Do DSIP funds help PNG MPs win?

Maholopa Laveil and Terence Wood

Abstract

District Services Improvement Program (DSIP) funds are constituency development grants which members of parliament in Papua New Guinea (PNG) exert considerable control over. Similar funds exist in a number of other countries, but on a per capita basis PNG's funds are some of the highest globally. The funds are also controversial, and often said to be tools of patronage. In this paper, we study whether the funds have any discernible impact on MP re-election rates. We do this by taking advantage of the natural experiment afforded by malapportionment in PNG. DSIP funds are given in equal amounts to all constituencies. Owing to substantial malapportionment, larger electorates receive considerably less funding per capita. We test whether incumbents are more likely to win re-election in smaller electorates where DSIP funding is higher on a per capita basis. Despite including (and excluding) a large range of controls, as well as different variants of variables, we find only very limited evidence of a difference in re-election rates. We also show that this is not simply because it is inherently harder to be re-elected in smaller electorates. We do find some evidence of DSIP money being associated with higher incumbent vote shares. However, even this evidence is limited. The balance of available evidence strongly suggests that having more DSIP money does not help MPs win re-election on average.

Do DSIP funds help PNG MPs win?

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Do DSIP funds help PNG MPs win?

1 Introduction

District Services Improvement Program (DSIP) funds are, as the name suggests, funds provided to districts in Papua New Guinea (PNG), ostensibly for improving services. They are an example of a broader global phenomenon often referred to as constituency development funds: funds that individual members of parliament (MPs) control to greater or lesser extents and which can, in theory, be used as tools of electoral patronage, to the advantage of incumbents. Although similar funds exist in many countries globally, on a per capita basis PNG's funds are some of the highest in the world.

Like equivalent funds in other countries, DSIP funds are controversial in PNG. Proponents, including MPs themselves, claim the funds provide a means of circumventing an inefficient and unresponsive central state. Detractors argue there is little evidence of the funds systematically benefitting people in need and that the funds consume resources that would be better devoted to cash-starved government ministries. Opponents also contend that the funds are often spent in a politicised way by MPs.

In this paper, we study whether the funds have any discernible impact on MP re-election rates. We do so by taking advantage of the natural experiment afforded by malapportionment in PNG. DSIP funds are given in equal amounts to all constituencies. Owing to substantial malapportionment between electorates, however, larger electorates receive considerably less funding per capita. We test whether incumbents are more likely to win re-election in smaller electorates where DSIP funding is higher on a per capita basis. Despite including (and excluding) a large range of controls, as well as using many different variants of variables, we find almost no evidence of a difference in re-election rates between larger and smaller electorates. MPs do not appear to be re-elected more when per capita DSIP funding is greater. Using electorate results data from the period prior to the introduction of DSIP funds we show that the inability to find a clear DSIP effect does not appear to be because it is inherently harder to be re-elected in smaller electorates.

Because vote shares and similar measures of incumbent competitiveness may be more sensitive gauges of any DSIP advantage, we add to our core tests by also examining whether greater DSIP funding is associated with higher incumbent vote shares and incumbents polling more strongly compared to their most competitive rivals. Using these variables, we do find slightly more evidence of a DSIP effect. However, even this evidence is limited, producing clear results only in a minority of the tests we run, and never in our most exacting models.

Taken together, these findings strongly suggest that having more DSIP money does not help MPs win re-election in PNG in any clear systematic way. We do not believe that this is evidence that MPs never try to use DSIP funds to their electoral advantage. Rather, it seems likely that competing spending pressures, alongside voters' awareness of the potential that rival candidates may use the money as helpfully, if not more so, than incumbents, counters any electoral advantage DSIP funds might bring. This is particularly true in PNG's heated electoral climate.

In addition to providing evidence of the limited electoral effects of DSIP funds in PNG, this paper speaks to the broader literature of constituency development funds globally. The political impacts of these funds have received little serious scholarly study to date. We contribute to the literature by demonstrating that it should not be assumed, either by scholars or politicians, that constituency funds provide real electoral benefits.

The paper proceeds as follows: in Section 2 we review the broader international literature on constituency development funds and outline how the funds operate in PNG. We then detail our data and the methods we use in Section 3 before presenting the results of a wide range of tests run on our data in Section 4. We conclude in Section 5 with a discussion of the substantive meaning of our findings.

2 Background

### 2.1 Constituency development funds globally

Papua New Guinea's DSIP is a form of constituency development fund (CDF). Although CDFs vary considerably from country to country, all such funds involve the transfer of central government revenue to electorates or constituencies where spending — including what funds are spent on and who benefits from spending — is controlled to a significant degree by the local MP or equivalent representative (International Budget Partnership 2010; van Zyl 2010). CDFs, or CDF-type funds, have existed in some countries since the late 1960s. However, funds of this type were rare until the 1990s. CDFs are now thought to exist in about 15 countries globally (Tsubura 2013).

Defenders of CDFs argue the funds enable politicians to skirt inefficient or corrupt government bureaucracies and deliver much-needed local projects and resources to communities. Critics, on the other hand, contend that the funds are often not transparent and are used as a tool of patronage, and that funding is frequently delivered with little view to sustainability or recipient need. Critics also argue that CDFs distract MPs from their role as legislators and lead to excessive focus on delivering resources to communities (International Budget Partnership 2010; Tsubura 2013; van Zyl 2010).

In addition to international variation in the rules governing the funds, there is also considerable variation in just how much money is allocated to MPs though the CDFs. Figure 1 draws on data from 2009 (the most recent cross-country data that we are aware of). Data come from International Budget Partnership (2010, pp. 4–5), combined with our own data and calculations for PNG, and information from researchers studying CDFs in PNG's neighbour, Solomon Islands.[1]

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[1] Fund values have increased considerably in both PNG and Solomon Islands since these data were collected. It seems likely that similar funds have increased elsewhere too. We are grateful to James Batley for sharing Solomon Islands data.

Figure 1: International comparisons of CDF volumes
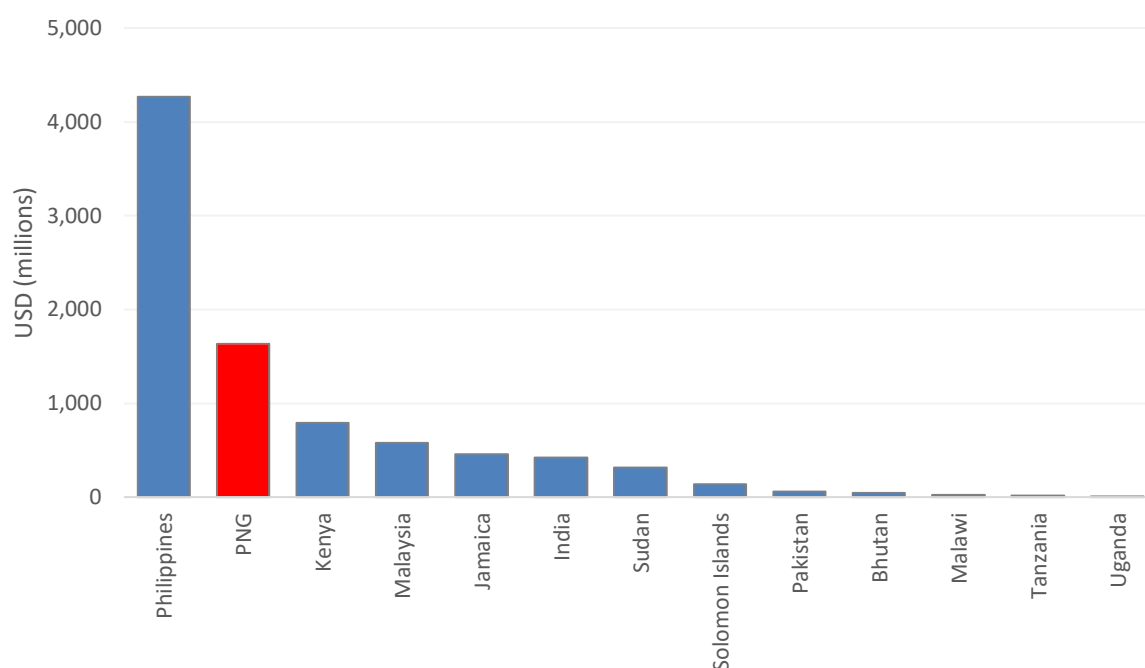
The data in Figure 1 are absolute amounts. Solomon Islands and PNG are smaller countries than many in the figure. Reflecting this, Solomon Islands and PNG have the highest CDF spends as a share of overall government spending of all of the countries covered in the figure (Howes et al. 2014, p. 129). We calculate that CDF spending in Solomon Islands was 10 per cent of the government budget. In PNG the DSIP fund was 5 per cent.

To date, surprisingly little research has been conducted on the electoral impacts of CDFs. Using survey and election data from Kenya, Gutiérrez-Romero (2013) provides evidence which appears to suggest that CDF funds do not aid MPs in re-election, a fact attributed in part to tribal voter loyalties. In work on East 'Are 'Are in Solomon Islands, Hiriasia (2019) reaches similar conclusions. Similarly, Barkan and Mattes (2014) suggest that the absence of changes in national re-election rates in a number of African countries when CDFs were introduced appears to be evidence of the limited electoral efficacy of the funds. Although in Solomon Islands CDF funds do seem to have changed re-election rates for the country as a whole in recent years (Wiltshire & Batley 2018; Wiltshire et al. 2019).

One obvious possible reason why CDF funds may be electorally ineffective in some of the studied countries is that they are simply too small to impact on electoral competition, particularly as incumbents and their rivals may often have other funding sources to draw upon. Given this possibility, and given CDF funds in PNG are some of the highest in the world relative to population size, PNG is a most-likely case of sorts. If an electoral effect of CDFs is to be found anywhere, it will most probably be in a location like PNG.

One difference between our study and some work based on African countries is that we neither draw on survey data, which could be susceptible to social desirability bias, nor make inferences on fund effectiveness by looking at changes, or the lack of changes, in aggregate national MP turnover rates. Instead, we use detailed results data at the electorate level, spanning a long period of time in which PNG's CDF funds have fluctuated in volume.

2.2 DSIP funds in Papua New Guinea

Figure 2 shows inflation adjusted DSIP values, per open MP, over time in PNG. The figure also shows inflation adjusted total government revenue.

Figure 2: DSIP and government revenue (million Kina, inflation adjusted 2012)
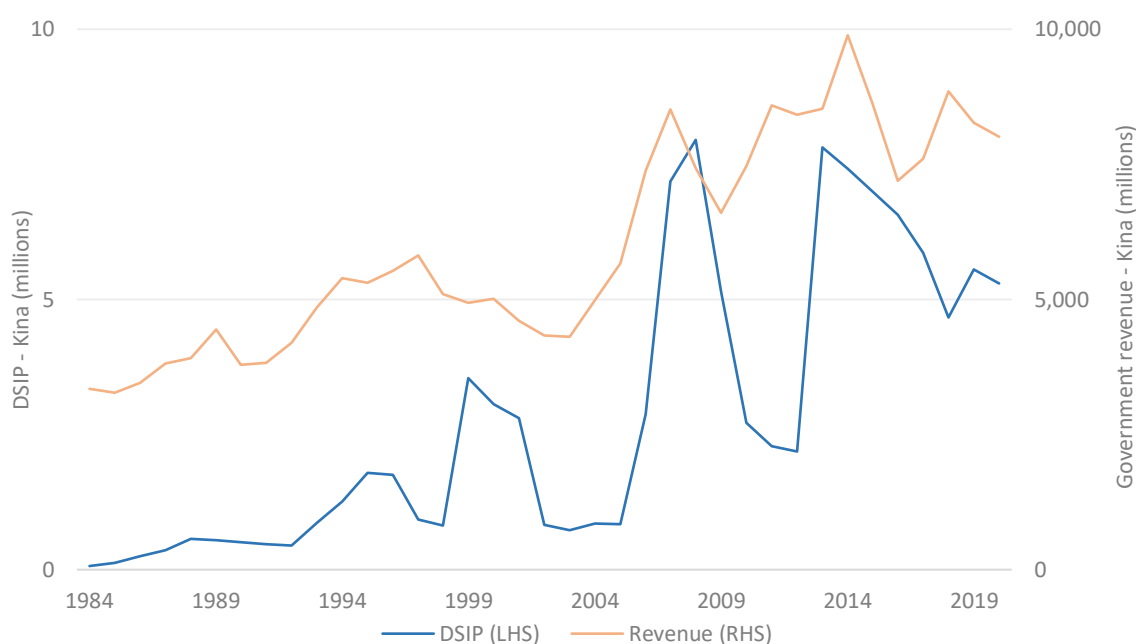
Sources: Data come from Laveil (2021). We are very grateful to Jon Fraenkel for sharing data from early years.

PNG's DSIP funds began in 1984, under the name of the National Development Fund. DSIP funds remained very modest, however, until after the 1992 general election when funding began to rise. MPs' control over the funds also became more substantial in the term following 1992 (Fraenkel 2011). As can be seen in Figure 2, DSIP volumes have fluctuated wildly, although the overall trend since at least the turn of the millennium has been one of clear increase. By 2020, a total of K890 million (K10 million per open MP) was allocated to DSIPs, comprising 15 per cent of PNG's capital expenditure, and 4 per cent of total expenditure.

Because DSIP funds comprise such a large share of capital expenditure, DSIP funds tend to fall when revenue falls, and the waxing and waning fiscal fortunes of the PNG Government explain much of the fluctuation in DSIP volumes. There have been four spikes in real DSIP funds, in the periods: 1993–1995, 1999, 2006–2008 and 2013. In the early 1990s PNG was heavily reliant on agriculture exports, and this was evident in 1993–1995, when government revenue rose as log and coffee prices increased. The spike in 1999 resulted from the introduction of the Value Added Tax (now GST), which increased government revenue, and the Bank of Papua New Guinea financing government expenditure beyond its formal limits.

By the 2000s, government revenue in PNG had become primarily dependent on extractive industries. The spike from 2006 to 2008 was caused by a surge in government revenue driven by increases in log and mineral prices. In 2013, DSIP funds increased again, as a boost in tax revenue from the construction phase of the PNG Liquified Natural Gas project allowed higher budget allocations. A fall in DSIP funds occurred in 2018, caused by a diversion of expenditure in response to a large earthquake. In 2020, depressed global trade and a three-month internal lockdown as a result of the COVID-19 pandemic led to lower revenue and a diversion of expenditure to health, security and economic recovery, reducing DSIP funding (Laveil 2021).

DSIP funds are provided by law to each open MP. However, the timing of the release of the funds is determined by the Department of Finance. Spending was largely at MPs' discretion even before guidelines were relaxed (Kama 2017; Nauga 2014; Walton & Davda

2019). The government's influence over the Finance Department responsible for DSIP disbursement has enabled MPs greater control over the use of the funds (Kama 2017).

At the open electorate level, the district government, known as the District Development Authority (DDA), resembles a corporate structure. The district administrator serves as CEO of the DDA, which is overseen by a board consisting of local-level government presidents, who are elected officials, and chaired by the MP (Howes et al. 2014). Although the board is responsible for determining DSIP expenditure, as chair the MP wields considerable influence over DSIP decisions.

DSIP fund allocations are held within the national Department of Finance. Once budget submissions are made by the respective MP for specific projects, the funds are released. In theory, these funds may only be approved if acquittals of the previous year's expenditure have been made to the Department of Implementation and Rural Development. The Department of Implementation and Rural Development is also tasked with monitoring and reviewing DSIP projects. However, acquittals for projects are rarely made and the department rarely reviews or monitors projects (Guande 2020; Nauga 2014).

DSIP funds are paid directly to the respective DDA's bank account, from which the DDA then pays contractors selected to undertake proposed projects (Howes et al. 2014). DSIP funds for school projects (usually to build new classrooms or teachers' houses) are typically paid to the schools themselves. DSIP funds for health and other special purpose projects are typically undertaken by external contractors.

Reflecting the lack of oversight that exists in practice over DSIP expenditure, a common complaint about DSIP funds is that they are often used to reward and expand an MP's voter support base (Ketan 2007; Reilly 1996).

3   Data and methods

In this section we discuss the data that we used in our study and the methods we used to analyse the data.

3.1 Data

Until recently, data allowing for the systematic study of the DSIP's impact on electoral outcomes was not available for PNG. However, this has changed in recent years with the release of a number of useful datasets, which have enabled us to compile data on election outcomes, a range of variables that may potentially affect election outcomes, and volumes of DSIP funds.

3.1.1 Election outcomes data

Our data on election outcomes are drawn from the PNG Elections Database.[2] This dataset makes election results data available for most of PNG's electorates in most of its post-independence general elections (Laveil & Wood 2019a). We draw on these data for the key dependent variables used in our study: the binary variable of whether incumbent MPs win their seats back,[3] and two continuous variables. The continuous variables are the vote share won by incumbent candidates, and the ratio of the vote share won by the incumbent over the vote share of the highest polling candidate who was not the incumbent in the election in question.[4]

Figure 3 shows the share of incumbents who have won their seats back in each post-independence general election in PNG since 1982 (the first post-independence election with data on incumbency). The data are limited to rural open seats, and to seats for which we have data. As can be seen, incumbent re-election rates have been about 50 per cent in most elections, with the exception of 2002, a year in which incumbent turnover was particularly high.

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[2] See PNG Elections Database, https://devpolicy.org/pngelections/.

[3] We only made use of election results data when we could be sure of the incumbency status for electorates in individual elections and excluded all cases where there was no incumbent (incumbents not standing for re-election) or where incumbency, or results themselves, were uncertain owing to data issues. Electorates excluded from the data total to only 10.5 per cent of the 680 electorate election year results.

[4] In limited preferential voting elections, first preference results are used for both the incumbent vote share variable and the incumbent to highest polling non-incumbent variable. This was done to ensure a consistent measure over time, which would not have occurred if second and third preferences had been taken into account from 2007 onwards.

Figure 3: Share of incumbents in rural open seats winning re-election
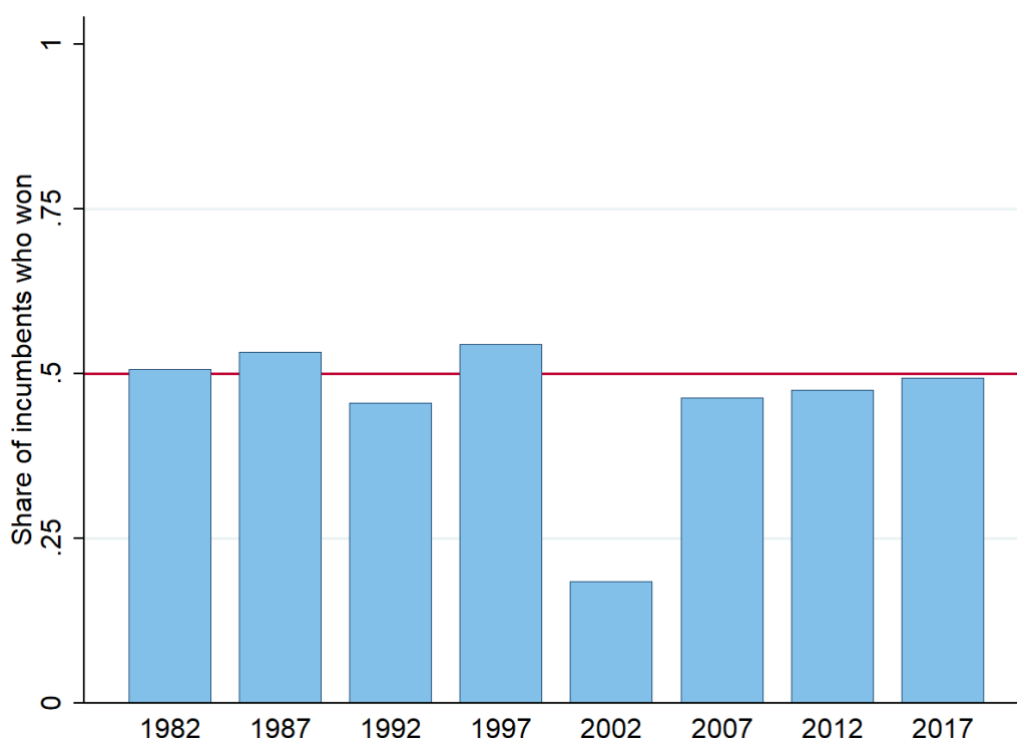
3.1.2   Data on DSIP flows

Data for the central independent variable of interest, DSIP volumes, were released in 2021 (Laveil 2021; for an earlier version of DSIP data, see Fraenkel 2011.)

Importantly, each MP serving in an open seat receives the same amount of DSIP funding in any given year. At the same time, there is also major malapportionment between open electorates in PNG: the largest seats have approximately six times as many voters as the smallest (Laveil & Wood 2019b). The malapportionment is not a product of active gerrymandering. Rather, it is a result of historical inertia and a failure to change open seat boundaries since the mid-1970s. Consequently, DSIP funds per capita (or DSIP funds per voter) vary dramatically between electorates.

This can be seen in Figure 4, which is a histogram of DSIP funds per voter in 2012. Funds are summed over the term prior to the election (excluding the year of the election as elections tend to be early in the year).

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Figure 4: DSIP funds per voter, 2012 (Kina)
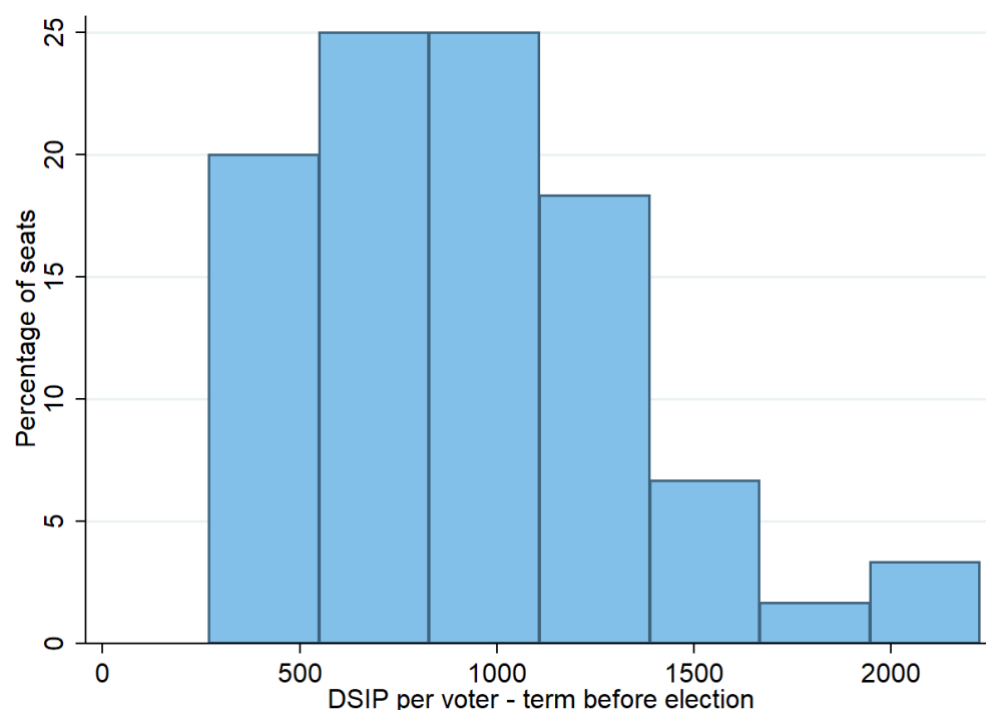
Note: Values on the x-axis are in Kina.

Although this variation is very useful analytically, analysing DSIP data presented some challenges. First, it is unclear whether voters are more likely to be influenced by spending across the (5-year) term, or whether it will be the year prior to the election that has the most influence on voter behaviour. Moreover, as can be seen in Figure 2, DSIP flows have fluctuated considerably annually. For this reason, we created both term-before (summed across the term prior to the election, excluding the election year itself) and year-before (using just the year prior to the election year) DSIP variables. (Years prior to election years, rather than election years themselves, were used as the formal electoral process starts in the second quarter of election years.)

We faced a further problem in that the denominator in our calculation of DSIP per capita figures was not easy to obtain. Ideally, it would simply be population of an electorate. However, censuses in PNG are decadal and issues with the 2011 census mean that the last reliable census in PNG is from 2000 (Allen 2014). For this reason, all of our per capita figures use 2000 populations as the denominator in calculations. Given that PNG's population is growing, this is a potential issue. However, as we do not (except in

robustness tests in the appendices) analyse our data as panel data, such a figure should at least provide a reasonable gauge of relative differences between electorates in terms of their size: there are not many rural electorates that were once comparatively small but which are now comparatively large. To further overcome this issue, we also calculated DSIP per voter in electorates.[5] This measure is itself imperfect as over-enrolment is a problem in some electorates (Laveil & Wood 2019a). However, the measure does have the benefit of changing with time and reflecting changing population sizes. To mitigate the limits of each of these individual measures we used both separately in our analysis and looked for findings that were consistent across measures.

3.1.3   Electorate and MP traits

In 2021, Colin Filer and other academics released data on attributes of rural districts in PNG including levels of development and geographical traits (Filer & Wood 2021).[6] Filer and co-authors subsequently published work looking at the relationship between ministerial power, district attributes, and re-election rates in PNG (Filer et al. 2021).[7] We utilise these two papers for the control variables used in our study. Specifically, we draw on electorate traits found to be correlates of re-election in Filer et al.'s (2021) study of this topic, or which might theoretically be expected to have an impact on the value of DSIP spending. We use range of altitudes (a measure of the extent to which the inhabited parts of an electorate span different altitudes) and population density. Both of these variables were found to be associated with incumbent turnover rates in Filer et al. (2021) . We also use child mortality as the best available proxy of development. This measure was not found to be associated with incumbent turnover in the same study. However, it seems reasonable to anticipate DSIP funding will have a greater impact in needier electorates, and as such ought to be controlled for. We took two further variables from the Filer et al. (2021) study. The first is the mean number of candidates who have stood in elections in

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[5] The denominator in this equation was the number of voters in the previous election. This was chosen because numbers of voters could plausibly be endogenous to the possibility that the incumbent may lose their seat. Taking voter numbers from the election prior will reduce this risk.

[6] See also Papua New Guinea District Level Dataset, https://doi.org/10.6084/m9.figshare.14456229.v3.

[7] See also Ministerial Power data for Papua New Guinea, https://doi.org/10.6084/m9.figshare.16689562.v1.

that electorate, averaged across all elections except the current election. This was clearly correlated with incumbent turnover in Filer et al. (2021): electorates with more candidates standing were home to more turnovers on average. The second variable was a measure of incumbents' political power derived from the seniority of ministerial roles that they had held across the previous term (MPs who had not served in ministerial roles scored 0 on this measure). This power variable has been found to be a clear predictor of re-election chances (Filer et al. 2021).

Reflecting the information included in the two datasets prepared by Filer et al., our study is restricted to rural electorates (in practice this means it excludes the three Port Moresby electorates, and the one electorate in Lae). Our study also focuses on so-called 'open' district-level electorates and excludes provincial seats. This is a limitation, but not a major one: our study still covers 85 of Papua New Guinea's 111 electorates. And victory rates are not significantly different in provincial seats or urban areas.[8]

Table 1: Variables used in analysis.

	Mean	SD	Min	Max
Dependent variables				
Incumbent wins?	0.43	0.50		
Incumbent vote share	0.18	0.12	0.01	0.77
Incumbent/top non-incumbent vote ratio	1.29	1.10	0.03	10.43
DSIP measures				
DSIP per capita (1000s) – term before election	0.31	0.23	0.05	1.15
DSIP per capita (1000s) – year before election	0.06	0.04	0.01	0.24
DSIP per voter (1000s) – term before election	0.59	0.47	0.05	4.22
DSIP per voter (1000s) – year before election	0.13	0.10	0.02	1.15
Controls				
Mean candidates (over elections except current)	21.47	8.05	7.43	40.43
Ministerial power	0.30	0.48	0.00	4.06
Child mortality	84.46	39.32	26.00	226.00
Range of altitudes	6.78	4.67	1.00	20.00
Population density (ln)	2.90	1.18	0.00	5.65
Observations	425			

Table 1 shows summary statistics for the variables used in our analysis. The variables are broken into three groups: those that are used as the dependent variables in our

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[8] Over elections since 1982, for elections where we have data, 46 per cent of incumbents in open seats were re-elected, compared to 47 per cent in provincial seats. Variation is slightly larger in rural/urban comparisons (46 per cent re-elected in rural versus 52 per cent in urban areas) but the difference is not statistically significant.

analysis; the DSIP variables used at different points in our analysis; and control variables.

3.2 Methods

Our central analysis involved taking the dichotomous variable for incumbent victory and making it the dependent variable in a series of logistic regressions. In the first regression, we simply looked for a bivariate relationship between the victory and DSIP funds (per capita or per voter). In the second we included a suite of controls. In the third we added regional fixed effects. In the fourth we added election year fixed effects. (Regional fixed effects reduced the risks of other regional traits confounding findings. Election year fixed effects prevented anomalous elections, such as the 2002 election, from unduly influencing results.) In all of these regressions, data were pooled and robust standard errors were clustered at the district level. We conducted the work with the following DSIP measures (each applied separately):

1. The natural log of DSIP per capita (from census data) calculated over the term before the election.
2. The natural log of DSIP per capita (from census data) calculated based on DSIP amounts in the year prior to the election.
3. The natural log of DSIP per voter calculated over the term before the election.
4. The natural log of DSIP per voter calculated based on DSIP amounts in the year prior to the election.

We then repeated these regressions but this time using our two continuous results variables — incumbent vote share and incumbent to top contender ratio — as our dependent variables of interest. OLS regressions were run in this instance, with the natural logs of the dependent variables used. The use of natural logs of our key independent variables and key continuous dependent variables was appropriate given the typically skewed nature of the variables and the risk of outliers driving results.[9]

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[9] Logging the incumbent vote share variable also has the benefit of reducing the extent to which it is strictly bound. The variable transformed in this way is more appropriate for use in OLS regressions.

In all our work, including DSIP spending in the main body of this paper, we ran regressions on data from 1997 onwards, as 1997 was the first election in which DSIP funds were large enough to plausibly affect election outcomes.[10]

In the second part of our analysis, we addressed the possibility that DSIP funds do improve an incumbent's election fortunes but that something else about smaller electorates makes these electorates *harder* to win, eliminating any visible DSIP effect. To do this we ran regressions using data from 1992 and earlier, excluding DSIP values (which were effectively zero) and including population instead. The logic here is that, if smaller electorates are intrinsically more difficult for incumbents to win, we should see a negative relationship between population and incumbent victory rates in the pre-DSIP years.

4   Findings

This section is divided into two parts. In the first we look at the central findings (or absence thereof) from our regression analysis. In the second part we look to see if there was any relationship between district size and incumbent re-election rates prior to the provision of DSIP funding.

4.1   Central findings

Table 2 shows regression results from three groups of regression models. The first group (models 1–3) are logistic regressions with the 'incumbent wins' variable as the dependent variable. The second group (models 4–6) are OLS regressions with the natural log of incumbent vote share as the dependent variable. The third group (models 7–9) are OLS regressions with the natural log of the incumbent to most competitive other candidate ratio as the dependent variable. In all models the key dependent variable reflecting DSIP spending is the natural log of DSIP funds over the term before the election.

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[10] Starting as early as 1997 could, in theory, mask the effects of more recent, higher DSIP flows. Or, potentially, could plausibly produce anomalous results owing to unusual elections in 2002. As robustness tests we re-ran all regressions starting with the 2007 election. However, when we did this, statistically significant positive findings were less common, not more.

Each group of models starts with a simple bivariate regression, this is followed by a regression with controls, and then a regression with year and region fixed effects.

Table 2: Regression results across three dependent variables

	Incumbent wins			Incumbent vote share			Incumbent ratio		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DSIP capita term (ln)	-0.00	-0.04	-0.11	0.10*	0.08*	-0.16	0.12***	0.11**	-0.23**
	(0.13)	(0.13)	(0.33)	(0.05)	(0.04)	(0.10)	(0.04)	(0.04)	(0.10)
Average candidates		-0.05***	-0.06***		-0.04***	-0.04***		-0.01***	-0.01***
		(0.01)	(0.02)		(0.00)	(0.00)		(0.00)	(0.00)
Ministerial power		0.42	0.41		0.32***	0.31***		0.30***	0.29***
		(0.28)	(0.32)		(0.05)	(0.06)		(0.08)	(0.08)
Child mortality		0.00	0.00		0.00	0.00		-0.00	-0.00
		(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)
Range of altitudes		-0.02	-0.02		-0.01	-0.00		-0.00	0.00
		(0.02)	(0.02)		(0.01)	(0.01)		(0.01)	(0.01)
Population density (ln)		-0.06	0.04		0.04	0.05		0.03	0.05
		(0.11)	(0.15)		(0.03)	(0.04)		(0.03)	(0.04)
Region FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	379	379	379	374	368	368	363	359	359

Clustered robust standard errors in parentheses; regressions run on elections from 1997 onwards.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The key independent variable of interest is not statistically significant in models 1 to 3. It is only weakly statistically significant in models 4 and 5. What is more, it is not statistically significant in model 6, when region and year fixed effects are added. DSIP spending is more clearly statistically significant and positive in models 7 to 9, the models pertaining to the incumbent to strongest rival ratio. However, in model 9, with fixed effects, its sign reverses and is actually negative. This is a mixed set of findings: there is no good evidence of an impact on whether an incumbent wins or not. The evidence of an effect on winner vote shares and incumbent to strongest competitor ratios is more positive, although it is contradictory at times.

Of course, Table 2 only shows one permutation of the DSIP variable. It could be the case that findings change with different variants. Figure 5 reports the key results of regressions run to check on this possibility. The figure shows the coefficients, and 90 per cent confidence intervals from 16 different regression models examining possible DSIP spending effects. Each of the columns is a different dependent variable: the binary incumbent win or lose variable; the natural log of incumbents' vote shares; and the natural log of the ratio of incumbent to top non-incumbent vote shares. The groups of

coefficients are all from models run using different permutations of the DSIP variable (the exact variable is listed on the vertical axis). The different symbols show the results of different models: simple bivariate regressions are shown with diamonds; regressions with controls included (the same controls as in Table 2) are shown with triangles; and regressions with region and year fixed effects are shown with squares.

Figure 5: Coefficients for different DSIP measures in different regressions
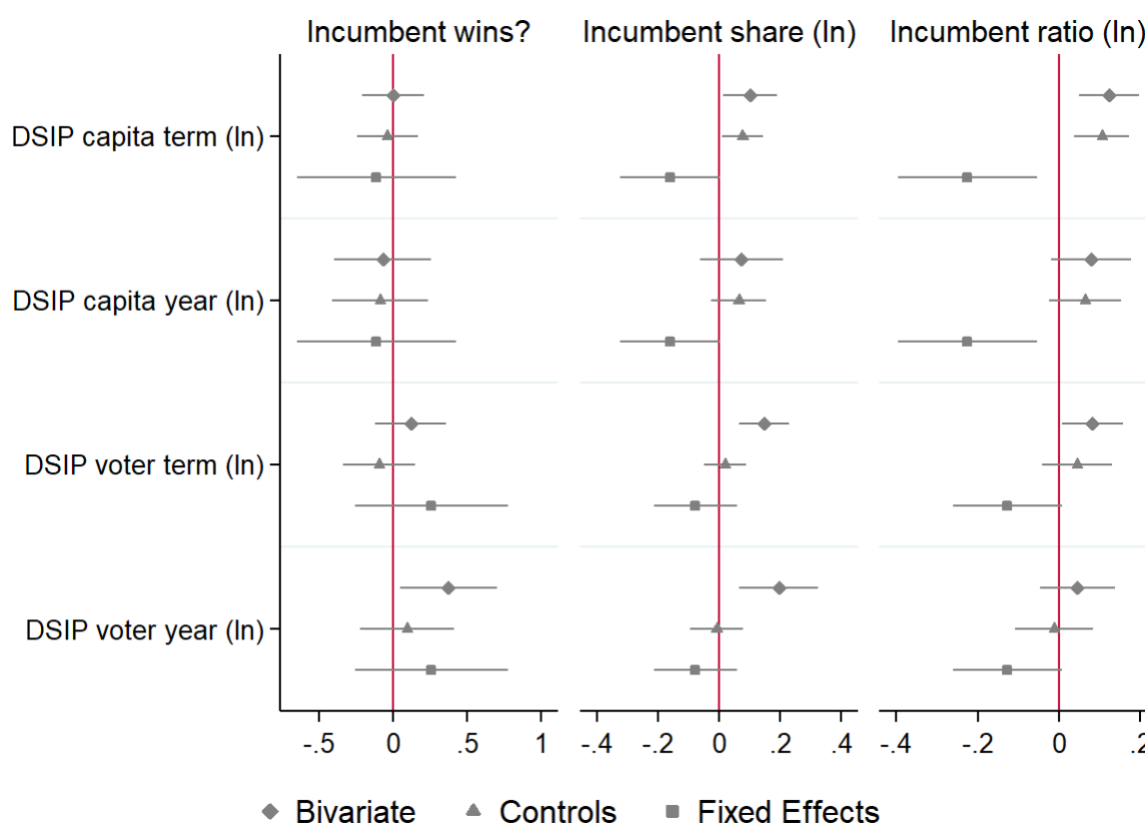
Notes: All data are from 1997 onwards. The unit of analysis in all regressions is an electorate in an election year. Robust standard errors are clustered at the electorate level. 90 per cent confidence intervals are shown as well as point estimates. The vertical red lines show zero effect. Logistic regressions are used in the first column. OLS regressions in the second and third.

Only once, in a bivariate regression, is the coefficient for a logistic regression regarding incumbent victory positive and statistically significant. Over all of the regressions in the figure, the coefficients are positive and statistically significant (at p<0.1) just 8 times out of 36. Almost all of the instances of statistically significant findings are for bivariate relationships. The coefficients are never positive and statistically significant when region and year fixed effects are added.

Of course, it might be possible that taking the natural log of the DSIP variables is not appropriate: possibly the influence of DSIP funds follows a simple linear trajectory, without diminishing returns. To test for this possibility, in Tables A1–A24 in the Appendix we include both the regression models that produced the results summarised in Figure 5, and also models in which the various DSIP variables are included in an untransformed state. Positive, statistically significant (at $p<0.1$) findings were only found in 26 per cent of the 96 models shown in the Appendix. Positive findings were never found in the models with year and region fixed effects included. Given that we should expect statistically significant findings (at $p<0.1$) purely by chance 10 per cent of the time, this is not strong evidence of a DSIP effect.

In terms of relative performance, findings (both in the body of the paper and the tables in the Appendix) tend to be positive more often for the incumbent vote share variable and the variable measuring the ratio of incumbent vote share to top rival candidate vote share. We cover plausible interpretations of this difference in the discussion section.

In a final robustness test we also ran the regression models treating the data as panel data and using district fixed effects. We did this with DSIP per voter data only as DSIP per capita data are not well suited to panel analysis given that DSIP per capita increases artificially over time owing to our unchanging population values, which come from just one census. The results of this robustness test are in Table A25 in the Appendix. As can be seen, the results provide no clear evidence of a DSIP effect on incumbent performance.[11]

4.2   Size and incumbent success prior to the DSIP

One reason why it could be the case that DSIP funding really does help incumbents, while at the same time this effect is not visible in our analysis, is that it may be harder, for some other reason, for incumbents to win re-election in smaller electorates. To test this

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[11] In further tests we examined results using years from 2007 onwards only. We also ran regressions in which incumbent vote share from the previous election was controlled for. Neither approach produced findings that were qualitatively different from those detailed in this paper.

possibility, we regressed electorate populations against our standard incumbent outcomes variables. Results can be seen in Tables 3 and 4. Table 3 uses an untransformed population variable as the key independent variable; Table 4 takes the natural log of population as the key independent variable. In both tables, regression equations are grouped under the different dependent variables of interest presented (models 1 to 3 using the incumbent wins binary, models 4 to 6 using the incumbent vote share variable, and models 7 to 9 using the incumbent to top competitor variable). Bivariate relationships are shown, relationships with controls are shown, and models including year and region fixed effects are also shown.

Neither table provides any clear evidence that incumbents did any worse on average in smaller electorates prior to the arrival of significant DSIP funding. In instances coefficients are negative but never statistically distinguishable from zero. In some models the coefficients for the population variables are actually positive (although once again not statistically distinguishable from zero).

Table 3: Pre-1997 relationship between population and key dependent variables

	Incumbent wins			Incumbent vote share (ln)			Incumbent ratio (ln)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Population 2000 (0000s)	-0.01	-0.04	-0.04	-0.01	-0.01	-0.01	0.01	0.00	0.01
	(0.06)	(0.06)	(0.06)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Average candidates		-0.04***	-0.04***		-0.04***	-0.03***		-0.01***	-0.02***
		(0.01)	(0.01)		(0.00)	(0.00)		(0.00)	(0.00)
Ministerial power		0.65	0.52		0.33***	0.31***		0.19*	0.20*
		(0.40)	(0.43)		(0.09)	(0.09)		(0.10)	(0.11)
Child mortality		0.00	0.00		0.00*	0.00		0.00	0.00
		(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)
Range of altitudes		-0.05*	-0.04		-0.01	-0.01		-0.01	-0.01
		(0.03)	(0.03)		(0.01)	(0.01)		(0.01)	(0.01)
Population density (ln)		0.17	0.35*		-0.01	0.03		0.06	0.08
		(0.12)	(0.20)		(0.05)	(0.06)		(0.05)	(0.06)
Region FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	229	229	229	229	226	226	229	226	226

Robust standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Pre-1997 relationship between log population and key variables

	Incumbent wins			Incumbent vote share (ln)			Incumbent ratio (ln)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Population 2000 (ln)	-0.09	-0.34	-0.35	0.00	-0.04	-0.05	0.07	0.02	0.02
	(0.37)	(0.36)	(0.36)	(0.17)	(0.10)	(0.10)	(0.10)	(0.10)	(0.11)
Average candidates		-0.04***	-0.04***		-0.04***	-0.03***		-0.01***	-0.02***
		(0.01)	(0.01)		(0.00)	(0.00)		(0.00)	(0.00)
Ministerial power		0.65	0.53		0.33***	0.31***		0.19*	0.20*
		(0.40)	(0.43)		(0.09)	(0.09)		(0.10)	(0.11)
Child mortality		0.00	0.00		0.00*	0.00		0.00	0.00
		(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)
Range of altitudes		-0.05*	-0.04		-0.01	-0.01		-0.01	-0.01
		(0.03)	(0.03)		(0.01)	(0.01)		(0.01)	(0.01)
Population density (ln)		0.17	0.36*		-0.01	0.03		0.07	0.08
		(0.12)	(0.21)		(0.05)	(0.06)		(0.05)	(0.06)
Region FE	No	No	Yes	No	No	Yes	No	No	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	229	229	229	229	226	226	229	226	226

Robust standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5   Discussion

Taken together our findings provide almost no evidence to support the argument that having more DSIP funding per capita or per voter increases an incumbent MP's chances of winning re-election in PNG. This is true despite the many different permutations of the key dependent and independent variables we used. Findings were least likely to be present when year and regional fixed effects are added — the most robust approach — but findings were not common in less demanding models either, including simple searches for bivariate correlations. There is little evidence, in other words, that we are simply failing to get results because we are overburdening models with too many controls.

We similarly failed to find any evidence from regressions run on years prior to DSIP volumes becoming substantial that would suggest our lack of results is in some way a result of smaller electorates being inherently harder to win.

When we look at other measures of incumbent electoral advantage, such as incumbent vote shares, we find slightly more evidence of an electoral advantage being conferred by DSIP funding. A very optimistic reading of this evidence might be that DSIP funds do help MPs in their electoral contests but that the benefits are so small as to rarely be decisive in the outcome that matters the most: victory.

Even this interpretation of the results — that DSIP funds do not help incumbents win, but they do at least boost their vote shares, or how well they poll against their toughest competitor — relies on a favourable reading of the findings we have presented, a reading which focuses on results from models with fewer controls and without fixed effects.

All told our findings provide little grounds for believing that having more DSIP funding aids MPs in their quest to be re-elected.

This is itself a puzzle. Given the clientelist nature of PNG's democracy and evidence of vote buying in at least parts of the country (Haley & Zubrinich 2018; Wood 2016), it would seem that MPs having more money ought to enhance their re-election prospects.

As is almost always the case in empirical work it may be that some analytical issue is masking relationships that would exist if we could overcome the empirical challenge. One possibility suggested by a reviewer is that people may be moving to less populous districts to take advantage of higher DSIP per capita volumes, or that people may be moving to districts where MPs are better at delivering DSIP-funded services for other reasons. Qualitatively we have heard no evidence to suggest that this is the case. Nevertheless, the problem warrants further investigation in future work, and we are currently in the process of collecting data that will hopefully allow us to rule out the possibility.[12]

Analytical issues aside, one possible explanation as to why no electoral advantage appears to exist is that, even as large as DSIP funds are, when compared to the number of voters in electorates, DSIP funds might simply not be enough to help MPs' re-election prospects. This seems plausible in the largest electorates, but not in smaller ones. In the year before the 2017 election, the MP in the smallest electorate had about US$175 to spend per voter. The MP in the 75th percentile electorate in terms of voter numbers had over US$120 to spend per voter. In a low-income country like PNG, these are substantial amounts of money.

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[12] We are grateful to a reviewer for raising this possibility.

Another possible explanation stems from the nature of electoral winning coalitions in PNG. Perhaps, in the ethnically fragmented and strongly clientelist electoral environment found in many electorates in PNG, it is very difficult to reliably pull together voter support bases beyond a certain size, and — plausibly — the upper bound for support base size is, in terms of absolute voter numbers, the same, regardless of electorate populations. DSIP funds might possibly help hold together incumbents' support bases without support base sizes changing in absolute terms between larger and smaller electorates. If this was the case, there might be no relationship between per capita DSIP volumes and incumbent turnover rates (or winner vote shares), simply because the DSIP effect is the same in every electorate, regardless of its size. This seems plausible in theory, but we found little empirical support for this explanation from further investigations into the matter.

Were there absolute bounds on winning coalition sizes, and if these were the same regardless of electorate size, we would expect to see two patterns in election results: first, we would expect winner vote shares to be smaller in larger electorates. We would also expect the absolute numbers of votes won by winners to be the same across all electorates (or at least free of any pattern associated with size). When, in additional work, we tested for these patterns we found that winner vote shares did tend to be lower in larger electorates, although the extent to which this was true depended on measures used and whether regional fixed effects were used. However, we also found winners clearly win more votes (in an absolute sense) in larger electorates. There is little evidence, in other words, to support the thesis that there is an absolute upper bound to winning coalition sizes, which stays the same regardless of electorate size.

Another possible explanation — one offered by Gutiérrez-Romero (2013) in her work on Kenya — is that ethnic loyalties (which would likely be clans in most rural PNG electorates) trump material concerns when voters decide who to vote for. This might be true in parts of PNG, particularly the Highlands, yet in many other parts of the country there are numerous examples of voters being willing to vote for candidates who are not co-ethnics (May 2006; Standish 2007).

In a similar vein, the unenforceable nature of clientelist electoral 'contracts', which mean that — in some electorates at least — it is easy for voters to abandon MPs in search of

candidates they perceive to be stronger, even when MPs have supported the voters with DSIP funds, may possibly bring such political instability to electoral governance that steady relationships between funding levels and incumbent re-election do not exist. (See Duncan and Hassall (2011) for further discussion of this dynamic in the Pacific.)[13]

A further plausible reason why we failed to find results is because not all MPs are receiving DSIP funds in equal amounts. In particular, prime ministers have been accused of withholding DSIP disbursals from MPs in the opposition (Post-Courier 2018). Possibly this could mean DSIP funds are only useful to a subset of MPs: those in government. We think this is unlikely to be the explanation for our absence of findings. Only one administration, the O'Neill government, seems to have made a regular practice of withholding funds; it has not been a major issue over most of the period of our study. What is more, reflecting parliamentary rules, a large majority of MPs were in government during the O'Neill years; only a few suffered loss of funding. Ideally, we would test for the effects of withheld funds by running regressions using only MPs who were in government during any particular term. Unfortunately, no complete record has been kept of MPs' parliamentary political allegiances. However, we do know which MPs were ministers in each political term. Only a subset of government MPs are ministers, but it is a non-trivial subset, and when we re-ran our analysis limiting it only to MPs who had held ministerial roles during each political term, we ended up with results that were very similar to the main results presented above.

Another possibility is that the formal rules governing DSIP funds prevent them from effectively being used as tools of patronage and political advantage. This would seem unlikely for the simple reason that, as we detailed in the section on the history of the DSIP, the rules are not well followed. Perhaps though, there are enough processes that, combined with the challenges of delivering goods and services in rural PNG, MPs end up disappointing supporters as often as they manage to deliver to them. This problem may be enhanced by year-on-year volatility in DSIP funds. Planning to deliver effectively to voters under these circumstances must surely be difficult.

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[13] We are grateful to a reviewer for raising this point.

Voter expectations and disappointment would seem to offer a good explanation more generally for why DSIP funds do not seem to confer an obvious electoral advantage. In a state like PNG where central service provision is very weak, and where voters in rural areas are usually poor, there is no shortage of items that could be funded. Voters also know about the existence of DSIP money, and are usually aware of what it could do. In circumstances such as these, and where MPs may not be particularly effective at delivering on promises, either because of DSIP processes, or the inherent challenges of working in rural PNG, or because MPs themselves are not guaranteed to be good project managers, it may be that voters are often unimpressed with how the current MP is spending DSIP money. Because all candidates will have access to the DSIP if they are elected, voters who are inevitably somewhat disgruntled with the incumbent may well consider other competitors as better alternatives, even when the sitting MP has delivered something. Voters' material considerations in these circumstances could just as easily work against MPs as for them. We view this as a likely explanation for our failure to find a DSIP effect. However, it is not the only possibility, and there is scope for future case study research investigating individual electorates, DSIP spending and MPs' fates.

There is one final puzzle associated with our inability to find an electoral advantage associated with more DSIP funding: MPs in PNG appear very keen on the funds (Elapa 2018). This is hard to square with such limited evidence of electoral advantage. One possible explanation is that MPs simply like the funds because they view them as a better means of delivering to the people of PNG than the traditional mechanisms of government. This seems plausible given poor governance in PNG: most government departments do not function well. On the other hand, most MPs display little interest in getting government departments to function better, which you would think they might do if they were genuinely concerned with efficient governance. Another possibility is that, even if MPs gain little by way of electoral advantage from DSIP funds, the funds do still make their lives easier by helping to meet immediate community demands and saving MPs the challenge of having to meet these demands through other means. These explanations seem plausible. Once again future research, particularly involving interviews with MPs and former MPs about DSIP funds, could add more to understanding in this area.

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Appendix

All of the regressions in the following table were run with data from 1997 onwards. All were run with robust standard errors clustered at the electorate level.

Table A1: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita term	0.08	0.25	0.25	0.15
	(0.10)	(0.42)	(0.42)	(0.84)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	379	379	379	379

Table A2: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita term (ln)	-0.00	-0.04	-0.05	-0.11
	(0.03)	(0.13)	(0.13)	(0.33)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	379	379	379	379

Table A3: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita year	0.36	1.63	1.61	4.12
	(0.65)	(2.65)	(2.71)	(4.49)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	379	379	379	379

Table A4: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita year (ln)	-0.02	-0.09	-0.10	-0.11
	(0.05)	(0.20)	(0.20)	(0.33)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	379	379	379	379

Table A5: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter term	0.06	0.01	0.02	0.31
	(0.05)	(0.18)	(0.19)	(0.25)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	350	350	350	350

Table A6: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter term (ln)	0.03	-0.10	-0.14	0.26
	(0.03)	(0.15)	(0.16)	(0.32)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	350	350	350	350

Table A7: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter year	0.36	0.39	0.56	0.93
	(0.26)	(0.79)	(0.81)	(0.91)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	350	350	350	350

Table A8: Logistic regression with incumbent wins as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter year (ln)	0.09*	0.09	0.08	0.26
	(0.05)	(0.19)	(0.24)	(0.32)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	350	350	350	350

Table A9: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita term	0.38**	0.33**	0.33**	-0.31
	(0.19)	(0.15)	(0.15)	(0.30)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	374	368	368	368

Table A10: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita term (ln)	0.10*	0.08*	0.08*	-0.16
	(0.05)	(0.04)	(0.04)	(0.10)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	374	368	368	368

Table A11: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita year	1.32	1.35*	1.35*	-1.26
	(1.08)	(0.75)	(0.75)	(1.42)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	374	368	368	368

Table A12: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita year (ln)	0.07	0.07	0.07	-0.16
	(0.08)	(0.05)	(0.05)	(0.10)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	374	368	368	368

Table A13: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter term	0.26***	0.09*	0.08	0.00
	(0.08)	(0.05)	(0.05)	(0.06)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	346	341	341	341

Table A14: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter term (ln)	0.15***	0.02	0.01	-0.08
	(0.05)	(0.04)	(0.04)	(0.08)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	346	341	341	341

Table A15: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter year	0.97**	0.18	0.07	0.03
	(0.47)	(0.20)	(0.19)	(0.20)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	346	341	341	341

Table A16: OLS regression with incumbent vote share (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter year (ln)	0.20**	-0.01	-0.05	-0.08
	(0.08)	(0.05)	(0.06)	(0.08)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	346	341	341	341

Table A17: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita term	0.44***	0.39***	0.39***	-0.52*
	(0.16)	(0.15)	(0.15)	(0.31)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	363	359	359	359

Table A18: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita term (ln)	0.12***	0.11**	0.10**	-0.23**
	(0.04)	(0.04)	(0.04)	(0.10)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	363	359	359	359

Table A19: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita year	1.52*	1.37*	1.36*	-2.08
	(0.83)	(0.76)	(0.76)	(1.51)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	363	359	359	359

Table A20: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP capita year (ln)	0.08	0.06	0.06	-0.23**
	(0.06)	(0.05)	(0.05)	(0.10)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	363	359	359	359

Table A21: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter term	0.14*	0.09	0.09	-0.06
	(0.07)	(0.07)	(0.07)	(0.07)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	336	333	333	333

Table A22: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter term (ln)	0.08*	0.05	0.03	-0.13
	(0.05)	(0.05)	(0.05)	(0.08)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	336	333	333	333

Table A23: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter year	0.24	0.03	-0.03	-0.18
	(0.28)	(0.24)	(0.23)	(0.26)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	336	333	333	333

Table A24: OLS regression with incumbent/top competitor ratio (ln) as the dependent variable

	(1)	(2)	(3)	(4)
DSIP voter year (ln)	0.05	-0.01	-0.05	-0.13
	(0.06)	(0.06)	(0.06)	(0.08)
Controls	No	Yes	Yes	Yes
Region FE	No	No	Yes	Yes
Year FE	No	No	No	Yes
Observations	336	333	333	333

Table A25: Regression models with district fixed effects

	Incumbent wins		Incumbent vote share		Incumbent ratio	
	(1)	(2)	(3)	(4)	(5)	(6)
DSIP voter term (ln)	0.01		0.02		-0.11	
	(0.71)		(0.17)		(0.22)	
DSIP voter year (ln)		0.01		0.02		-0.11
		(0.71)		(0.17)		(0.22)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	309	309	341	341	333	333

Robust standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$