Paper No.	Particulars
	SESSION – I
	Time: 10.30 – 12.00 *Regal 2 Hall*
	THEME: **International Flow of Financial Resources – I**
	CHAIR: *Prof. Dr. Bishwambher Pyakural* *Tribhuvan University*
7	**Empirical Analysis of Remittance Inflow: The Case of Nepal** — *Saujanya Acharya* *Kahmandu University, Nepal.*
8	**Remittance and its Casual Effect to Trade Deficit in Nepal: A Vector Error Correction Model Approach** — *Guna Raj Bhatta* *Nepal Rastra Bank, Nepal*
	SESSION REPORT

Empirical Analysis of Remittance Inflow: The Case of Nepal

Karan Singh THAGUNNA, Ph.D.[*], Saujanya ACHARYA[**]

Abstract

This paper analyzes the nine year remittance inflow and macroeconomic data of Nepal, and studies the effect of remittance on each of those macroeconomic variables. We have used Unit Root Test, Least Squared Regression Analysis, and Granger Causality Test. The empirical results suggest that remittance has more causality on the consumption pattern as well as the import patter, and less on investments. Furthermore, with available literatures, this paper discusses the importance of channeling the remittance funds into the productive capital, mainly the public infrastructure, in comparison with the South Korean case study.

JEL Classification: F24, O40, E13, E22

Key words: Remittance, Growth, E Views, Unit Root Test, Least Squared Regression, Granger Causality Test, Cobb-Douglas Function, Two Gap Model, Nepal

I. INTRODUCTION

In the past two decades, increasing number of Nepalese people has been migrating abroad in the pursuit of better opportunities. Definitely, a decade long Maoist's insurgency in Nepal (1996 – 2006) compelled for the massive exodus. Rather than living under uncertainties and life threatening risks associated with the civil war, thousands of people opted for emigration – whether as laborers, students or as other status of residency. With the 2005 figure alone, it is estimated that 4.77% of the Nepalese population are emigrants – and there is an upward pressure on the figure (Kollmair, 2005).

Remittance is the money sent back home by the workers who have migrated abroad. It would include cash or non-cash items, and could arrive in the country through a formal or informal channel. In case of Nepal, the reported figures of remittance are those flown in through the formal channel, and researches estimate that significant amount, mainly from India, still arrive through the informal channels – through friends. However, over the years, it has been seen that the use of a

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formal channel is becoming more widespread as the financial institutions are making it easier and accessible – e.g. increasing the number of remit counter in cities as well as in rural areas.

In the recent years, there has been an increasing demand for the Nepalese workers in - international labor markets, and hence, the amount of remittance flow into the Nepalese economy has been on an upward trend – in fact, it has been so for the past 10 years. Essentially, our economy has grown depended on remittance over the past decade.

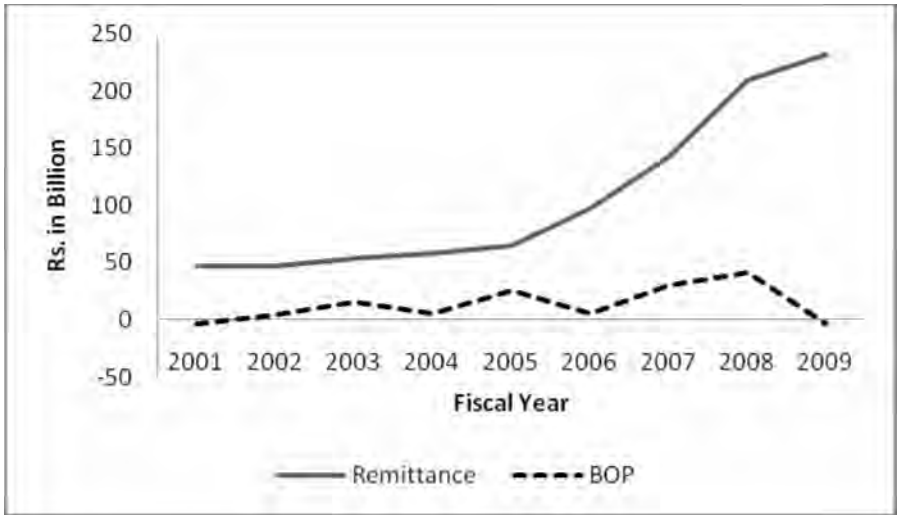
TABLE 1: Remittance inflow to Nepal (FY: 2001/02 – 2009/10)

Financial Year	Remittance Inflow (In Rs. Billion)
2001/02	47.22
2002/03	47.54
2003/04	54.2
2004/05	58.59
2005/06	65.54
2006/07	97.69
2007/08	142.68
2008/09	209.7
2009/10	231.73

Source: Ministry of Finance, Government of Nepal (2011)

In the fiscal year 2010/11, Rs. 259.53 billion was reported to have arrived in a 10 months period; in the year 2009/10, inflow of Rs. 231.73 billion was reported (Ministry of Finance, 2011). In fact, as of 2010, remittance accounts for 23 %[1] of the GDP. And Nepal is within top five countries in the world with highest remittance-GDP ratio (World Bank, 2008).

FIGURE 1: Remittance – Balance of Payment (FY2001/02 – 2009/10)

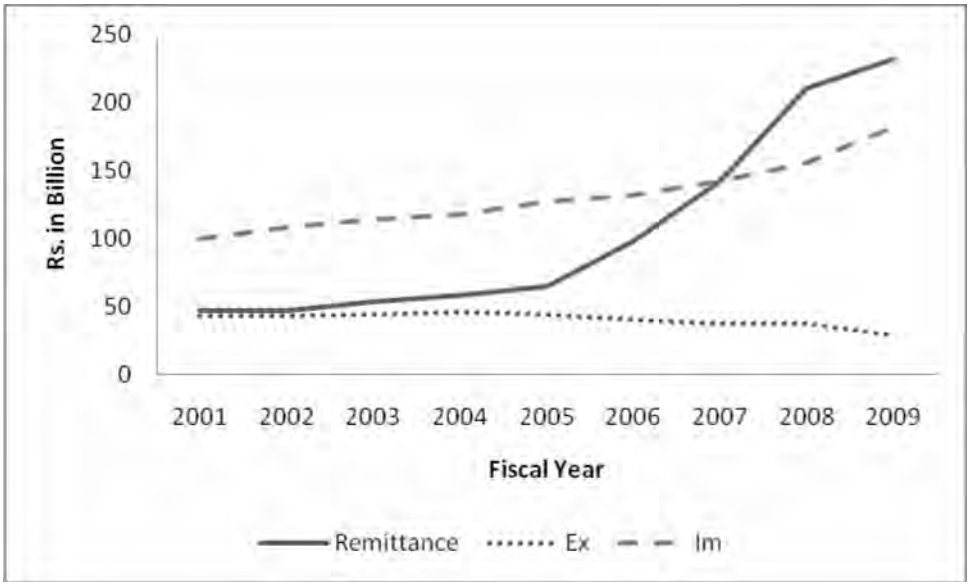


Source: Ministry of Finance, Government of Nepal (2010)

[1] This figure is subject to debate, as significant amount is arriving through the informal channel is not considered.

High volume of remittance raised the standard of living, and has remained as an effective instrument for poverty alleviation particularly in the rural areas. Most importantly, it has now been the primary component in achieving a favorable balance of payment by narrowing the current account deficit. As shown in the Figure 1 above, remittance seems to have a pulled up favorable balance of payment for the most part of the decade. With its contribution, as well as the foreign aid inflow, balance of payment surplus of Rs. 1 billion in the year 2010/11 was reported, despite the deficit faced in the year 2009/10 (Nepal Rastra Bank, 2011).

FIGURE 2: Remittance – Export – Import Trend (FY 2001/02 – 2009/10)



Source: Ministry of Finance, Government of Nepal (2010)

As shown in Figure 2, during the ten year period that experienced mass inflow of remittance, Nepalese export declined, where as the import increased. It can be derived that the remittance has not been utilized in productive sectors to achieve better international competitiveness. Instead, imports grew in tandem with the remittance inflow. To a large extent the so-called phenomenon of "Dutch Diseases" might be in play as the influx of foreign currency in the form of remittance appreciates local currency (or at least stop depreciation). In addition, there is also seemingly negative impact on labor market due to shortage of labor forces and high wage rate. As a result Nepalese economy relies on remittance inflow for the stabilization of the balance of payment, which has been favorable over the years, as shown in Figure 1.

Capital inflow from the external economy provides a great buffer to the economy. It stimulates the economy, and when invested, also leads to the employment generation (Salman, 2011). However, academics have raised concern on the importance of as well as methods of channelizing those funds for productive investment purposes (Pant 2011). Numerous studies, Salman (2011) as well as Samimi, Razanejad and Ariani (2010), have empirically analyzed the impact of the foreign capital flow into their respective economies. This paper has dual objectives: first to empirically and theoretically investigate the impact of remittance of several macroeconomic variables through Granger Causality Test Method, and establish the importance of remittance funds in Nepalese economic growth in comparison with South Korea.

II. EMPIRICAL ANALYSIS

3.1.Model Framework and Data Sources

The variables that would be studied mainly relates to macroeconomic variables affecting the Gross Domestic Product (GDP) of Nepal. In this study, the identified variables are consumption (CN), investments (I), savings (S), import (IM) and export (EX). First, with the analysis of Durban-Watson Statistics, Akaike Information Criterion and Schwarz Criterion, the regression equation is established. Then the Granger Causality Test for remittance inflow and each of the aforementioned variables will be conducted.

The model is based on the data within the time series of Nepalese Fiscal Year 2001/02 – 2009/10. Data on each variable are obtained from *Economic Survey: Fiscal Year 2010/2011* published by *Ministry of Finance, Government of Nepal.* All the data are represented in Rs. billion. In addition, logarithmic transformation was conducted on the data.

3.2.Unit Root Test

Before moving on to regression, it is important to conduct the Unit Root Test of each variables in order to test whether the data are stationary or not. Stationarity is important for both least square regression as well as the Granger Causality Test in order to avoid misleading parameter estimates of relationship between variables (Mahadeva and Robinson, 2004).

The Unit Root Test was conducted with the following hypothesis:

H_0 : The concerned variable has a unit root.

H_1 : The concerned variable does not have a unit root.

Following table summarizes the decision at the 5% significance level.

TABLE 2: Unit Root Test decision

Variable	GDP	Consumption	Investment	Savings	Export	Import
Decision	Accept	Accept	Accept	**Reject**	Accept	Accept

Referring to Table 2, the test provides enough evidence to reject the null hypothesis for the case of savings, which does not have a unit root, which is differenced at 1st level (all others were had the lag length of 0).

3.3.Least Squared Regression Analysis

The original model in this case would be the following, where β represents the coefficient, and μ represents the error:

$$gdp = \beta_0 + \beta_1 CN + \beta_2 I + \beta_3 S + \beta_4 IM + \beta_5 EX + \mu \quad (1)$$

Following is the regression result using E views.

TABLE 3: Regression Results

Dependent Variable: GDP
Method: Least Squares
Date: 03/27/12 Time: 15:20
Sample: 2001 2009
Included observations: 9

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CN	0.836567	0.019627	42.62323	0.0000
I	0.008352	0.013212	0.632103	0.5722
S	0.095320	0.005236	18.20470	0.0004
IM	0.021558	0.016611	1.297797	0.2851
EX	-0.009296	0.006177	-1.504986	0.2294
C	0.268695	0.053164	5.054076	0.0149

R-squared	0.999979	Mean dependent var	2.684381
Adjusted R-squared	0.999945	S.D. dependent var	0.043281
S.E. of regression	0.000322	Akaike info criterion	-13.00809
Sum squared resid	3.11E-07	Schwarz criterion	-12.87661
Log likelihood	64.53641	F-statistic	28871.42
Durbin-Watson stat	2.207738	Prob(F-statistic)	0.000000

From the regression results above, it can be concluded that consumption has the significant contribution to the Nepalese economy at the present. After consumption, most contribution comes from savings and investment, both with a positive coefficient. And finally, the outcome of the coefficients of import and export is quite unorthodox, as the import has positive coefficient and export has a positive coefficient.

3.4.Granger Causality Test

Essentially, this study is conducted in order to empirically determine the effect of remittance on the macroeconomic variables. In the previous sections, using the regression, it was made possible to understand the correlation among some of the macroeconomic variables with the dependent variable GDP. Granger Causality Test is a method of determining the causal relationship between two variables at a time. Using the statistical analysis software E Views, Granger Causality Test was conducted for remittance and each of the aforementioned macroeconomic variables. Following table summarizes the test results.

TABLE 4: Granger Causality Test Result

Null Hypothesis	Obs.	F-Statistic	p - value
Consumption does not Granger cause Remittance	7	6.94152	0.12592
Remittance does not Granger cause Consumption		0.04942	0.95291
Investment does not Granger cause Remittance	7	1.65654	0.37643
Remittance does not Granger cause Investment		5.42921	0.15554
Savings does not Granger cause Remittance	7	2.52416	0.28376
Remittance does not Granger cause Savings		0.61692	0.61846
Import does not Granger cause Remittance	7	1.45230	0.40778
Remittance does not Granger cause Import		6.80554	0.12811
Export does not Granger cause Remittance	7	5.12597	0.16324
Remittance does not Granger cause Export		2.77532	0.26488

As none of the null hypothesis is significant up to 10% significance level, this case would hold 15%[2] as it's α level. When α = 0.05, we can reject the hypothesis "Consumption does not Granger cause Remittance" and "Remittance does not Granger cause Import."

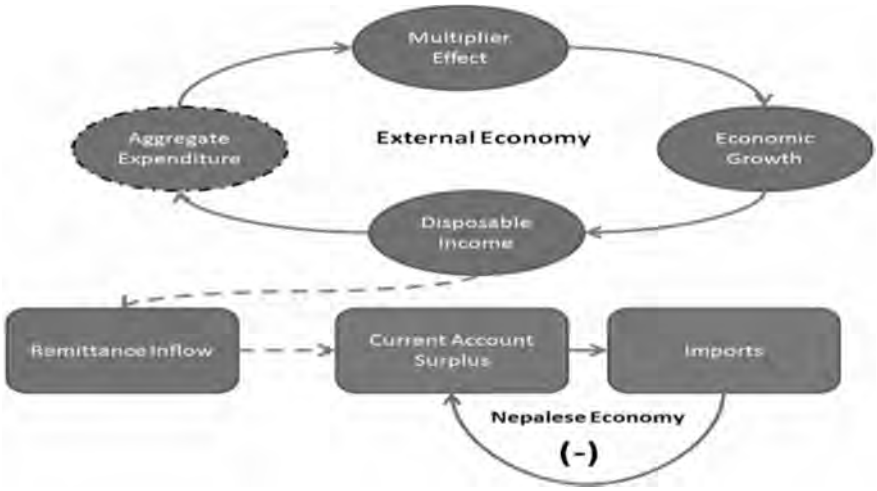
III. ANALYSIS

3.1 Consumption and Imports

In the regression results in the section 2.3., consumption stood out to be one of the major determinants of the GDP, as the coefficient of the consumption is positive and is higher compared to other factors. In case of the imports, the coefficient happens to be positive. In addition, the Granger Causality Test result indicates that, at the 15% significance level, the null hypothesis "consumption does not Granger cause Remittance" and "remittance does not Granger cause Import" are both significant. Hence, we can reject those null hypotheses.

Essentially, remittance is the major contributing factor that allows our economy to opt out of the unfavorable balance of payment that we would have otherwise faced due to increasing trade deficit every year. As household has increased on their consumption, also of imported products, the investment has not increased in tandem. Hence, since our economy is consuming more than it can afford, dependency on remittance has also grown. In a way, consumption does cause remittance inflow, as the economy is depended on it to off-set the current account deficit.

FIGURE 3: Current effect of Remittance inflow on Nepalese Economy



As shown in the Figure 3, remittance acts as a stabilizing factor in maintaining a favorable balance of payment – as remittance significantly accounted for the current account surplus in the recent years (Ministry of Finance, 2010). Remittance is not acting as a source of stimulus that drives toward higher economic output through investment; instead, inflow of remittance is integral in maintaining favorable balance of payment, thereby allowing the desired level of consumption.

Aggregate expenditure of the external economy, as shown in Figure 3, is subject to many macro-economic factors including, but is not limited to, consumer confidence, oil price, economic policy, or even climate. Essentially, our economy is betting its own economic performance to the

[2] Any null hypothesis that are significant, or has the *p*-value of less than 0.15, will be rejected.

multivariate factors that could influence the performance of the outside economy – i.e. economy of countries that we are exporting labors to. When the economic crisis occurs in the outside economies, then the amount of remittance flowing into Nepal would decrease as the unemployment rate would be rising in the economies in recession. As most Nepalese migrate as a blue collar labors, the recession would have more effect, as more number of blue collar jobs get cut. In such scenarios, Nepalese economy would not be able to maintain the similar level of balance of payment as before. In addition, since significant portion of GDP is accounted for remittance, it is likely that Nepalese economy would suffer economic downturn as well. Hence, in the long run, current dependency on remittance could trigger structural problems.

3.2 Savings and Investment

From the section 2.3. Least Squared Regression Analysis, it has been observed that the consumption has significant impact on the overall GDP of Nepalese economy. Savings and investment do have positive coefficient, indicating the direct effect on the GDP. However, the degree at which that impact takes place is not high, especially not enough for the developing countries like Nepal. For least developed countries (LDCs) like Nepal, there needs to be more investment in physical public capital such as the transport infrastructures than demanded by the public (Acharya 2003).

$$Y = AK^{\alpha}L^{1-\alpha} \tag{2}$$

In addition, the Cobb-Douglas production function (2) also places an importance of investment in private capital generation, which is essential to overall macroeconomic output. In the function (2), A represents the level of technology, K represents capital, L represents labor, and α represents the output elasticity, a constant that is determined by the level of technology.

$$\Delta K = I - Kd \tag{3}$$

In the function (3), it is stated that change in capital is essentially, the difference between level of investment and the product of current capital level and depreciation. This function signifies the role of investment in the economy in order to achieve the level of targeted output. Therefore, it is necessary for the developing countries to invest more in public capital such as highways, and other infrastructures.

Since the source of investment is the savings, savings and investment have a direct relationship. Hence, it is favorable for the growing economies to have a high level of savings[3], as was the case for Japan when its economy was growing.

Regression analysis determined the contribution of savings and investment to the overall economic output, or the GDP. Next, from the Granger Causality Test results in Table 4, there were no statistical significance to reject the null hypothesis of both "remittance does not Granger cause investment" and "remittance does not Granger cause savings." Essentially, this indicates that no causality existed between remittance and investment or savings.

One of the similar characteristics of the developing countries around the world is lack of infrastructures. And for economic growth, it is starter knowledge that adequate infrastructures are needed to facilitate economic activities – mainly, these include, but is not limited to, transport of goods and services, and energy supply required for production process. Though public

[3] Japanese economy had saving rate of approximately 20%, which made it easier and cheaper for the businesses to expand. High level of saving is cited as the true factor behind the Japanese economic miracle (Chen, 2007).

infrastructure development is a necessary condition for economic growth, developing economies could face saving gap or the foreign exchange gap – with latter usually being detrimental.

In the past, form of foreign aid known as Official Development Assistance (ODA) played an important role in providing sufficient funds – eliminating both saving gap and mainly the foreign exchange gap constraints (Acharya 2003). However, it seems that much of ODA nowadays are targeted more toward developing soft infrastructures that would have more direct impact on poverty alleviation than investment toward hard infrastructure, which is considered to be "simply a waste of resource" (Easterly 2001). In addition, the ODA led infrastructure development projects tend to be several time costlier than it would have been if it was funded by local resources, as the prerequisites to aid asks for hiring of international consultants (Acharya 2003). Hence, Nepalese policy makers would now need to think beyond ODA as a source of hard infrastructure development: which answer seems to lie within effective channeling of the remittance funds.

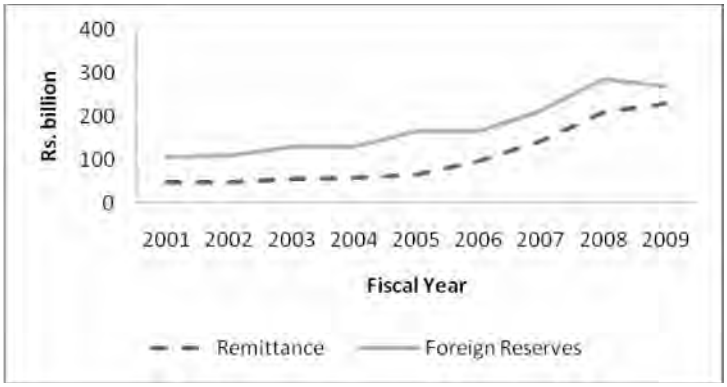
Nepal, like any other developing countries, is lacking much in "hard" infrastructures, mainly the hydro-power, and transport infrastructures.

First, lack of power supply[4] is indeed a problem for Nepalese populace – especially for the businesses in the manufacturing industry. Over the years, due to an upward pressure on prices of fossil fuels, an alternative to electric power, cost of production has increased for many businesses. And it seems that upward pressure on the fuel price would continue – i.e. there is no sign of a downward pressure. It is reported that many businesses are in fact going out of businesses due to the fuel price hikes.

Second, transport infrastructures are very crucial to Nepalese economic growth as it provides for both domestic and international trade. Travelling in Nepalese highways tend to be too time consuming, when compared to an international standard – as it often takes more than 6 hours to travel 100miles in Nepal, which is covered within 1.5hrs to 2 hrs in the developed countries. With proper transport infrastructures, Nepalese businesses could gain much more from the open-border it shares with India.

As state before, developing countries usually face the foreign reserve gap of the Two Gap model when implementing investment projects.

FIGURE 4: Remittance – Foreign Reserves Trend (FY: 2001/02 – 2009/10)



Source: Ministry of Finance, Government of Nepal (2010)

[4] Nepal has daily load shedding in the household area, as well as in industrial areas. The load shedding period vary from season to season.

In case of Nepal, due to increasing remittance inflow, foreign reserves have been increasing in tandem. This will ease the foreign exchange constraints, and it is less likely that Nepal would be facing binding constraints when implementing infrastructure development projects.

IV. COMPARATIVE STUDY: CASE OF SOUTH KOREA

South Korea was under the Japanese Colonization until the end of the Second World War. Though the Japanese developed public infrastructures and several industries there, much of them were destroyed during the Korean War that was fought between North Korea and South Korea. Essentially, at the end of the war and division, both Koreas were down to ashes. In the South, after taking over an ineffective government, President Park Jung-hee came into the leadership. During his tenure, he transformed Korea into one of the emerging economies of the time.

In the 1960, Korean economy exported $32.83 million worth of goods while importing $343.53 million worth of goods. It was inevitable, as those import consisted mostly of basic commodities. If those goods were not imported, people's life would have been unbearable (Chol, 2009).

In order to achieve economic growth, President Park's aids formed the first 5-year economic development plane, which composed of plan to develop several industries in South Korea such as the chemical industry, steel industry, heavy industry and others. In all, the ministers, generals, and the experts at that time, all sat with the president and discussed the area of investment that the South Korean government needed to invest in (Chol, 2009).

Although there were foreign aids and loans, mainly from the United States, flowing into South Korea, much of it were used in consumption and the amount was decreasing as the time went by. And during the early days, foreign direct investments were not arriving into South Korea, as risk of war was still associated. By 1963 point, Korea had foreign exchange reserves below $100 million, which put the country in the brink of bankruptcy (Chol, 2009).

Such foreign reserve constraints did not allow the government to run the first 5-year economic development plan as planned. Hence, they adjusted the nature of their investment: focusing more investment in the sectors the policy makers thought to be important.

During this time, apart from the foreign aid, many South Korean youth, due to persistent unemployment, sought employment abroad, mainly in the Middle East, and Turkey. There South Koreans worked as miners or as nurses. Most of them even worked overtime. The money sent back home by them eventually contributed, despite its small scale, alleviate the foreign reserve constraints.

It is interesting to note that the GDP of South Korea back in 1971 is just slightly higher to the GDP of Nepal in the beginning of the new millennium (2001 onwards). Following table summarizes the GDP and government investment trend for the two countries.

TABLE 5: South Korean government investment and GDP trend (FY: 1971 – 1979)

Year	Government Investment ($ billions)	GDP ($ billions)
1971	0.4728	9.85
1972	0.44034	10.74
1973	0.47915	13.69
1974	0.5769	19.23
1975	0.66526	21.46
1976	1.03425	29.55
1977	1.25169	37.93
1978	1.84068	51.13
1979	2.49128	65.56

Sources: Bank of Korea (2000), World Bank (2012)

TABLE 6: Nepalese government investment and GDP trend (FY: 2001/02 – 2009/10)

Year	Government Investment ($billions)	GDP ($ billions)
2001	0.2137	6.01
2002	0.174203	6.05
2003	0.169759	6.33
2004	0.181509	7.27
2005	0.175292	8.13
2006	0.226812	9.07
2007	0.282303	10.28
2008	0.32957	12.57
2009	0.342663	12.9

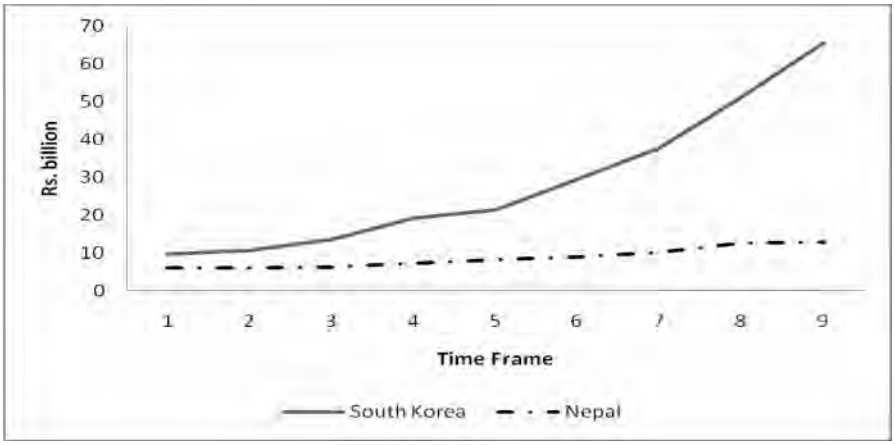
Source: Ministry of Finance, Gov. of Nepal (2010) and World Bank (2009)

Over the decade, in the 1970s, South Korean economy was booming with around 8% average annual GDP growth (Ro, 2002). However, in case of Nepal, from the year 2001 – similar GDP to the South Korea in the early 70s – till today, the economy has been expanding at 3.5% average, which is significantly less in comparison to the South Koreans. Evidently, South Korean government invested significantly more than what Nepalese government invested. Surely, the political instability in Nepal has hindered the economic growth; yet, Nepal is in a better foreign reserve condition than South Korea in the late 1960s and early 1970s. Remittance inflow is providing opportunities for sustainable growth.

As shown in Figure 5 below, it seems that the South Korean economy took off with in one or two years period, where as the Nepalese economy has not really taken off. South Korean government creating the economic plan and framework for the development process and consistently enforcing them with the help of military, authoritarian rule enabled the miraculous growth to take place.

Certainly challenges exist for Nepal: which is creating a sound economic plans and agendas and enforcing them. This is not just role of government, but it should require industry cooperation as well as the public support. By making economic growth our priority, commitment must come from every individual in our country.

FIGURE 5: GDP growth of South Korea (1971 – 1979) and Nepal (2001 – 2009)



Source: World Bank (2009)

V. CONCLUSION

Nepalese economic growth, due to higher Remittance is essentially a "pseudo-growth". The economy is able to afford foreign imports not because of the return from its economic output – through higher level of exports of goods and services – but it is simply from the return of exporting labors. When remittance from official source alone is approximately the quarter of the GDP, there is a significant risk: what happens when the vicious cycle takes place in the outside economy in Figure 3?

As almost 38.5% of the migrants are in Malaysia and other significant proportion in the Middle East, the risk-hedging is not appropriately taking place. If economic downturn or unprecedented event takes place in one of those countries, it is likely that the sources of remittances will be in jeopardy.

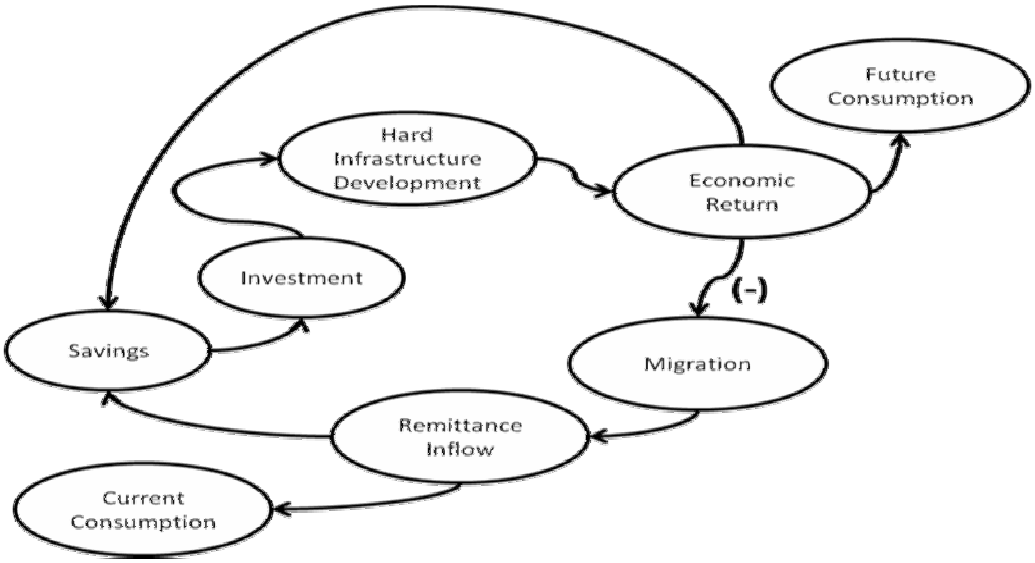
Secondly, inflow of remittance has been increasing at a decreasing rate since the global economic downturn following the financial crisis in the United States in the year 2008. This can be the result of contracting economy and higher unemployment abroad. With this trend continuing, it is likely that the Nepalese economy would be facing a downward pressure on the remittance inflow – which could be troublesome given that the economy has grown in remittance dependency.

For a developing country, infrastructure investment is essential. Public infrastructures such as highways, railways, ports and airports all provide positive economic impact. And as argued in (Acharya 2003), developing countries should have higher supply of public infrastructures than demanded. Such would stimulate further economic activities to take place, which would trigger the virtuous cycle of economic growth. South Korean government under the direction of President Park Jung-hee heavily invested on infrastructure development. This had later contributed the significant factor in South Korea emerging as the major economy of Asia.

South Korea faced significant foreign exchange constraint when implementing their economic plans, particularly infrastructure development. However, they were able to offset such problems through series of international loans, aids and remittance inflow. With infrastructure development, economic activities in South Korea flourished. Hence, South Koreans were able to generate funds internally for further development, as well as their trade deficit was reduced. Essentially, South Korean grew out of foreign funds dependency, and grew self sufficient.

With most donor agencies fund and ODA allocated more toward developing "soft infrastructures" (Acharya 2003), countries would be required to allocate more of their resources for "hard infrastructure" development. While remittance inflow is still significant to the Nepalese economy, our policy should be to channelize those funds to infrastructure development. Our economy should encourage saving, which Cobb-Douglas suggests, would lead toward higher economic growth through more investment. And by capturing the remittance funds, the foreign exchange constraints would not be a problem.

FIGURE 6: Feedback on flight from remittance dependency



With more investment in infrastructure and other productive sectors, the economy would generate its own economic return, making the domestic market stronger and entrepreneurship to improve. Such economic return would create more opportunities and incentives for future investment – creating a virtuous cycle. Greater economic return would have negative causality on migration, as opportunities within Nepal would provide incentives for people to stay. Gradually, the economy would emerge out of its remittance dependency. This essentially, would establish Nepalese economy to be self confident and competitive.

Numerous policy measures recommended in (Pant 2011) could be utilized to capture the remittance fund, and utilize it in investment for more productive sectors. As of now, remittance inflow is simply short-circuited to financing import for consumption. The economic stimulus is not great. Yet, when "harnessed" into the productive sector, there is good scope of kick-starting economy with stronger stimulation effect. This asks for a strong implementation of policies that would shift Nepalese economy away from its remittance dependency in the future.

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Remittance and Trade Deficit Nexus in Nepal: A Vector Error Correction Model Approach

Guna Raj Bhatta*

Abstract

In Nepal, economic liberalization accessed the international labor market at one side and eased the international trade of goods and services on the other side. Thousands of young manpower migrating every year to work abroad is in increasing trend. Such an emigration rose remittance inflow sharply in the recent years. Remittance inflow helps provide hand-to-mouth provision to the poor as well as improve the living standards of them. Hence, it has been observed as a good contributor for the economy. However, it might further deteriorate the trade balance, causing to increase in demand of consumable goods, most of which are imported.

Using Vector Error Correction Model (VECM) method, this paper studies whether remittance and merchandise trade deficit have nexus based on the monthly data of merchandise trade deficit, worker's remittance and change in net foreign assets for ten years period. The study finds that remittance has positive impact to trade deficit and such impact is in an increasing trend. This paper recommends channelizing remittance into productive sectors by encouraging the migrant worker's families to establish small entrepreneurships.

JEL Classification: F10, F24, C32

Keywords: Trade deficit, Remittance, Nepal, Import, VECM

I. INTRODUCTION

Trade, either domestic or international, is considered as one of the most important resources to achieve sustainable growth, employment generation and welfare of people. International trade becomes crucial if the country is not self-sufficient in factors of production as well as consumption and capital goods. Even if one country may have a higher productivity to produce all goods in

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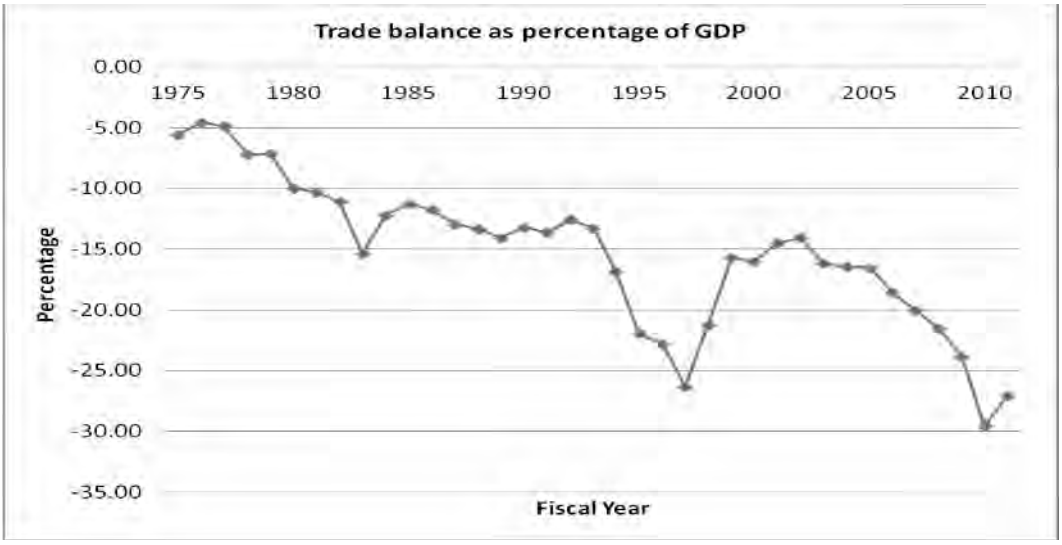
comparison to another country, the relative productivities to produce different types of goods differ in each and hence, trade is primarily based on the relative comparative advantage which helps to increase welfare in both countries (Shrestha, 2003). International trade is one of the major sources of foreign currency earning which is necessary for any country to import goods and services that are not produced domestically. In both business and economics, external trade has been emphasized for comparative advantage which is one of the major components contributing to GDP in most of the open economies (Silwal, 2008).

The meaningful international trade in Nepal is said to have began since 1960s. Since international trade took place, Nepal has been facing trade deficit, which soared up to 20 percent of the GDP towards the second half of the 1990s (Khatiwada & Sharma, 2002) especially with India and then to the rest of the world (Devkota, 2004). A persistent and soaring deficit in international trade may be less likely to resemble good economic condition of an economy, leaving the question of the nation's sustainability in the international trade and finance (Silwal, 2008).

FIGURE 1



Data Source: Quarterly Economic Bulletin, Nepal Rastra Bank

Trade liberalisation, through lowering the tariffs and removal of quotas and restrictions on capital flows with the floating of the currencies, was an essential component of the economic reforms that occurred during the 1980s and 1990s globally (Centre for International Economics, 2009). In the mid-1980s, Nepal introduced liberalized economic and trade policies by pushing tariff walls down and removing import restrictions. At each stage of liberalization, it is followed by removal and/or minimization of tariff and non-tariff barriers, privatization of public enterprises and promotion of foreign investment. For instance, Nepal became the member of World Trade Organizations (WTO) in 2004, being "the first least developed country (LDC) to join the WTO through the full working party negotiation process.., revealing its clear belief in the benefits of liberalization as an engine for future growth and prosperity" (WTO, 2004).

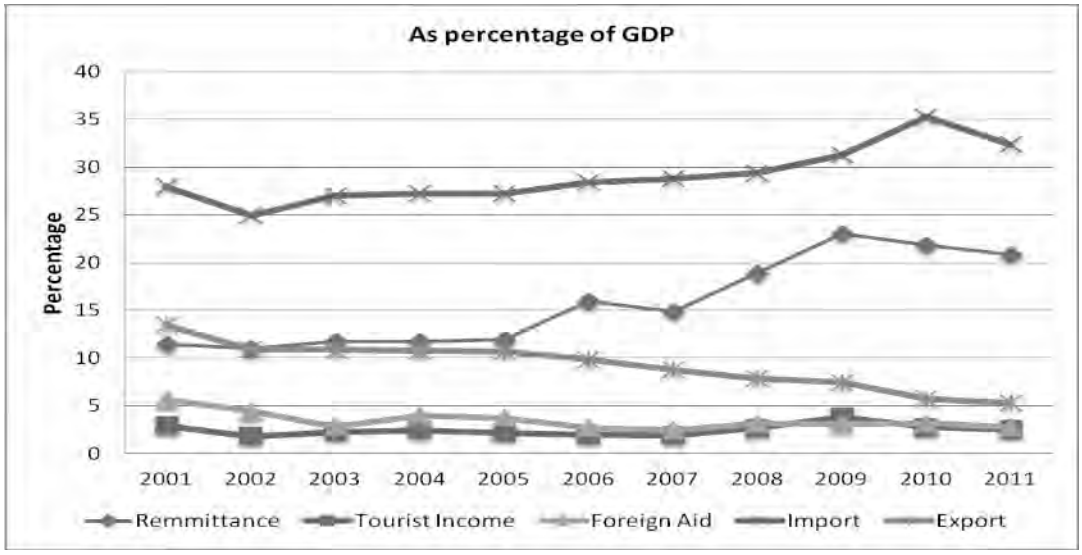
As we can observe from the above graph, the negative trade balance remained unsolved creating even serious problems after the liberalization of the economy. Excluding some exceptions, the privatized enterprises could not improve their efficiency in production; severe political instability forced some industries to shut down and multinational companies to relocate their plant. Although

there was an increasing demand of goods and services in the country due to the rising disposable income and steady population growth, the production remained worse, which resulted to push up the import.

As Nepal introduced trade and economic liberalisation policies in the mid-1980s, the international labor market gradually opened up to the job-seeking Nepali youths. Though there was a long history of labor migration in the country, Nepal witnessed most of the young population migrating every year for the search of work abroad in the recent decades because of economic as well non-economic factors. The work related emigration, excluding India, increased from about ten thousands in early 1990s to more than 300 thousands in 2010 (DOFE, 2011).

Although it has negative economic and social consequences, one of the positive effects is noted as significant remittance, which is becoming the largest source of foreign currency inflow in Nepal exceeding the tourist income, export and foreign aid. The graph presented below shows these variables as percentage of gross domestic products (GDP).

FIGURE 2



Data Source: Quarterly Economic Bulletin, Nepal Rastra Bank

This emigration resulted to sharp rise in contribution of remittances to GDP from 2 percent in early 1990s to 23 percent in 2009 (World Bank, 2011) and also strengthened the overall balance of payments position and share of it to current account receipts, for instance, it soared from 33.6 percent in 2001/02 to 50.8 percent in 2007/08 (Pant, 2008).

The majority of the labor migration is from rural part of the country. Out of total 55.8 percent households receiving remittance in Nepal, the share of rural is 58 percent (Nepal Living Standards Survey [NLSS], 2011). An supplementary advantage of remittance can be noted as a 'person-to person aid' that is going to the population where government cannot provide aid for the basic needs too by playing a dual role of offering livelihood security for the poor and 'acting as a savings and investment channel for wealthy households' (Premaratne & Mel, 2009). Because of remittance flow to the rural sector, the rural-urban migration has also increased significantly (United Nations, 2007), progressed in poverty reduction; ‘as they percolate and penetrate to remote areas of the

country and the poorest sections of society' (National Planning Commission [NPC] and United Nations Country Team, 2010).

Out of the total income of remittance receiving households, 31 percent income comes from remittance which are mostly spent on daily consumption (79 percent) followed by repayment of loan (7 percent). Capital formation and doing business has a very minimal share. The use pattern of remittance receiving households confirms that remittance income is mostly spent on consumption. Cross country remittance inflow and their uses are presented in the following Table-1.

TABLE 1: Origin and Primary Uses of Remittance (In percentage)

Source	Daily Consumption	Education	Capital formation	Business	Household Property	Savings	Repay loan	Others
India	**84.6**	2.2	2	0.3	4.2	0.4	**4.5**	1.9
Malaysia	**52.1**	4.3	4.3	1.2	5	0.9	**30**	2.2
Saudi Arabia	**57.6**	1.2	4.3	0.5	2.8	0.6	**31**	2.1
Qatar	**55.4**	5	6.2	0.3	4.3	0.5	**25.8**	2.5
United Kingdom	**74.2**	0	3.6	2	2	3.2	**10.2**	4.8
Other country	**59.1**	6.3	4.6	1.6	1.9	3.1	**19.1**	4.3
Donor Agency	**41.9**	16.1	0	0	0	0	**0**	41.9
Total	**78.9**	**3.5**	**2.4**	**0.5**	**4.5**	**0.6**	**7.1**	**2.5**

Source: Nepal Living Standards Survey, 2011

Hence, it is questionable that whether remittance can compensate the negative consequences of mass labor migration and act as a positive force in the sustainable development of the economy (Jovicic & Mitrovic, 2006). The major issue this paper wants to discuss is about whether surging import has any significant relation to the soaring remittance such that it results rising negative trade balance in Nepalese economy.

Jovicic & Mitrovic, 2006 analyses "Determinant and importance of remittance in Serbia" by using 62 months time series data of remittance, output level, unemployment rate, average dollar wage, trade deficit, imports, consumer goods imports, etc. Among the aforesaid macroeconomic variables of Serbia, remittance shows the highest correlation with the series of imports of consumer goods. The estimated model for the observed period of 62 months show an autoregressive character, a positive coefficient of regression on consumer goods import and a negative coefficient on the lagged industrial output with the conclusion that remittances are mostly spent on consumption.

II. DATA, MODEL AND METHODOLOGY

The monthly data of merchandise trade deficit (TD), worker's remittance (REMIT) and change in net foreign assets (NFA) available from Nepal Rastra Bank have been used in the model. Months is a time variable which starts from 2001 August and ends to 2011 March[&]. TD is a negative trade balance i.e. absolute value of export-import (in million Nepali Rupees (NPR))[&&]. REMIT is an

[&] Nepali fiscal year starts from mid-July. So, Mid-July to Mid-August is counted as August and so on for the statistical conveniences.

[&&] One US Dollar is equivalent to 70.79 Nepali rupees as of 2011.07.27.

inflow of the worker's remittances to the country from abroad (in million NPR). NFA is an external sector balance of an economy, also referred as Balance of Payments statistics (in million NPR).

The graphical plot of the three major variables namely remittance (REMIT), trade deficit (TD) and changes in Net Foreign Assets (NFA) used in the model show that remittance and trade deficit are the non-stationary processes behaving as random walk with drift i.e. having both deterministic and stochastic trends whereas changes in NFA is a stationary process. Moreover, the trends of TD and REMIT show the movements together over time indicating co-integrated relationship. The trends have been presented below in the Figures 5, 6, 7 and 8.

FIGURE 5: Ten Years Trend of Remittance inflow to Nepal

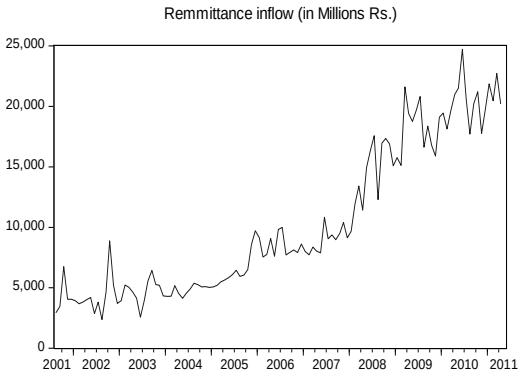


FIGURE 6: The Rising Trend of Trade Deficit over 10 Years Period

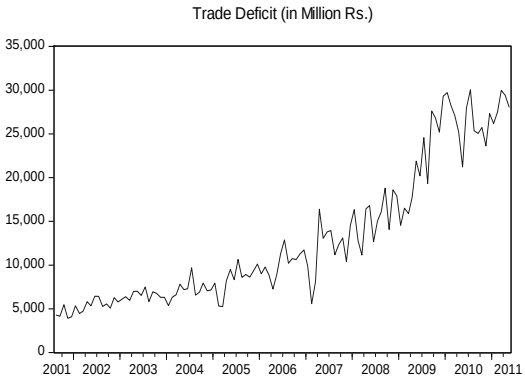


FIGURE 7: Change in Net Foreign Assets

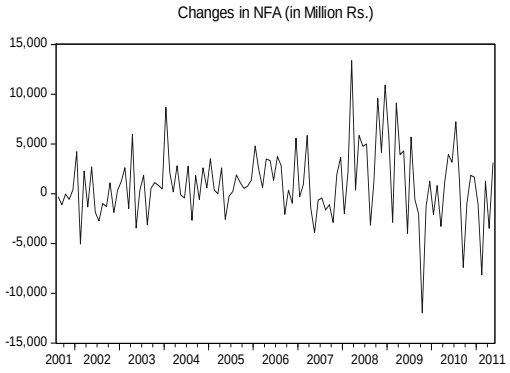
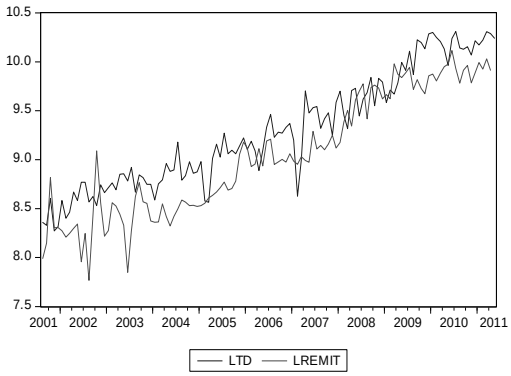


FIGURE 8: The Co-movements of Trade Deficit and Remittance



Nevertheless, both TD and REMIT show the stationary process at first difference (Figure 9 and 10).

FIGURE 9: First Differences of Merchandise Trade Deficit

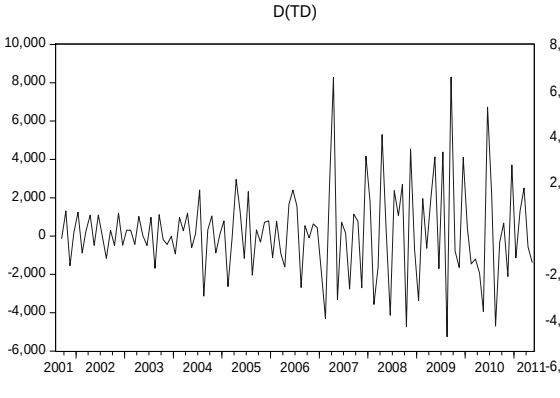
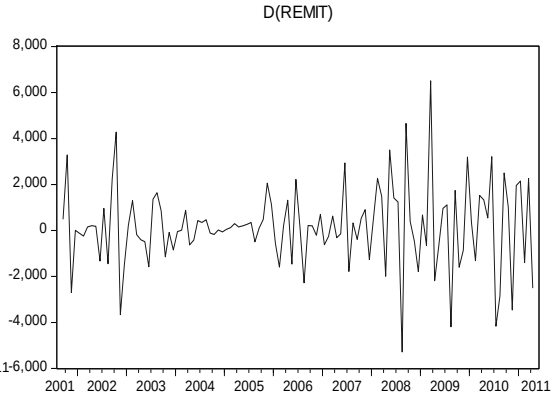


FIGURE 10: First Differences of Remittance



In the normal regression model, the relationship among the three variables can be expressed as:

$$TD_t = \mu + \beta_1 REMIT_t + \beta_2 NFA_t + \varepsilon_t \quad (1)$$

In this model, there is a presumption that the disturbances (ε_t) are a stationary white noise series. If TD_t and $REMIT_t$ are cointegrated, this presumption is unlikely to be true. We assume that both series are cointegrated at order one (*I(1)*), which means the first difference of both variables are stationary (ΔTD_t and $\Delta REMIT_t$ are stationary).

The representation theorem of Engle and Granger (1987) establishes a link between the cointegration and Error Correction Model (ECM). Transforming equation (1), there exits β_1 such that:

$$\varepsilon_t = TD_t - \mu - \beta_1 REMIT_t - \beta_2 NFA_t \quad (2)$$

is I(0). If both series are I(1), the partial difference between the cointegrated variables may be stable around the mean.

Then, there exists an Error Correction Model (ECM) for TD_t, $REMIT_t$ and NFA_t :

$$\Delta TD_t = \mu_{TD} + \alpha_{TD}\varepsilon_{t-1} + \sum_{h=1}^{l} a_{1h}\Delta TD_{t-h} + \sum_{h=1}^{l} b_{1h}\Delta REMIT_{t-h} + \sum_{h=1}^{l} c_{1h}\Delta NFA_{t-h} + u_{TDt} \quad (3)$$

$$\Delta REMIT_t = \mu_{REMIT} + \alpha_{REMIT}\varepsilon_{t-1} + \sum_{h=1}^{l} a_{2h}\Delta TD_{t-h} + \sum_{h=1}^{l} b_{2h}\Delta REMIT_{t-h} + \sum_{h=1}^{l} c_{2h}\Delta NFA_{t-h} + u_{REMITt} \quad (4)$$

$$\Delta NFA_t = \mu_{NFA} + \alpha_{NFA}\varepsilon_{t-1} + \sum_{h=1}^{l} a_{3h}\Delta TD_{t-h} + \sum_{h=1}^{l} b_{3h}\Delta REMIT_{t-h} + \sum_{h=1}^{l} c_{3h}\Delta NFA_{t-h} + u_{NFAt} \quad (5)$$

where, u_{TDt} , u_{REMITt} and u_{NFAt} are stationary variables, for some number of lags *l*.

The coefficients in the cointegrating equation give the estimated long-run relationship among the variables and coefficients on the VECM describe how deviations from that long-run relationship affect the changes on the variable in next period. The parameters α_{TD}, α_{REMIT} and α_{NFA} of the equation (3), (4), and (5) measure the speed of adjustment of TD, REMIT, and NFA respectively towards the long-run equilibrium.

The main hypothesis is that remittance cause merchandise trade deficit to increase, but the other way is not true. The supplementary hypothesis is that remittance cannot bring the balance of payments in the long run equilibrium since it makes positive contribution to current account balance and negative contribution to the merchandise trade balance and the positive and negative contribution are not equal.

Nepal faced severe political instability during the study period. It witnessed not only demolition of many economic infrastructures, but also frequent blockades and several nationwide strikes. These all phenomenon might have supported to rising trade deficit too in the study period decreasing the industrial output. Further to this, Nepal, at south, shares the open border which may underestimate the official figures of both remittance and trade deficit. The major limitation of the study is, other than remittance, it does not consider the entire phenomenon that might cause the trade deficit to rise and the official figures might have underestimated. Moreover, due to the unavailability of worker's remittance data, the study covers the data only from 2001, which might not be able to fully explain the long run relationship among the variables.

III. RESULT ANALYSIS

3.1 Unit Root and Stationary Test

The summary output of Augmented Dickey Fuller (ADF) test for unit root using both constant and constant with trend has been presented below:

TABLE 2: Augmented Dickey Fuller (ADF) Test for Unit Root

Variables	Level		First Difference	
	t-stat	p-value	t-stat	p-value
TD	0.2252	0.9731	-12.7641	0.0000
REMIT	-0.0167	0.9544	-12.274	0.0000
NFA	-9.8461	0.0000	-10.6328	0.0000
LTD	-0.5937	0.8667	-13.2983	0.0000
LREMIT	-0.1025	0.9456	-9.2113	0.0000

Including constant in the equation, the test statistics show that TD and REMIT have unit root while NFA is stationary at level. For instance, the p-value for TD is 0.9731; t-stat is 0.2252 while test critical value is 2.886 at 5 percent level. Hence, we fail to reject the null hypothesis. At the first difference, TD and REMIT both are stationary.

The Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test of stationary also shows the similar results that TD and REMIT are not stationary while NFA is stationary. For instance, at 5 percent level of significance, critical value of NFA with constant in regression is 0.463 while LM-stat is 0.1368; we fail to reject null hypothesis and conclude that NFA is stationary. With the similar arguments, all of the KPSS test results are similar with the ADF test of unit root.

TABLE 3: KPSS Test of Stationary

Variables	Level	First Difference
	LM-Stat	LM-Stat
TD	1.1501	0.2525
REMIT	1.1631	0.1203
NFA	0.1368	0.1255
LTD	1.2556	0.3588
LREMIT	1.2355	0.1706

Asymptotic critical values:

1% level	0.739000
5% level	0.463000
10% level	0.347000

3.2 Cointegration Test

The stationarity test and unit root test have suggested that trade deficit and remittances are non-stationary. We did a Johansen co-integration test with two lags ordering NFA, REMIT and TD. The test results are presented in the tables below.

TABLE 4: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.316592	56.47341	29.79707	0.0000
At most 1	0.103281	13.07775	15.49471	0.1120
At most 2	0.005689	0.650356	3.841466	0.4200

TABLE 5: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.316592	43.39566	21.13162	0.0000
At most 1	0.103281	12.42739	14.26460	0.0956
At most 2	0.005689	0.650356	3.841466	0.4200

The trace statistics of Johansen cointegration tests shows that we have one cointegrating relation, since we reject null of hypothesis of rank 0 and fail to reject null hypothesis of rank 1 at 5 percent level of significance. The trace statistic is smaller than the critical value (i.e. 13.07<15.49 and p-value is 0.1120) when we hypothesized number of cointegration equation at most 1, hence we cannot reject null hypothesis. Maximum Eigenvalue test for cointegration also shows the consistent results; concluding that we have rank 1 in the given relationships.

3.3 Lag-length Criteria Test

The statistical output of lag length criteria test is presented in the Table 5.

TABLE 6: Lag Length Criteria Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-313.2031	NA	0.070087	5.855612	5.930116*	5.885821
1	-303.2116	19.24286	0.068819	5.837251	6.135266	5.958085
2	-281.7143	40.20783	0.054625	5.605821	6.127346	5.817280*
3	-275.4064	11.44767	0.057478	5.655674	6.400711	5.957760
4	-263.5027	20.94168	0.054573	5.601902	6.570450	5.994613
5	-253.4404	17.14323	0.053675*	5.582230*	6.774288	6.065566
6	-245.7508	12.67353	0.055242	5.606497	7.022066	6.180459
7	-243.5680	3.476422	0.063067	5.732740	7.371820	6.397328
8	-232.5180	16.98426*	0.061224	5.694777	7.557368	6.449990

Among the different lag-length criteria presented above, the Hanna-Quinn (HQ) criteria shows the lowest value when the model includes two lags. The HQ criterion is applied to select lag-length criteria.

3.4 Statistical Output

The increased remittance increases net foreign assets as well as the negative trade balance, i.e. trade deficit due to the import of durable/consumable goods. By default, change in net foreign assets includes both remittance and trade deficit. As we hypothesize, remittance causes trade deficit to increase. Due to this reason, the variables are ordered as NFA, REMIT and TD for Vector Auto Regression (VAR) model. Using this order, the e-Views output of estimated VECM while including two lags is as follows:

TABLE 7: The e-Views Output of Error Correction Model

Cointegrating Eq:	CointEq1		
NFA(-1)	1.123651		
	(0.12758)		
	[8.80721]		
REMIT(-1)	-1.241600		
	(0.04830)		
	[-25.7049]		
TD(-1)	1.000000		
C	-1242.510		
Error Correction:	D(NFA)	D(REMIT)	D(TD)
CointEq1	-0.707612	0.062256	-0.324090
	(0.16796)	(0.07214)	(0.09352)
	[-4.21291]	[0.86298]	[-3.46531]
D(NFA(-1))	-0.259057	-0.144485	0.269276
	(0.15227)	(0.06540)	(0.08479)

	[-1.70129]	[-2.20923]	[3.17593]
D(NFA(-2))	-0.157406	-0.043565	0.207162
	(0.10893)	(0.04679)	(0.06066)
	[-1.44498]	[-0.93113]	[3.41539]
D(REMIT(-1))	-0.180918	-0.261413	-0.356744
	(0.25824)	(0.11092)	(0.14379)
	[-0.70057]	[-2.35684]	[-2.48094]
D(REMIT(-2))	0.008615	-0.274895	-0.065960
	(0.23894)	(0.10263)	(0.13305)
	[0.03605]	[-2.67861]	[-0.49577]
D(TD(-1))	0.103923	-0.209760	-0.240388
	(0.18276)	(0.07850)	(0.10177)
	[0.56862]	[-2.67216]	[-2.36217]
D(TD(-2))	0.136805	-0.060098	-0.253072
	(0.16650)	(0.07151)	(0.09271)
	[0.82164]	[-0.84038]	[-2.72971]
C	-57.81962	264.3915	395.1962
	(341.143)	(146.522)	(189.953)
	[-0.16949]	[1.80445]	[2.08049]

Note: Restriction has been imposed to the aforementioned order of variables to normalize the analysis of our interest that remittance has a significant impact to the trade deficit.

The estimated cointegration equation is:

$$\varepsilon_t = TD_{t-1} - 1242.51 - 1.2416REMIT_{t-1} + 1.1236NFA_{t-1} \quad (6)$$

Rearranging the equation, we can re-write it as :

$$TD_{t-1} = 1.2416REMIT_{t-1} - 1.1236NFA_{t-1} + 1242.51 + \varepsilon_t \quad (7)$$

Equation (7) shows the long-rum relationships among the three variables. It shows that one unit increase in remittance increases trade deficit by 1.2416 whilst one unit increase in net foreign assets is accounted the trade deficit to decrease by 1.1236 in the long run. It also shows that trade deficit is always higher than of those remittance and changes in net foreign assets.

The coefficients of ECM are presented below.

$$\Delta TD_t = 395.196 - 0.324\hat{\varepsilon}_{t-1} - 0.24\Delta TD_{t-1} - 0.253\Delta TD_{t-2} - 0.357\Delta REMIT_{t-1} - 0.066\Delta REMIT_{t-2} + 0.269\Delta NFA_{t-1} + 0.207\Delta NFA_{t-2} \quad (8)$$

$$\Delta REMIT_t = 264.39 + 0.062\hat{\varepsilon}_{t-1} - 0.21\Delta TD_{t-1} - 0.06\Delta TD_{t-2} - 0.261\Delta REMIT_{t-1} - 0.275\Delta REMIT_{t-2} - 0.144\Delta NFA_{t-1} - 0.043\Delta NFA_{t-2} \quad (9)$$

$$\Delta NFA_t = -57.82 - 0.708\hat{\varepsilon}_{t-1} + 0.104\Delta TD_{t-1} + 0.134\Delta TD_{t-2} - 0.181\Delta REMIT_{t-1} + 0.009\Delta REMIT_{t-2} - 0.259\Delta NFA_{t-1} - 0.157\Delta NFA_{t-2} \quad (10)$$

The coefficients α_{TD} and α_{NFA} of the equations (8) and (9) are significant at 5 percent level. Hence, the deviations from the long-run relationship only affect NFA and TD. The coefficient α_{REMIT} is

not significant at 5 percent level showing that remittance is weakly exogenous. The remittance variable does not bring the model in long run equilibrium relationship of equation (7). If any deviation from the equilibrium occurs, it will not affect to REMIT in the next period.

3.5 Granger Causality Tests

The Granger causality test with eight lags of the variables shows that remittance granger causes trade deficit but the trade deficit does not (Table 8).

TABLE 8: Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
D(REMIT) does not Granger Cause D(TD)	108	4.30593	0.0002
D(TD) does not Granger Cause D(REMIT)		0.77853	0.6226

We reject the null hypothesis of 'the first difference of REMIT does not Granger cause the first difference of TD' and fail to reject the null hypothesis of 'the first difference of TD does not Granger cause the first difference of REMIT'.

3.6 Diagnostics Tests of the Model

The model diagnostics test of the residuals of VECM shows all inverse roots lie within the unit root circle indicating that ε_t is stationary with zero mean (Figure 11). The cointegration graph also confirms that the model is stable since residuals always revert back to the origin in every diversion (Figure 12).

FIGURE 11: Inverse Root Test

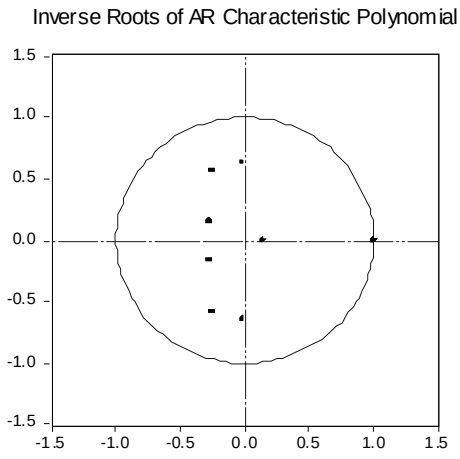
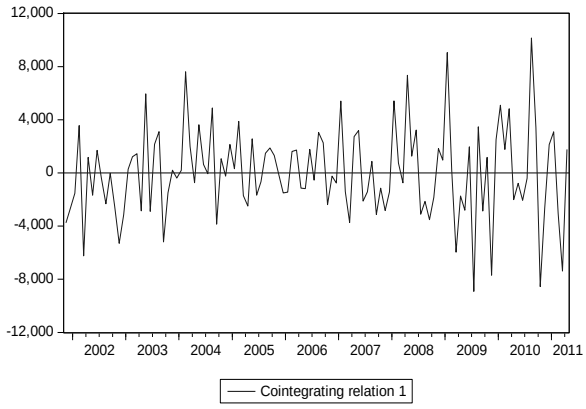


FIGURE 12: Cointegration graph



The correlation LM test for VEC residual also confirms that there is no serial autocorrelation in residuals. We fail to reject null hypothesis for any lag at 5 percent level of significance (Table 9).

TABLE 9: VEC Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h

Included observations: 114

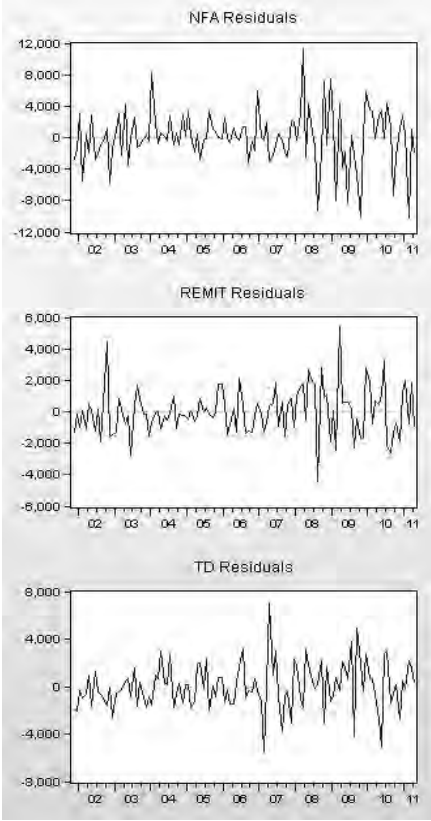
Lags	LM-Stat	Prob	Lags	LM-Stat	Prob
1	4.816063	0.8500	7	6.841203	0.6536
2	6.391376	0.7002	8	10.59707	0.3043
3	12.32024	0.1959	9	6.384231	0.7009
4	9.027519	0.4347	10	6.499973	0.6890
5	5.412051	0.7970	11	5.323585	0.8052
6	23.47751	0.0052	12	19.19604	0.0236

Probs from chi-square with 9 df.

The residual tests for the three individual variables also show same trend as of cointegration relation that these residuals are stationary (Figure 13).

Figure 13

Residuals Tests for Autocorrelation



3.7 Impulse Responses and Variance Decomposition

For the analysis of shocks to the variables and their impacts to each other, impulse response function has been applied using Cholesky innovations with ordering to NFA, REMIT and TD. The response of TD to REMIT shows the positive relation, the shock to the remittance at period one causes the trade deficit to increase up to period five; the impact is highest between period four and five. For every three variables, own shock, however, is very high than the shock of other variables (Figure 14). Similarly, the impulse response function using generalized impulse response function proposed by Pesaran and Shin (1998) shows the similar results of Cholesky decomposition (Figure 15). The generalized impulse response function does not matter the order of the variables.

FIGURE 14: pulse Responses using Cholesky Decompositions

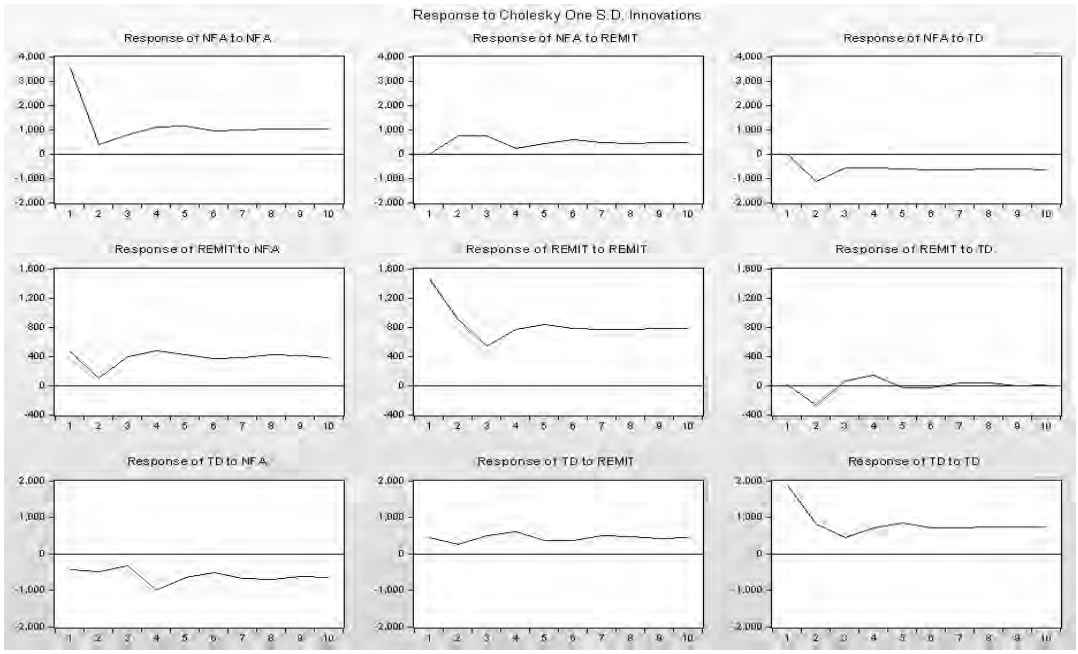
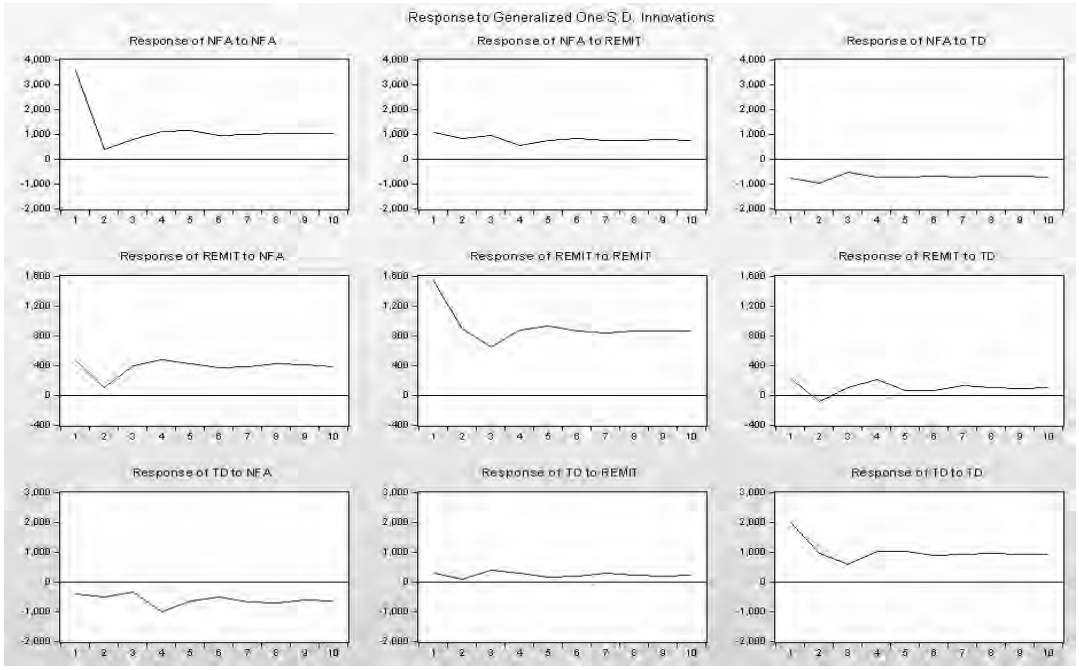
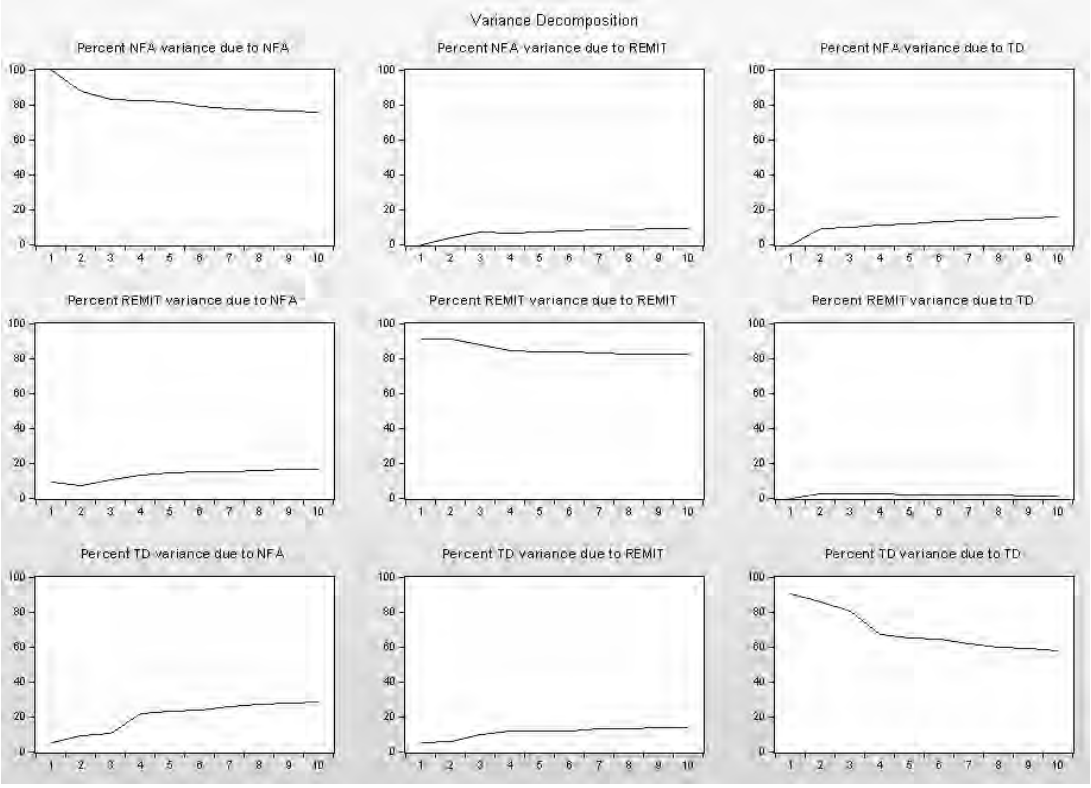


FIGURE 15: Generalized Impulse Response Function



The variance decomposition of the three variables reports that the percent remittance variance due to TD is almost 0 percent but the percent TD variance due to remittance is 3 percent at period one, gradually rises over time which becomes about 15 percent within ten periods, i.e. ten months. It confirms that trade deficit varies over time due to the remittance (Figure 16).

FIGURE 16: Variance Decomposition



IV. SUMMARY AND CONCLUSION

Nepal observed significant rise of migration of the young population in the recent years. Such an emigration resulted to a sharp rise in remittance inflow exceeding all other source of foreign currency income. Remittance inflow helps provide a person-to person aid especially to the poor people who reside at the rural part of Nepal. However, the income received from remittance is seen mostly spent on consumption with a very little spending on productive sector.

Nepal introduced trade and economic liberalization policies in the mid-1980s. With the policies adopted, the international labor market opened to the job-seeking Nepali youths. During the liberalization process, Nepal eased tariff and non-tariff barriers of international goods and services, privatized public enterprises and joined the WTO. However, since the country was suffering from trade deficit, the open-up of the economy created further problems owing to the surging imports and uprising negative trade balance. One of the main reasons behind this can be noted as rising disposable income, received from abroad as remittance.

To find out whether remittance cause merchandise trade deficit to rise, the monthly data of merchandise trade deficit (TD), worker's remittance (REMIT) and change in net foreign assets (NFA) for ten years is used. It is assumed that trade deficit and remittance are cointegrated to each other. In this case, linear regression analysis cannot provide the unbiased estimates. The analysis of data is carried out in e-Views with the Vector Error Correction Model (VECM). The test statistics show that TD and REMIT have unit root while NFA is stationary. The Johansen co-integration test shows that we have one cointegration relation. The lag-length criterion is determined by using HQ criteria.

The statistical output of estimated cointegration equation shows that one unit increase in remittance increases trade deficit by 1.2416 units, i.e. remittance does cause trade deficit to rise and such impact is in an increasing trend. The coefficient of NFA and TD that measures speed of adjustment towards long run equilibrium are significant while the coefficient of REMIT is insignificant at 5 percent level. Impulse responses of the shocks to the variables and variance decomposition also support the finding that there exists a positive relationship between REMIT and TD; as REMIT rises, it also makes TD to rise. Moreover, it makes NFA to increase and trade balance to decrease, leading to disequilibrium in the long-run as the impact to each is not equal.

The diagnostics test of the model by using inverse root test, observing the cointegration graph, the correlation LM test for VEC residual and residual test for autocorrelation confirm that the model is stable, residuals are stationary and there is no serial autocorrelation in residuals.

However, the model does not take into account other important variables such as exchange rate, price level, income, production to the study. Hence, the study can be extended including theses variable in the future.

V. RECOMMENDATIONS

The study confirms that one of the major reasons of surging import is increasing remittance and its unproductive use in the daily consumption. As mentioned by Pant (2011), government has not emphasized the utilization aspects of the remittance although there are some policies and efforts which are encouraging the workers to send it through official channels. Various surveys and research show that most of the remittance comes from low-paying jobs of gulf countries and Malaysia, where the workers of poor family go with the loan. Foreign income for them is a means of livelihood for bread and butter, repay of loan and the rest for the better quality of life than before, but not giving much for others. Hence, channeling remittance in the productive use is a challenging task.

When major portion of remittance goes to the families for solving hand-to-mouth problem, some initiatives like a foreign employment bonds, business environment, etc., may not work for the migrant workers and their families who encourage them to invest. Since the amount they save seems to be very minimal, the micro finance initiative might be one of the solutions. The households of the migrant workers at home can establish or become member of cooperatives and save a small amount of money each month. Then, as recommended by Pant (2011), families of them should be encouraged and well-trained to establish small entrepreneurships so that migrant workers would come back and joint on it with new skills and technologies. Such small business can be bee keeping, livestock, poultry farms, dairy industries, vegetable farming and other agro-based entrepreneurships. The author believes that it may help agro-based import substitution at the initial and export in the long-run, creating employment opportunities at home.

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SESSION REPORT

Name of Session Chair	Dr. Bishwambher Pyakuryal		
Session Title	International Flow of Financial Resources		
Session Location	Regeal 2, Yak and Yeti, KTM	**Session Time**	10:30-12:00; Day1, 20, April

SN	Title and Summary
1	**Title: Empirical Analysis of Remittance Inflow: The Case of Nepal**
	Summary The paper analyzes the nine year remittance inflow and macroeconomic data of Nepal, and studies the effect of remittance on each of the macroeconomic variables. The model is based on the data within the time series of Nepalese Fiscal Year 2001/02 – 2009/10. To make the result more accurate, the authors have used Unit Root Test, Least Squared Regression Analysis, and Granger Causality Test. At the finding, the empirical results suggest that remittance has more causality on the consumption pattern as well as the import patter, and less on investments. Besides, the paper has discussed the importance of channeling the remittance funds into the productive capital, mainly the public infrastructure, in comparison with the South Korean case study. At the concluding part, the paper has mentioned that Nepalese economic growth, due to higher remittance is essentially a "pseudo-growth". Further, it is likely that the Nepalese economy would be facing a downward pressure on the remittance inflow.
	Issues Raised: • If permanent income hypothesis can be applied? • If remittance has caused only consumption, then can't indirectly we prove that remittance is causing economic growth?
2	**Title: Remittance and Trade Deficit Nexus in Nepal: A Vector Error Correction Model Approach**
	Summary The paper is focused on the introduction of trade and economic liberalization policies in Nepal, where Nepal has been receiving remittance as a major source of foreign currency income for the last couple of years. On the other hand, the paper also emphasizes that because of low industry-bases at home and export constraints rising trade deficit in Nepal is leading to a panic for the sustainable trade and development of the country. The objective of the paper is to analyze the statistical nexus between remittance and trade deficit and make some ideal recommendations if any.

	The paper has applied cointegration technique with Vector Error Correction Model by using ten years monthly data of merchandise trade deficit, worker's remittance and change in net foreign assets. With the sophisticated statistical and diagnostics tests, the paper shows that that remittance has positive impact to trade deficit and such impact is in an increasing trend towards the long-run. The author recommends that remittance needs to be channelized into productive sectors by establishing agro-based small entrepreneurships.
	Issues Raised: • Whether remittance can cause the trade deficit to rise?

Session Moderator:

Bibhu P Aryal, May 29, 2012
Signature and date