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Utilization of Remittance for Transportation: A Case Study of Moldova

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Table of Contents

1. Introduction

The role of remittances in under-developed nations has been a highly contested issue among economists for decades. The diversity of cases among nations and aid groups has varied over the years, with some research showing a negligible effect of remittances on poverty reduction through increased consumption at the expense of decreased human capital investments (Reichert, 1981; Clemens, 2011)[4,15]. While other research has shown remittances generating additional capital that allows citizens to purchase durable goods, as well as, investing in local business development to generate opportunities (Adams & Cuecuecha 2010)[1]. Through extensive research, it's evident that remittances have some marginal influence on economic activity, but what circumstances generate a productive remittances system? Remittances have risen to a massive global market, with $582 billion transferred in 2015, and $575 billion transferred in 2016. The year 2017 is projected to generate about $570 billion in transfers, with much of that capital moving to under-developed nations[20]. Literature that shows a positive correlation between remittances and economic development suggests a pattern of basic conditions for remittances to have a positive influence (Manic, 2017; Adams, 2005; Taylor, 1996)[11,2,18]. The first condition is decreasing, or possibly eliminating, the economic and social barriers between urban and rural populations within a nation. These barriers mainly include financial institution availability (banks) and infrastructure development.

This paper will focus primarily on the implication that remittances helped sustain the livelihood of rural Moldovan citizens, but due to perpetual poor infrastructure spending by the Moldovan government, rural citizen have been constricted through limited economic/spending opportunities. As the empirical evidence will later show, the absence of infrastructure development leads to negative consequences that further limits the sociodemographic population that live in rural areas, and leave them with fewer options to generate or obtain capital (Rodrigue & Notteboom 2017)[16]. The second condition, which is intertwined with infrastructure development, is proper government expenditure on social overhead capital, particularly in rural areas. The economic divide between rural and urban is an issue that many third-world-remittance-dependent nations face, and in cases like Moldova it can be partially attributed to disproportionate urban spending and government corruption. Thus, having the accountability from international organizations and donors to allocate the funds given for proper development is a necessity. Government corruption in remittance dependent nations is often far higher than in more developed nations, thus it's imperative that nations and organizations funding the development of third-world nations, such as Moldova, require positive productivity from the capital allocated. There has been little to no productive capital movement in rural Moldova over the past decade, with staggering data suggesting significant infrastructure under-development that has resulted in a constricted household spending, with less marginal utility of capital for the rural population.

This research will empirically analyze government spending, transport use, and household expenditures in Moldova to bring attention to the misuse off foreign aid given to the Moldovan government, as well as, what consequences have been seen, and will be seen in the future if proper infrastructure development isn't resolved.

1.1 Overview

Due to the mass capital inflows from foreign sources, Moldova has been stringently required to provide data on government spending and census data to determine the effectiveness of these capital inflows. Government spending data displayed a clear correlation between general fiscal government expenditure and foreign aid received; as more money was given to Moldova, the more they spent, but the effectiveness of these government expenditures did not have corresponding effects according to census data. Moldovan census data, which was obtained from the Moldovan Statistical databank (Statistica de Moldovei)[23], showed that the overall standard of living, and basic spending patterns of rural and urban citizens differed. Urban citizens, who live in the capital city of Chisinau and the localities directly surrounding it, spend their income on business development, education, and other forms of long-term investment. While rural citizens, who live everywhere but Chisinau, are seen to spend their income on durable goods, transport, and basic necessities (i.e. food). Moldova's total population is approximately 3.5 million, with more than half of that population residing in the rural country, opposed to the more urbanized capital of Chisinau. Figure 1 depicts the urban region as the red locality in the middle, with the yellow (North), green (Centre), and orange (South) representing regions categorized as rural. As empirical evidence will later show, the focus of prior foreign aid projects provided an opportunity for public administrators and government officials to essentially falsely report on production of goods that the funding was supposedly allocated toward. This paper looks to prove that misappropriated capital, originally allocated for transport/infrastructure development, has caused rural citizens to constrict their spending even further and will continue to keep them in this economically suppressed cycle if proper public administration and justice reform isn't achieved.

Figure 1. Map of Moldova, showing what localities are separated by which category in Statistica de Moldovei. The North (yellow), Centre (green), South (orange) and the capital Chisinau (red).

2. Literature review – How Useful Are Remittances?

To understand how remittances influence a third-world developing nation, like Moldova, an exhaustive literature review has been conducted to determine the effect of remittances on general household expenditures. As a general consensus, there are three primary views on how remittances influence household expenditure. The first is that remittance incomes are treated the same as real wages, where goods are bought at the availability of capital to the household. This suggests that remittances and wages do not alter household expenditure, and instead promote greater spending. The second, more pessimistic view, is that remittances promote a status-oriented spending that doesn't assist in the human capital investments or institutional establishment that could benefit a nation long-term, few cases of such evidence have surfaced, but differ in many ways to Moldova. And finally, the third general opinion on remittance effectiveness is that remittances are able to provide additional capital that promote human capital investments and institutional establishment that benefit nations long-term.

To determine whether remittances have a positive effect on promoting economic development in third-world nations similar to Moldova, an analysis of the Philippines, Ghana, Guatemala and Moldova will be analyzed to determine where and how remittances influence household spending. These nations were specifically chosen because they provide clear and strong evidence on household expenditures with large samples, and fairly conclusive results. After conducting analysis of overall remittance impact, this research will also analyze the impact of transportation on remittances/remittance availability, and how that may influence an individual's quality of life in each location. Though much of the empirical analysis conducted from the prior research was on the basis of aggregated data, Moldovan statistical information provides disaggregated information on transportation which will display exactly how transportation has hindered rural income availability. Most of this research looks at primarily how health and education expenditures are influenced due to the availability of remittances, and while health and education are obviously significant indicators of national human capital investment and basic quality of life, transportation also encapsulates factors of economic development, import/export efficiency and citizen mobility.

Transportation plays a significant role in providing intra-national (internal) remittances, opposed to international remittances, which many third-world nations rely on outside sources of employment, opposed to finding work from a major internal city. While some literature shows nations with a direct separation between internal and international remittances, an efficient transportation system could help bridge the gap between massive cycle of migration and assist in the national development of business institutions that will provide opportunities for labor. Transportation aids low income families with access to remittances, whether internal or international, and could ultimately aid low income families to a higher standard of living. While each case is different, the three nations selected for analysis all share common characteristics of high remittances as a percentage of GDP, distinct separation between rural and urban localities, low infrastructure spending as a percentage of total fiscal expenditures (Philippines not included) and a cyclical nature to migration. These characteristic commonalities will help researchers understand how and why infrastructure spending has harmed or helped citizens in each country. In addition, this will help researchers better formulate how policy prescribers could tailor their aid packages to effectively be implemented.

2.1 Ghana

Research conducted from 2005-2006 by Richard Adams Jr., Alfredo Cuecuecha, and John Page looked at how remittances impacted consumption and investments in Ghana[2]. Utilizing a database with household expenditure from the aforementioned years, the researchers wanted to see what effect expenditure patterns had on households with and without remittances, if different, could the remittances be the explanatory variable? With a sample of over 5,000 household, the dataset was fairly extensive, comparisons were made between remittance and non-remittance household against spending in 6 categories: food, durables (shoes, stove, furniture, etc.), housing, education, health, and other (gas, bus/taxi fares, expenses on remittances). Their conclusion was:

> "First, when compared to what [households] would have spent without the receipt of remittances, households receiving international remittances (from other African countries and other countries) spend less at the margin on one key consumption good: food. At the mean, households receiving international remittances spend 14 percent less at the margin on food that what they would have spent without the receipt of remittances. Second, households receiving both internal and international remittances spend more at the margin on one important investment good: education. At the mean, households receiving internal and international remittances spend 3 and 33 percent more at the margin, respectively, on education than what they would have spent on this investment good without the receipt of remittances. Such remittance-inspired investments on education are important, because they can help to build human capital in Ghana." (Adams Jr. 2005)[2]

Their conclusions clearly depict that remittances have a positive effect on spending in terms of human capital investments. Their results suggest that as remittances accumulate, they generate a greater opportunity to invest in education, opposed to the purchase of food. The major differentiating spending pattern between non-remittance receiving household and household that do receive is that those who do not receive are essentially forced to spend their money on food to survive, while those who have either internal or international remittances are able to have a greater range of investments. The categories durables, health and other also received greater spending when the household received either internal or international remittances. With a marginally greater propensity to spend on durables, health and other if the household has both internal and international remittances.

The Ghana research helped build a greater understanding of the broad spending patterns of remittance receiving and non-receiving households, with a clearer suggestion that education is an important investment for Ghanaian citizens if they have the capital for it, but if disaggregated data was provided it could be interesting to see how categories among 'durables' and 'other' separated among households. For example, the purchase of a car would be under durables, while public transportation costs would stay under other. Looking at prior research, Ghana does not have a very well established road network, aside from national roads for international commerce. The rural sector of Ghana is mostly placed near dirt roads with very little opportunity to travel. Therefore the question is, would Ghanaian citizens be more likely to travel for labor internally or internationally opposed to investing in education if the fares were low enough, and would that benefit them in the long term? Additionally, it would be interesting to analyze how much aid has been given to Ghana for the specific purpose of road development and rehabilitation, but for that disaggregated data from Ghana household would have to be available. Overall, this research shows that remittances do in fact have a positive effect in Ghana, a third world developing nation, highly attached to remittances, similar to Moldova.

2.2 Guatemala

Additional research conducted by Richard Adams Jr and Alfredo Cuecuecha in 2010 looked to analyze how remittances impacted household spending in over 7000 cases in Guatemala[1]. Their findings closely resembled the results from their work in Ghana a few years prior with the general conclusion that in Guatemala:

> "Households receiving international remittances spend less at the margin on one key consumption good—food—compared to what they would have spent on this good without remittances. Second, households receiving either internal or international remittances spend more at the margin on two investment goods—education and housing—compared to what they would have spent on these goods without remittances." (Adams Jr. 2010)[1]

Utilizing the same comparative variables: food, durables, housing, education, health and other, Adams and Cuecuecha were able to conclude that remittances positively impacted household spending if the household received at least one form of remittance (internal vs. international). The effect was seen to be even greater if the household received both forms of remittances, with education and housing obtaining increased investments. In most cases of developing nations, health is usually the second most impacted variable by remittances, but given that most empirical research of this sort is conducted in Africa where outbreaks are more frequent, and health is of a greater concern, housing seems like a logical alternative for investment in the case of Guatemala. There is also very little disaggregated information provided on Guatemala, with very little/incomplete information on infrastructure spending and rural development. Guatemala differs from Moldova significantly, but they are nestled in a fairly similar situation. Around Guatemala is the rest of central America, with the United States, one the largest foreign aid donors in the world, right to the north. Compared to Moldova which is nestled in the east of Europe, among many leading economies. And yet both Guatemala and Moldova, are still third world countries struggling to find income within their country border. Though the countries are similar in many ways, their overall outcome will have to run through different paths, and it will be interesting to see how Moldova and Guatemala decide to grow. Since Moldova is nestled in eastern Europe, where their main source of income are exports of food from the highest quality soil in Europe, as well as small natural oil reserve exports, they will still need their crops to turnover at increasing rates year on year, which is very unlikely, or they will need to find new primary sources of income. Opposed to Guatemala which is surrounded by tropical locations and with their main source of income being tourism. The establishment of luxury locations and emersion of Spanish culture will have to be the way Guatemala generates the majority of their income, the issue being that they have extensive competition within central America, as well as, South American countries, Spain, and other tropical islands. Though their income streams vary significantly, both nations seem to see remittances as having a positive impact on household spending and generating additional opportunities for consumption and investments.

2.3 Philippines

To get a complete understanding of how remittances impact developing nations, some of the negative influences of remittances should be observed also. Research conducted by Aubrey Tabuga in 2007 showed that international remittances induced household spending to a greater propensity of their income on consumer goods and leisure [16]. The researcher found that of the remittance received money, most of the capital was spent toward durable goods (a common finding amoung third world developing countries), but Tabuga also found a major propensity toward leisure. With nearly 22% of remittance capital being spent on what she classified as leisure (i.e. recreation, family occasion, eating outside). What the research found was that citizens in the Philippines were more likely to eat out opposed to eating at home. The propensity to supplement leisure (eating out) and food (eating in) was nearly double for leisure.

> “This study found that while there is some degree of conspicuous consumption, there are also evidence that households might be putting the extra income to better uses. Similar to findings of past research works, remittances induce households to spend more on education and housing. There is also some evidence that it influences the households to devote more on durables goods. However, claims that households receiving remittances may be spending more on conspicuous consumption may have some validity. This is shown by the strong and consistent evidence that remittance induces households to allocate more on consumer goods and leisure.” (Tabuga 2007)[16]

The difference between the Philippines and Moldova though is the level of establishment, and the convergence of internal remittances opposed to international remittances. The Philippines also have a far greater infrastructure system that has been established and is continually being developed. Of all the developing nations analyzed in this research, the Philippines are the closest to becoming a self-sustaining forward-moving economy. This suggestion that remittances are spent more on leisure, when leisure has become a substitute for food, makes understanding the framing of this research so critical. Nonetheless, this research still sees that remittances do have a positive effect on national development, even though the researcher would like to see spending handled a bit differently by household, the metrics for her analysis aggregated too many factors that could have skewed her reading of the data.

2.4 Moldova

Moldova has benefitted from remittances in several ways, but not in an equal nature. Research conducted by V. Lozovanu in 2014 and Eugene Hristev 2009, showed that the major delineation in Moldova is a clear separation in opportunity and economic availability between rural and urban citizens. Both researchers have shown that Moldovan rural citizens are often the migrating population obtaining remittances, even though it is more difficult for them to migrate due to traveling costs. In addition, Moldovan rural citizens have invested their remittances in durable goods and food for the most part, while urban citizen have been investing their remittances on education. This could be partially attributed to:

> "Opportunities for development of other kinds of business activity are extremely limited [in rural areas], not only due to limited access to credit which is equally inaccessible both in the countryside and in the cities, but also due to poor conditions of transport and communication infrastructure." (Hristev 2009)[19]

Remittance spending for rural citizens necessitates spending on food, clothes, medicine, and whatever other particular basic good may be needed at the time. The spending of these rural citizens is done mostly in larger municipalities outside of their local village, where they will have to pay high bus fares to obtain durable goods. This outside spending not only creates an additional financial burden to cover, but it again promotes development of urban localities opposed to their local village. Urban remittance spending, on the other hand, is divested mainly toward education, business development, durable goods and leisure. The urban setting has far more opportunities and availability to spend on goods because that is where the majority of the spending is done.

Remittances are essentially a lifeline for rural citizens, that have very limited alternative forms of income generation. On top of that, the fares needed to travel into the city, or a near by bank, are disproportionately high for the individuals that need to pay this money so they can acquire more. Citizens in Moldova seem to benefit from remittances overall, the major issue is the negligence to cover the social overhead capital that would adjust the availability for equal spending in the rural class more in line with the urban class, allowing the whole nation to gentrify and develop.

3. Empirical Analysis of Moldova

There are several factors that can be attributed to the constriction of rural household spending in Moldova, the largest being lack of social overhead capital from the government. Aside from the lack of government spending, the rural setting in Moldova has inherently less advantageous qualities. The demographic, economic and social availability of goods make living in rural Moldova all the more difficult, especially when the main source of income comes from an hour long bus ride on a gravel road. The aim of this chapter is to expose the living condition, income disparity for rural citizens, and corrupt spending patterns of the Moldovan government. The result of over a decade of rural neglect has put over half of the 3.5 million Moldovan population in a system of full reliance of international remittances. If any dramatic changes are to necessitate greater spending (like a drought or famine causing higher food costs) Moldova rural citizens would have to live through brutal circumstances and mass starvation could very well be likely. The goal of this research is to show what harm has been done by inadequate government spending, and what potential policy prescriptions can be taken to bridge the gap between urban and rural Moldova.

3.1 Urban vs. Rural Demographic

The divide between rural and urban Moldova is important to understanding the full scope of how infrastructure under-development decreases the utility of remittances for rural Moldovan citizens. The population of Moldova is about 3.5 million with nearly half of the citizens residing in the capital city of Chisinau ('urban'), while the other half live outside the capital which will be classified as 'rural' areas. Though the population is split relatedly evenly, the population demographics of rural and urban Moldova show clear differences. Utilizing the national statistical databank of Moldova, which aggregated the average number of citizens by age group and sex, the conclusions show that since at least 2000-2016 youth (ages 0-19) reside in significantly larger numbers in rural areas, while the middle aged population are distributed relatively evenly among rural and urban localities (Figure 1). Rural localities also see a smaller population in working age citizens (ages 20-59), while having a larger overall population of elderly (ages 60+). Nonparametric t-tests were conducted to see whether there is a significant difference between rural and urban population per age group, with a significant difference found in 0-9 and 10-19 age groups ($P < 0.001$).

Demographic Makeup of Moldova by Age, Gender, and Region of Residence (rural vs urban)

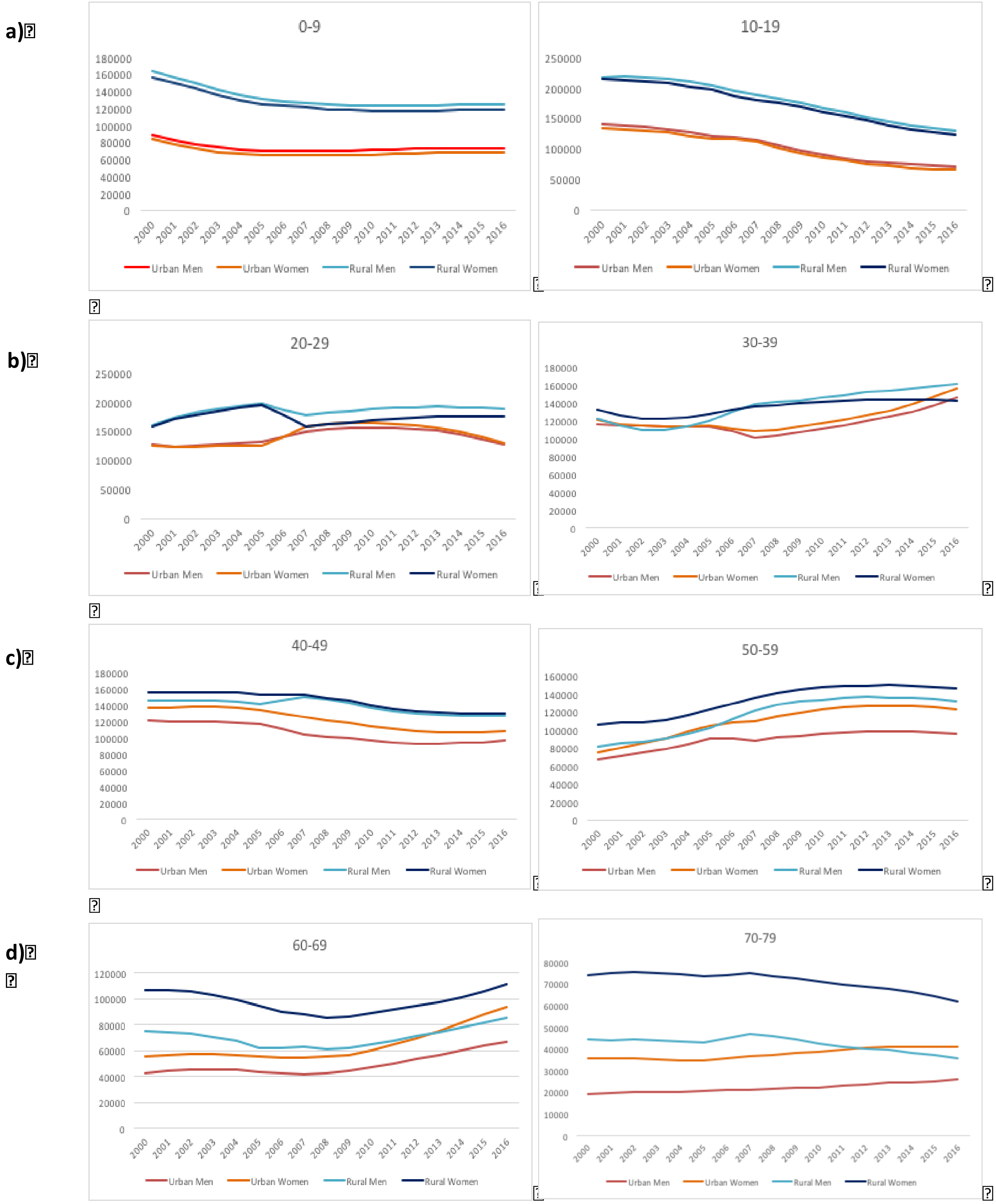


Figure 1. Demographic plot of population by age and region of residence from 2000-2016: rural women (navy), rural men (blue), urban women (orange), and urban men (red). Populations separated by age to show divide between makeup of rural and urban youth (a), working-age (b);(c), and elderly (d). Significant difference found between rural and urban populations for both men and women in ages 0-19 (P < 0.001)***.

This demographic structure in Moldova impedes the opportunities of rural development since there are less working age citizens in rural areas. This demographic structure is the result of decades of inequality in government spending between rural and urban localities. The opportunities for rural citizens are mostly comprised of manual labor, farming, carpentry, and other forms of blue-collar jobs. While the capital city of Chisinau has been continually maintained and improved to present labor opportunities in financial services, engineering, conducting scientific research, and more. The regional divide for opportunities is not uncommon in third-world developing nations, but what is unique about the Moldovan case is the high fares for intranational travel. The wage gap between rural and urban citizens is quite substantial in Moldova, given the labor opportunities aforementioned. Thus, for rural citizens to obtain access to the opportunities in urban Moldova, they need to spend a greater portion of their total income to simply get to Chisinau (Figure 2). Utilizing household expenditure data from Statistica de Moldovei, a comparison between urban and rural population transportation expenditure (car/taxi, bus, trolley & train) shows that urban citizens spend more on transportation overall, yet they still pay a smaller percentage of their total expenditure on transportation. Transportation is far more available in Chisinau, and has become integrated into much of the daily life of city dwellers. Transportation for rural folks, on the other hand, is seen more as an expenditure of necessity opposed to convenience like in an urban setting. And as the infrastructure building had stagnated, the availability, cost and quality of transport for rural localities began to tarnish as well, causing the rural citizens additional difficulties in picking up their much needed remittances. Transportation for rural and urban citizens no longer serve the same purpose; the urban folks use transportation to make their lives more efficient, while rural folks use transportation as a tool to procure the funds needed for survival.

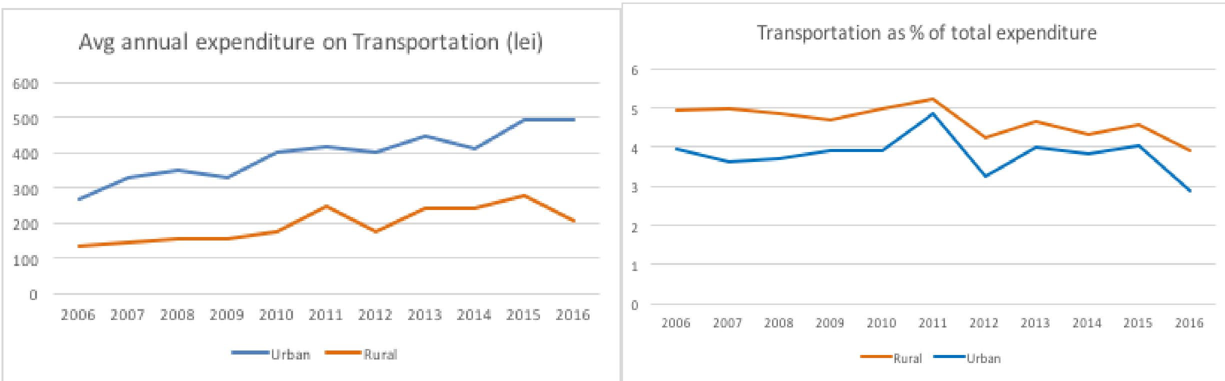


Figure 2. Average annual expenditure on transport shows the urban citizens spend more annually on transport than rural citizens (left), yet, when analyzing transportation as a percentage of total household expenditure from 2006-2016 rural citizen spend more of their income on transport (right). Household expenditure data provided by the Moldovan Bureau of Statistics (Statistica de Moldovei).

3.2 Reasons for Transport – Rural Remittance Reliance

When analyzing transport in Moldova, the main modes of transport are bus (essentially an 8-12 passenger Ford Sprinter or school bus), car, and trolley system (for urban citizens only). Transport is utilized for very different purposes for rural and urban populations. The urban population often utilizes transport to get to their workplaces, for leisure, and in some cases, they will use transport to travel to the airport and begin a cycle of remitting. Rural populations, on the other hand, utilize transport primarily to travel to banks or money exchanges to pick up remitted capital from family living internationally. Aside from the travel for remittances directly, rural citizen also use transport to purchase durable goods in Chisinau, or to send family to the airport in Chisinau to begin their cycle of remitting. Remittances play a significant role in allowing additional modes of economic growth for urban citizens in Moldova, but they are especially important for rural citizens' survival. Moldova has been one of the largest nations in terms of remittances as a percentage of their GDP for nearly a decade, and due to economic and technological expansion in urban Moldova that number has been generally decreasing since 2006 (Figure 3). Utilizing data from the Worldbank on national GDP, it's clear that Moldova has had a significant reliance on remittances since the early 2000s, with nearly 25% of Moldovan GDP being accounted for by remittances.

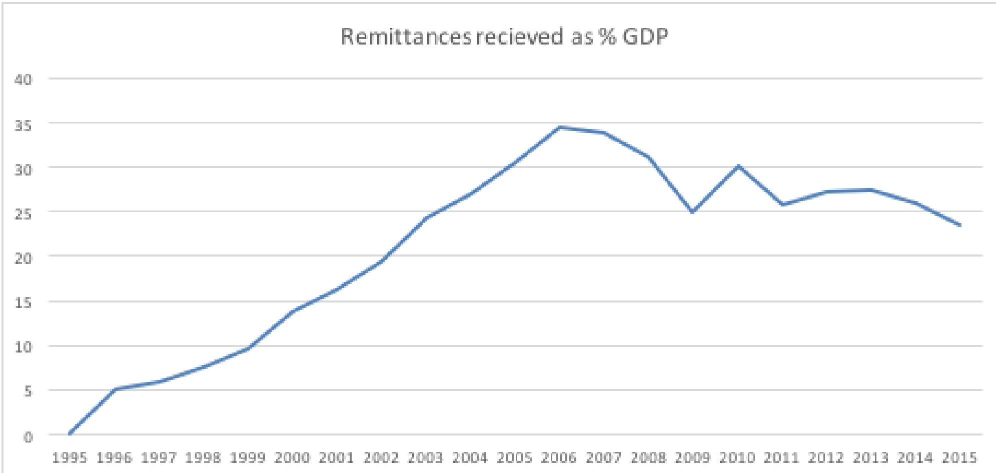
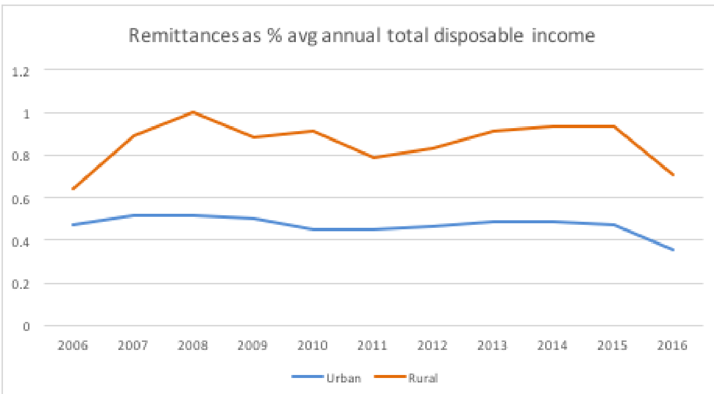


Figure 3. Remittances received as a percentage of Moldovan GDP from 1995-2015.

Unfortunately, the decrease in overall remittance dependence since about 2006 has not been an even separation for rural and urban populations. Employment and wages continued to increase in Chisinau since the early aid packages of 2000, but that capital (~200 million) had not been put to any significant use for rural citizens. Employment and wages stayed stagnant for the rural population since 2006, with little to no increased job opportunity, no increased availability for human capital investment (school, apprenticeship academy, etc.), and little to no infrastructure development. Rural citizens' opportunity for obtaining a livable wage had not become any easier from 2006-2016, while the same could not be said for urban citizens. To better understand the separation between urban and rural need for remittances, an analysis of Moldovan census data (Statistica de Moldovei) on remittances as a percentage of disposable income shows that from the period of 2006-2016, the rural population received a significantly higher proportion of remittances. The urban population remittance dependence is nearly half of that of rural citizens from 2006-2016, yet, during the same timeframe rural citizens paid a larger percentage of their total income for the transportation the allows them to acquire these remittances. Figure 4 shows the proportion of remittances as a percentage of total disposable increases, which signifies an increase in reliance on remittances for rural citizens from 2006-2016. In addition, it shows that the urban population has seen no significant deviation from 2006-2016, signifying less overall reliance on remittances. A nonparametric t-test was conducted to determine whether the difference between urban and rural remittances received as a percentage of a total disposable income was significant, and for the period of 2006-2016, and the difference was found to be significant.



	Urban	Rural
	Percent of total	*Percent of total*
2006	11.9	15.9
2007	12.9	22.2
2008	12.9	25.9
2009	12.6	22
2010	11.3	22.8
2011	11.3	19.7
2012	11.7	20.8
2013	12.3	22.9
2014	12.2	23.4
2015	11.8	23.4
2016	11.7	22.9

Figure 4. Remittances as a percentage of average total disposable income for rural and urban populations from 2006-2016. The rural populations is significantly more reliant on remittances in comparison to the urban populations based on total disposable income (P <0.001)***. The graph shows average annual, while the table shows average quarterly.

This indication of increased remittance dependence for rural populations displays stagnation in opportunity for the rural areas. Rural citizens have been trapped in the cycle of high transport costs to obtain their remittances, and due to inactive government spending, the rural population has less capital to invest in economic development, human capital, and often basic durable goods. The dependence of rural populations for reliable transport infrastructure/transport system becomes increasingly more important when such a significant portion of one's income can only be accessed from Chisinau or a larger town near the main municipalities (**S1 Figure**). Thus, it would be imperative that the Moldovan government cover the social overhead capital if the monetary funds presented themselves, and since the early 2000s, many such monetary aid packages have been given, but never properly allocated.

3.3 Moldovan Developmental Aid

Foreign aid has been given to Moldova for the purpose of development through private funds and national aid packages. Data from the International Monetary Fund (IMF), Worldbank, and Organisation for Economic Co-operation and Development (OCED) shows that given the size of many of these aid packages, coupled with expected government spending patterns, many of these development projects should be fully funded and completed, yet the contrary is observed.

Data from Worldbank and IMF shows that total net developmental aid given to Moldova from 2007-2015 amounted to $3,403,630,000. This capital was allocated for varying developmental reasons according to IMF and Worldbank records. Utilizing the resources mentioned above, in addition to European Neighborhood Instrument (ENI) records, Figure 5 was constructed to show the purpose of the aid packages given, in addition to the amount from 2000-2016. Many of these packages have overlapping goals and are often left in broad terms, but they all have a general focus of ‘economic development’. The interpretation of ‘economic development’ is more specifically defined by projects such as: finance development, education, healthcare, export stability, and infrastructure development.

Year	Aid (USD)	Donor	Purpose
2000	$ 144,650,000.00	Worldbank/IMF	PRGF - economic development/poverty reduction
2007	$ 259,310,000.00	Worldbank/IMF	
	$ 5,500,000.00	Worldbank/Chemonics	CEED - Entireprise development/economic instutition development
	$ 4,000,000.00	USaid	DCA - enterprise development (IT, agriculture, loans)
2008	$ 300,230,000.00	Worldbank/IMF	
2009	$ 245,770,000.00	Worldbank/IMF	
2010	$ 473,010,000.00	Worldbank/Chemonics	CEED II - enterprise development/poverty reduction
		WNISEF/Horizon Capital	$150-$200million private fund aid between Ukraine and Moldova (economic development)
		PIN org	Development of civil society, self-governance, agriculture, and eduction
2011	$ 461,690,000.00	Worldbank/IMF	Development and strengthening of fiscal procedures
2012	$ 475,490,000.00	Worldbank/IMF	Increase exports and economic stability
2013	$ 348,690,000.00	Worldbank/IMF	Further economic development
2014	$ 517,880,000.00	Worldbank	
	$ 45,000,000.00	Worldbank/IBRD	MSCEP - increase export competitiveness of Moldova enterprises and decrease regulatory burdern
2015	$ 312,560,000.00	Worldbank/IMF	
2016	$ 180,000,000.00	Worldbank/IMF	Long-term economic development, extend to 2020; education, infrastructure, secure financial system
		USaid	ICTEC project for development of IT sector, technology, and finance
Total	$ 3,773,780,000.00		
Data aquired from Databank® from Worldbank Indicators 2017			

Figure 5. Foreign developmental aid from IMF, Worldbank, and private funds from 2000-2016.

The European Neighborhood Instrument (ENI), a financial arm of the EU, provides reports of capital productivity of these aid packages from the Worldbank, IMF, and outside sources to better organize Moldovan in their effort for a bilateral agreement to potentially meet EU partnership standards. The ENI, formerly known as the ENPI (European Neighborhood Partnership Instrument), began organization of Moldovan spending on development projects from 2007, with projects currently running until 2020. The focus of these projects varied from 2007-2016, with the early focus of the ENI in 2007 to secure the Moldovan border against illegal immigration and human trafficking. The development projects from 2007-2010 mostly revolved around the establishment or improvement of sustainable necessities such as water, health, technical assistance (i.e. IT infrastructure) and energy. While the recent projects from 2010-2014 focused primarily on rural development, justice policy reform and public finance reform. The specific cases and projects allotted for rural development amounted to over 150 million Euro and were titled as follows:

Project Year	Project Title	Amounted allotted (euros)
2010	Economic Stimulation in Rural Areas	45 million
2012	Pilot regional development programs	7 million
2014	Agriculture and rural development	64 million
2016	Rural development	62 million

Figure 6. Rural development aid packages with information provided from the Worldbank/IMF and ENI. Provides year, title and capital allotted to projects.

The project objectives included specifics in infrastructure development (roads), regional transport maintenance, employment development projects, and resolving the barriers between rural and urban setting to create social and economic opportunity.

The project objectives from 2010-2016 attempt to resolve the issue of this rural and urban divide through the creation of a more local, self-sustaining economy, which in the long-term will increase the opportunity of rural citizen; but the consequence of substituting long-term development for more cost-effecting access to Chisinau, where many opportunities are still present, decreases the overall net disposable income rural citizens will have to spend in these years of development. The bottom-line objective of this developmental aid needs to be increasing the amount of net total disposable income that households have to spend, which in turn will allow them greater access to spend on investments that will generate long-term returns, opposed to spending on durable goods and necessities for survival.

The current major ENI Moldova project from 2014-2020 is looking to allocate 610,000,000-746,000,000 euros. The bilateral allocation for 2014-2017 is 335,000,000 - 410,000,000 euros, with the remaining ~335,000,000 euros in 2020. The indicative breakdown by sector is the following:

Sector of intervention	Indicative amount as % of total	ENI 2014-2020 (EUR)
Public administration reform	30%	223,800,000.00
Agriculture and rural development	30%	223,800,000.00
Police reform and border management	20%	149,200,000.00
Complementary support:	20%	149,200,000.00
Capacity development and institution building	15%	111,900,000.00
Civil society	≤ 5%	37,300,000.00

Figure 7. ENI proposed aid intervention from 2014-2020 with sector and capital amount allocated. Data from ENI report 2014-2020.

Over the period of 2014-2020, agriculture and rural development is allotted 223.8 million euro to achieve multiple specific objectives. Agriculture is often tied with rural development in these aid packages, given the proportion of the rural population that relies on food exports as their main source of income, but this development covers a broad range of tasks. Several notable goals listed within agricultural and rural development sections are:

- To support the diversification of economic activity
- To strengthen the social and technical infrastructure in rural areas
- To improve the conditions for living and working in rural areas through the introduction of active employment initiatives

The descriptions for many of the objectives listed in the ENI 2014-2020 support framework allow for multiple arrays of options to satisfy the potential need, but yet rural development seems to stagnate. The main reason for this rural inefficiency can be explained by the other major intervention programs in the ENI 2014-2020 such as: public administration reform and police reform & border management. Public administration, which is responsible for the proper allocation of funds given to the state for specific projects, like rural development, requires equal capital to solve that issue. In addition, if there are crimes or injustices carried out against capital misappropriation in the government, the police will most likely not intervene because they require reform as well.

Foreign aid organizers have noticed that the burden for rural citizens is that they are consistently guaranteed these projects that will generate economic growth, but they are often left with unsatisfactory results. The development projects are always started and completed to full satisfaction in the opinion of public administrators organizing its completion, which they report to foreign aid officials. Yet as government expenditure data will later show, the monetary funds these individuals are claiming to be utilizing for rural development is never being allocated to satisfy the objectives listed for them by the ENI, IMF or Worldbank. In addition, if rural citizens identify these injustices and attempt to bring them to light, the police will most likely not be on their side if they have been corrupted by the same public administrators who stole the funds from the beginning. This cycle of corruption and misappropriation of foreign aid keeps rural citizens tied down with limited options to generate a sustainable income that could potentially lead to a higher standard of living. To limit the damage of further sunk capital, foreign aid organizations must hold stricter consequences for public administrators who irresponsibly manage development packages given by the IMF, Worldbank or other major private/public aid.

Foreign aid plays a significant role in sustaining the rural population's ability to develop any sort of economic growth, but as of 2012, the monetary inflows from foreign nations has stagnated. This stagnating of foreign capital in recent years has been seen to perpetuate a degradation of livable options for elderly and young rural citizens, with an increase in rural migration of working-class citizens to Russia or Italy for remittances. Thus, the importance of continued investment into the rural region is multiplicatively higher considering the potential of draining the rural working-class individuals, which are the individuals that would be able to further develop the local economy in rural Moldova.

3.4 Fiscal Government Expenditures

To determine whether these funds were properly allocated, Worldbank also provides data on Moldovan government fiscal expenditures. The fiscal expenditures are separated by sector with data on transport spending available, which can be applied to assess proper infrastructure development. Figure 8 shows that from 2007-2014, transport spending never exceeded 4% and stayed closer to 1-2.5% for the majority of the time these large capital investments/aid packages were being provided.

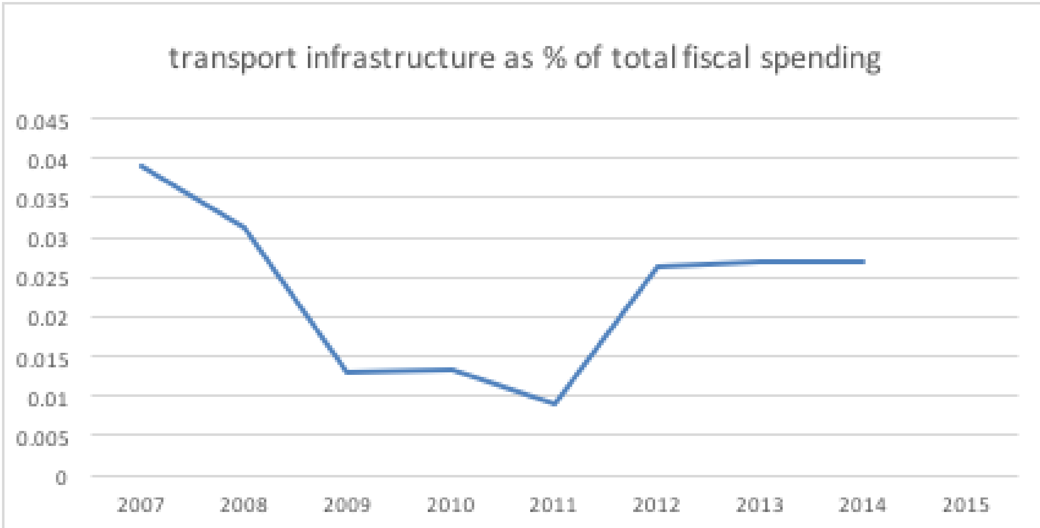
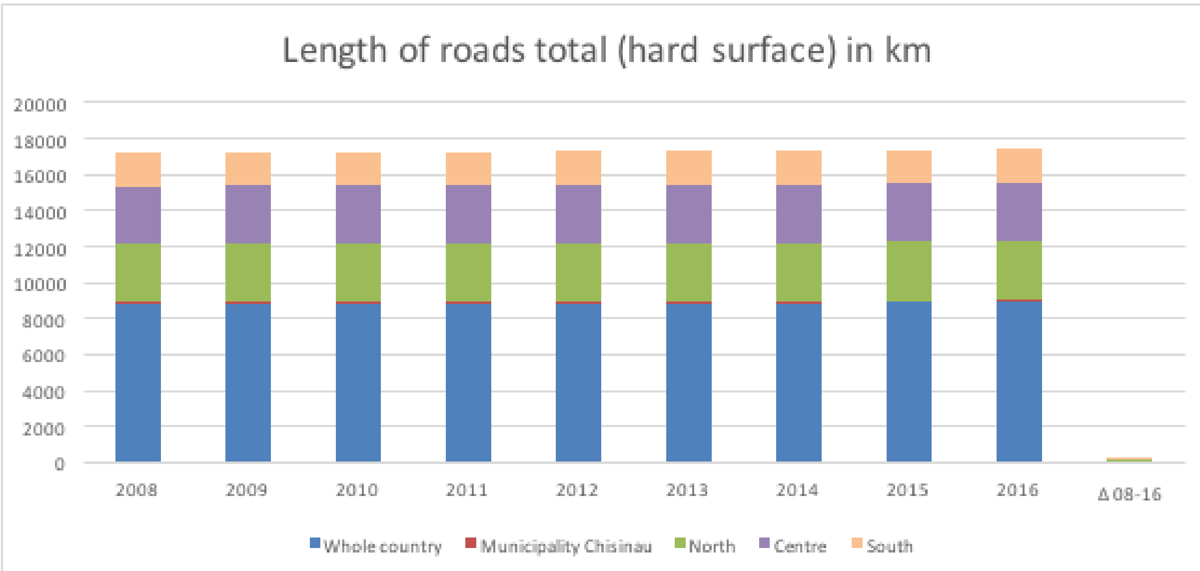


Figure 8. Infrastructure spending as a percentage of total fiscal spending. Data provided by Worldbank.

The IMF and ENI (European Neighborhood Instrument) often stipulate a minimum of 20% dedication toward infrastructure development, specifically in ENI packages from 2008-2010, 2010-2014, and 30% in the current aid project from 2014-2020 (~223 million euros). As it is seen, Moldova receives a sizable amount of capital from foreign aid, which they are directed to allocate toward specific projects such as rural development of new roads, schools, institutions, and other factors that may stimulate economic growth, but upon closer inspection of their declared spending to Worldbank and their national statistical databank (Statistica de Moldovei), the results and spending seem misaligned. Moldovan national data from Statistica de Moldovei suggests that from 2008-2015 the government expenditure on transport infrastructure summed to nearly 220 million Lei, far below the expected spending given the rural development programs established during that time. Though the Moldovan SRA (State Road Administration) spent considerably less than what was allotted from aid, they were unable to generate physical progress on road development as can be seen in Figure 9. The total increase of hard surface (asphalt paved) roads was a total of 84.4 km during the same period that the Moldovan government reportedly stated they spent nearly 220 million Lei (~10.6 million Euro) for infrastructure development (not including repairs).



	2008	2009	2010	2011	2012	2013	2014	2015	2016	Δ 08-16
Whole country	8809.3	8810.6	8810.6	8826.8	8835.4	8836.5	8860.9	8878.8	8893.7	84.4
Municipality Chisinau	101.4	101.4	101.4	101.4	101.4	101.4	101.4	101.4	101.4	0
North	3259.1	3260.5	3260.5	3269.1	3272.8	3272.8	3275.3	3275.3	3275.3	16.2
Centre	3196.6	3196.5	3196.5	3204.5	3209.5	3209.5	3214.8	3232.8	3229.2	32.6
South	1880.5	1880.5	1880.5	1880	1880	1881.1	1892.5	1892.6	1915.5	35

Figure 9. Stacked bar graph showing total length of hard surface road in km from 2008-2016, with change from 08-16 as the last column. Table below given numerical representation of change from 08-16.

Infrastructure development requires the production of new (hard surface) roads, but considering the minimal increases in road length, how much road is there left to develop in Moldova? According to the national statistical databank in Moldova over 9000 km are categorized as non-hard surface, which means they are essentially either dirt or gravel paths, with over 95% in non-Chisinau localities. Also, of all the regions, the municipality of Chisinau is the only region to not receive any increase in road length, mostly because it has started and completed prior to rural regions. The blatant inconsistency in the hard surface road production and proposed government spending is a clear sign of public administration corruption, which is why the focus of the 2014-2020 ENI program specifies this type of reform as a principle issue. This sign of corruption is even more unsettling when transport infrastructure repair spending is analyzed. The main reason for this is because there are no published quantitative values to measure the result of road repairs, opposed to development, which requires new roads to be made. Road repair is a major portion of total government fiscal expenditure on transport (Figure 10), yet there are no published metrics by which successful road repair can be determined. If the Moldovan SRA is blatant enough to suggest progress on developmental road production for 8 years without physical results, a likely scenario could be imagined for road repair spending.

Row Labels	2007	2008	2009	2010	2011
14 Transports, roads, communications and IT	216,956,625	264,685,505	215,116,401	258,026,497	405,602,070
14.01 Motor vehicle transportation	141,188,913	145,194,120	130,986,210	116,577,402	251,891,055
14.07 Roads service	72,470,132	105,230,116	80,348,460	137,412,952	149,829,607
14.09 Transports, roads, communication and IT services and activities unattributable to any other group	24,000	10,780,400	22,000	303,000	
14.10 Administrative authorities	3,273,581	3,480,870	3,759,731	3,733,143	3,881,409

Row Labels	2012	2013	2014	2015
14 Transports, roads, communications and IT	2,095,433,290	2,680,444,765	3,478,338,992	2,444,097,002
14.01 Motor vehicle transportation	194,156,433	227,826,421	258,598,734	325,788,288
14.02 Naval transportation	11,227,829	7,404,238	8,075,961	7,421,484
14.07 Roads service	1,877,525,648	2,429,663,803	3,197,322,716	2,097,385,584
14.09 Transports, roads, communication and IT services and activities unattributable to any other group	3,150,223	4,060,942	1,557,534	4,062
14.10 Administrative authorities	9,373,158	11,489,360	12,784,047	13,497,584

Figure 10. Moldovan government spending on transport-related categories from 2007-2015. Units are in Moldovan Lei. Data provided by BOOST initiative from Worldbank.

The European Bank for Reconstruction and Development (EBRD) has been Moldova's largest ally in direct assistance with infrastructure repair. The ERBD began a contractual arrangement with Moldova in 2007 with the first installment of four aid packages looking to help develop and repair the roads moving out of the municipality of Chisinau. The project was given 30 million euro in the first installment with project 2&3 bringing in 75 million euro, and project 4 bringing in 150 million euro. Cumulatively, since 2007-2017 the EBRD has given Moldova over 250 million euros for the development and repair of roads, but no published records can show how much, or where the roads were repaired. The only published data of Moldovan expenditure on road repair would be from Worldbank BOOST data, which is provided by Moldovan administrators in charge of the project. Given the prior analysis of infrastructure development spending, I would not be surprised if the amounts reported by Moldovan administrators did not correspond to that of which was actually spent on road repair. Donors of this capital must find a solution in which tangible results must be propagated if any additional capital is funneled in, unfortunately the economic and political climate of Moldova make it quite difficult to find individuals that will be trustworthy and reliable in handling massive amount of capital, in a country with very little. The ERBD has been seen to be more effective than other donor groups since they split the aid packages up, opposed to producing a massive omnibus package. In addition, they also included an ingenious consequence to misappropriated capital, in which a distinct amount of work must be done (ex. production of 200km of main road) for a given price, otherwise the aid becomes a loan that will need to be paid by the Moldovan government. Incentivizing Moldovan officials to use the capital given to the people of Moldovan opposed to themselves will be a tough issue, like it is in many developing nations, but with the proper consequences, their harmful actions can be stopped.

Moldovan fiscal expenditures for transport between 2008-2015 have shown to be ineffective given the current state of administrative corruption (**Figure A1)**, but this misuse significantly influenced rural remittance dependence and rural economic development. Between the influx of major packages from 2007 and on, administrators saw an opportunity to take advantage of the vagaries stipulated in objective statements by the ENI, EBRD and IMF, and divert monetary investment from rural areas in need toward alternative projects. The rural population in Moldova required, and still do require, these monetary investments to assist in alleviating the dependence to travel abroad for income. As Figure 4 shows, after 2007 remittances constituted nearly double the total income of rural citizen opposed to urban citizens, with ~20%+ of total income being received from remittances. This high proportion of remittances to total income is due to, in some part, the culmination of cyclical negligence and the inability to tend to the basic living necessities for working-class citizens in rural Moldovan such as: a proper transport system (i.e. efficient bus system, lower fares, hard surface roads), access to institutions, or any alternative methods that could generate opportunities for economic development. The government spending patterns in rural Moldova has instilled in a repetitive loop of migrating to generate income, which is sent back to the non-working class in the same neglected area they just came from, resulting in a greater need for remittances to cover the negligence of government overhead capital spending to sustain a very basic standard of living. If poverty alleviation is to continue in rural areas, the government must increase its efficiency in rural developmental spending to help bridge the gap of rural and urban opportunity, i.e. economic growth.

4. Conclusions

The initial stride Moldovan officials should be making is legislating very stringent and harsh consequences for the corruption of people in office/administration. The largest issue with creating a law against corruption by people who may already be corrupt in office, is implementing the consequences. Whether it be a financial penalty or a penalty to serve time in prison, the need for governmental honesty is far past due. Moldova has been receiving capital from multiple outside sources, in addition to partnering with European officials to help develop their infrastructure, yet their progress is so stagnant and rural citizens are still stuck in the same place they were over a decade ago. The opportunities and economic investments allocated to Moldova should also be managed by an outside source or member of the donor institution for the beginning stages to make sure the project is at least under way, before Moldova officials take over.

In addition to harsh legislation, the establishment of rural banks and money exchanges would aid a major population in the north and south of Moldova. The fare for bus and taxi would ultimately be lowered if more bank were set up in the larger municipalities in the north and south, in addition the presence of those bank could provide greater economic opportunity for rural citizen who may want to take out a loan to start a business. The establishment of more frequent banks and money exchanges would certainly alleviate the separation in opportunity between rural and urban citizens, and could possibly shift the spending of rural household toward the direction of greater long term investments (education, business, etc.).

The aim of this research is to convey that if the Moldovan government were to cover the social overhead capital of transportation infrastructure, the standard of living and spending patterns of rural household in Moldova would diversify and generate greater income. The solutions to these issue seem simple, but they necessitate the will of individuals to fall in line, which is never a simple matter. If Moldova is to begin reaping the benefits of their foreign aid donations, they need to get the money out of the bank accounts of corrupt aristocrats and onto the land, and in the public works that would help Moldova thrive.

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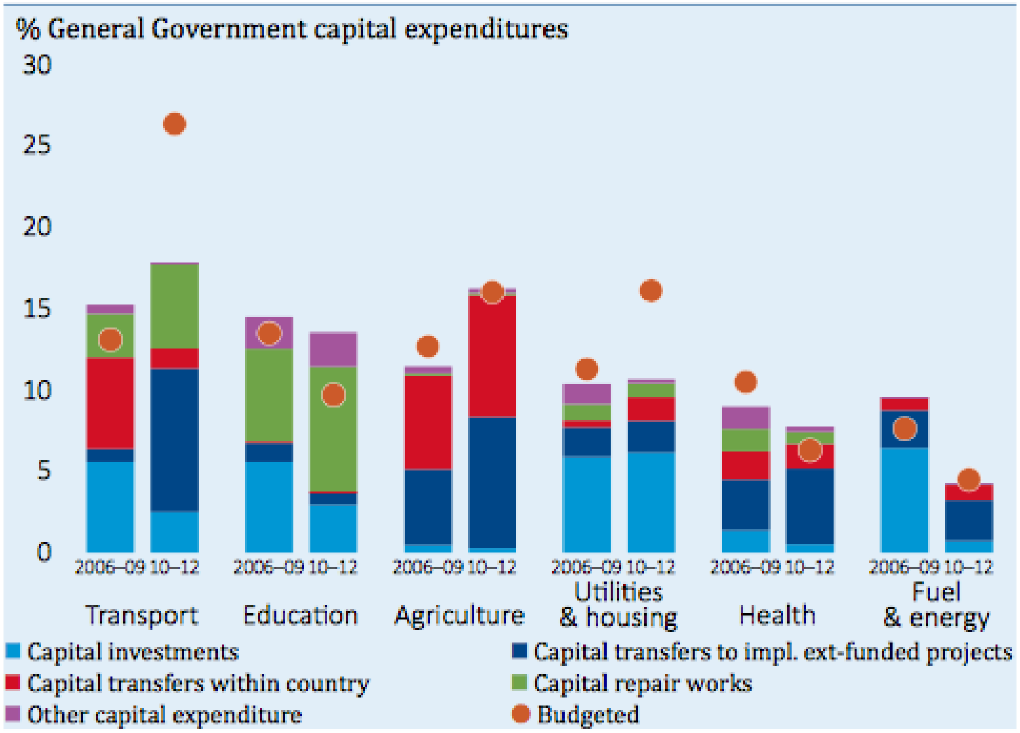
Appendix



Source: BOOST capital expenditure database, Ministry of Finance.

A1. General government capital expenditures of major national projects, with budgeted amounts and corresponding spending for the year 2006-2012.