From Evidence to Policy: Supporting Nepal's Trade Integration Strategy

Policy Note 1

Trade Imbalances and Remittances: Ensuring Macro Stability

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Executive Summary

The report aims at addressing the following questions: what are the underlying drivers of the trade imbalances and their relative contributions to the deficit (e.g. domestic private expenditure fueled by remittances versus public expenditures, relative prices, etc.)? What are the paths to be expected for the trade balance and the current account in the medium run, based on reasonable forecast assumptions for the main identified determinants? What are the implications of high remittances for the competitiveness in the short and long-run? How can Nepal maximize the positive impact of remittances in the economy?

Nepal's trade balance in goods and services has been in deficit for many years. The large deficit has not resulted in a substantial accumulation of net foreign liabilities, as it has been largely financed with workers' remittances from abroad. Indeed, remittances are the largest component of the current account.

In the case of Nepal, the current account balance is roughly equal to the trade balance plus remittances; hence, the report focuses mostly on the trade balance and remittances. More specifically, we estimate the impact of determinants of the trade balance, and the last section focuses on the impact of remittances in the real exchange rate.

We found that the trade deficit is highly influenced by changes in remittances and terms of trade. In fact, a large part of the increase in the trade deficit is explained by the remittance inflows. Nepal's trade deficit is moderately persistent and sensitive to policy malleable variables, such as government expenditures or credit. On the short-run policy front, government expenditures had a significant contribution on the trade deficit, though at a lower scale.

We simulated future paths of the trade balance and the current account balance over 2014-2019 under five scenarios for the following determinants: (i) remittances (ii) government expenditures, (iii) output gap, (iv) oil imports, and (v) real effective exchange rate (REER). Overall, higher levels of domestic demand, inflation, government expenditures and remittances related to reconstruction works are likely to lead to higher trade deficits. The current account is expected to turn sharply into a deficit in 2016 due to reconstruction expenditures and improve gradually thereafter.

Nepal experienced a significant increase in remittances inflows after 2000, which reached 25-30 percent of GDP over the past years. The literature has noted the positive impact of remittances on an economy. First, the literature found that remittance inflows reduce volatility of output and stimulate economic growth. Second, remittances support the development of the financial sector. By relaxing credit

constraints, they stimulate investments and future growth. Yet, remittance inflows may exert negative effects in the economy. Large inflows can lead to a real exchange rate appreciation and the subsequent loss of export competitiveness. This Dutch-disease effect operates through two channels. First, higher inflows of remittances lead to increased spending in both tradeable and non-tradeable goods (spending effect). As prices of tradeable goods are set in international markets, increasing demand leads to higher prices of non-tradeable goods. The relative increase in prices of non-tradeable goods results in an appreciation of the real exchange rate. Second, an increase in remittances stimulate the transfer of resources from the tradeable to the non-tradeable sectors (resource movement effect) as the relative profitability of producing tradeable goods fall. This is due to an increase in wages and the cost of other production factors led by the higher demand for non-tradable goods, which puts additional pressure on the real exchange rate to appreciate.

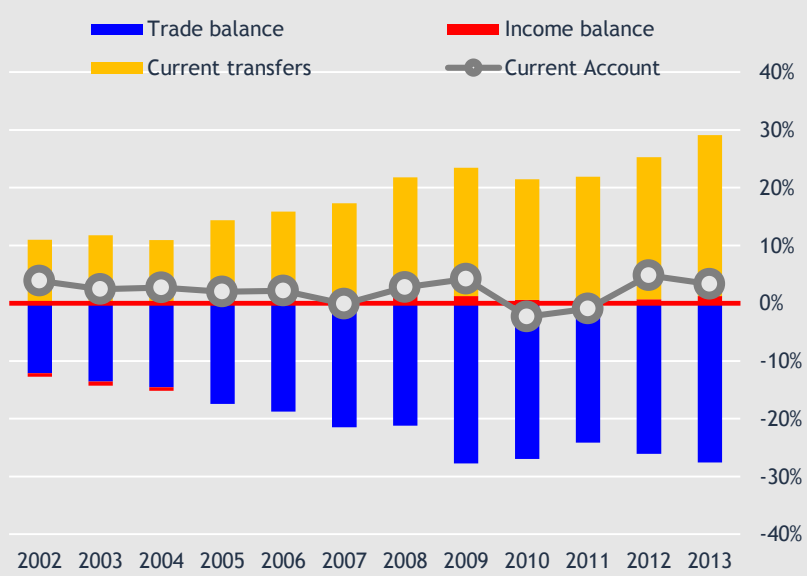
We assess the impact of remittances on Nepal's real exchange rate and attempt to distinguish between their short and long term impact. Potential negative effects of remittances on the competitiveness can be offset in the long run if these inflows boost capital formation and investments. Some countries implemented measures aimed to stimulating more remittance inflows and shift their structure towards investment. We found that the exchange rate adjusts to changes in workers' remittances in the long-run. The estimated coefficient of remittances implies that a 10 percent nominal increase in remittances leads to a 0.5 percent of real appreciation in the long run and the subsequent loss of export competitiveness.

The potential negative effects of remittances on the competitiveness can be offset in the long run if these inflows boost capital formation and investments. Yet, a large amount of remittances inflows in Nepal seem to be spent in consumer goods, including importing consumer goods. Governments have often offered incentives to increase remittance flows and to channel them to productive uses, but such policies can also generate unintended effects. Tax incentives may attract remittances, but they may also encourage tax evasion. Matching-fund programs to attract remittances from migrant associations may divert funds from other local funding priorities. Efforts to increase savings and improve the allocation of remittances should also be accomplished through improvements in the overall investment climate and the business environment.

Context

Nepal's external sector is under-performing and increasingly vulnerable. Nepal's trade deficit in goods and services reached 20 percent of GDP in 2007, and since then, it has grown steadily, as shown in Figure 1. A large deficit has not resulted in a substantial accumulation of net foreign liabilities, as it has been largely financed with workers' remittances from abroad.

Figure 1. Current account balance and its components



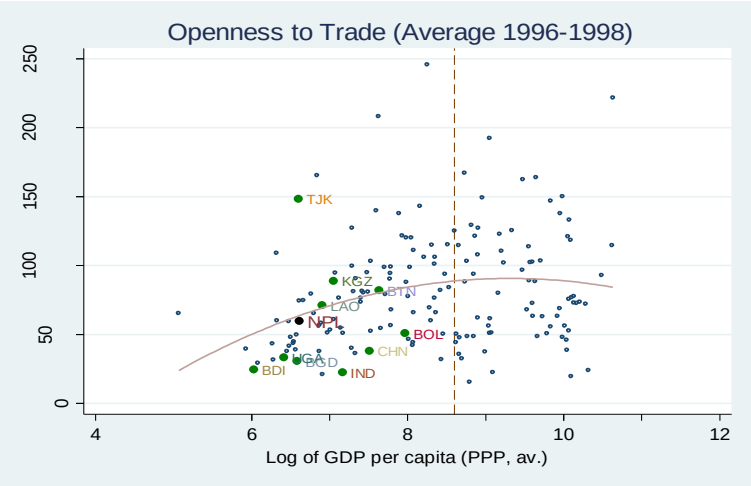
Nepal had a significant increase in remittances inflows after 2000. As a result of the massive labor emigration, remittances reached 22 percent of GDP in 2009, previous the global recession, and went down slightly subsequently.[1] Since 2010, remittances as a share of GDP have increased continuously until reaching almost 28 percent of GDP in 2013.

[1] They are expected to have increased substantially in the aftermath of the earthquake that devastated the Kathmandu Valley in April 2015, although data are not yet available.

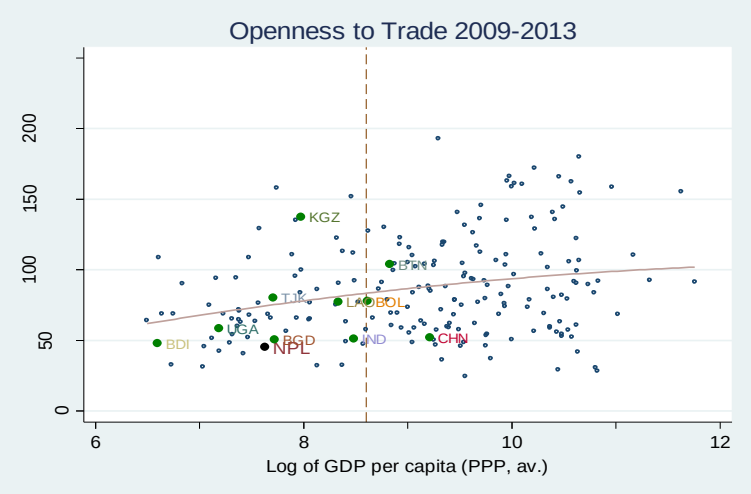
Nepal has become less integrated in the global marketplace. While Nepal's overall openness to trade was similar to that of other countries at similar levels of income during the 1990s (i.e. with openness levels above Uganda or Bangladesh), it has fallen well below the average thereafter. In the last 10 years the country's export performance has been poor: merchandise exports growth have fell from an average of 19 percent per year in the 1990s to 0.65 percent in 2000s. Nepalese exports in 2013 were barely 1.1 times of 2000's, while imports quadrupled over the same period.

Figure 2: Openness to Trade

2.a Average 1996-98



2.b. Average 2009-2013



Nepal has historically been a net exporter of services, but imports of services have increased substantially in recent years. While in 2000, exports of services were about two and a half times imports of services, by 2013, they were only 21 percent higher.

Box 1

WHAT DOES THE CURRENT ACCOUNT BALANCE SHOW?

The current account balance of a country comprises three subcomponents: the trade balance, the income balance, and the transfer balance.

The trade balance records all transactions with the rest of the world related to the exchange of goods and services. The income balance records net interest and dividend payments and earnings of domestically owned firms operating abroad, while the last component, the transfer balance reflects net payments (that do not correspond to purchases of any good, service, or asset) received from the rest of the world. Notably, the transfer balance includes remittances received from nationals working abroad minus remittances sent abroad by foreigners working in the domestic economy.

Current Account = Trade Balance + Income Balance + Current Transfers Balance

The current account can also be seen as the difference between what an economy produces and what it consumes and invests in a given period (or alternatively, the difference between saving and investment). When a country consumes and invests more than what it produces, it needs to borrow from the rest of the world to finance that gap. Hence, the current account deficit reflects what a country borrows from the rest of the world to finance its investment and consumption in excess of what it produces.

Current Account Balance= [Output (GDP) – Consumption] – Investment

Or

Saving – Investment

If Saving > Investment → The economy is a net lender of the rest of the world

If Saving < Investment → The economy is a net borrower of the rest of the world

The saving and investment can be decomposed further into portions attributable to the public and private sectors. Thus, the current account balance can be expressed as the sum of the private sector's surplus (private saving minus private investment, S_p-I_p) and the government's surplus (tax revenues minus government expenditures, T-G). This is why current account deficits and fiscal deficits are often referred as the "twin deficits". Given the private sector balance (S_p-I_p), increases in fiscal deficits co-move with increases in current account deficits.

Current Account Balance = ($Saving_p$ - $Investment_p$) + (Tax – Government Expenditures)

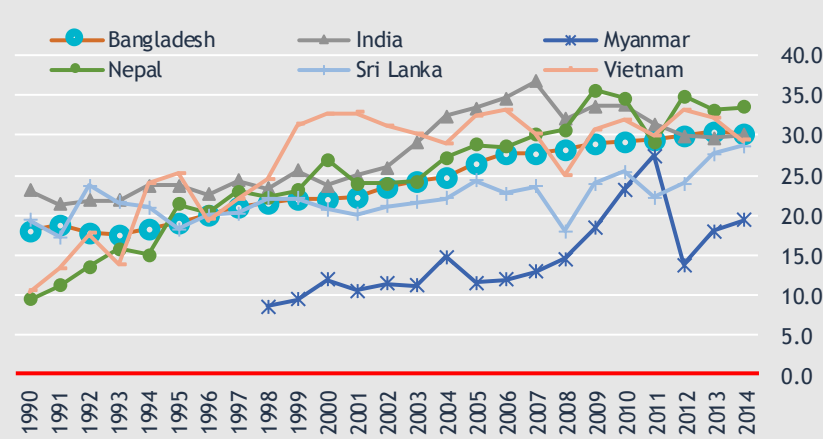
From the above relationship, one can infer that a positive or a negative current account balance is not bad per se, as it depends on the country's specific circumstances. For example, a relatively poor country in the process of investing in infrastructure but constrained by low levels of domestic saving will finance its infrastructure projects through foreign capital and will run a current account deficit. In this context, the deficit may be an inevitable path to economic development. On the other hand, current account deficits also arise as a consequence of public sector deficits. When governments consume more than what they collect in taxes, countries run current account deficits, all other things being held equal. Yet, these deficits are unlikely to be associated to faster future growth, and concerns about current account sustainability will be raised.

These simple examples stress the importance of identifying the underlying sources of current account deficits. For instance: are they mainly driven by fiscal deficits, by low private saving rates, or by high private investment?

Source: Authors' elaboration.

Nepal has ample public and private saving that could be mobilized for investment. Compared to other South Asian countries, such as Bangladesh, India, and Sri Lanka, Nepal's aggregate saving has been among the largest in the region controlling for its size. Nepal saving rate was almost 34 percent of GDP in 2014.

Figure 3: Aggregate saving rates (percent of GDP)



Two features may raise concerns about the current account sustainability. First, export earnings are concentrated in a narrow set of export products and markets. Second, Nepal is highly dependent on remittances to finance its increasingly larger trade deficit.

What is behind Nepal's trade balance deficit?

In this section, we analyze the determinants of trade deficits (TD) over the period 1994-2013. The section is structured as follows. First, we discuss the relationship of Nepal's trade deficits to a number of prospective determinants by estimating a model[2]. Second, we discuss about the variables that contribute the most to trade dynamics in Nepal, as estimated by the model.

The current account is equal to the sum of the trade balance, income balance, and transfers balance, as discussed previously. In the case of Nepal, the income balance has been close to zero during most of the covered period, and remittances account for the transfer balance. In fact, remittances are the largest component of the Nepalese current account. Thus, the Nepalese current account is roughly equal to the trade balance and the inflows of remittances. Given the particular configuration of the Nepalese current account, we apply the methodology to of current account determinants (described in Box 2) but focus on the trade balance and exclude remittances. Indeed, remittances, the other large component of the current account, are largely determined at the household level based on more lucrative opportunities abroad and family factors, instead of macroeconomic variables.

In next section, we combine the estimates of the determinants of the Nepalese trade balance provided by the model with assumptions regarding the expected evolution of these determinants to compute their potential contribution to the dynamics of trade balances as well as current account balances.

Box 2

CONCEPTUAL FRAMEWORK FOR THE ANALYSIS OF DETERMINANTS OF THE CURRENT ACCOUNT BALANCE

The current account balance reveals the difference between national saving (private and public) and national investments (private and public), as described in Box 1. To identify the underlying drivers of the current account balance, we relate to the factors affecting private and public savings and investments with other related factors that may affect the current account directly (with indirect effects on saving and investment):

$$CA(X_{CA}) = S_P(X_S) - I_P(X_I) + S_G - I_G$$

[2] For more on the methodology, see Box 2 and the Toolkit for the Analysis of Current Account Imbalances (Cusolito and Nedeljkovic, 2013).

where X_S are private consumption/saving determinants, X_I denotes factors that affect private investment and X_{CA} denotes factors that may influence the current account directly (for example, the export/import determinants, past FDI inflows). Assuming exogeneity of the trade drivers X_{CA} the current account balance is defined as:

$$CA = g(X_S, X_I, S_G, I_G, X_{CA})$$

and the function g(•) is assumed linear. The prospective determinants are classified according to their sensitivity to policy decisions, and the sign of their expected effect on the current account balance.

PROSPECTIVE DETERMINANTS OF THE CURRENT ACCOUNT BALANCE

EXPECTED EFFECT ON THE CURRENT ACCOUNT BALANCE

	Positive	Negative	Ambiguous
SENSITIVITY TO POLICY DECISIONS			
Sensitive to policy in the short run		Fiscal Balance, REER, credit	
Sensitive to policy in the medium run			Openness, FDI
Sensitive to policy in the long run	Relative income, Macro uncertainty		Relative GDP growth
External	Terms of trade		
Others	Lagged CA/GDP		NIIP

Source: Authors' elaboration based on Cusolito, A. and M. Nedeljkovic (2013).

The dependent variable in the analysis is the ratio of the current account balance to GDP.

The explanatory variables and their relationship with the current account balance are described below:

- Lagged current account balance: At an annual frequency, CA balances tend to show high persistence, associated to habit formation in consumption and saving, or agglomeration effects in investment.
- Lagged Net International Investment Position (NIIP): Net foreign assets can affect the current account balance in two ways. First, a large stock of foreign liabilities will require a country to run current account surpluses to pay them off. Second, the country will still pay interest on those liabilities, and thus the current account will become more imbalanced.
- Terms of trade (ToT): A positive ToT shock can improve the current account via increased saving due to larger current income relative to permanent income (the Harberger-Laursen-Metzler effect). On the other hand, ToT shocks can also affect the optimal capital stock and change investment plans, leading to more current account deficit. The greater the persistence of the shock, the more dominant is the investment effect. For an oil importer like N, oil prices directly affect the oil import bill, thus the CA.

- Fiscal balance: To the extent to which Ricardian equivalence hold, there should be no relationship between the fiscal and the CA balance. However, empirical studies in both developed and developing economies typically reject the hypothesis and suggest positive relationship between the two deficits.
- Openness: Trade openness has ambiguous effects on the current account balance. Less open economies may import less, which may reduce the current account deficit. However, the same countries may have difficulties servicing external liabilities, resulting in higher debt service costs and a greater current account imbalance. On the other hand, greater openness typically allows countries to undertake more investment and to finance the resulting current account deficits with capital flows from abroad. Also, international trade is an important conduit for the transfer of technology, leading in the long run to economic development, thereby improving the current account balance.
- Real Effective Exchange Rates (REER): REER appreciations induce an expenditure switching effect away from domestic goods and into foreign goods, for a given level of expenditure, which increases the CA deficit, all else equal.
- Foreign Direct Investment (FDI): FDI has ambiguous effects on private domestic investment and the current account. It can crowd out domestic investment when local and offshore firms compete for scarce domestic resources (e.g. labor or finance). FDI may also generate local spillover that 'crowd in' domestic investment. Gross FDI may also worsen the current account, depending on import content and the amount of profits repatriated and the export orientation of multinationals.
- Relative GDP growth: The effect on the CA balance depends on agents' expectations about the implications of growth for future income. If agents consider it permanent, then saving rates could decline, increasing the CA deficit. If instead it is perceived as temporary, saving will increase and the current account balance will increase.
- Credit to the Private Sector: Proxies financial deepening, and aggregate demand. Relaxed borrowing constraints can reduce private saving (increase CA deficits). Also, if reduces transaction costs and improves risk management, may encourage private saving (decrease CA deficits).
- Relative income: Small, developing economies will run current account deficits as they accumulate capital goods. Eventually, the country will be sufficiently developed to pay its debts by running CA surpluses.
- Demographics: Faster expected aging is related with an improvement in the CA. If agents expect an increase in the share of dependent population in the future (increase in the dependency ratio relative to the current one), they will be expected save more, which will improve the CA balance.
- Macroeconomic uncertainty: A more uncertain macroeconomic environment is expected to raise precautionary saving and reduce investment, according to the buffer stock theory.

Some of the factors proposed as potential determinants are in fact jointly determined with the current account balance. The most notorious case is that of the real exchange rate, for example. To deal with this 'simultaneity' problem, we instrument variables that are likely to be endogenously determined with the current account balance. The instruments consist of lagged values of the variable in question, which are predetermined at time t.[3] Pre-determination, however, does not necessarily imply 'exogeneity' if anticipation effects are present. For these reasons, a word of caution is in order. The results presented here should be read as conditional associations between variables, rather than strict causal relationships.

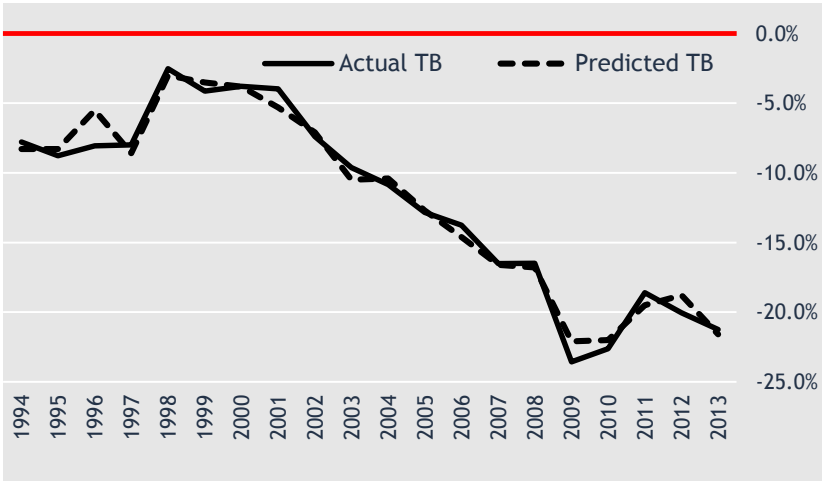
Source: Authors' elaboration based on "Toolkit for the Analysis of Current Account Imbalances" (Cusolito, A. and M. Nedeljkovic).

[3] This methodological choice is based on data availability (both in terms of the scope of potential additional explanatory variables, and on the time period available).

How sensitive is the Nepalese trade balance to its determinants?

The model used to estimate the trade balance determinants performs well on average. Figure 4 shows the actual and the predicted trade balance dynamics. Overall, the difference between the actual trade balance and the one predicted by the model is small over the entire period. The model underestimates the size of trade deficit in 2009 and 2010, but predicts better the more recent evolution. Table 1 reports the estimated coefficients for each of the prospective determinants, along with their standard errors and the standardized coefficients. Standardized coefficients show the effect of a change in one standard deviation in one of the trade-balance determinants (measured also in terms of standard deviation of the trade balance). To facilitate reading the results, Table 2 reports the sign of all estimated coefficients and the relative importance of their effects on the trade balance. All coefficients are significant and have expected signs and magnitudes.

Figure 4: Trade balance: actual level vs predicted level



Source: author's estimates

Table 1: Estimated effects of trade balance determinants in Nepal

	Model used in simulations		
Variable	Coefficient	Standard Error	Standardized coefficient
Dependent variable	Trade balance (net of oil balance)		
Trade Balance (1 year lag)	0.18	0.01	0.17

Remittances (1 year lag)	-0.52	0.02	-0.68
Terms of trade (log, change)	0.09	0.01	0.24
Government expenditures (share of GDP)	-0.16	0.01	-0.05
Relative GDP PPP per capita (lag, log)	0.03	0.01	0.01
Relative openness	0.00	0.01	-0.01
Aging speed (lag, 2 year average)*	0.04	0.00	0.03
Real exchange rate (CPI based, change)	-0.20	0.06	-0.10
FDI (% of GDP, 2 year average)	0.29	0.53	0.01
Output gap (lag)**	-0.41	0.23	-0.07
Credit change (share of GDP)	-0.17	0.06	-0.11
Political and macroeconomic uncertainty** (lag, 2 year average)	0.00	0.00	0.01
R squared			0.96

Notes:

+ (-) denotes a standardized coefficient between 0 and 0.1 (0 and -0.1).

* Defined as the current dependency ratio relative to the one in 20 years.

** Real GDP- potential GDP

***Calculated as the first principal component of inflation volatility, unemployment, VXO, and World Bank Governance Indicators for corruption, government effectiveness, political stability, rule of law, regulatory quality and voice and accountability.

Nepal's trade deficit is highly influenced by changes in remittances and terms of trade, as measured by their standardized coefficients. The strong and negative effect of remittances is what expected: higher remittances will increase demand for foreign goods, and will also have an indirect impact through the appreciation of the real exchange rate. The last section of the report provides a more complete discussion on the impact of remittances on the real exchange rate. Unsurprisingly, changes in the terms of trade have a high and positive impact on the trade balance.

The trade deficit is moderately persistent, which is associated to habit formation in consumption and saving. The persistence effect of 17 percent is smaller than typically found across groups of countries of all levels of income, but is in line with the results found when implementing this type of current account imbalances analysis for other developing countries, such as Morocco (17 percent), Georgia (23 percent), or Turkey (16 percent). From a conceptual point of view, persistence may be related to habit formation in consumption and saving, and suggests a certain degree of inertia in the current account and the trade balance.

Nepal's trade deficit is sensitive to policy malleable variables such as changes in credit or government expenditures. The results suggest that a one percent (as a share of GDP) increase in the fiscal expenditures increases the trade deficit by 0.16 percent. This result strengthens a case on the importance of prudent fiscal policy to prevent expanding the trade deficit. Expansions of credit to the private sector are also associated with trade deficits.

Relative income per capita (measured as GDP at PPP) has a positive effect on the trade balance in Nepal. As the country becomes richer, it tends to save more in order to pay for investment made during the catching up period, in line with the convergence hypothesis.

Table 2: Signs and relative importance of estimated effects of trade balance determinants in Nepal

Variable	Estimated effect
Trade balance (1 year lag)	++
Remittances (1 year lag)	---
Terms of trade (log, change)	+++
Government expenditures (share of GDP)	-
Relative GDP PPP per capita (lag, log)	+
Relative openness	-
Aging speed (lag, 2 year average)*	+
Real exchange rate (CPI based, change)	-
FDI (% of GDP, 2 year average)	+
Output gap** (lag)	-
Credit change (share of GDP)	--
Political and macroeconomic uncertainty*** (lag, 2 year average)	+

Note: (+/-) denotes a positive/negative relationship between the determinant and the CA balance. +++ (---) denotes a standardized coefficient above (below) 0.2 (-0.2), ++ (--) denotes a standardized coefficient between 0.1 and 0.2 (-0.1 and -0.2), + (-) denotes a standardized coefficient between 0 and 0.1 (0 and -0.1).

* Defined as the current dependency ratio relative to the one in 20 years.

** Real GDP- potential GDP

***Calculated as the first principal component of inflation volatility, unemployment, VXO, and World Bank Governance Indicators for corruption, government effectiveness, political stability, rule of law, regulatory quality and voice and accountability.

Although small, FDI inflows had a positive impact on the trade balance. Although foreign capital is small in Nepal, foreign companies having entered the Nepalese market had a bigger positive effect on exports than on imports (through increased demand for foreign intermediates and capital goods).

Demographic changes, measured by the aging speed, have a small and positive effect on the trade balance. Given the long horizon over which the demographic trends materialize, the overall impact of the demographic change in Nepal on the trade balance is positive, in line with the decline in the dependency ratio.

Macroeconomic uncertainty is also estimated to have a small positive impact on the trade balance. Actually, as uncertainty mounts agents tend to increase their precautionary savings, which reduces the consumption, including the consumption of foreign goods.

Box 3

HOW TO READ FIGURE 5 ?

To better interpret Figure 5, which plots the contributions of different variables to Nepal's trade deficit, we use the imaginary case of the Fictional Republic of Uqbar, for the period 2012-2013 plotted in this box.

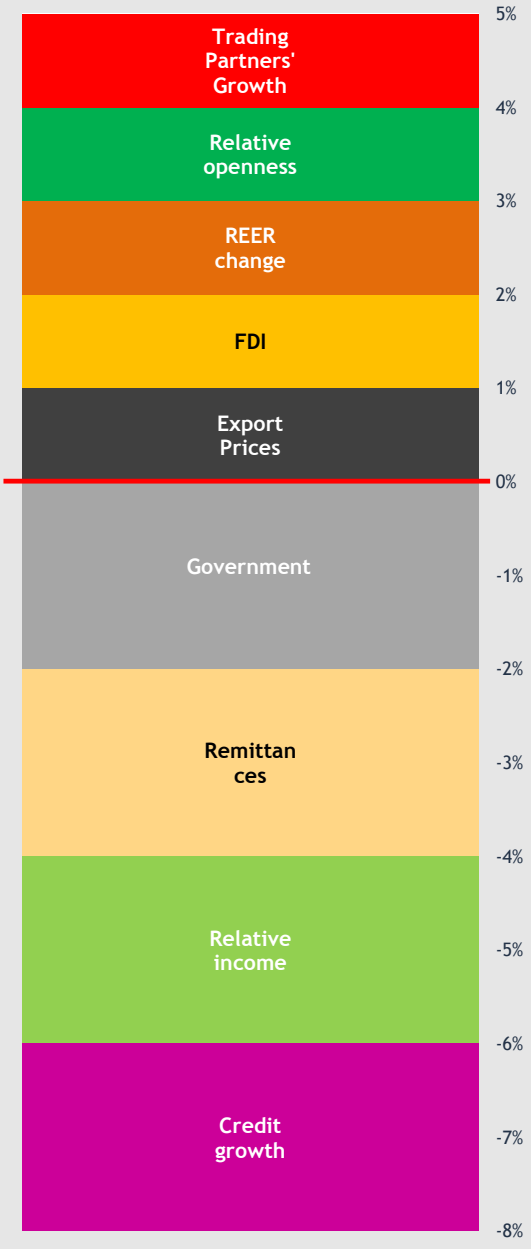
Uqbar run a trade deficit of 4 percent of GDP on average over the period. The estimated model identified how sensitive Uqbar's trade deficit was to a number of prospective determinants. Estimates predicted a deficit of 3 percent of GDP, one percentage point away from the actual 4 percent. In fact, the prediction of 3 percent of GDP is the sum of the contributions of all trade balance determinants.

Notice that some of the determinants had a negative contribution to the trade balance (i.e. a positive contribution to the trade deficit) while others had a positive contribution to the trade balance (i.e. offsetting the trade deficit).

Altogether, the variables with positive impact contributed to a trade surplus of 5 percentage points of GDP, while the variables with negative impact contributed to a deficit of 8 percentage points of GDP. Thus, the net predicted effect was a trade deficit of 3 percent of GDP.

The variables with positive contributions to the trade balance are plotted above "zero", while those with negative contributions are plotted below zero in the graph of this Box. For instance, export prices, FDI inflows, changes in the REER, relative openness and trading partners' growth were found to offset the trade deficit of Uqbar in different magnitudes (for example, the trading partners' growth contributed to offset the deficit by 1 percentage point of GDP). Instead, government expenditures, remittances, relative income and credit growth dynamics contributed to increase the trade deficit. For example, the government expenditures contributed to the deficit by 2 percentage points of GDP.

CONTRIBUTIONS OF DIFFERENT FACTORS TO THE TRADE DEFICIT IN THE FICTIONAL UQBAR REPUBLIC (2012-2013)



Source: Authors' invention

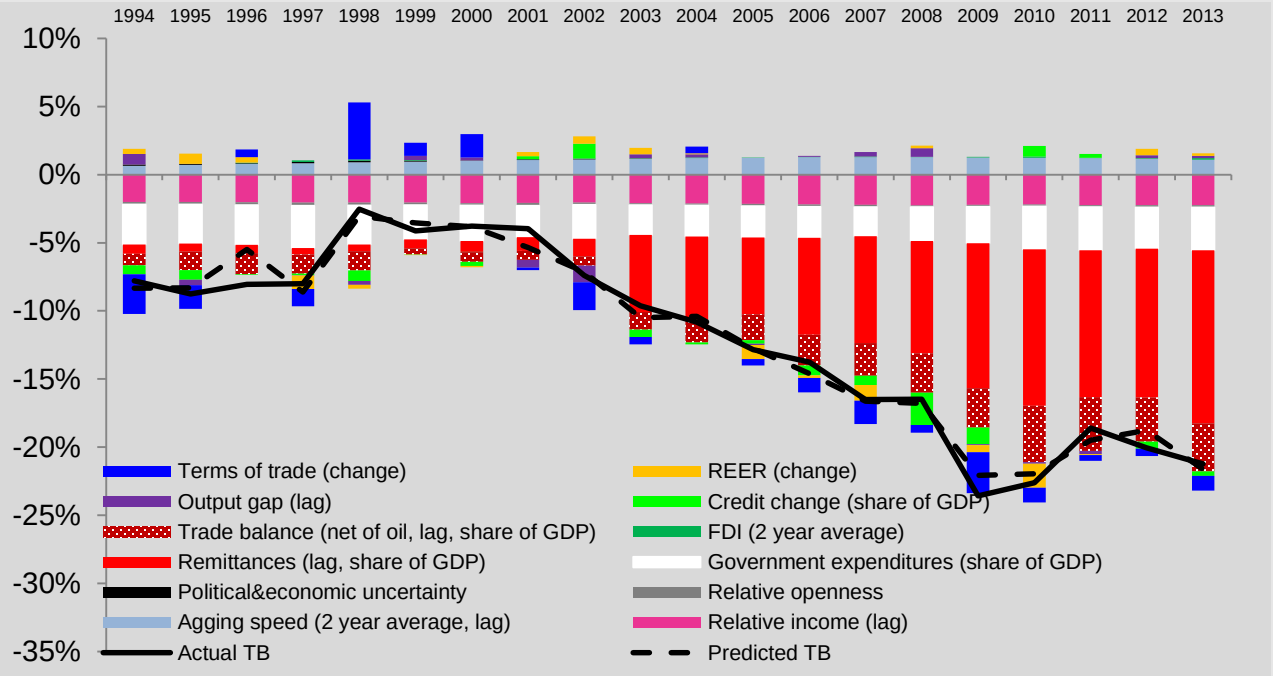
Source: Authors' elaboration

What are the factors that contribute the most to trade dynamics in Nepal?

In addition to its sensitivity, it is crucial to understand how each determinant has contributed to the actual trade balance dynamics. The distinction between sensitivity and contribution of a given determinant is important. The sensitivity refers to how much the trade balance changes given a marginal change in one of its determinants. By combining information on the sensitivity to a given determinant with the actual changes of a given determinant over the period, we can estimate how much of the trade deficit has been attributable to actual changes in that determinant. For instance, Nepal's current account is highly **sensitive** to remittances (see standardized coefficient in Table 1) which increases the CA balance. Yet, the **contribution** of remittances to the trade balance of Nepal before 2002 is small and increases thereafter, as shown in Figure 5.

Figure 5

CONTRIBUTIONS OF KEY VARIABLES TO THE TRADE BALANCE (AS % OF GDP)



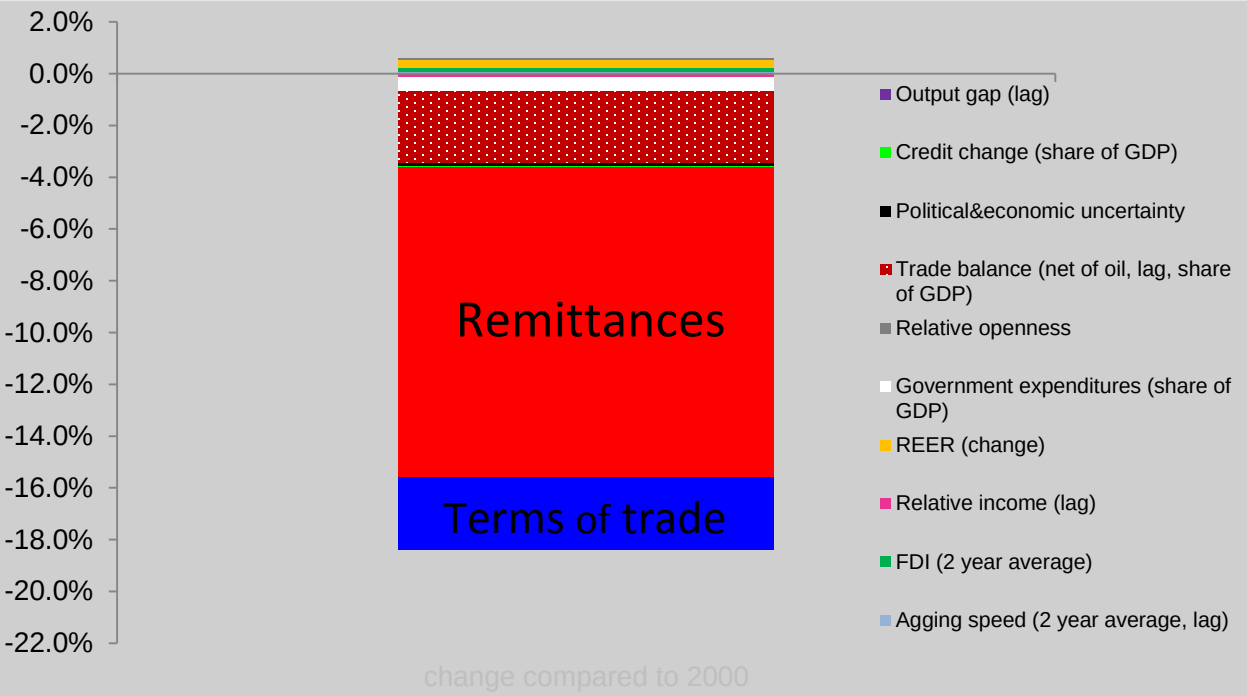
Source: Authors' calculations.

Another way of looking at the evolution of the determinants contribution to the trade balance is to focus on how these contribution changed between 2000 and 2013, as shown in Figure 6. The contribution of remittances to the trade deficit has increased substantially (by 12 percent of GDP)

between 2000 and 2013, the end year of our analysis. The contribution of the terms of trade to the trade deficit has increased by 2.8 percent of GDP.

Figure 6

CONTRIBUTIONS TO TRADE BALANCE - CHANGE IN CONTRIBUTIONS TO THE TRADE BALANCE FROM 2000 TO 2013 (AS A PERCENT OF GDP))



Source: Authors' calculations.

What are the Likely Paths of Nepal's Trade Balance and Current Account Balance?

How sustainable is Nepal's external position? What would happen to the trade deficit and to the current account balance if the key determinants continue along their current trend or if they deteriorate? What if the government introduced policy changes? The external sustainability exercise in this section aims at answering these questions.

Current account sustainability is defined as the stable state in which the current account balance generates no economic forces of its own to change its trajectory. In particular, the current account balance is sustainable if the continuation of current government policy stance and private sector behavior does not result in future rapid policy shifts (such as, for example, a sudden policy tightening causing a large recession) and/or substantial changes in other economic variables, such as large exchange rate depreciations or interest rates hikes (Milesi-Ferretti and Razin, 1996). The notion of sustainability does not provide a clear criterion for assessing country's external vulnerability as it incorporates agent's expectations of future policies rather than the policies themselves.

The methodology focuses on another aspect of sustainability: the current account deficit may be sustainable as long as there is foreign funding willing to finance it. The analysis does not impose any steady-state assumption on the evolution of the economy, as these assumptions typically do not hold for emerging countries. To simulate future paths of the trade balance over the period 2014-19, we combine projections for the trade balance determinants (mostly from the IMF World Economic Outlook and our own calculations) with the estimated elasticities of the trade balance with respect to each of these determinants. We also add projections of remittances and other transfers (including donations for reconstruction) to the simulated paths of the trade balance to obtain future paths of the current account balance over the same period following the identity:

Current Account Balance (CAB) = Trade Balance(TB) + Remittances + Other transfers (incl.donations)

Simulations also take into account the expected economic impact of the earthquake that struck Nepal on April 25, 2015, causing widespread damage and devastation. Box 4 below provides IMF's account on the expected economic impact of the earthquake on macroeconomic variables that are relevant for

our simulations, while Figure 7 summarizes how the changes in these economic variables will affect the current account and the trade balance.

Box 4

THE ECONOMIC IMPACT OF THE EARTHQUAKE

Growth is expected to slow down. On June 8, Nepal's Central Bureau of Statistics released a revised GDP projection for 2014/15 with growth falling to 3.4 percent in the year to mid-July 2015, compared to staff's pre-earthquake baseline forecast of 5.0 percent. The tourism sector which generated foreign earnings for about 2½ percent of GDP last year, has been particularly affected. As economic activity recovers and reconstruction gains momentum, growth is expected to gradually rebound to around 5.5 percent in 2016/17. Based also on experience in other fragile countries struck by natural disasters, potential growth is projected to be adversely affected by the earthquake, falling to around 4 percent over the medium term.

Inflation pressures are likely to rise. Losses in agricultural production and damage to transport systems will lead to reduced supply of agricultural products, which account for some 40 percent of the CPI basket. Stepped-up foreign aid and higher inflows of remittances would further boost the liquidity in the financial system, putting pressure on the central bank which has been reluctant to sterilize foreign inflows. Over time, however, as agricultural production recovers and transportation infrastructure improves, inflation pressure should ease.

The fiscal impact of the earthquake will also be significant. Revenue losses are unlikely to be fully offset by higher duty collection from increased reconstruction-related imports (to the extent these are ODA-financed, they may enter duty free). The much greater impact on the budget will be on the expenditure side because of damage to infrastructure and government properties. In addition to the reconstruction cost in the public sector, the government will likely have to provide financial assistance for the recovery of the business sector and to households, particularly for housing. Financial institutions may also need assistance to help overcome the effects of the earthquake (see last point below). Donor support is expected to help fund a large part of the recovery and reconstruction expenses, but the government may also need to borrow more to meet the increased spending needs. Thus, both the fiscal deficit and public debt could likely increase in the medium-term.

The external current account will likely be pushed into deficit. Imports of reconstruction-related materials will rise. Tourism receipts, a key source of Nepal's foreign exchange earnings, could fall by some 1½ percent of GDP in 2015/16 compared with 2013/14, and experience in other countries suggests that recovery could take several years. A temporary surge of remittances is likely as the Nepalese diaspora and migrant workers send more money home to support the reconstruction efforts. However, these one-off higher inflows will be more than offset by higher imports, pushing the current account to a deficit of about 4 percent of GDP on average during the next 5 years.

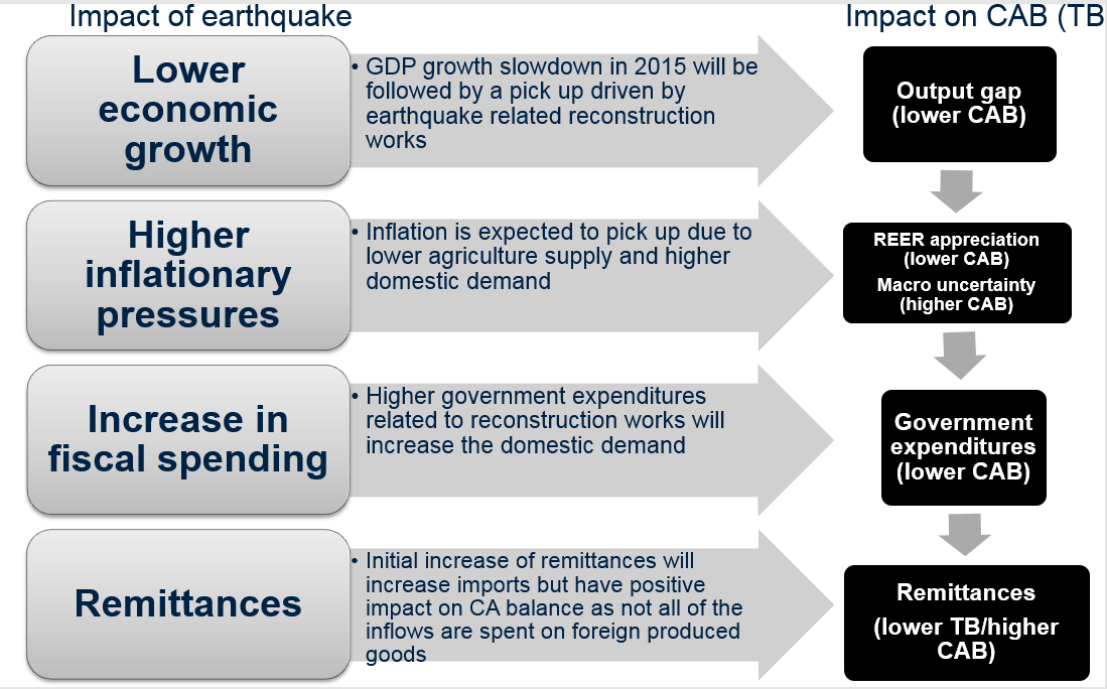
An urgent balance of payments has arisen, reflected in a financing gap. Without the mobilization of substantial exceptional donor financing, the deterioration in the external current account would cause the central bank's foreign reserves to fall significantly in 2015/16 and over the medium term. As illustrated in Table 6, without the RCF disbursement and exceptional support from other donors—which could in part be catalyzed by the RCF disbursement—central bank reserves would fall to about 5 months of imports. This is well below Nepal's reserve adequacy metric suggesting that reserves should be maintained at the current level of about 7 months of imports (Box 2). It is envisaged that with concerted support from the Fund and development partners, Nepal's official reserves could be maintained at about 7 months of prospective imports (excluding construction-related imports) over the next few years.

The financial sector's asset quality would be expected to deteriorate. The damages and economic disruption caused by the earthquake could affect the loan portfolio of banks, microfinance institutions and cooperatives, particularly in rural areas where borrowers lost lives and livelihoods. Initial estimates of the financial hit to the banks (NR 38 billion or about 1.8 percent of GDP) and the insurance sector (NR 3 billion, net of reinsurance provided by foreign reinsurers) seem manageable. However, more data and diagnostics are needed to allow accurate assessments of the impact of damage to real estate and there could still be a need for budgetary support for the financial sector.

Source: IMF (2015), " Nepal: Request For Disbursement Under The Rapid Credit Facility", July 17

Figure 7

THE IMPACT OF EARTHQUAKE ON FUTURE TRADE AND CURRENT ACCOUNT BALANCES?



Source: Authors' construction based on IMF (2015)

We simulate future paths of the trade balance (TB) and current account balance (CAB) over 2014-2019 under five scenarios for the five following determinants: (i) remittances (ii) government expenditures, (iii) output gap, (iv) oil imports, and (v) real effective exchange rate (REER). One of the scenarios is a baseline scenario described in next paragraph. The other four scenarios are constructed around it. Baseline values for relative trade openness and relative income are drawn from IMF WEO. The FDI projection is taken from the IMF Article IV (2014). The aging speed variable is calculated using UN demographics projections. Political and economic uncertainty variables are set to increase in 2015 and decline afterwards. The terms of trade are expected to improve in 2015 due to declining oil prices but to worsen gradually afterwards. Credit growth is expected to pick up backed by the reconstruction.

Under the baseline scenario, the assumptions regarding the trajectory of the five determinants are as follows:

Output gap is calculated using WEO projections for the real GDP[4]. After a negative gap in 2014 and 2015, the scenario assumes a positive gap due to increased demand reflecting reconstruction efforts.

Real effective exchange rate (REER): After a sharp appreciation in 2015 (due to higher inflation), a real appreciation of 3 percent is expected by the end of the simulation period.

Government expenditures are in line with IMF WEO projection. After a decline in 2014, total increase of 5 percent of GDP is expected by 2019 in line with increasing infrastructure investments.

Remittances are expected to increase in 2015-2016 as emigrants support reconstruction efforts and to return to their 2014 level afterwards (in line with the empirical evidence, see WB, 2009).

Oil imports are expected to follow the forecasted developments of oil prices. We assume that imports increased by 25 percent in 2014 and by additional 20 percent in 2015. From 2016, a gradual decline of 5 percent per year is assumed. These rates imply oil imports of about 5 percent of GDP in 2019.

Results: simulations for the trade and current account balances

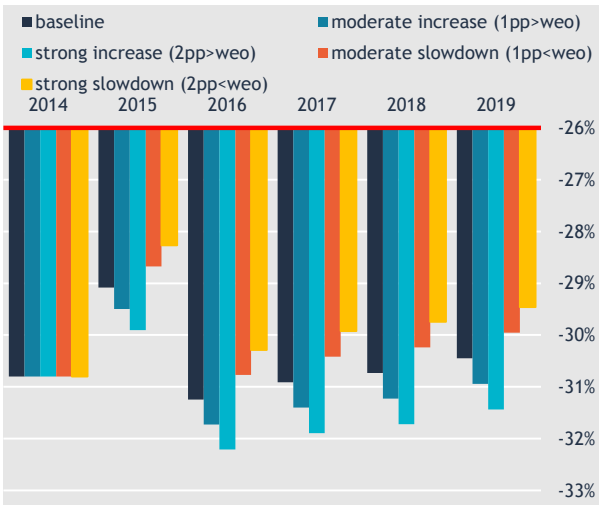
Overall, higher levels of domestic demand, inflation, government expenditures and remittances related to reconstruction works lead to higher trade deficits. Figure 8 shows the forecast for the trade balance under different scenarios for four determinants, as oil imports (the fifth determinant) is included in the trade balance. Namely, the baseline path as discussed in the previous paragraph, two expansion scenarios, and two contraction scenarios for each simulated determinant. For instance, the comparison between the strong increase and the strong slowdown in the output gaps scenarios in Figure 8.a, implies a difference in the trade deficit of two percent in the long run.

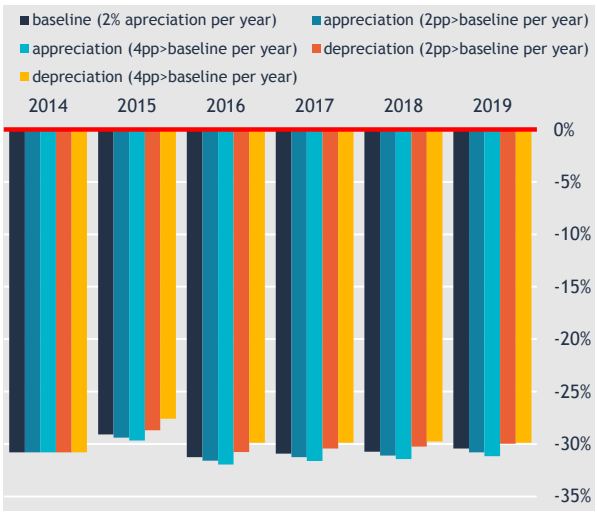
Figure 8: Simulations for the trade balance (TB) under different scenarios

a. TB in alternative output gap scenarios (% of GDP)

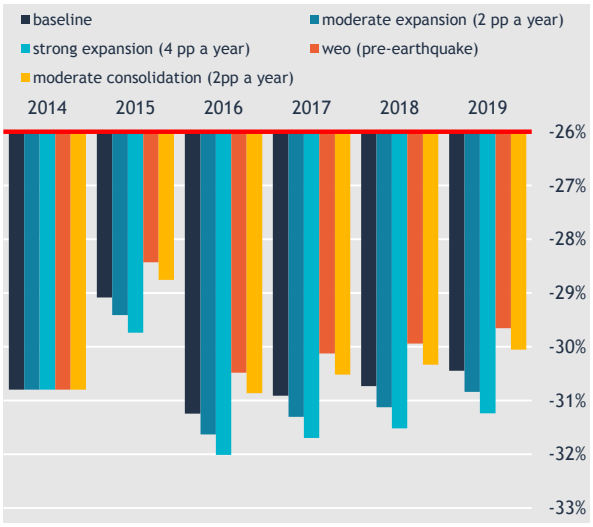
b. TB in alternative real exchange rate scenarios (% of GDP)

[4] Estimates of output gap are obtained using the Hodrick–Prescott filter with smoothing parameter 40, over the period 1990-2019.

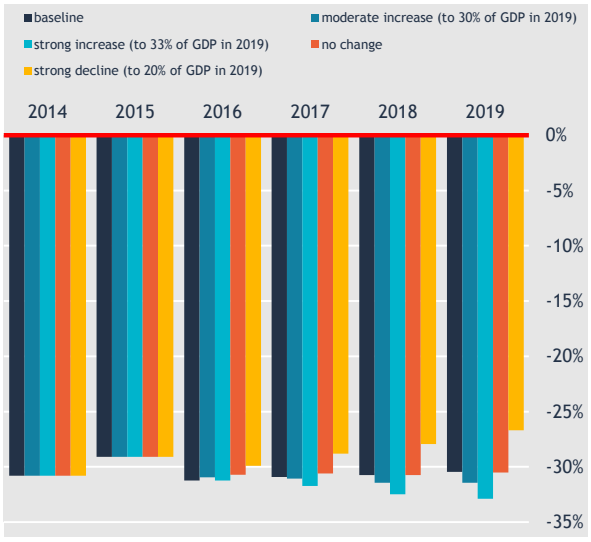




c. TB in alternative government expenditures scenarios (% of GDP)



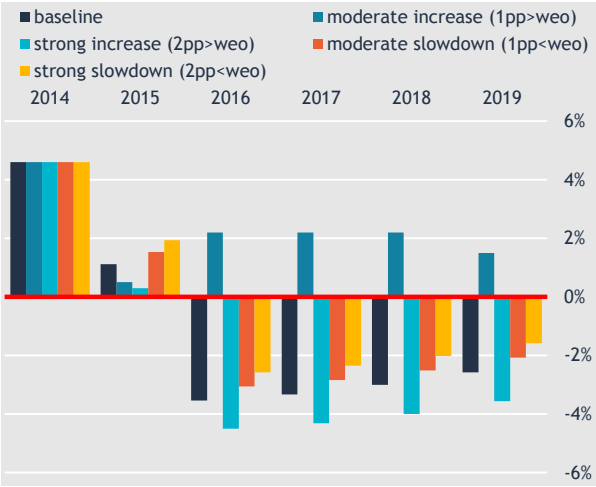
d. TB in alternative remittances scenarios (% of GDP)



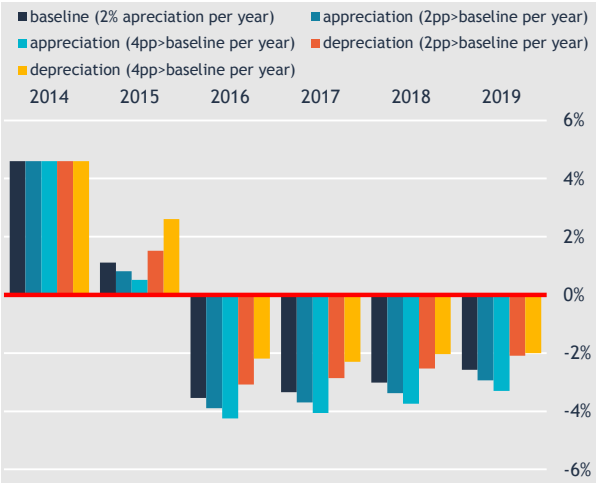
The current account is expected to turn sharply to a deficit in 2016, due to reconstruction effort, and improve gradually thereafter. Figure 9 shows the forecast for the current balance under different scenarios for four determinants, analogous to the previous figure. The current account is forecasted to be in surplus until 2015 in most scenarios, and to fall sharply to a deficit in 2016 due to the reconstruction expenditures. From 2017 onwards, the current account deficit is forecasted to fall under most scenarios.

Figure 9: Simulations for the current account balance (CAB) under different scenarios

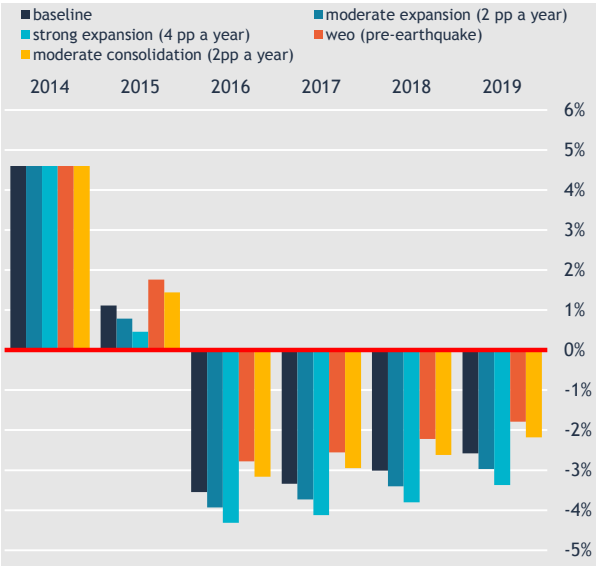
a. CAB in alternative output gap scenarios (% of GDP)



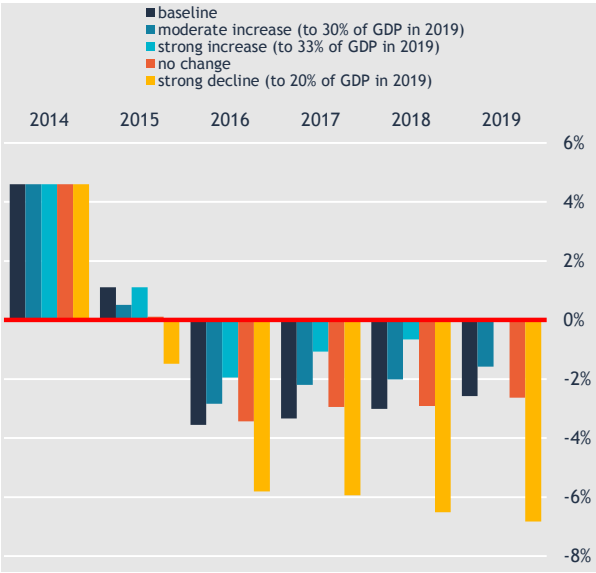
b. CAB in alternative real exchange rate scenarios (% of GDP)



c. CAB in alternative government expenditures scenarios (% of GDP)



d. CAB in alternative remittances scenarios (% of GDP)

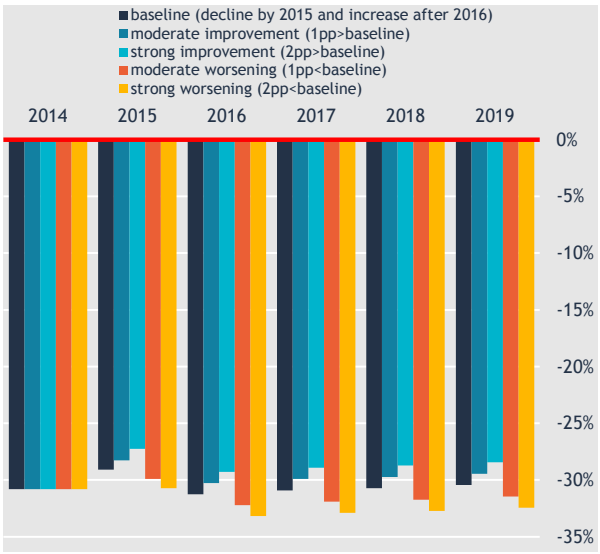


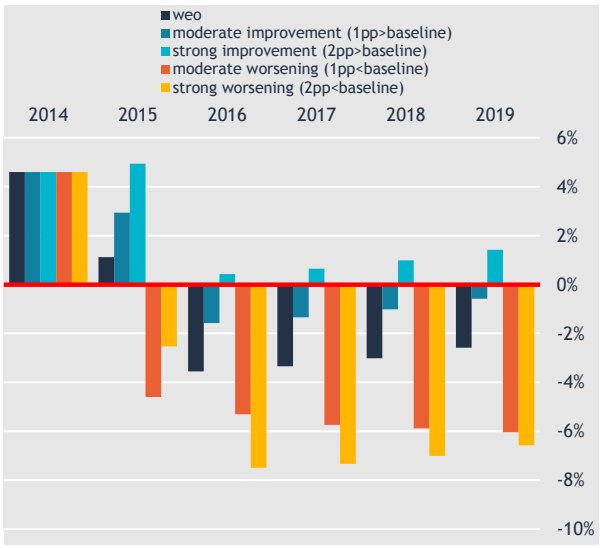
Finally, oil prices dynamics have important implications for the evolution of the trade balance and the current account balance, as shown in Figure 10.

Figure 10: Simulations for the trade balance (TB) and current account balance (CAB) under different oil prices scenarios

a. TB in alternative oil prices scenarios (% of GDP)

b. CAB in alternative oil prices scenarios (% of GDP)


baseline (decline by 2015 and increase after 2016)
moderate improvement (1pp>baseline)
strong improvement (2pp>baseline)
moderate worsening (1pp<baseline)
strong worsening (2pp<baseline)
2014
2015
2016
2017
2018
2019
0%
-5%
-10%
-15%
-20%
-25%
-30%
-35%

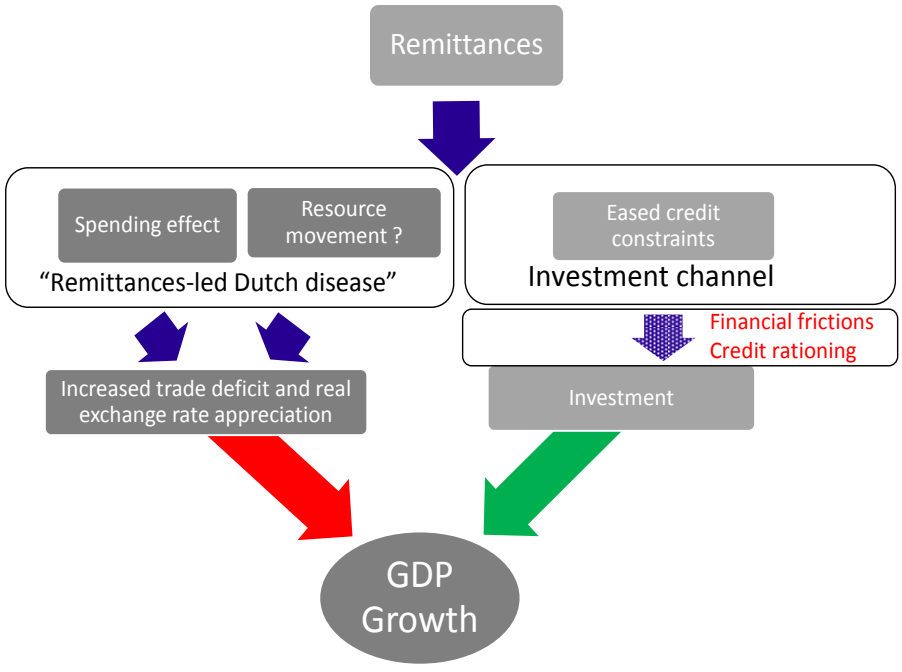

weo
moderate improvement (1pp>baseline)
strong improvement (2pp>baseline)
moderate worsening (1pp<baseline)
strong worsening (2pp<baseline)
2014
2015
2016
2017
2018
2019
6%
4%
2%
0%
-2%
-4%
-6%
-8%
-10%

What is the impact of Remittances on the Nepalese Economy?

Nepal experienced a significant increase in remittances inflows after 2000, which reached 25-30 percent of GDP over the past years, as shown in Figure 1.

The literature has noted the positive impact of remittances on an economy. First, a vast number of studies found that remittance inflows reduce volatility of output and stimulate economic growth (see survey in Hassan and Holmes, 2013). Second, remittances support the development of the financial sector. By relaxing credit constraints they stimulate investments and future growth. Figure 11 provides an overview of the different channel remittances affect the economy.

Figure 11: Implications of remittance inflows in an economy



Source: Author's Elaboration

Notwithstanding these positive effects, remittance may exert adverse effects in an economy receiving them. Large inflows can lead to a real exchange rate appreciation and the subsequent loss of export competitiveness (see Acosta et al, 2004, Hassan and Holmes, 2013, among others). This Dutch-disease effect operates through two channels. First, higher inflows of remittances can lead to increased spending in both tradeable and non-tradeable goods (*spending effect*). As prices of tradeable goods are set in international markets, increasing demand leads to higher prices of non-tradeable goods. The relative increase in prices of non-tradeable goods results in a real exchange rate appreciation. Second, an increase in remittances stimulate the transfer of resources from the tradeable to non-tradeable sectors (resource movement effect) as the relative profitability in tradeable sectors fall. This is due to an increase in wages and the cost of other production factors following the higher demand for non-tradable products, which puts additional pressure on the real exchange rate to appreciate.

Most of remittances seem to be used for consumption and a smaller portion is used for investments. According to 2011 consumer survey in Nepal, 71% of remittances are spent in consumption goods, 7% are used for repayments of existing loans and only small portion is used to boost investment. In poorer households, remittances may finance the purchase of basic consumption goods, housing, and children's education and health care. In richer households, they may provide capital for small businesses and entrepreneurial activities. They also help pay for debt service, and in some countries, banks have been able to raise overseas financing using future remittances as collateral.

Are remittances causing a Dutch disease?

We assess the impact of remittances on Nepal's real exchange rate and attempt to distinguish between their short and long term impact. Most empirical studies employ panel cointegration to test for the existence of this Dutch-disease-type of effect. The use of panel techniques is reasonable given the short samples typically available for most emerging and developing economies. Yet, heterogeneity among countries may have an impact on the final estimates obtained. Therefore, we use a Vector Correction Error Model (VECM) that will also allow to estimate the short term and long term impact of remittances on the real exchange rate, and thus on the export competitiveness of a county. Our empirical estimation consists of two steps that are explained in Box 5.

Box 5

THE IMPACT OF REMITTANCES IN THE REAL EXCHANGE RATE

Our empirical estimation consists of two steps. First, a cointegration equation of following form is estimated:

$$REER_t = f(R_t, M_t, EXO_t) \qquad (1)$$

Where REER denotes the real exchange rate (an increase in its value denotes appreciation), log of R is remittances in USD, M is log of imports, and EXO is a set of exogenous controls: 10 year US interest rate, log of GDP per capita

and government expenditures to GDP ratio. We also include time trend as a proxy for the determinants that are not included in the analysis directly. The intuition behind these determinants is outlined below.

Remittances are expected to appreciate the real exchange by increasing the prices of non-tradeable goods. Hence a positive coefficient is expected as the higher the income due to remittances, the higher consumption of goods produced abroad. This shift in consumption creates additional pressure on the exchange rate both in the short and the long run. Therefore, a negative sign for the imports coefficient is expected.

Per capita income is used as a proxy for technological progress. As increased productivity will more likely occur in the tradeables sector, the subsequent gains lead to increases in wages which will attract more labor from the non-tradeable sectors. The subsequent increase in the price of tradeable goods leads to an exchange rate appreciation. Global interest rate and government expenditures have an ambiguous effect on the real exchange rate. If a country is net creditor, high interest rate may improve its position relative to the rest of the world which will lead to the REER appreciation. Alternatively, higher interest rate attracts capital and increases income inflows and domestic spending and cause a real depreciation. The effect of government expenditures depends on their structure. The more these expenditures target traded goods sector the more REER is going to depreciate.

The second part of the analysis estimates following error correction model:

$$d(REER_t)=c+ a_1 d(REER_{t-1})+ a_2 d(R_{t-1})+a_3 EXO_t+becm_{t-1}+e_t \quad (2)$$

where d denotes the first difference and b is the adjustment speed of error correction term, $ecm= REER_t-f(R_t, M_t, EXO_t)$. A negative and significant b is an indicator that REER adjusts towards long term equilibrium.

Error! Reference source not found.Error! Reference source not found. reports the estimates of the long run equilibrium relationship obtained using DOLS (Dynamic Ordinary Least Squares). DOLS estimation augments regression with lead and lagged differences of the regressors to control for endogenous feedback effects which allows us to overcome the issues of heterogeniety and persistance of short-term dynamics which are typically present in the analysis of single cointegrating relationship.

The real exchange rate in Nepal is found to have a higher speed of adjustment than what is found in the literature. The results presented above indicate the existence of long-run equilibrium relationship among REER, remittances and imports. Yet, the estimates do not tell us anything about the speed of the adjustment towards long term equilibrium. To shed some light on that issue we estimate ECM model outlined in equation (2). The results reported in Table 2 indicate that error correction term for the real exchange rate is highly significant and negative in line with theoretical predictions. In particular, the estimate of -0.35 implies that any REER misalignment will be completely adjusted in about 3 years. Looking ahead the loss of competitiveness that arise from remittance inflows is likely to be contained as the pace of remittance growth will be constrained by the demand for Nepalese migrant workers.

Table 3: Estimation of long-run dynamics

Variable	Coeff.	Std. Error	p-value
Remittances (log, USD)	0.05	0.02	0.04
Imports (log, USD)	-0.03	0.02	0.10
Constant	-6.04	1.30	0.00
Linear trend	-0.01	0.00	0.01

Government expenditures (share in GDP)	-1.65	0.56	0.00
GDPpc (log, USD)	0.56	0.35	0.11
Global interest rate	-1.08	0.39	0.01
R squared			0.89

Table 4: Estimation of short-run dynamics

Variable	Coeff.	Std. Error	p-value
change REER (lag)	0.08	0.12	0.51
change remittances (lag)	-0.01	0.01	0.21
change imports (lag)	0.04	0.02	0.09
Error correction term (lag)	-0.35	0.10	0.00
Constant	-0.20	0.20	0.33
Government expenditures (share in GDP)	0.07	0.19	0.70
GDPpc (log, USD)	0.05	0.06	0.40
Global interest rate	0.53	0.45	0.24
R squared			0.22

Source: authors' elaboration

The real exchange rate adjusts to changes in workers' remittances in the long-run. The estimated coefficient of remittances implies that a 10 percent nominal increase in remittances leads to 0.5 percent of real appreciation in the long run and the subsequet loss of export competitiveness. The average quartely increase in remittances over the period under analysis (1995Q1-2015Q1) was 5.8 percent, which implies that the loss of competitiveness of 22 percent is due to higher remittances. The estimated impact is broadly in line with the literature. For example, Hassan and Holmes (2013) found the impact of similar magnitude (0.048) using data of a large panel of remittance recipient countries.[5] Imports are also found to have negative long run effect on real exchange rate albeit of a smaller magnitude. The estimated impact of exogenous variables is in line with the literature. We also find some evidence of a Balassa-Samuelson effect, that is the real exchange rate appreciates as the country grows, but it was not significant at 10 percent (see coefficient on per capita GDP).

[5] Other authors that used panel techniques found either small (Barjas et al, 2010) or insignificant effect of remittances on REER (Ozcan, 2011 even finds the opposite effect).

The potential negative effects of remittances on the competitveness can be offset in the long run if these inflows boost capital formation and investments. Some countries implemented measures aimed at chanelling more remittances to support investments and capital formation. For example, to stimulate saving deposits by non-residents in India, earned interest on these deposits are exempted of income tax. The private sector in some countries has also encoraged the allocation of remittances to better uses. For instance, private companies in the Philippines ensure that funds sent by a parent working abroad and intended for children's education are not used for other purposes. Governments have often offered incentives to increase remittance flows and to channel them to more productive uses, but such policies can also encounter unintended effects. Tax incentives may attract remittances, but they may also encourage tax evasion. Matching-fund programs to attract remittances from migrant associations may divert funds from other local funding priorities. Box 6 discusses provides a discussion about these matching-fund programs. Efforts to increase savings and improve the allocation of expenditures should also be accomplished through improvements in the overall investment climate and the business environment.

Box 6

TAX AND SUBSIDIES RELATED TO REMITTANCES

While most governments have encouraged efforts to increase remittances inflows through formal channels, a few countries have considered taxing remittances as an additional source of revenue. A few receiving countries already tax remittances, often through indirect means. For example, remittances sent from the US to Cuba could only be paid to recipients in Cuban convertible pesos with a tax of 20 percent for exchange rate conversion. According to Mohapatra (2010), other countries having had a parallel market premium with an overvalued official exchange rate, e.g., Ethiopia, Pakistan, and Venezuela to name a few, also implicitly tax remittances when they require recipients to convert remittances to local currency at uncompetitive official exchange rates. Philippines used to impose a small Documentary Stamp Tax of 0.3 pesos for every 200 pesos, but this was scrapped in 2010. Even though a country loses some tax revenues in the short run, the gains from increased remittances could easily outweigh the losses.

Taxing remittances is a tax on the poor, and it immediately reduces the incentive to send remittances and the amounts received by the beneficiaries, and ultimately the development impact of remittances. In addition, a remittance tax would also drive these money flows underground. A shift of flows to informal channels can hurt efforts to leverage remittances for increasing access of recipients to formal financial services (financial inclusion). Such a tax is difficult to administer as remitters can resort to using informal channels. Also such a tax is highly regressive. And they produce huge deadweight losses as remittances are highly cost-elastic.

On the subsidies side, matching programs have been used to stimulate the use of remittances for investment in migrant-origin countries. For example, the Mexican "Tres por Uno" ("Three for One" or 3x1) program encourages Mexican migrants abroad to invest in their communities of origin. Each dollar invested by migrants is matched by $3 from the Mexican government. Migrants have contributed an average of $15 million annually since the program began according to Hazán (2012). Yet, the program is very small compared to Mexico's annual remittances. In 2008,

a 1x1 Migrant Business Fund was established to provide subsidized loans to Mexicans in the US who want to invest in Mexico. Migrant entrepreneurs must submit business plans to the Mexican development agency Sedesol, which can grant up to 300,000 pesos ($22,600) to help establish a business in Mexico. Such programs have been implemented by home country governments, and rigorous impact evaluation are difficult to conduct.

Ambler et al (2015) conduct a randomized experiment offering Salvadoran migrants matching funds for educational remittances, which are channeled directly to a beneficiary student in El Salvador chosen by the migrant. They desing and implement "EduRemesa," a program allowing migrants to channel funds towards the education of a student of their choice in El Salvador for the 2012 school year. EduRemesa beneficiary students in El Salvador received an ATM card in their name, providing access to the funds, and were told that the funds were for expenditures related to their own education. Ambler and his co-authors conducted a randomized controlled trial to measure take-up and impacts of the EduRemesa at various levels of matching funds. They randomly assigned migrants (recruited in metro Washington, DC) to a control group or one of a number of treatment conditions which varied in the degree to which our research project matched EduRemesa funds for the beneficiary student. In the "3:1 match" treatment, each dollar contributed by the migrant was matched with $3 in project funds. In the "1:1 match" treatment, each dollar contributed by the migrant was matched with $1 in project funds. In a third treatment group ("no match"), migrants were simply offered the EduRemesa product without matching funds. Several months after the EduRemesa offers to migrants, follow-up surveys were conducted to establish impacts of our treatments. Key finding is that take-up of the EduRemesa was monotonically related to the match level. 18.5% of migrants in the 3:1 match treatment executed at least one EduRemesa transaction, compared to 6.9% in the 1:1 match group and exactly zero in the no-match group. 15.1% and 6.0% of migrants with the 3:1 and 1:1 matches, respectively, sent an EduRemesa to their target student. The matches lead to increased educational expenditures, higher private school attendance, and lower labor supply of youths in El Salvador households connected to migrant study participants. They find substantial "crowd-in" of educational investments: for each $1 received by beneficiaries, educational expenditures increase by $3.72.

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