What happens to aid fungibility when recipient government takes control? Effects of low fungibility of aid in Rwanda

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Abstract

Aid fungibility and aid ownership have been discussed separately in the development literature. This is unfortunate, as donors have aimed to reduce the former, while increasing the latter, without fully understanding the relationship. In this paper we analyse the impact on aid fungibility when the recipient government takes ownership of its development process by examining the case of Rwanda. We use a mixed method approach for our analysis; we start off with an econometric model to determine if aid fungibility is present in Rwanda and find out a U-shaped relationship between development aid and public development expenditure indicating that fungibility of development aid decreases in Rwanda as more aid comes in. Using the principle-agent framework as a theoretical background, we investigate our quantitative results further by conducting expert interviews in Rwanda and conclude that Rwanda reduced aid fungibility by taking over its development process through i) division of labour among the donors ii) urging the donors to switch from project aid to budget support and iii) introducing performance contract for increasing accountability of government departments. While government taking ownership of its development process does reduce aid fungibility it could also contribute to marginalization of sectors/regions that the recipient government might be less interested in. We therefore suggest that a balance of power between the donors and the recipient government could enhance aid effectiveness.

1. Introduction

Development aid is usually targeted at specific public sectors (for example health, education etc.) and if it is not used in the sector for which it was earmarked, it is said to be fungible[1]. This fungibility of aid brings in the problem that donors may unintentionally end up financing a completely different sector (for example military expenditure) than intended (Pettersson, 2007). The major concern about aid fungibility is that alternative use of funds might be less productive or socially useful than the intended purpose (Pettersson, 2007). As a result, donors have come up with new aid modalities to reduce aid fungibility and to ensure that the recipient government uses the funds for its intended purposes and don't allocate their own funding elsewhere.

Several studies have been conducted in the past to evaluate the presence of aid fungible and have concluded that at large development aid is not always used for its intended purpose (Khilji & Zampelli, 1991) (Lu, et al., 2010) (Pack & Pack, 1993) (Dieleman, et al., 2013) (Farag, et al., 2009) (Pack & Pack, 1990). Most of the studies on aid fungibility assume it to be a negative phenomenon that needs to be controlled for by the donors since the donors know better and the recipient countries lack the institutions to hold corrupt activities accountable (Rana & Koch, 2020).

In addition to the debate on aid fungibility, there has been some discussion in the literature on the problems and advantages of aid ownership[2] as agreed upon in the Paris declaration in 2005 (Hasselskog & Schierenbeck, 2017) (Booth, 2012) (Swedlund, 2013) (Teshome & Hoebink, 2018) and recipient government's effort to manage their aid donors (Menocal & Mulley, 2006) (Eyben, 2005). These studies discuss the underlying power struggles and motivations between the donors and recipients of development aid. However, to the best of our knowledge, there are no studies that analyze the relationship between aid fungibility and aid ownership especially with a strong control of the recipient government. Donors want to reduce the former and increase the latter, but is this actually possible? And if it is possible, what impact does it have in practice?

In this paper, we try to combine the two concepts by analyzing the impact on aid fungibility when the aid recipient country takes charge of its development process. We hypothesize that i) the recipients of development aid have a better understanding of their needs and can use the development aid more effectively even in the presence of fungibility and ii) when the development process is recipient government driven, fungibility of development aid decreases. For this reason, our main research question is: What is the impact of recipient government driven development process on aid fungibility?

To answer our research question, we will be using a mixed method approach combining quantitative modeling and expert interviews; we focus on one country only i.e. Rwanda. We choose Rwanda as our case study for several reasons; to begin with, it has been a "donor darling" for almost two decades with several bilateral and multilateral institutions lining up for the country to give development aid. Secondly, it is hailed as a success story in terms of finding its own path for development (for example the Vision 2020 and Vision 2050) by both policy makers and researchers (Takeuchi, 2019). Lastly, it has been in the middle of several controversies and concern about governance (Burke, 2017), interference in neighboring countries (Ford, 2012) and manipulating the numbers to show inflated

[1] Fungibility is that idea that "aid does not pay for the item it is accounted for but for the marginal expenditure it makes possible" (White & Dijkstra, 2003, p. 468)

[2] Aid ownership refers to "the recipient's right to set their own development objectives and strategies for achieving these objectives" without active interference by the donors (Brolin, 2017).

progress in growth and poverty reduction (Ansoms, et al., 2017). All these factors make Rwanda an interesting case study to learn from especially with regards to aid fungibility and progress towards the SDGs.

With our paper, we hope to add to the current debates on aid fungibility on three levels: firstly, we present a detailed picture of aid fungibility in Rwanda by using a mixed methods approach, something that has mostly been missing from the fungibility literature so far. Secondly, we introduce a new interaction between aid fungibility and recipient government driven development process which we believe is a crucial missing link for aid effectiveness. Finally, we add to the limited amount of literature on aid fungibility in Rwanda despite it being a donors' darling for the past several years.

We have divided our paper into seven sections: section 2 gives a brief overview of the literature related to aid fungibility and the role of recipient countries in the development process. Section 3 introduces our theoretical framework while section 4 gives an overview of the expenditure and aid patterns in Rwanda. It is followed by section 5 which explains the methodology and section 6 which discusses the results from quantitative and qualitative perspective while section 7 and 8 cover the lesson to be learned and conclusion for our paper.

2. Aid effectiveness and aid fungibility: a review of literature

The literature on aid effectiveness is divided into different strands from impact on economic growth and poverty reduction to political motivation, aid fragmentation, aid ownership and aid fungibility. In this section, we discuss aid effectiveness considering some of these strands found in the literature.

2.1. The debate on aid fungibility

There have been several attempts to analyze the presence of aid fungibility at a national level in various countries including Dominican Republic (Pack & Pack, 1993), Indonesia (Pack & Pack, 1990), Pakistan (Khilji & Zampelli, 1991), Vietnam (Wagstaff, 2011) and Tanzania (Alvarez, et al., 2016). Almost all these studies have found the presence of fungibility in the respective countries. Another branch of literature has looked at fungibility at a more aggregate level (Farag, et al., 2009) (Lu, et al., 2010) (Dieleman, et al., 2013) and has reached similar conclusions as national level studies. Most of these studies advise for stricter measures by the donors to control for aid fungibility and assume that the phenomenon of fungibility results in a reduction of aid effectiveness.

In addition to national and aggregate levels, there have also been attempts to look at aid fungibility at sectoral level including health (Lu, et al., 2010), health and education (Sijpe, 2010), growth and poverty reduction (Pettersson, 2007) to name a few. These studies have also concluded that aid might not always be used in the sector that it was intended for; Pettersson however found no evidence of non-fungible sectors to be working better than the fungible sectors. Devarajan, et al., (1999) went a step further and looked at aid fungibility in Africa both at sub-national level and sector level and found that fungibility was higher at sectoral level as compared to national level.

The studies on fungibility have mostly been quantitative in nature[3] and have met with problems related to missing or incomplete data sets and unreliable figures. Sijpe (2010), for example, pointed out that if off-budget aid (technical assistance) was considered in quantitative modelling, the amount of funds displaced due to aid fungibility seem to decrease significantly across sectors. Similarly, WHO

[3] Except for Alvarez et al., (2016)

does imputations for missing data on health spending where the government had not reported all the components. These imputations are usually done with the assumption that government spending with be in a constant ratio to its general government spending (Lu, et al., 2010) leading to figures being over or understated. Therefore, relying only on quantitative modelling for testing for fungibility and its impact may sometimes lead to biased conclusions which impact policy making as well.

2.2. Aid fragmentation and aid ownership

Some researchers have studied aid fungibility indirectly as well by looking at aid fragmentation, political considerations, donor commitment problem and intent of the donors (Gering, et al., 2017) (Aldasoro, et al., 2010) (Swedlund, 2013) (Dollar & Levin, 2006). These studies try to look at the underlaying problems that impact aid effectiveness.

Looking at the relationship between the donors and recipients of aid, Swedlund (2013) analyzed the case of Rwanda and Tanzania and pointed out that gaining ownership of your development process especially as an aid dependent country is very difficult; even if the donors provide budget support, they can still exercise their power on the recipient government. The donors use tools like voice amplification, a seat at the table and the license to ask questions as means to influence the decision making process of the recipient government (Swedlund, 2013).

In a similar vein, Whitfield and Fraser (2010) pointed out that the ability of the donors to negotiate with the donors effectively rest on how dependent the recipient government is on the markets or resources in the donor country, if the recipient government has alternate sources of funding including foreign direct investment or non-traditional donors like China and on how well the recipient government is able to express a clear vision of its development policy (Whitfield & Fraser, 2010). Booth (2012) also pointed out that long term goals as in the case of Rwanda and Ethiopia are necessary to gain ownership of development aid.

On the other hand, recipient countries might have a different definition of aid ownership specially in authoritarian governments where the decision making power lies in the hand of a few elites; the concept of ownership becomes narrower as not all stakeholders are involved in the decision making process (Hasselskog & Schierenbeck, 2017). In such a case, aid ownership might lead to focus on a narrow development policy focusing on a few sectors that the authoritarian regime might find relevant.

In addition to aid ownership, aid fragmentation has also been discussed as a cause of both aid fungibility and lack of aid effectiveness. For example, an analysis of both health (Acharya & Martínez-Álvarez, 2012) and education sector (AbbyRiddell & Nino-Zarazúa, 2016) indicated that while aid made a positive impact on both the sectors, its effectiveness was significantly undermined by weakness in how aid was provided as a result of lack of donor coordination and aid fragmentation (Leiderer, 2015). The increased aid fragmentation makes it difficult to engage in negotiations both for the donors and the aid recipients (Harford, et al., 2004) and so such aid might not be that effective for the recipient government to achieve its national development targets.

Overall, the review of literature shows that fungibility of development aid exists both at national and sector level and for effective use of aid it is important to reduce aid fragmentation and increase aid ownership in favor of democratic government which have a well-established national development policy. However, the literature does not discuss what happens to aid fungibility when the recipient government is given ownership of aid. We hope to answer this question in our paper and add to the literature on aid effectiveness. In the next section, we will be discussing our theoretical framework that we will later use for analysis of the results.

3. Theoretical Framework

In order to understand the role of fungibility in the power struggle between the donors and the recipients of development aid, we can view it from the lens of public choice theory and institutional economics. For this purpose we use the principle agent framework as discussed by (Mueller, 2003), (Douma & Schreuder, 2002), Rana & Koch (2020) and (Castel-Branco, 2008) in the following section;

3.1. Principle – Agent Framework: A question of information asymmetry

The relationship between the donors and the recipients can be put in the framework of principle-agent theory where i) the agent has to work on behalf of the principle ii) both the principle and the agent want to maximize their own utility and iii) there is information asymmetry in the sense that the agent is better informed. In the classical principle-agent literature, the agent (for example a manager in a firm) needs to be given such an incentive structure that despite information asymmetry, it seeks to maximize the utility of the principle (the owner of the firm) instead of its own utility (Castel-Branco, 2008).

In the aid scenario, this situation becomes a bit more complicated. Let us assume that the donor is the principle while the recipient government is the agent in our case. The donors are answerable to their voters and have to compete for votes in their own county; as a results each new minister dealing with development aid has the pressure to present a “new” or “better” policy which leads to formation of new aid modalities and conditionalities (Rana & Koch, 2020). On the other hand, the recipient government is answerable not only to its voters[4] (or the supporting elites) but also to the donors from whom it has received its funding (Rana & Koch, 2020).

Therefore, when exchange of funds happens in the form of development aid, the aim of the principle is policy efficiency, altruism and long term vested interested including political or commercial interests (Castel-Branco, 2008). The agent, on the other hand, aims to make his voters happy by delivering them the service he/she promised at the time of the election. The principle has no direct concern with the agent’s voters – therefore if the interests of the principle and the voters of the agent differ, the loyalties of the agent will lay with whoever exerts greater pressure (Castel-Branco, 2008). If the voters exert greater pressure, it can eventually lead to fungibility of development aid.

Since there is presence of asymmetric information between the two parties, the principle cannot ensure that the agent will apply the policy recommendations that it has proposed to achieve the required target. The agent on the other hand might not even be interested in the policy reform that the principle has recommended. In such a case, the principle can penalize the behavior of the agent through sanctions i.e. delaying disbursement of funds or stopping them altogether, if its political and future interests allow it to do so. But sanctions might not be that useful since it indirectly damages the citizens of the agent’s country as well. Therefore, the best alternative is that the agent has an incentive structure which allows it to maximize its own utility while aligning with the aims of the principle. This would be partially possible if the agent is given ownership of its policy process which would allow it to align its development process with those of the aims of the principle.

[4] We assume that the recipient country is democratic in our scenario.

Letting the recipient government choose its own development policy would then also help in reducing aid fungibility since it would be able to bring the interests of its voters and those of the donors on the table. At the same time, it would reduce information asymmetry since both the donors and recipient government would have the same aim for utility maximization. Thus, the chances of success, measured in terms of achievement of the development policy objective, would be higher.

4. Rwandan Government and its Donors

Rwanda has been hailed as a model country for taking control of its aid funds and using them effectively; for this reason, most of the literature on the country focuses on aid ownership and the role of government to reduce aid fragmentation. Hayman (2009) pointed out that Rwandan government was the first one to sell the idea of "nationally owned vision of aid and its effectiveness" in Accra in 2008. While the limited literature on aid fungibility and aid effectiveness on Rwanda shows that the government has been hard at work to achieve its development target, there have also been concerns about the accuracy of the figures published by the government to show its progress and legitimize its governance strategies.

In the last three decades, the average development assistance as a percentage of GNI for Rwanda was around 21.66% with about 1208.5 million US dollars in total net receipts in 2018 alone (OECD, 2020). The amount of development aid to Rwanda has normally seen an upward trend until 2012-13 when several donors stop their aid disbursements because of allegations of Rwanda's potential involvement in the on-going conflict in one of its neighboring country (Ford, 2012). The biggest donors in the past three years for Rwanda include the World Bank, United States, Global Fund, EU and African Development Bank (AfDB) which constitute about 70.2% of the total ODA coming to the country (MINECOFIN, 2018).

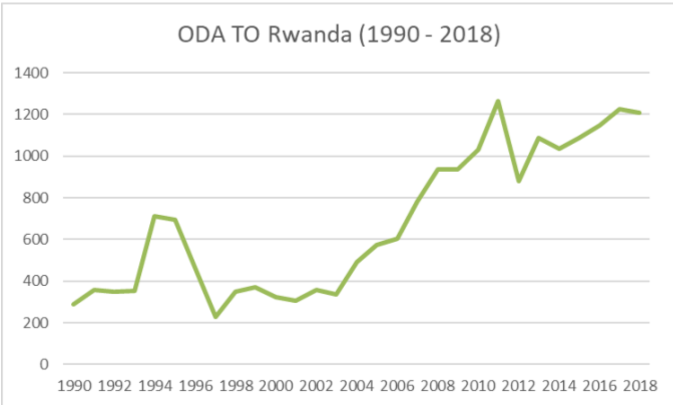

Figure 1: ODA to Rwanda (1990 -2018)

In general, the amount of development assistance coming in the form of grants to Rwanda has been declining over time and is typically being replaced by loans. For example, between 2015 and 2018, the World Bank and African Development Bank provided more than 90% of their development assistance in the form of loans (MINECOFIN, 2018). However, grants still make up more than 50% of the total ODA disbursements with most of the bilateral partners having no loan element in their development assistance (excluding China and India that provided ODA as 100% loans).

In terms of aid modalities, the share of sector budget support has been increasing with time; for example, in 2015-16 it was around 40% of total disbursements which increased to 48% by 2017-18 (MINECOFIN, 2018). Among the five biggest donors to Rwanda, only the US does not provide sector budget support while a major portion of disbursements of the World Bank, EU and AfDB constitutes sector budget support or flexible funding in terms of loans and grants.

Apart from development aid, the biggest source of revenue for the government is taxation which has been steadily increasing in the past decade according to the statistics published by the ministry of economic planning and finance of Rwanda. In addition to the upward trend of tax revenues, the public debt has also shows an upward trend i.e. in 2010, the total debt as a percentage of GDP was around 17.3% which had jumped up to 45.7% in 2018 (MINICOFIN, 2020) but the current S&P risk rating for Rwanda still stands at B+ which shows a positive and stable outlook for the country.

Overall, the Rwandan government seems to have a clearly defined policy for financing of its development sector, and it is trying to decrease its reliance on development aid. However, there has also been allegation on the government for not being completely transparent in its expenditure. Now that we have an overview of the policies of the government, we will be moving on to our methodology in the next section followed by a discussion of the results.

5. Methodology

As mentioned previously, we use a mixed-method approach for our analysis since it allows us to dive deeper into the concept of aid fungibility and its relation to aid ownership. We start off with a quantitative model to establish the relationship between government's development expenditure and ODA. Once we have investigated that fungibility is indeed present and declining in the case of Rwanda, we move on to expert interviews to further elaborate on our results. For this reason, we divide this section further into two parts: the quantitative model and the qualitative model and explain them as follows;

5.1 Quantitative Model

In this section we begin by defining the concept of aid fungibility mathematically and then moving on to explaining the econometric model. Afterwards, we explain our data collection procedures, followed by the robustness tests that have been conducted.

5.1.1 Defining Fungibility

Before we dive deeper into the methodological approaches and the econometric modelling, it is important to define aid fungibility. Using the concept introduced by van de Sijpe (2013), we define aid fungibility as a less than one-to-one increase in government expenditure i.e.

$$\frac{\partial GovExp}{\partial Aid} < 1$$

Since we are looking at development aid and expenditure for our analysis, we can redefine it as;

$$\frac{\partial DevExp}{\partial ODA} < 1$$

This means that a positive change in ODA should also cause the development expenditure to change positively by the same amount (Rana & Koch, 2020). If an increase in ODA causes the development expenditure to remain unchanged or to decrease, it leads to fungibility.

5.1.2 Econometric Model

Based on the definition of fungibility and the review of literature, we develop a multivariate regression model that tests for fungibility. The regression equation therefore is as follows:

$$PubDevExp = \alpha + \beta_1 \ln ODA + \beta_2 \ln ODA^2 + \beta_3 \, IntPay + \beta_4 TradeBal + \beta_5 \ln MilitaryExp + \beta_6 \, FDI + \varepsilon$$

Where[5]: PubDevExp = Public development expenditure/ GDP, ODA = Official development assistance/ GDP, IntPay = Interest payments / GDP, TradeBal = Trade Balance / GDP, MilitaryExp = Military expenditure / GDP and FDI = Foreign Direct Investment / GDP

The time period taken into consideration for our dataset is from 1990 to 2018. The dependent variable i.e. public development expenditure seems to be seeing an upward trend since 2004 with fluctuations in between. During the genocide the value of the variable becomes zero i.e. it is officially reported as zero by the government (instead of a missing value), which we also confirmed during the interviews.

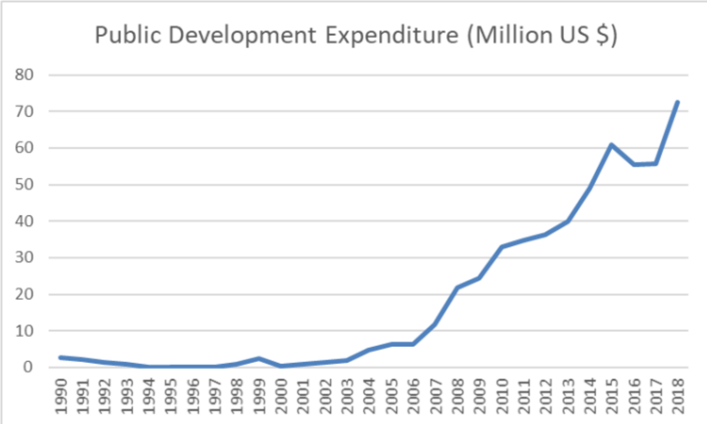

Figure 2: Public Development Expenditure of Rwanda (1990 - 2018)

Our main independent variable is ODA since it has a direct impact on government development expenditure especially if ODA is coming as sector budget support. We assumed the relationship between ODA and public development expenditure to be of non-linear nature since increase in ODA does not always trigger a one on one increase in public development expenditure as already discussed by Rana and Koch (2020).

Additionally, we use interest payments as a proxy for debt servicing in our analysis since the major development partners of Rwanda are moving away from grants and towards loans. We also include trade balance and foreign direct investment as our control variables since they are a good source of revenue for the government and can therefore positively impact public development expenditure.

We began with a simple OLS model[6] and found some interesting results. However, these regression results were unreliable since we found autocorrelation in our OLS model. As a result, we shifted to a dynamic linear model (see table 1) and introduced a "trend" variable (which automatically separates the trend element from each explanatory variable[7]) to get rid of autocorrelation problem. The trend variable did not only come out significant but also increased our R-squared from 92% to 97% which indicates that a significant amount of variation in the model was because of past trends; this also led to the residuals of the model being stationary.

To further our analysis, we also ran a log model (we couldn't use a log-log model because one value in our dependent variable was zero) in which both ODA and ODA squared showed positive and significant results. However, the residuals of the model were nonstationary and had autocorrelation as well; therefore, we do not discuss the log model in our main analysis but include them in the appendix only. Since the results from the OLS and log DLM models are not robust, we do not discuss them in the paper.

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[5] Information on where each variable is extracted from can be found in appendix A

[6] See appendix B, table 3

[7] See Hill, et al., 2018, pg. 567 - 568

5.2 Qualitative Model

To further our results from the regression models, we conducted semi structured expert interviews with government officials and development partners in Rwanda.

A total of ten interviews were conducted, four of them with development partners and six with government officials within different departments of the ministry of finance and economic planning[8]. From the government's side, interviews were conducted with four different departments within the ministry of finance and economic planning. These included macroeconomic policy division (MPD), external finance department (EFD), budget management and reporting unit (BMRU) and national development planning and research unit (NDPRU).

The interviews with the government officials showed very similar opinions which were very defensive of the government's decisions and expenditure patterns. The officials were reluctant to discuss sensitive information or critical opinions in the interview. In order to get a counter opinion, we interviewed officials from a multilateral donor organization, German Corporation for International Cooperation (GIZ) and the World Bank were interviewed. In comparison to the government officials, the donors spoke much more candidly and were both praising and critical of the government and their own agencies.

Each interview was around forty-five minutes to one hour long (except for one interview at ministry of finance which was only 25 minutes long). All the interviews were conducted in English; 4 of the interviewees from the ministry did not agree to the conversation being recorded; so, we took notes during the interview and use them for our analyzes. The rest were recorded and later transcribed. We used qualitative content analysis to extract relevant information from the interviews.

In the next section, we discuss the results from both our quantitative and qualitative model respectively and then move on to the conclusion.

6. Fungibility of development aid in Rwanda

In this section, we first represent and discuss the results from our quantitative model. Afterwards, we enrich the findings further considering the expert interviews conducted in Rwanda.

6.1. Analyzing aid fungibility in Rwanda

Table 1 shows the results of the dynamic linear models; the standard errors are mentioned in the bracket under each coefficient value. The table represents different combinations of dynamic linear model including the autoregressive model which includes detrended variables. Model 1 looks at the core variables i.e. ODA and squared ODA while models 2 to 5 shows the additional impact of additional control variables. The final model (model 6) includes the additional trend variable discussed in the previous section. We will discuss model 6 in greater detail since its results are the most robust.

Almost all the models show a negative and significant relationship between ODA and public development expenditure indicating a presence of fungibility of ODA in Rwanda. However, the nonlinear effect of ODA can also be observed as being significant and positive indicating a U-shaped relationship between ODA and public development expenditure i.e. initially as ODA increases, it leads

[8] A detailed list of interviewees is included in the appendix

to a decrease in government spending until the minimum value of 96.551 million US dollar after which an increase in ODA causes the government development expenditure to increase as well. This can imply that for smaller aid amounts, the government might reallocate its own funding to other sectors/regions but for bigger ODA amount, the government does not reallocate its own funds.

In addition to ODA, the trend variable also shows a very significant and positive relationship with public development expenditure indicating that some of the variations in the model are a result of past trends. It does not however mean that fungibility is decreasing over time (as indicated by the ODA squared variable) but rather that the variation in the government development expenditure is linked in past trends. This is also clear from the fact that after detrending the variables in model 6, the R squared increases significantly compared to model 5. Looking at our control variables, we see that as expected FDI has a significant and positive correlation to the public development expenditure while both military expenditure and trade balance have a negative but insignificant relation to our dependent variable. However, contrary to what we expected, interest payments show a positive relationship to public development expenditure. This could be the result of the shift of the government from ODA to loans which can imply that as interest payments increase, development loans increase and so does the development expenditure. However, it is also important to note that the variable becomes insignificant in our final model (model 6).

Table 1: Dynamic Linear Regression Model for Rwanda

Dynamic Linear Model						
	Dependent variable: PubDevExp					
	(1)	(2)	(3)	(4)	(5)	(6)
ODA	-0.078^{*}	-0.050	-0.069^{*}	-0.077^{*}	-0.042^{**}	-0.056^{***}
	(0.041)	(0.031)	(0.038)	(0.041)	(0.019)	(0.013)
I(ODA^2)	0.597^{**}	0.384^{**}	0.483^{**}	0.523^{**}	0.240^{**}	0.290^{***}
	(0.229)	(0.177)	(0.209)	(0.225)	(0.104)	(0.069)
IntPay		5.247^{***}	4.143^{**}	3.887^{**}	1.027	0.876
		(1.123)	(1.671)	(1.764)	(0.839)	(0.554)
TradeBal			-0.007	-0.007	-0.004	-0.003
			(0.008)	(0.009)	(0.004)	(0.003)
lnMilitaryExp				0.001	0.0004	-0.0002
				(0.001)	(0.001)	(0.0004)
FDI					0.146^{***}	0.075^{***}
					(0.015)	(0.016)
Trend						0.0002^{***}
						(0.00003)
Constant	0.003^{*}	0.0001	0.0003	0.004	0.003	-0.001
	(0.002)	(0.001)	(0.001)	(0.007)	(0.003)	(0.002)
N	29	29	29	29	29	29
R^2	0.357	0.657	0.668	0.672	0.938	0.974
Adjusted R^2	0.308	0.616	0.613	0.601	0.921	0.966
Residual Std. Error	0.002 (df = 26)	0.002 (df = 25)	0.002 (df = 24)	0.002 (df = 23)	0.001 (df = 22)	0.001 (df = 21)
F Statistic	7.219^{***} (df = 2; 26)	15.952^{***} (df = 3; 25)	12.070^{***} (df = 4; 24)	9.422^{***} (df = 5; 23)	55.240^{***} (df = 6; 22)	113.104^{***} (df = 7; 21)
Note:	$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$					

Overall, we can conclude from our analysis that there is some evidence of aid fungibility in Rwanda; which seems to be decreasing (or even disappearing completely) as the amount of ODA increases. Our regression results, though interesting, do not portray a complete picture of the aid scenario in Rwanda and therefore we believe that a qualitative analysis is necessary to dive deeper into the analysis of aid fungibility and the dynamics of the government and the donors. Thus, in the next section, we discuss the results from our qualitative data to nuance our results further.

6.2. How was fungibility reduced in Rwanda?

The opinions about the presence of fungibility across development partners and the government officials differed quite significantly. While the government officials said that fungibility of development aid might have been happening in late 1990s, they strongly believed that it was not happening anymore. In fact, the government assures that it is the lead spender in any sector to keep the ownership of the project and the sector (interview with an official of MINECOFIN, 2020). Instead of taking its own funding out of sectors which are supported by the donor, the government matches the donor funding with its own funding to the sector, it was argued.

When questioned about the U-shaped relationship between ODA and development expenditure found in the econometric model, the official from the ministry of finance and economic planning pointed out that "the fungibility visible in the econometric modelling could be because in the initial years the revenues of the government were very low and it relied mostly on foreign aid for expenditure in the development sector but over time, the government has made sure that it is the main spender in all development sectors with donors spending as a secondary source of financing" (interview with an official in MINECOFIN, 2020). However, the sectoral level data on government expenditure portrays a slightly different and a more mixed picture i.e. the government has been trying to match funds with ODA in some sectors including health and education but sectors like energy, environmental protection and infrastructure show that the donor funding is far more than the government expenditure in most years.

On the other hand, the development partners believed that their aid funds were fungible especially since all the donors we interviewed disbursed their funds as sectoral budget support. However, this is not a bad thing, since for donors the important aspect is getting the job done and the Rwandan government has been quite efficient in the use of funds so far (interview with the member of World Bank, 2020).

The bigger change in aid dialogue in Rwanda happened after 2012-13 when several donors backed out of their commitments because of Rwanda's alleged involvement in neighbouring country's affairs. This resulted in extreme measures from the government including cutting off salaries of the staff and putting them in a "voluntary" fund to help the government reduce its expenditure (interview with a member of a multilateral donor organization, 2020). The episode of 2012-13 made the government realise that they cannot rely on the donors for funding and that's when they decided to take on the ownership of their development sector by ensuring that they were the main spenders in each sector – which totally changed the dialogue between the government and the donors (interview with a member of a multilateral donor organization, 2020). In taking ownership of their expenditure, the government was also indirectly able to reduce aid fungibility.

The government has taken lead of its development process by initiating its short term and long-term plan in the form of vision 2020 and vision 2050 which act as guiding principles for spending policies both for the government and the donors. The presence of these documents also helps the donors evaluate the performance of the government against its own set targets and so far, it seems that the government has been able to satisfy the donors and has managed to reduce fungibility in the process as well. To reduce fungibility and to take control of the development process, the government enacted different policies which we will be discussed in detail as follows;

6.2.1. Division of Labor

The government of Rwanda tries to stimulate a division of labor across donors while trying to keep itself as the primary spender in each sector. In the early 2000s, the donor projects were scattered across sectors and there was a lot of aid fragmentation. As a result, there could have been some aid fungibility in different sectors; so the government decided to access the need of each sector and coordinate the aid funding across sectors (interview with an official of MINECOFIN, 2020). Consequently, the government developed a strategy that one donor cannot work in more than three sectors simultaneously; resulting in some of the donors being asked to stop their projects/ funding for certain sectors. For example, Germany was working in the health sector earlier but since there were already too many donors in the sector, the government asked GIZ to exist the health sector (interview with a member of GIZ, 2020).

The donors usually focus on achieving targets set up by their organizations/country while the government wants to achieve its own development plan. Therefore, the government must prioritize its spending based on its own development plan and it tries to push the donors in the same direction (interview with an official of MINECOFIN, 2020). The government has a pretty straightforward stance: If a donor doesn't want to work in the sector where the government identifies the need, the government does not have to work with such a donor (interview with an official of MINECOFIN, 2020).The division of labor among the donors helped reduce aid fragmentation and indirectly aid fungibility because the government was better able to keep track of donor spending and therefore coordinate its expenditures with them across all sectors. In doing so, it also aligned the goals of both the parties involved thus reducing the principle-agent problem discussed in section 3.

6.2.2. Use of government infrastructure

In the early 2000s, increased transaction costs were one of the main problems in Rwanda as the donors placed several demands on the country in terms of time, reporting needs and use of resources (MINECOFIN, 2006). In addition, the donors were reluctant to delegate work to local offices of the government which further exacerbated already limited resources of the government resulting in increased transaction costs (MINECOFIN, 2006). However, over time, the government has been able to gain the trust of the donors to such an extent that more than 66.3% of ODA disbursements used public financial management and procurement systems in 2016-17 (MINECOFIN, 2018).

While gaining ownership of its development process, the government also started pushing the donors away from project aid and towards sector budget support. The introduction of vision 2020 and vision 2050 and the efforts made by the government to achieve its targets increased the confidence of the donors in the government's commitment to such an extent that by 2018, almost all major donors use sector budget support as their primary aid modality (MINECOFIN, 2018).

6.2.3. Performance Contracts

To keep track of progress being made at each governmental level (district, provincial and state level), the government introduced performance contract that are signed between the President himself and the individual department in the government i.e. before the funds are disbursed, a contract is signed which sets targets/ goals to be achieved by the department. The performance contracts are reviewed every year for each ministry and each district to ensure that the targets were met, and the funds were used transparently (interview with an official of MINECOFIN, 2020).

The performance contracts have helped the government track down and somewhat eliminate corrupt officials from the system. It also allows different districts to compete against each other for better performance and access to funds which eventually helps the government achieve its development targets. In this way the government was able to strengthen local institutions to reduce aid fungibility happening because of corrupt practices within its departments.

Overall, it is evident from this section that once the recipient government was given ownership of its development process, it was not only able to reduce aid fungibility but was also able to align the goals between itself and its donors. Additionally, the presence of a proper developmental plan in the form of vision 2020 and vision 2050 convinced the donors as well that Rwandan government was indeed serious about its development process. In the next section, we discuss the positive and negative effects of government ownership and decreased fungibility in the case of Rwanda.

6.3. What are the effects of decreased fungibility?

In the previous section we established that once Rwandan government took ownership of its development process, it ultimately led to more effective use of funds and a decrease in fungibility. However, the use and abuse of funds is not completely black and white; in this section we discuss the positive and negative implications of the ownership of development process and decreased fungibility.

6.3.1. Positive effects

The decreased fungibility in Rwanda has led to increased donor confidence in the performance of the government which has made the country a “donor’s darling”. This has the implication that the government of Rwanda can choose to work with donors that are willing to align their goals with those of the government. It also means that the conditionalities set by the donors are the same as the targets government has setup for its own self (interview with a member of a multilateral donor organization, 2020), thus the government has a greater incentive to achieve those targets. As a result, we can see significant improvement in economic and development statistics of the country; for example, its GDP growth rate is at 8.6% as of 2018, the life expectancy has increased from 48 years (in 2000) to 69 years (in 2018), the primary school enrolment rates are improving and poverty headcount seems to be decreasing over time (World development indicators, 2020)

The government of Rwanda has ensured that all parties involved in the development process are kept well informed and evaluated on regular basis. The government departments are evaluated through performance contract while a donor evaluation is also conducted on annual basis through the development partner coordination group. This led to better coordination of policies and results in decreased transaction costs and principle-agent problems as the utility of both the parties is maximized. Thus, the government of Rwanda does not have to choose between satisfying the demands of its voters and the donors as discussed in section 3 of our paper.

6.3.2. Negative effects

On one side, the ownership of the government helps it steer the development process effectively but on the other side it also raises questions of transparency of usage of funds and reporting of numbers. Rwandan government has in the past been accused of human right violations, lack of freedom of speech, imposing constraints on independent media reporting and lack of political freedom in addition to potential involvement in the war in Eastern Congo (McDoom, 2013). This also led to several donors stopping their aid disbursements to pressurize the government towards more transparent and "moral" behavior. Therefore, while the ownership of aid has led to government using funds based on its own policies, it has also led to some sectors (including advocacy, human rights and freedom of speech) being neglected completely both by the government and donors (who were made clear that their support in those sectors weren't welcome).

Similarly, while the performance contracts follow the same logic as results based approach used by donors, these contracts focus more on output than on outcome or impact targets and since the contracts are made on yearly basis, it impedes long term planning and sustainable achievement of goals (Klingebiel, et al., 2019). In addition, the districts are highly dependent on the government for fiscal transfers for implementation of the contract activities and so their success depends on their mobilization capacities especially with regards to the staff, budget and local cooperation (Klingebiel, et al., 2019). This is difficult to achieve in districts where literacy rates are low, and unemployment and poverty rates are high – resulting in increased disparity across districts.

High level of income and regional disparity is another problem in Rwanda; for example the south-west of the country has districts with high concentration of poverty (ranging from 60% - 73%); these make up for 23% of the total poor population in Rwanda (World Bank, 2015). This disparity is the result of lack of access to financing opportunities including credit, spatial differences including urban/rural divide, gender inequality and limited access to electricity, water and sanitation facilities in different areas within Rwanda (Finnoff, 2015; McKay & Verpoorten, 2016; Orrnert, 2018). Since the donors give sector budget support, they are not involved in disbursements of funds on district/provincial level but rather reply on the government mostly. The government on the other hand lacks transparency in distribution of funds on provincial level; it has published data on its province wise expenditure only for two years (2010 and 2011) in its budget execution reports, after which only consolidated figures from all the provinces were published which do not give a complete picture of the regional expenditure of the government.

In a similar vein, transparency in reporting of data is necessary for analyzing the progress Rwanda has made over the years. However, Jerven (2013) cautioned against taking African development and economic statistics at their face value since there are high political and financial stakes involved and no institutions in place to prevent the interference of the government in manipulating the numbers. For example, in 2015 the National Institute of Statistics of Rwanda (NISR) published a report that claimed that poverty has gone down from 45% in 2010 to 39% in 2014. However, Reyntjens (2015) pointed out that the change in figures was the result of the Rwandan government changes the type of poverty line used resulting in a decreased amount of poverty statisitcs.

The government of Rwanda has been trying to reduce its dependency on development aid and has been trying to move towards loans instead for financing its projects as discussed in section 4. This also has the implication that from 2011-12 to 2017-18, the interest payments on public debt have increased 225% in real terms and make up more than 30% of the total general public services budget (interview with an official from EU, 2020). Even though the current S&P risk rating of Rwanda is stable at B+, a heavy reliance on loans for development process can hinder the achievement of long terms goals as interest payments and repayment of principle starts to pile up.

Overall, from this section we can conclude that by taking over its development process, the government was able to achieve economic progress while solving the principle-agent dilemma faced by most aid recipient governments. However, there are still some problems with allocation of funds on sector and regional level and lack of institutions to keep a check on the power enjoyed by the government which can lead to problems for both the donors and the government in the long run. In the next section we try to generalize our results to understand the overall implications or lessons that we can learn and apply for other countries.

7. Aid ownership and fungibility: Lessons to learn

Fungibility of development aid is a common issue in most developing countries and it is viewed as a problem that needs to be addressed. In most cases, the donors try to control aid fungibility by adopting different aid modalities which may or may not work. In this paper, we found out that fungibility of development aid is automatically reduced as the recipient government takes ownership of its development process. In order to gain the confidence of the donors, it is imperative for the recipient government to come up with a national level development policy that helps it set up some clear targets over a given time period. The development plan also helps the donors and the recipient governments to streamline their priorities which reduces transaction costs and allows them to work towards a common goal.

In addition to having a national plan, the recipient government could introduce division of labor among the donors to reduce aid fragmentation which could in turn reduce aid fungibility as well. On the other hand, the division of labor can be made among the donors and the government as well, as discussed by Wagstaff (2011). He analyzedthe case of Vietnam where the government and the donors agreed on aid fungibility by tragetting different regions within Vietnam. Similarly, if the recipient government would established strong government infrastructure and policies, it can motivate the donors to move away from project aid to more aggregate sector budget support which once again reduces aid fragmentation and aid fungibility.

However, while the ownership of its development process by the recipient government can be beneficial for reducing aid fungibility, it is important to ensure that there are proper institutions in places within the recipient country to ensure transprency of use of funds and to keep a check on the power enjoyed by the government. If such instiutions don't exists and the power is enjoyed by a few elites in the society, government ownership of aid can lead to further dispartiy and higher fungibility as funds are moved to areas where the ruling elites can benefit the most.

Our results and conclusions from this research come with some limitations as well; for example, we do not include "ownership" of aid in our quantitaitve model. So while we want to bring ownership and fungibility together, we do so through two different methodological approaches instead of including it in our regression model. Similarly, due to time and availability constraints, we were only able to conduct a limited number of expert interview. A higher number of expert opinions from different parties could possibly help us achieve even more profund insights into the working of the government and the donors. Finally we draw our results from one case study i.e. Rwanda; these results need to be replicated for other countries to ensure generalization of our findings.

Overall, we can say that the ownership of its own development process is the way forward for recipients of development aid since these governments are aware of their development process and needs. However, some checks and balances by the donors can help ensure that the funds are being used in the most effective ways.

8. Conclusion

In this paper we analyzed the concept of fungibility of development aid exploring the hypothesis that if development process becomes government driven it can reduce fungibility. We consider Rwanda as our case study for this analysis since Rwanda has increasingly taken ownership of its development process. We used a mixed method approach consisting of econometric modelling and expert interviews.

We found a U-shaped relationship between ODA and development expenditure from our empirical model. To further investigate our results from the econometric model, we conducted expert interviews and concluded that the Rwandan government was able to reduce aid fungibility by taking ownership of its development process through division of labor amongst the donors, urging the donors to move towards budget support instead of project aid, by using government infrastructure for aid disbursements and introducing performance contracts for its departments. While these mechanisms helped government gain control of its development policies, we also found out problems of transparency in fund reports and disbursements, sectoral disparities and irregularities in data reporting by the Rwandan government.

The research demonstrates that while government driven aid policy reduces fungibility and increases aid effectiveness, it can also lead to problems with marginalization of certain sectors or regions especially in the absence of strong government institutions that keep the power of the government in check. The literature on aid effectiveness also indicates that too much donor intervention in the recipient country through aid conditionalities etc. also hinders aid effectiveness. A fine balance of power between donor and recipients might actually be needed to achieve sustainable and inclusive development.

Therefore, more research is indeed into the relationship between the donors and recipients of development aid especially considering aid fungibility. Through our paper we want to encourage researchers to ponder on the right balance between recipient government driven aid policies and donor interventions needed to ensure that aid is used as effectively as possible.

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Appendix A

Table 2: List of Variables for regression model with sources

Variable Name	Abbreviation	Source
Public Development Expenditure / GDP[9]	PubDevExp	Annual budget statements, Ministry of Finance and Economic Planning, Rwanda
Official development assistance/ GDP	ODA	OECD Creditors reporting system
Interest payments / GDP	IntPay	Annual budget statements, Ministry of Finance and Economic Planning, Rwanda
Trade Balance / GDP[10]	TradeBal	World Development Indicators (WDI)
Urban Population / Total Population	UrbanPop	World Development Indicators (WDI)
Military expenditure / GDP	MilitaryExp	World Development Indicators (WDI)
Foreign Direct Investment / GDP	FDI	World Development Indicators (WDI)
Gross Domestic Product	GDP	World Development Indicators (WDI)
Total Population	TP	World Development Indicators (WDI)

Appendix B

Table 3: OLS Regression Model

OLS Model						
	Dependent variable: PubDevExp					
	(1)	(2)	(3)	(4)	(5)	(6)
ODA	-0.078*	-0.050	-0.069*	-0.066***	-0.042**	-0.042**
	(0.041)	(0.031)	(0.038)	(0.020)	(0.018)	(0.018)
I(ODA^2)	0.597**	0.384**	0.483**	0.377***	0.237**	0.237**
	(0.229)	(0.177)	(0.209)	(0.110)	(0.100)	(0.100)
IntPay		5.247***	4.143**	2.637***	3.157***	3.157***
		(1.123)	(1.671)	(0.891)	(0.755)	(0.755)
TradeBal			-0.007	-0.014***	-0.016***	-0.016***
			(0.008)	(0.004)	(0.004)	(0.004)
lnFDI				0.001***	0.001***	0.001***
				(0.0001)	(0.0001)	(0.0001)
lnMilitaryExp					-0.002***	-0.002***
					(0.001)	(0.001)
Constant	0.003*	0.0001	0.0003	0.005***	-0.005	-0.005
	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)
N	29	29	29	29	29	29
R^2	0.357	0.657	0.668	0.914	0.943	0.943
Adjusted R^2	0.308	0.616	0.613	0.895	0.927	0.927
Residual Std. Error	0.002 (df = 26)	0.002 (df = 25)	0.002 (df = 24)	0.001 (df = 23)	0.001 (df = 22)	0.001 (df = 22)
F Statistic	7.219*** (df = 2; 26)	15.952*** (df = 3; 25)	12.070*** (df = 4; 24)	48.586*** (df = 5; 23)	60.626*** (df = 6; 22)	60.626*** (df = 6; 22)
Note:	*p<0.1; **p<0.05; ***p<0.01					

[9] The variable PubDevExp is reported as "Capital expenditure" in the annual budget statement

[10] The variable was calculated manually by subtracting Exports and Imports of goods and services (constant LCU), both the variables were extracted from WDI

Table 4: Dynamic Linear Model with lnODA

DYLM model with lnODA						
	Dependent variable: PubDevExp					
	(1)	(2)	(3)	(4)	(5)	(6)
lnODA	0.021***	0.013***	0.015***	0.008***	0.005*	0.004
	(0.004)	(0.004)	(0.004)	(0.002)	(0.003)	(0.003)
I(lnODA^2)	0.003***	0.002***	0.002***	0.001***	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.0004)	(0.0004)	(0.0004)
IntPay		4.433***	3.021	2.018**	2.918***	2.297**
		(1.187)	(1.775)	(0.941)	(0.897)	(0.962)
TradeBal			-0.009	-0.014***	-0.015***	-0.010*
			(0.008)	(0.004)	(0.004)	(0.005)
lnFDI				0.001***	0.001***	0.0004**
				(0.0001)	(0.0001)	(0.0002)
lnMilitaryExp					-0.002**	-0.001*
					(0.001)	(0.001)
Trend						0.0001
						(0.0001)
Constant	0.033***	0.019***	0.021***	0.014***	0.0003	-0.0001
	(0.006)	(0.006)	(0.006)	(0.003)	(0.006)	(0.006)
N	29	29	29	29	29	29
R^2	0.498	0.677	0.692	0.919	0.939	0.945
Adjusted R^2	0.459	0.639	0.641	0.901	0.922	0.927
Residual Std. Error	0.002 (df = 26)	0.002 (df = 25)	0.002 (df = 24)	0.001 (df = 23)	0.001 (df = 22)	0.001 (df = 21)
F Statistic	12.873*** (df = 2; 26)	17.505*** (df = 3; 25)	13.488*** (df = 4; 24)	51.913*** (df = 5; 23)	56.417*** (df = 6; 22)	51.578*** (df = 7; 21)
Note:	*p<0.1; **p<0.05; ***p<0.01					

Appendix C

Table 5: Details of Expert Interviews

No.	Department/ Institution	Interview conducted on
1	Department of Macroeconomic Policy Division, Ministry of Finance and Economic Planning	12.02.2020
2	Department of External Finance, Ministry of Finance and Economic Planning	13.02.2020
3	Support for Macroeconomic and Investment Policy, GIZ	15.02.2020
4	Multilateral Development Organization	18.02.2020
5	World Bank	19.02.2020
6	Department of Macroeconomic Policy Division, Ministry of Finance and Economic Planning	20.02.2020
7	Department of Macroeconomic Policy Division, Ministry of Finance and Economic Planning	20.02.2020
8	Budget management and Reporting Unit, Ministry of Finance and Economic Planning	20.02.2020
9	National Development Planning and Research Department, Ministry of Finance and Economic Planning	20.02.2020
10	Multilateral Development Organisation	28.02.2020