreign exchange and money transfer) quoted three major reasons for the costs not lowering down to the desired
levels. He stated that since no major competition exists, there exists no access to formal modes of transferring funds and a significant price difference exists between different corridors. Vice President of Xpress Money Services Ltd. (money transfer company), Giriyan (2012) quoted that the cost of remittance of funds to India is cheaper as if compared with Africa. But the concern of high costs still persists.

Ratha and Riedberg (2005), Beck and Martinez Peria (2011) and Singh and Hari (2011), are few amongst many authors who have worked on the cost and factors concerning remittances. With significant interests of the low-skilled Indian workers residing in the Gulf nations, who remitted in 2017, approximately USD37 billion to India, the Central Bank of India (RBI) has been dedicated to taking appropriate actions to keep remittance costs as low as possible.

Further, few authors suggested that the transaction costs could be reduced by enhancing the access to financial services in remote areas through innovative ways like the concept of branchless banking (Freund and Spatafora, 2008; Schiantarelli, 2005). The cost reduction is considered two-fold. It will increase the volume of funds being remitted and also enhance financial inclusion (United Nations, 2014). Lower charges and better financial services will undoubtedly redirect the fund flows from informal to formal channels and gradually open various other innovative doors for easing the flow of funds.

2.1 Determinants of transaction costs

A review of the literature highlights many possible determinants of remittance costs.

2.1.1 GDP and cost

Lewer and Van den Berg (2008) in their study based on the data of 11 Asian and European countries from the year 1980–2004 reported more than 50% of the variations in remittances can be explained by economic activity in the host and home country and other gravity variables (namely, geographical distance, common language, colonial).

One of the early studies in this area is by Faini (1994) which reported home country GDP negatively impacts remittances, while the host country’s GDP positively impacted remittance flow. GDP for the host country is reported as one of the most important factors that influence higher remittances to home countries (Vargas-Silva and Huang, 2006). A World Bank report identified remittance costs, the attitude of the host country towards migrant’s financial matters, employment opportunities in the host countries, the cost of living in the host and home countries, government policies in the host and home countries as crucial factors affecting remittances (World Bank, 2006).

An IMF panel data study of 87 counties for the period 1980–2003 reported that host country GDP has a statistically positive impact on remittances while GDP of the home country, presence of multiple exchange rate, restrictions on holding foreign exchange deposits and black market presence have a significant negative impact on the same (Ralph et al., 2005). However, mixed evidence regarding the relationship between the GDP per capita of the home country and remittance is reported by Silva (2005).
2.1.2 Migrant stock and financial development

Migrant stock and financial development in destination country are also a crucial factor for determining remittance volume. The remittances are positively and significantly affected by the migrant stock, i.e., countries with increasing size of migrants’ stock have potential for high remittance flow volume. Besides, improvements in the financial sector of home country it enhances the availability of low-cost remittance services that could have a substantial effect on the number of transactions through official channels (Freund and Spatafora, 2008).

An Indian case study by Gupta (2005) reported that an increase in migration and total earnings of the migrants can be important factors to explain the growth in remittances. Further, the study reported that economic conditions of the home and host country have negative and positive impacts on remittances respectively.

2.1.3 Distance and cost

Lueth and Ruiz-Arranz (2008) reported distance to have a negative effect on remittance flow by examining bilateral remittances for 11 countries in Asia and Europe for the period 1980–2004. They further asserted that economic activity in the home and host countries and other gravity variables accounts for more than 50% of variations in the remittances. Using the same data set Frankel (2011), reported a negative relationship between distance and cost. Whereas a significant positive association is found with the income per capita of the host country. Further, it is highlighted that the gravity variables such as common border and common language are not statistically significant.

De Sousa and Duval (2010) analysed the remittance from various countries to Romania for the years 2005–2009 and reported a positive impact of geographical distance and economic size of home and host country. Whereas, a panel data study of bilateral remittances of 21 sending and receiving European countries from the year 2000–2005 by Schiopu and Siegfried (2006) reported no significant role of geographical distance in determining remittances. However, a positive effect is reported if the countries have no common border.

Recently, McCracken et al. (2017) reported a negative association between geographical distance and volume of transactions based on bilateral remittances to 27 Latin American and Caribbean countries.

3 Data and methodology

3.1 Data and their sources

This paper uses data from The World Bank, Remittance Prices Worldwide, accessed from http://remittanceprices.worldbank.org. The website provides a detailed log of RSPs operating in various corridors. The present study consulted the highest remittance sending countries list issued by the Ministry of External Affairs (India).
Table 1  Break up of remittances Indians sent back home

<table>
<thead>
<tr>
<th>Country of origin</th>
<th>Remittance</th>
<th>Population of overseas Indians</th>
<th>Per capita annual remittance</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAE</td>
<td>$13.8 billion</td>
<td>2.8 million</td>
<td>Rs.3.4 lakh</td>
</tr>
<tr>
<td>USA</td>
<td>$11.7 billion</td>
<td>4.5 million</td>
<td>Rs.1.8 lakh</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>$11.2 billion</td>
<td>3.3 million</td>
<td>Rs.2.4 lakh</td>
</tr>
<tr>
<td>Kuwait</td>
<td>$4.6 billion</td>
<td>0.9 million</td>
<td>Rs.3.4 lakh</td>
</tr>
<tr>
<td>Qatar</td>
<td>$4.1 billion</td>
<td>0.7 million</td>
<td>Rs.4.1 lakh</td>
</tr>
<tr>
<td>UK</td>
<td>$3.9 billion</td>
<td>1.8 million</td>
<td>Rs.1.5 lakh</td>
</tr>
<tr>
<td>Oman</td>
<td>$3.3 billion</td>
<td>0.8 million</td>
<td>Rs.2.8 lakh</td>
</tr>
<tr>
<td>Nepal</td>
<td>$3 billion</td>
<td>0.6 million</td>
<td>Rs.3.4 lakh</td>
</tr>
<tr>
<td>Canada</td>
<td>$2.9 billion</td>
<td>1 million</td>
<td>Rs.1.9 lakh</td>
</tr>
<tr>
<td>Australia</td>
<td>$2 billion</td>
<td>0.5 million</td>
<td>Rs.2.6 lakh</td>
</tr>
</tbody>
</table>

Note: Per capita annual remittances calculated using the exchange rate of Rs.68.6 to a $.

Source: Ministry of External Affairs, Migration and Remittances of the World Bank Group, and Xpress Money, data updated as on 1 July 2018

Table 2  Summary of data sources

<table>
<thead>
<tr>
<th>Variables</th>
<th>Data source</th>
<th>Time period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remittance costs</td>
<td>The World Bank, Remittance Prices Worldwide</td>
<td>2014–2018</td>
</tr>
<tr>
<td>Top remittance</td>
<td>Ministry of External Affairs, Migration and Remittances of the World Bank Group, Xpress Money</td>
<td>As on 1 July 2018</td>
</tr>
<tr>
<td>countries</td>
<td>World Development Indicators Online Database, World Bank</td>
<td>2014–2018</td>
</tr>
<tr>
<td>GDP</td>
<td>United Nation Migrant Stock Database</td>
<td>2010, 2015 and 2017</td>
</tr>
<tr>
<td>Migrant stock</td>
<td>CEPII Database</td>
<td>NA</td>
</tr>
<tr>
<td>Distance</td>
<td>theglobaleconomy.com</td>
<td>2014–2017</td>
</tr>
<tr>
<td>Political Stability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index score</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Among the top 10 courtiers listed in Table 1 the current paper explores the remittance market place of UAE, USA, Saudi Arabia, UK, Canada, and Australia. The reason for the exclusion of the rest of the countries is the lack of consistent data.

Further, the data on variables that were considered important in influencing remittance flows chosen based on literature review was collected from different sources. One of the most important factors that influence higher remittances to home countries is the GDP for the host country. The data of GDP (in billions of USD) is taken from WDI (World Development Indicators Online Database, World Bank). The migrant stock data in the host country is sourced from (United Nations, 2017). The geographical distance in kilometres is measured from India’s capital – Delhi to the corresponding capital of the remittances-sending country. The data is sourced from the CEPII database. Political stability is gauged from the index created by theglobaleconomy.com (n.d.). The index is a composite measure based on multiple index sources such as the Economist Intelligence Unit, the World Economic Forum, and the Political Risk Services, among others.
3.2 Methodology

The present research work categorises the data into a panel form for the analysis. The study considers six different nations for the assessment. Based on priori literature, we explored distinctive techniques that have been applied to assess the relationship of remittances with a varied set of variables. To quote a few techniques, regression analysis (Beck and Martínez Peria, 2011), gravity model (Ahmed and Martínez-Zarzoso, 2016), and panel fixed effects and panel random-effects model (Meyer and Shera, 2017). The current dataset is a strongly balanced form of a panel. This infers the same period for every select country in the study.

The panel form of assessment is also preferred in analysing variables that change with time but not with one country to another. The panel study also uses control variables for the assessment. These control variables are not directly observed but may strongly impact the results. Based on the type of study, data and past literature, the research chose panel fixed effects (FE) and random effects (RE) model for the analysis.

Green and Tukey (1960) highlight the fact that if a sample exhausts the population, the variable is said to be fixed and when the sample is a smaller part of the population, the corresponding variable is said to be random. In the fixed-effect model, the panel data consider explanatory variables as non-random variables. This model is advantageous in identifying the type of impact variables that change over time. FE model explores the relationship between independent variables and output within the same unit (partner country). On the other hand, the RE model considers explanatory variables from random events. This model is based on the assumption that the difference between the units (countries) is random and uncorrelated with the independent variables in the model (Meyer and Shera, 2017; Pillai, 2016; Schiopu and Siegfried, 2006). Equation (1) highlights a general equation for fixed effects and random effects model and equation (2) represents a specific equation for the model.

\[
Y_{it} = \beta_0 + \beta_1 W (x_{it} - \bar{x_i}) + \beta_2 B \bar{x_i} + \beta_3 z_i + \epsilon_i
\]  

\[
\text{Cost of remittances} = \beta_0 + \beta_1 \text{GDP home} + \beta_2 \text{GDP host} + \beta_3 \text{migrants stock} + \epsilon_{it}
\]

where Y_{it} represents dependent variable (cost of remittances); i infers country; t infers time; x_{it} represents independent variable (GDP home, GDP host and migrants stock); \(\beta_1, \beta_2, \beta_3\) represent respective coefficients for independent variables; and \(\epsilon_{it}\) represents the error term.

4 Results and analysis

This section first attempts to understand the general competitiveness of the remittance industry and then analyse various remittance cost affecting factors in the Indian context.
4.1 General competitiveness in the remittance service industry

For the present study, it is gauged by the following factors like number of RSPs operating in a given country, the different types of RSPs operating (banks, MTOs), service coverage of the RSPs and the cost of remitting money to India.

4.1.1 Number of RSPs operating in the selected country, the number of countries served and types of RSPs

The marketplace of the countries selected is very uneven. Figure 1 shows the number of RSPs operating in each of the selected countries.

Figure 1  RSPs by country, type and number (see online version for colours)

Source: Authors compilation from World Bank Data

The companies operating in the money transfer industry can be broadly categorised according to their geographic scope as:

1 Global operators: Companies which operate in all the countries, predominately MoneyGram International and Western Union International.

2 Selected operators for the region: Companies operating in specific regions, e.g., Asian markets and European markets.

3 National operating business including local banks like Royal Bank of Canada, Toronto Dominion Bank operating in Canada; Al Zamil Exchange, Enjaz Bank and A-Rajhi Bank in Saudi Arabia; Al Ansari, Al Fardan and UAE Exchange in UAE; etc.

Overall, there are at-least nine RSPs operating in each of these countries. But still some countries have more RSPs than others. There is a wide variety in the type of RSPs where Australia not only has the maximum number of service providers, i.e., 40 but also has the maximum number of banks involved in the services at 8. It is followed by the UK with a total of 22, including 19 operators with three banks and Canada is third with 19 operators and five banks as RSPs.
Mostly, banks are outnumbered by the other operators in remittance landscape as they do not consider remittance to be their core business and hence only offer it as a marginal product if at all operating in this sector. There can be a number of possible reasons for scarce banks presence in the remittance landscape:

a. banks have a preference for larger loans and investments over small remittances
b. remittance sending customers are generally low net value customers who are not the prime customers for the bank
c. remittances are quite often sent to developing countries and that too in the rural areas, where large banks presence is in general scarce
d. lastly from the remitter’s point of view, large banks can be intimidating (Ratha and Riedberg, 2005).

4.1.2 Cost of remitting money to India

The countries selected have a range of cost associated with the sending remittances to the home country (India). Money transfers have not substantially changed for any of the countries and hover between 2.8% to 9.1% in the last five years. Table 3 compares the pricing of sending remittances to India from various countries of origin (these are unweighted average costs in percentage and 2018 included data until Q2).

<table>
<thead>
<tr>
<th>Origin</th>
<th>‘14</th>
<th>‘15</th>
<th>‘16</th>
<th>‘17</th>
<th>‘18</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>3.57</td>
<td>3.22</td>
<td>3.20</td>
<td>3.01</td>
<td>2.72</td>
</tr>
<tr>
<td>ARE</td>
<td>4.77</td>
<td>4.69</td>
<td>4.26</td>
<td>4.65</td>
<td>5.19</td>
</tr>
<tr>
<td>UK</td>
<td>3.87</td>
<td>3.78</td>
<td>3.94</td>
<td>4.31</td>
<td>3.42</td>
</tr>
<tr>
<td>CAN</td>
<td>9.18</td>
<td>9.04</td>
<td>7.66</td>
<td>5.94</td>
<td>5.23</td>
</tr>
<tr>
<td>AUS</td>
<td>7.09</td>
<td>6.36</td>
<td>6.34</td>
<td>6.07</td>
<td>5.13</td>
</tr>
<tr>
<td>UAE</td>
<td>2.856</td>
<td>2.926</td>
<td>2.855</td>
<td>3.130</td>
<td>3.177</td>
</tr>
<tr>
<td>World avg.</td>
<td>8.35</td>
<td>7.54</td>
<td>7.35</td>
<td>7.17</td>
<td>6.99</td>
</tr>
</tbody>
</table>

Note: Non-weighted averages in %.
Source: Authors compilation of World Bank data

The line diagram (refer to Figure 2) highlights that the cost of sending US$200 for all the selected countries are well below the world average except for Canada, who also joined the others after 2017. UAE has the lowest remittance cost over the years. A similar trend is replicated when the cost of sending US$500 is compared.
The cost of sending money to India differ depending on a variety of factor like source country, type of RSP chosen, and the remittance sending scheme (Afram, 2012). The other factors that add to the high remittance costs are de-risking measures taken by commercial banks and exclusive partnerships between national post office systems and a single money transfer operator (World Bank Group and KNOMAD, 2018). It is worth noting that the average costs of these transfers worldwide account for approximately US$30 billion per year. Though the direct costs of remittance are borne by the sender and their recipients, however, the cost indirectly impacts the country as a whole. It is because remittance serves as an alternate means of financing investments and enhances growth in poor countries. A high remittance cost is reported to negatively impact the remittance flow and hence thereby impacting the country’s finances (Giuliano and Ruiz-Arranz, 2009).

While comparing the prices, it is important to be cautious of the fact that two different types of operators exist namely, banks and MTOs. Almost all the countries analysed had a greater number of MTOs than the banks operating. Countries with such a scenario are seen to have a remittance sending cost that is relatively below the average. This is supported by Ratha et al. (2010), where they reported a high remittance fee in corridors with a high concentration of banks and low competition in the market.

A high remittance fee is recorded in corridors with low competition and with high bank concentration. A highly competitive corridor is expected to have low remittance prices. A high-volume corridor opens the opportunity to tap the advantage of economies of scale. It thereby attracts more competitors, particularly small niche players that compete primarily on price (Freund and Spatafora, 2008). To quote an example, the Saudi Arabia-India corridor has numerous RSPs from major MTOs to small and regional players.

4.2 Analysing other factors influencing the cost of remittances

4.2.1 Distance

A comparison between the distance and the average cost of sending US$200 show that the transaction costs and not exclusively determined by the distance of the home country and the host country. For instance, Table 4 and Figure 3 illustrate the average cost to send
money from the USA was lowest even when the capital to capital distances is maximum among the chosen countries.

Table 4  Distance and cost

<table>
<thead>
<tr>
<th>Country</th>
<th>Distance to India</th>
<th>Avg. cost of sending US$200</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>11,761.81</td>
<td>1.758</td>
</tr>
<tr>
<td>Saudi Arab</td>
<td>3,053.15</td>
<td>3.006</td>
</tr>
<tr>
<td>UK</td>
<td>6,720.64</td>
<td>2.128</td>
</tr>
<tr>
<td>Canada</td>
<td>11,643.63</td>
<td>4.026</td>
</tr>
<tr>
<td>AUS</td>
<td>10,435.1</td>
<td>3.464</td>
</tr>
<tr>
<td>United Arab</td>
<td>2,312.87</td>
<td>1.96</td>
</tr>
</tbody>
</table>

Source: CEPII for geographical distance (in kilometres) and World Bank Remittances Prices Worldwide for remittance costs

Figure 3  Remittance cost and distance (see online version for colours)

4.2.2 Political stability

The underlying indexes reflect the likelihood of a disorderly transfer of government power, armed conflict, violent demonstrations, social unrest, international tensions, terrorism, as well as ethnic, religious or regional conflicts. Where a negative 2.5 index indicates a weak and positive 2.5 indicates positive political stability.

Table 5  Political stability index

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>0.58</td>
<td>0.68</td>
<td>0.40</td>
<td>0.30</td>
<td>0.49</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>–0.29</td>
<td>–0.63</td>
<td>–0.46</td>
<td>–0.62</td>
<td>–0.5</td>
</tr>
<tr>
<td>UK</td>
<td>0.42</td>
<td>0.52</td>
<td>0.36</td>
<td>0.26</td>
<td>0.39</td>
</tr>
<tr>
<td>Canada</td>
<td>1.18</td>
<td>1.27</td>
<td>1.26</td>
<td>1.11</td>
<td>1.205</td>
</tr>
<tr>
<td>AUS</td>
<td>1.05</td>
<td>1.05</td>
<td>1.05</td>
<td>0.90</td>
<td>1.0125</td>
</tr>
<tr>
<td>United Arab</td>
<td>0.77</td>
<td>0.76</td>
<td>0.56</td>
<td>0.63</td>
<td>0.68</td>
</tr>
</tbody>
</table>

Source: theglobaleconomy.com (n.d.) and authors calculations
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An average of the political stability score, when compared to the average cost of sending remittance in several of corridors chosen, does not show any relationship as shown in Figure 4. The country like Saudi Arabia having negative political stability at 0.5 still have a lower cost of remittance as compared to the country of high political stability like Canada and Australia which have a higher cost of sending the remittance.

Figure 4  Political stability and costs (see online version for colours)

4.3 Fixed effects and random effects model

The present work considers a panel of six different countries, namely USA, UAE, Saudi Arabia, Canada, Australia and UK. Using the fixed effect model and random effect model, the relationships are observed. Time period of five years beginning 2014 till 2018 has been observed. The developed dataset is in a balanced panel form which allows the application of the aforesaid techniques.

Table 6  Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observation</th>
<th>Mean</th>
<th>Std. deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTRYNO</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COST</td>
<td>30</td>
<td>4.716</td>
<td>1.803</td>
<td>2.72</td>
<td>9.178</td>
</tr>
<tr>
<td>GDPHOME</td>
<td>30</td>
<td>178.319</td>
<td>263.919</td>
<td>1.19</td>
<td>756.35</td>
</tr>
<tr>
<td>GDPHOST</td>
<td>30</td>
<td>2.340</td>
<td>0.268</td>
<td>2.039</td>
<td>2.705</td>
</tr>
<tr>
<td>MIGRANTS</td>
<td>30</td>
<td>1,567,554</td>
<td>1,063,962</td>
<td>350,498</td>
<td>3,434,021</td>
</tr>
</tbody>
</table>

Source: Author’s calculations

As explained in Subsection 3.2, the cost of remittances is considered as a dependent variable and the following are considered as independent variables: GDP of home country, GDP of host country, and immigrants stock. The analysis begins by conducting stationarity, autocorrelation, multicollinearity and heteroscedasticity of the panel. The results proved robust and stable results (available on request). Next, descriptive statistics are performed. Table 6 represents the same. Further, fixed effects and random effects
models are applied. Tables 7 and 8 depict these results. Table 9 highlights Hausman test results which decide the better model amongst fixed effects and random effects. Stata 14 software has been used throughout the study for the analysis of the panel.

Table 6 depicts the summary of the dataset with all the variables including independent and dependent and with their mean and standard deviations. Tables 7 and 8 represent the fixed effect model results and random-effects model results, respectively.

### Table 7 Fixed effects model

<table>
<thead>
<tr>
<th>Cost</th>
<th>Coefficient</th>
<th>Std. error</th>
<th>t-value</th>
<th>P &gt; t</th>
<th>95% conf. interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPHOME</td>
<td>0.005</td>
<td>0.008</td>
<td>0.63</td>
<td>0.532</td>
<td>-0.011 0.022</td>
</tr>
<tr>
<td>GDPHOST</td>
<td>-2.770***</td>
<td>0.793</td>
<td>-3.49</td>
<td>0.002</td>
<td>-4.420 -1.121</td>
</tr>
<tr>
<td>MIGRANTS</td>
<td>-4.14**</td>
<td>1.99</td>
<td>-2.08</td>
<td>0.05</td>
<td>1.57 8.28</td>
</tr>
<tr>
<td>CONS</td>
<td>3.781</td>
<td>3.137</td>
<td>1.21</td>
<td>0.241</td>
<td>-2.742 10.306</td>
</tr>
<tr>
<td>sigma_u</td>
<td>7.098</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.683</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rho</td>
<td>0.990</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: *** and ** indicates significance at 1% and 5% level respectively.

Source: Author’s calculations

### Table 8 Random effects model

<table>
<thead>
<tr>
<th>Cost</th>
<th>Coefficient</th>
<th>Std. error</th>
<th>t-value</th>
<th>P &gt; z</th>
<th>95% conf. interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPHOME</td>
<td>-0.008</td>
<td>0.002</td>
<td>-0.3</td>
<td>0.764</td>
<td>-0.005 0.004</td>
</tr>
<tr>
<td>GDPHOST</td>
<td>-1.156**</td>
<td>0.588</td>
<td>-1.96</td>
<td>0.049</td>
<td>-2.310 -0.002</td>
</tr>
<tr>
<td>MIGRANTS</td>
<td>-6.28</td>
<td>6.45</td>
<td>-0.97</td>
<td>0.331</td>
<td>-1.89 6.37</td>
</tr>
<tr>
<td>CONS</td>
<td>8.546</td>
<td>1.767</td>
<td>5.79</td>
<td>0</td>
<td>5.652 11.440</td>
</tr>
<tr>
<td>sigma_u</td>
<td>1.306</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sigma_e</td>
<td>0.683</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rho</td>
<td>0.785</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: *** and ** indicates significance at 1% and 5% level respectively.

Source: Author’s calculations

Table 7 shows a positive and significant impact of the GDP of host country and immigrants stock on the cost of remittances. Since we consider all p-values to be significant if greater than 10%, coefficients of GDP host and Immigrants are considered statistically significant. This implies that the GDP of host country and immigrants stock pose a significant impact on the cost of remittances in the select set of nations. From the findings, it is implied that a 1% increase in GDP of the home nation reduces the cost of remittance by 2.77% and a unit increase in the number of migrants reduces the cost of remittances by 4.14%. On the other hand, Table 8 exhibits a positive and significant impact of the GDP of host country only on the cost of remittances. Since we consider all p-values to be significant if greater than 10%, coefficients of GDP host are only considered statistically significant. This implies that the GDP of the Host Country only impacts the cost of remittances in the selected set of nations. From the findings, we interpret that a 1% increase in GDP of the host nation leads to a decrease in the cost of remittance by 1.156%.
After the application of the fixed and random effects model, Hausman test is applied to see the preference amongst the two models. Table 9 highlights the results of the same.

<table>
<thead>
<tr>
<th>Table 9</th>
<th>Hausman test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed effect</td>
</tr>
<tr>
<td>GDPHOME</td>
<td>0.005</td>
</tr>
<tr>
<td>GDPHOST</td>
<td>-2.770</td>
</tr>
<tr>
<td>MIGRANTS</td>
<td>4.14</td>
</tr>
</tbody>
</table>

Source: Author’s calculations

The null hypothesis of the Hausman test states that the individual effects are not correlated with another model. If in case they are correlated, then the null hypothesis is not accepted, highlighting that the random-effects model is not suitable. In this research work, since the value obtained of Hausman test is 0.002, this implies results obtained by the fixed effects model should be followed. Thus, based on Hausman test results, we confirm the fixed-effect model over the random effect model.

5 Conclusions

Remittances across the globe are regarded as a crucial component of any nation. It contributes directly and significantly towards the income and GDP levels. India is one of the largest recipients of foreign remittances and this reason drives the present research work. The study examines the significance of various determinants that drive the cost of remittances in India across six different nations. Through an extensive literature review, the determinants of the cost of remittances are explored. These factors are further comprehensively assessed using panel data methodology. Fixed effects and random effects models are applied for six different nations over a time frame of five years. The literature highlights that lower cost of remittances fosters higher flows of remittances into the country. Moreover, on the contrary, increased cost refrains, migrants, from sending money via formal channels. The empirical analysis also proves the significant and positive impact of the GDP of the host country and immigrants’ stock on the cost of remittances. A 1% increase in GDP of the host nation leads to a decrease in the cost of remittance by 1.156% and a unit increase in the number of migrants reduces the cost of remittances by 4.14%.

The significant results of panel data imply that impact of GDP of host/home country can be treated as a proxy to measure the development of the country, i.e., more developed the country it has better technology and more competition in the market which will help the consumers get better services. Similarly, the migrant stock has also come out as an important factor determining the cost which is consistent with the existing literature which supports that more customer base serves as more opportunity for service providers to get in the market as they can take advantage of economies of scale. This further will attract more competitors to enter the market which will help pull the remittance cost down.
On analysing the general competitive landscape of the remittance marketplace and the relationship of remittance costs with geographical distance and political stability. No clear relationship is obtained between the cost of remittance and the geographical distance and political stability. However, lower costs are observed for the corridors with more migrants and more competition as highlighted by numerous studies quoted in the literature. Also, our analysis showed that costs are high where the share of banks is high. Thus, policymakers should encourage a greater number of service providers in the remittance markets particularly small niche players that compete primarily on price. Similar results are highlighted by The World Bank (2017) the report further adds that remittance costs vary substantially by the instrument used. In-fact, transfers using cash and bank accounts cost 7%, much more than the 4.2% average cost of using mobile money. It can be substantiated that expanding mobile technology (and displacing banks) will help squeeze remittance costs. Mobile technology eliminates the forms, codes, agents, extra time, and fees tied to the traditional money transfer process, which is a large part of the appeal.

The findings highlight that government and policymakers should aim to enhance the competition landscape, i.e., the number of operators in the market. This should be coupled with providing appropriate infrastructure to facilitate their functioning. Further other policy changes like tax-related benefits, lesser formation formalities, start-up incentives, etc. can also be introduced to make the remittance market place more attractive. This will facilitate lowering the costs and easy availability of service providers that shall further help in redirecting flows from informal towards formal channels across the globe.

The study finally recommends the introduction of educational programs that will allow to taking the maximum benefit of the increased competition in the remittance landscape. Educating the sender about the variety of services available is quintessential as the mere existence of low-cost mechanisms for transferring the money will not prompt them to use it. In-fact World Bank has also noted the importance of education in reducing the remittance costs and started with an education program called Project Greenback 2.0 in 2011 (World Bank, n.d.).

Lastly, like other researches, this research study is also not free from limitations. Firstly, more independent variables can be considered in assessing the cost of remittances. Further, the lack of publicly available databases for the volume of transactions for different types of RSPs limited the scope of the study to the consolidated figures. The research work is also confined to a few data sets available like the migrant stock data was available only for the year 2010, 2015 and 2017. The interpolation method is used to calculate the estimates of the missing years and forecasting technique for 2018. The lack of consistent year on year data of all the corridors have resulted in dropping a few of the top remitting host country from the analysis.

In the future, the impact of exchange rate stability and employment levels can also be studied to assess their impact on the cost of remittance. Also, the time period can certainly be expanded, giving the study a better horizon of understanding over time. The data accessibility to better resources will certainly add to the credibility and produce better results. More variables and country analysis may add significant contributions to the literature and in finding cheaper ways for low-cost remittances methods.
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References


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