



DRG LEARNING, EVALUATION, AND RESEARCH ACTIVITY

TASKING N048

EFFECTS OF U.S. FOREIGN ASSISTANCE ON DEMOCRACY BUILDING

REPORT ON PHASE III ACTIVITIES

AUGUST 2018

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Report on Phase III Activities (August 2018)

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1. EXECUTIVE SUMMARY

This document reports results of the study “Effects of U.S. Foreign Assistance on Democracy Building,” commissioned by USAID’s Center of Excellence on Democracy, Human Rights and Governance (DRG), and carried out by our research team at the University of Pittsburgh.¹ The primary goal of the study was to update our earlier assessment of the effect of DRG expenditures on democratic outcomes between 1990 and 2003, using newly available data provided by USAID for the 2001-2014 period.² The analyses provide estimates of the effect of USAID’s DRG expenditures on overall indices of democracy, estimates of the effects of a expenditures in four DRG sub-sector program areas, and estimates of the conditions that moderate the impact of DRG funding on recipient countries.

The study covered 145 countries. Data on DRG expenditures were obtained from USAID’s Foreign Aid Explorer (FAE) for 2001-2014. For comparisons with an earlier period (1992-2001), the team relied on the “Green-Richter” database, utilized in the original Pittsburgh-Vanderbilt impact assessment. The overall indices of democracy used were the Electoral Democracy Index and the Liberal Democracy Index provided by the Varieties of Democracy (V-Dem) database. Analyses of DRG program areas (rule of law and human rights, good governance, political competition and consensus building, and civil society and media) used customized indices based on V-Dem indicators. Data about moderators were obtained from a number of commonly used sources.

1.1. KEY FINDINGS

- *The effect of USAID’s DRG expenditures is positive but weak in the contemporary period (2001-2014).* For every ten million dollars in democracy assistance from USAID, a recipient’s Electoral Democracy Index score increases by about a third of a point on V-Dem’s scale ranging from 0 to 100. This effect size, while modest, is 2.5 times greater than the estimated average annual change in the index among all countries in the sample.
- USAID DRG Assistance has a significant impact on democratic outcomes, even after possible endogeneity in the relationship is taken into account (i.e. the possibility

¹ Steven E. Finkel (Daniel Wallace Professor of Political Science), Aníbal Pérez-Liñán (Professor of Political Science), Chris Belasco (Associate Director, Initiative for Effective Governance), and Michael Neureiter (Visiting Assistant Professor, Department of Political Science).

² See S.E. Finkel, A. Perez-Linan, and M.A. Seligson, Effects of U.S. Foreign Assistance on Democracy Building: Results of a Cross-National Quantitative Study. Final Report, December 14, 2005; S.E. Finkel, A. Perez-Linan, M.A. Seligson, and C.N. Tate, Deepening our Understanding of the Effects of U.S. Foreign Assistance on Democracy Building, 1990-2004. Final Report, January 31, 2008 (http://www.pitt.edu/~politics/democracy/downloads/USAID_Democracy_Assistance_and_its_Impact_on_Democratization_v34.pdf); and Finkel, S., A. Pérez-Liñán, and M. Seligson. 2007. “The Effects of U.S. Foreign Assistance on Democracy Building, 1990-2003.” *World Politics* 59 (3): 404-39.

that either democracy or trends in democratization lead to higher or lower levels of DRG Assistance, rather than DRG Assistance causing democratic outcomes over time). On balance, USAID DRG outlays are systematically unrelated to expected levels or trends in democratic outcomes.

- *The effect of DRG assistance declined in this century.* In analyses with the longer series (1992-2014), the study finds a structural break in effects circa 2001, controlling for overall trends in democratization over these two periods.³ Ten million dollars in USAID democracy assistance produced an increase of about 7 points in the 100-point Electoral Democracy Index scale during 1992-2000 (in contrast to 0.3 points in the contemporary era). However, because FAE data is not available for the earlier period, part of this may result from differences between the FAE and Green Richter data sets.
- Looking at the four DRG program areas, the study finds *positive* effects on program-specific democratic outcomes in the 2001-2014 period for Good Governance (program area 2.2). Interestingly, Good Governance funding also has positive effects on outcomes associated with Political Competition and Consensus Building (2.3) and Civil Society and Media (2.4). The study finds inconsistent *negative* effects for Political Competition and Consensus Building investment on certain program-specific democratic outcomes in the same period.
- *The results suggest diminishing marginal effects for larger levels of DRG assistance.* Ten million dollars in a country with no prior DRG investment is associated with about half a point increase in the 100-point Electoral Democracy Index scale. In a country with an average annual investment of 100 million over the past five years, it drops to about one-third of a point, and a country with an average investment of 200 million over five years, a quarter of a point.
- *Patterns of investment.* The study finds that DRG investment has a greater effect when:
 - *Levels of prior investment are lower (diminishing returns): the effect of aid approaches zero once yearly outlays reach between 200 and 300 million per year*
 - *Investments are stable: volatility in DRG investment is associated with weaker and more uncertain effects*
 - *Investments are concentrated in one or two DRG program areas: an additional million dollars produces greater impact when it is allocated to a single area than when it is spread across multiple program areas*

³ In this section our random effects models controlled for the negative change in the overall post-2001 global trend in democratization, and our fixed effects models controlled as well for differential post-2001 democratization trends for each country.

- *Context matters.* The results also suggest that DRG aid has a greater effect on a country's democracy:
 - *When levels of US security sector assistance are low*
 - *When the recipient country is neither very democratic nor very autocratic*
 - *When the recipient country is not otherwise “backsliding” – exhibiting a substantial decline in the V-Dem Electoral Democracy Index in a year, or over consecutive years*
 - *When the recipient country is ethnically homogenous – lower than .5 on an index of ethnic fractionalization*
 - *Among former French colonies, of which there were 16.5% in the dataset, relative to other former colonial rulers.*

1.2. TECHNICAL ASPECTS

The statistical models that produced the findings above included control variables that may correlate with democratic outcomes and DRG assistance: economic development, conflict and violence, other aid from the US and other foreign donors, diffusion, natural resource wealth, and stable country characteristics such as ethnic fractionalization and the extent of prior democracy in the country. The effects of DRG assistance were tested with three statistical models, including one that controlled for possible bias due to omitted variables or reverse causality – that is, the possibility that democratic levels or trends drive DRG expenditures. The findings were confirmed by all three models.

2. SUMMARY OF DATA AND BRIEF DESCRIPTION OF DATA SERIES UTILIZED

2.1. INDEPENDENT VARIABLES

We base our measures of DRG (Democracy, Human Rights, and Governance) investment primarily on data obtained from the Foreign Aid Explorer (FAE). Models covering the 2001-2014 period rely on FAE exclusively. Historical models covering the 1992-2014 period, described in sections 2.1.2 and 4.3 below, also incorporate some data from the “Green-Richter” database, utilized in the original Pittsburgh-Vanderbilt impact assessment and updated for 1990-2007.⁴ In both cases, measures of DRG investment reflect a two-year running average, lagged by one year. For example, the value of DRG investment in 2010 reflects the average of 2008 and 2009. Our models control for US foreign aid other than DRG using the same sources (FAE and some earlier information from Green-Richter). After consultation with the USAID team, we decided to employ OECD Development Assistance Committee (DAC) data, archived at the AidData site, only for control variables unrelated to US assistance (DRG and non-DRG by other donors). For comparability, all measures of aid are scaled in millions of constant 2011 dollars.

2.1.1. Foreign Aid Explorer

The FAE dataset contains obligations and disbursements categorized by funding agency and program area (Rule of Law and Human Rights, Good Governance, Political Competition and Consensus-Building, and Civil Society and Media), according to official record for Congressional reporting, for the years 2001-2016.⁵ This source reports a considerable amount of information on funds deobligated from awards; about 9 percent of the observations in the dataset contain negative values. Deobligations reflect the cancellation or downward adjustment of previously recorded obligations (USAID Automated Directives System, Chapters 200-203, 621, 635). They may occur upon the

⁴ See S.E. Finkel, A. Perez-Linan, and M.A. Seligson, Effects of U.S. Foreign Assistance on Democracy Building: Results of a Cross-National Quantitative Study. Final Report, December 14, 2005; S.E. Finkel, A. Perez-Linan, M.A. Seligson, and C.N. Tate, Deepening our Understanding of the Effects of U.S. Foreign Assistance on Democracy Building, 1990-2004. Final Report, January 31, 2008 (http://www.pitt.edu/~politics/democracy/downloads/USAID_Democracy_Assistance_and_its_Impact_on_Democratization_v34.pdf); and Finkel, S., A. Pérez-Liñán, and M. Seligson. 2007. “The Effects of U.S. Foreign Assistance on Democracy Building, 1990-2003.” *World Politics* 59 (3): 404-39.

⁵ Following the Phase I report and correspondence with Mike Bradow on October 10, 2017, the team adjusted the FAE DRG series by removing the following activities: (1) *Transfers that were not conditioned on democratic performance*, which included: the Afghanistan Reconstruction Trust Fund (ARTF) (from Funding Channel) Funding Channel), Cash Transfer (named activities from Activity Name); (2) *Transfers where DRG programming did not appear to have been a principal objective of the program* which included: International Disaster Assistance activities (from Funding Account), activities named Partnership in Economic Reform (form Activity Name), and the Pakistan Dairy Project (named activities from Activity Name). Removal of these activities was justified in correspondence with Mike Bradow on December 14, 2017. The analysis here includes activities funded by Millennium Challenge Corporation (MCC).

completion or termination of an award, to account for residual funds, or as a mid-award adjustment because the obligated balance is greater than any disbursements planned for the next 18 to 24 months.

After some rounds of consultation with the USAID team, we settled on two rules to process negative values in the FAE dataset:

Rule 1: Deobligations are subtracted from values obligated to the same country and activity code in the nearest past, until they are completely accounted for. For example, if a four-year series is {\$10, \$5, -5, -5}, the transformed series is {\$5, \$0, \$0, \$0}.

Rule 2: When series are interrupted, with no obligations or deobligations for several years, we “bridge” any gap shorter than seven years. Longer gaps almost certainly indicate that the program was terminated and re-started years later. For instance, activity code 22450 in Libya ended in 1970 and re-started in 2010. Under this rule, a hypothetical activity running between 2000 and 2007 that looks like {\$10, (missing), (missing), (missing), (missing), (missing), (missing), -5} would be reconciled as {\$5, \$0, \$0, \$0, \$0, \$0, \$0, \$0}. However, a similar series running through 2008: {\$10, (missing), (missing), (missing), (missing), (missing), (missing), (missing), -5}, would be reconciled as {\$10, (missing), (missing), (missing), (missing), (missing), (missing), \$0}.

Based on those rules, we employed the revised series to construct two-year running averages of DRG and non-DRG spending in particular countries.

2.1.2. Extended Series for 1990-2016

FAE does not provide systematic DRG data before 2001. To offer a more extensive analysis of DRG effects between 1992 and 2014 (see Section 4.3) we created a longer series for the period 1990-2006, using values from the Green-Richter dataset. The combined series follow two rules:

Rule 1: For country-years when only Green-Richter (1990-2000) or FAE (2008-2016) data are available, the combined series report the available values from any source (in millions of 2011 dollars).

Rule 2: For the period when both series are available (2001-2007), we compute a weighted average, using the geometric mean of the two items to reduce the influence of extreme values. The formula employed is $\sqrt{(1 + GR)(1 + FAE)} - 1$, where GR is the Green-Richter value and FAE is the Foreign Aid Explorer value for any given country-year.

We estimated two-year averages of the extended series and included the lagged value in all models presented in Section 4.3.

2.1.3. Program Areas

For specific program areas, we also: (1) aggregated FAE data into series for recipient countries by year; (2) converted all series to millions of US dollars; (3) rescaled figures to constant 2011 dollars (the metric employed by AidData, using DAC deflators); and (4) created a two-year running average for each category (lagged by one year in all models). The dataset thus presents four additional series:

- AID210: Rule of Law and Human Rights
- AID220: Good Governance
- AID230: Political Competition and Consensus-Building
- AID240: Civil Society and Independent Media

2.2. DEPENDENT VARIABLES (DEMOCRACY MEASURES)

2.2.1. General Measures of Democracy

We employ two general measures of democracy ranging between 0 and 100 (where 100 is most democratic). First, we use the Electoral Democracy Index provided by the Varieties of Democracy (V-Dem) database, which became publicly available in 2016 and has since been used by an increasing number of studies on the subject (e.g. Donno and Neureiter 2017). The Electoral Democracy Index is a composite measure that combines several lower-level indices, each capturing components of democracy such as clean elections, freedom of association, freedom of expression, and extensive suffrage. Second, we use the Liberal Democracy Index. This composite measure includes all components of the Electoral Democracy Index, plus a number of additional items capturing individual liberties as well as judicial and legislative constraints on the executive. Therefore, liberal democracy is a more “demanding” concept than electoral democracy, meaning that the threshold to meet its requirements is higher.

2.2.2. Program Area Outcomes (Composite Indices)

In addition to these general measures of democracy, we employ four composite indices designed to measure program-area outcomes, i.e. dimensions of democracy that have been specifically targeted by the USAID programs. The DRG Learning Division identified potential measures of program area outcomes using the Varieties of Democracy (V-Dem) database. Based on this information, we combined 65 V-Dem indicators in three steps:

1. Using factor analysis, we extracted a common factor for all V-Dem indicators identified with particular program elements. We present a detailed list of program elements and their respective V-Dem indicators in Appendix 6.1.

2. We further aggregated the composite measures for program elements, using factor analysis to create indices at the program-area level.
3. We rescaled the resulting program-area factors to range between 0 and 100, with higher values representing higher levels of democracy.⁶

The four composite indices based on V-Dem data are listed below, with the number of program element indicators listed in parentheses.

1. **Rule of law and Human Rights (five program elements measured):**
Constitutions, laws and legal systems (1 indicator), Culture of lawfulness (0 indicators available in V-Dem), Checks and balances with judicial independence and supremacy of law (8 indicators), Justice systems and institutions (0 indicators), Fairness and access to justice (2 indicators); Human rights systems, policies, and protection (8 indicators), Transitional justice (0 indicators), Equal rights for marginalized groups (5 indicators).
2. **Good Governance (four program elements measured):** Legislative authority (4 indicators), Non-security executive authority (2 indicators), Local government and decentralization (4 indicators), Anti-corruption reforms (6 indicators), Executive authority – civilian security (0 indicators).
3. **Political Competition and Consensus (three program elements measured):** Consensus-building processes (3 indicators), Elections and political processes (1 aggregate indicator), Political parties (7 indicators).
4. **Civil Society and Independent Media (four program elements measured):** Enabling environment for civil society (2 indicators), Civil society organizational capacity development (1 indicator), Civic education, citizen participation and public accountability (1 indicator), Civic education and democratic culture (0 indicators), Democratic labor and trade unions (0 indicators), Enabling environment for media and free flow of information (7 indicators), Professional and institutional capacities of media (0 indicators), Outlets and infrastructure (0 indicators).

2.3. CONTROL VARIABLES

The last set of variables comprises controls for social, economic, and political conditions in the country. Based on a review of the recent literature, we identified six broad classes of such conditions that need to be accounted for in our analyses: economic development; conflict and violence; other aid; diffusion; natural resource wealth; and stable country characteristics. Below, we provide details on the individual items used to operationalize and measure these factors.

⁶ Using the logistic function: $100 * (\exp(y) / (1 + \exp(y)))$, where y is the program-area factor.

1. Economic Development

- a. *GDP per capita* (PPP) in constant 2011 international dollars (Altunbas and Thornton 2014; Bermeo 2011; 2016; Cornell 2013). Source: World Bank.
- b. *GDP growth* in annual percent (Altunbas and Thornton 2014; Bermeo 2011; 2016; Cornell 2013). Source: World Bank.

2. Conflict and Violence

- a. *Intrastate war*, which is defined as an armed conflict between the government of a state and one or more internal opposition group(s) that results in at least 25 battle-related deaths in a calendar year (Donno and Neureiter 2017; Scott and Steele 2011; Wright 2009). Source: UCDP/PRIO Armed Conflict Dataset (Version 4-2016).
- b. *Interstate war*, which is defined as an armed conflict between two or more states that results in at least 25 battle-related deaths in a calendar year (Savage 2017; Scott and Steele 2011; Wright 2009). Source: UCDP/PRIO Armed Conflict Dataset (Version 4-2016).

3. Other aid

- a. *Non-DRG aid by the United States* in millions of constant 2011 US dollars (Cornell 2013; Scott and Steele 2011). Calculated as two-year moving average. Source: Foreign Aid Explorer (Green-Richter prior to 2001).
- b. *Non-DRG aid by other bilateral donors* in millions of constant 2011 US dollars (Cornell 2013; Scott and Steele 2011). Calculated as two-year moving average. Source: AidData.
- c. *DRG aid by other bilateral donors* in millions of constant 2011 US dollars (Cornell 2013; Scott and Steele 2011). Calculated as two-year moving average. Source: AidData.

4. Diffusion

- a. *Neighborhood effect*, which is defined as the annual mean of the V-Dem Electoral Democracy Index in a country's region (Scott and Steele 2011; Wright 2009). Source: Varieties of Democracy (V-Dem) data v7.1.
- b. *Trade openness*, which is defined as a country's overall trade in percent of its GDP (Altunbas and Thornton 2014; Cornell 2013). Source: World Bank.

5. Natural Resource Wealth

- a. *Oil and gas production* in thousands of metric tons (Altincekic and Bearce 2014; Altunbas and Thornton 2014; Bermeo 2016). Source: Ross and Mahdavi (2015).

6. Stable Country Characteristics

- a. *Ethnic fractionalization*, is measured as the average of the Annett (2001) and the Fearon (2003) indices of fractionalization, both ranging between 0 (ethnic homogeneity) and 1 (extreme fractionalization).
- b. *Prior democracy*. In the main models presented below, covering the period 2001-2014, past experience with democracy was measured as the average level of democracy experienced between 1970 and 2000. In the long-term models for 1992-2014, past experience was measured as the average level of democracy between 1970 and 1991. Source: *Varieties of Democracy* (Electoral Democracy Index).

The models presented in section 4.6 also incorporate additional variables hypothesized to moderate the effect of DRG on democracy: levels, volatility, and fractionalization of DRG investment; US administration, US military and security assistance, regime type, state fragility, youth bulge, colonial legacies, and region. We offer a discussion of these variables and alternative operationalization strategies in the respective section.

3. STATISTICAL MODELS AND ESTIMATION PROCEDURES

3.1. MIXED-EFFECTS RANDOM GROWTH MODEL – MERG

We estimate the impact of USAID DRG assistance on democratic outcomes using two distinct statistical models. The first, a hierarchical or **mixed-effects random growth model** (henceforth MERG), replicates the method estimated in Finkel *et al* (2007), which models USAID assistance as potentially having an impact on democratic outcomes over and above both global and country-specific trends in democratization, and over and above the effects of other economic and political time-varying influences on democracy as well. The model, shown in equation (1), specifies the level of democracy in any given country-year, y_{it} , as a function of a country-specific intercept π_{0i} , a country-specific democratization trend π_{1i} , the impact π_2 of USAID DRG assistance (DRG_{it}), and the impact π_k of k additional covariates and a time-specific residual error term ϵ_{it} . In turn, ϵ_{it} is an autocorrelated residual such that $\epsilon_{it} = \rho\epsilon_{it-1} + \omega_{it}$.

$$y_{it} = \pi_{0i} + \pi_{1i}t + \pi_2 DRG_{it} + \pi_k v_{kit} + \epsilon_{it} \quad (1)$$

where t is a time counter, DRG is the level of investment, and v represents the control variables. Since equation (1) can be estimated as a hierarchical model, in which the country-specific intercept and trend are a function of unobserved country characteristics,

$$\pi_{0i} = B_{00} + B_{0m}X_{mi} + r_{0i} \quad (2.0)$$

$$\pi_{1i} = B_{10} + B_{1m}X_{mi} + r_{1i} \quad (2.1)$$

where B_{00} is the population intercept or starting point for the growth trajectory; B_{0m} is the average effect of country characteristic X_m on country intercepts; B_{10} is the average population slope for the democratization trend; B_{1m} is the average effect of X_m on time trajectory slopes; and r_{0i} and r_{1i} are country-level residuals with a normal distribution.

Following the discussion in Section 2 above, the set of time-varying (v_k) covariates are:

- GDP per capita
- GDP growth
- Intrastate war
- Interstate war
- Non-DRG aid (US)
- Non-DRG aid (other donors)

- DRG aid (other donors)
- Neighborhood (average level of democracy in region)
- Trade openness
- Resource wealth (oil and gas production)

Based on the results of our earlier studies, we identified two variables as time-invariant factors (X_m) potentially influencing the country's time trajectory intercept and slope:

- Ethnic fractionalization
- Prior democracy

We treat this specification as the “baseline” model for the study, given that it replicates earlier treatments of the impact of USAID assistance.

3.2. FIXED-EFFECTS GROWTH MODEL – FEIS

We estimate an alternative specification of the hierarchical model of equations (1) and (2) above by treating the r_{0i} and r_{1i} terms in (2) as “fixed” at the country level, rather than as random variables with normally distributed variance. This version of the model may be termed a **fixed effects growth model** in contrast to the “random” or mixed effects model of (1) and (2). In the fixed effects model, each country's democratic time trajectory growth parameters are the values that would be obtained through a country-specific regression of democracy against time, rather than from a pooled cross-country analysis that treats the country intercepts and slopes as resulting from random draws from normally distributed populations. The advantage of the fixed effects model – argued most forcefully in Brüderl and Ludwig (2015) – is that it does not require the assumption that DRG assistance and the K time-varying covariates in (1) are unrelated to equation (2)'s growth trajectory error terms r_{0i} and r_{1i} . The relaxation of this assumption allows for stronger causal claims than the random effects specification, in that DRG Assistance may in this model have arbitrary correlation with any time-invariant, country-specific unobserved factor that may influence the average level of a democratic outcome or the time trend in the outcome for that country; taking this correlation into account protects against the potentially confounding effects those country-level “unobservables” may have on the DRG-democracy relationship. In this way the “fixed effects growth model” serves as an initial control for potential endogeneity in the form of omitted variables that may influence both DRG assistance and the country-specific trends in democratization.

The disadvantage of this model, however, is that it is no longer possible to estimate the impact of time-invariant country factors; those variables are perfectly correlated with the fixed country-specific growth parameters and hence drop out of the estimation process.

4. RESULTS

4.1. BASELINE MODEL

Table 1 shows the results for our analysis of both general measures of democracy, using the FAE series available for 2001-2014. In all four models, DRG aid from the US has a positive and significant effect on democratic development. The size of the effect is somewhat larger in the models for electoral democracy than it is in the models for liberal democracy, which is consistent with our earlier point that the latter represents a more demanding standard. Overall, the size of the effect is rather small: based on Model 2, for every additional ten million dollars in democracy assistance from the US, a recipient's democracy score increases by a third of a point on a scale ranging from 0 to 100.

Table 1. Analyses of General Democracy Measures, 2001-14

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.02** (0.01)	0.03*** (0.01)	0.01* (0.01)	0.02* (0.01)
GDP per capita	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
GDP growth (annual %)	-0.06*** (0.02)	-0.04* (0.02)	-0.00 (0.01)	0.01 (0.02)
Intrastate conflict	-0.51 (0.45)	-0.70 (0.71)	-0.29 (0.31)	-0.37 (0.43)
Interstate conflict	1.67 (1.23)	1.83 (1.46)	1.38 (0.84)	1.52* (0.89)
Non-DRG aid (US)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Non-DRG aid (Others)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
DRG aid (Other donors)	0.00** (0.00)	0.00*** (0.00)	0.00** (0.00)	0.00** (0.00)
Neighborhood	12.57 (8.43)	7.24 (13.19)	1.06 (6.72)	-0.56 (9.14)
Trade openness	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)
Resource wealth	-0.00 (0.00)	-0.00* (0.00)	-0.00* (0.00)	-0.00* (0.00)
Ethnic fractionalization	6.05 (6.09)		1.85 (6.01)	
Prior democracy	0.95*** (0.09)		0.87*** (0.08)	

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
Trend	0.88*** (0.27)		0.61** (0.24)	
Trend*Fractionalization	-0.05 (0.36)		0.03 (0.31)	
Trend*Prior Democracy	-0.02*** (0.00)		-0.01*** (0.00)	
N	1685	1733	1685	1733
Log-L	-4972.8	-4678.9	-4971.6	-4676.6

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

4.2. ADDRESSING ENDOGENEITY

We estimated a variety of additional models that address the possibility of *endogeneity* in the DRG Assistance – democratization relationship. While the fixed effects growth model controls for an important kind of endogeneity, i.e., country-level omitted variables that are correlated with both DRG Assistance and country-specific growth trajectories, other forms of endogeneity may also pose problems in the estimation of the causal impact of DRG Assistance. Endogeneity would exist, for example, if donors specifically targeted countries with differing past or expected democratic trajectories, (Altunbaş and Thornton 2014; Dietrich and Wright 2015), or if countries self-selected into the pool of recipients at a given time (Borzyskowski 2016). More informally, these forms of endogeneity would reflect either democracy or trends in democratization leading to higher or lower levels of DRG Assistance, as opposed to the causal sequence where DRG Assistance causes democratic outcomes over time.

If this kind of “reverse causality” is present, then neither the mixed nor fixed effects growth models would provide unbiased estimates of the impact of DRG Assistance. If USAID were to be making funding decisions based on *positive* democratic trajectories, then the estimates in the mixed or fixed effects models would be overestimated; conversely, if USAID were systematically targeting “tough cases”, i.e., countries that are on a *less positive* democratic trajectory (e.g., Afghanistan, Iraq, Haiti, Egypt), then the estimates in the mixed or fixed effects models would underestimate the impact of DRG Assistance on democratic outcomes.

A variety of statistical procedures exist for estimating effects when regressors (independent variables) may be endogenous to the outcomes of interest. Among the available procedures, we employ what is known as **the two-state residual inclusion (2SRI)** estimator (Cai, Small, and Ten Have 2011; Hausman 1978; Petrin and Train 2010), which has been shown to outperform standard instrumental variable strategies

under a wide range of conditions (Terza, Basu, and Rathouz 2008). Moreover, conventional treatments, such as two-stage least squares (2SLS) and Arellano-Bond (GMM) models are difficult to implement when aid is expected to interact with other variables in order to assess “conditional effects” or statistical moderation, as is the case for the models we present later in this report.

The 2SRI procedure involves a first stage in which DRG Assistance, the endogenous predictor, is estimated as a function of all exogenous variables in the model plus a set of “instruments”, or exogenous variables that are assumed to be related to DRG Assistance but *not* directly to the democratic outcomes. In the second stage, the set of original independent variables (including DRG Assistance and all other variables in equations (1) and (2) above) is augmented with the *residual* of the first-stage equation, which is included as a control function (Wooldridge 2010, sec. 6.2). In this way the model includes an estimate of all the unobserved factors that may influence DRG Assistance at a given point in time (including prior levels of democracy which, if relevant, would make up one component of the first stage error term), and provides estimates of DRG Assistance on current democratic outcomes in the second stage while taking the possible impact of those unobservables into account.

The challenge in estimating endogeneity-correction models is in specifying appropriate “instrumental variables” in the first stage of the process. Such variables, as mentioned, must be exogenous (i.e., unrelated to unobserved causes of democracy that are contained in the second stage error term), and they must also *not* have a direct impact on democracy in the second stage, i.e., they can influence democratic outcomes only indirectly, through their impact on DRG Assistance. Moreover, instrumental variables must have a sizeable direct impact on DRG in the first stage; instruments that do not explain sufficient variation in the first stage dependent variable are termed “weak”, and as such are inadequate for allowing a robust estimate of the unobservable influences on DRG Assistance that need to be included in the two-stage estimation procedure. Finding such variables -- “strong” exogenous variables that influence an endogenous predictor in the first stage but do not directly influence the outcome in the second stage -- is a difficult task in any longitudinal analysis.

Three general strategies for identifying appropriate instruments have been suggested in the vast econometric literature on the topic:

1. Using variables that, on theoretical grounds, can be defended as exogenous and as influencing the second stage outcome only through its effect on the endogenous predictor, what may be called the “external variable” strategy;
2. Constructing “internal instruments” by taking advantage of non-constant error variance in the first stage equation (i.e., the equation predicting DRG assistance); it

can be shown that there is a non-zero product of each mean-deviated exogenous variable with the residual of the first stage equation (Lewbel 2012), and that this product will be related to the endogenous predictor in the first stage without necessarily influencing democratic outcomes in the second stage; and

3. Taking advantage of the longitudinal nature of the data by utilizing deeper lags of USAID DRG Assistance to serve as instruments for contemporaneous DRG outlays.

We estimated models employing all of these strategies. Though none of the models passed every statistical test associated with instrumental variable or 2SRI regression methods, the results provide consistent evidence that USAID DRG Assistance has a significant impact on democratic outcomes, even after possible endogeneity in the relationship is taken into account. Moreover, the magnitude of the impact in the most credible models are very similar to that reported in Table 1 above, leading us to forego the inclusion and discussion of endogeneity models in subsequent sections of the report.⁷

The results of our baseline endogeneity-corrected model are shown in Table 2. This model employs an “external” instrument in the first-stage equation, the Implicit Price Deflator for US dollars (Development Assistant Committee, 2011 is the base year). By construction, inflation in the US is related to the value of DRG measured in constant dollars, but it is unrelated to the dependent variable. The model also makes use of the Lewbel (2012) method exploiting heteroskedasticity in the DRG first-stage equation by constructing ten additional instruments from the product of the mean-deviated values of each exogenous variable and the value of the first-stage error term for the country-year. We show the baseline models from Table 2 in columns 1 and 2 for comparison purposes, with column 3 containing the endogeneity-corrected MERG model and column 4 the endogeneity-corrected FEIS model.

Table 2. Baseline and Endogeneity-Corrected Baseline Models, Electoral Democracy, 2001-14

	(1)	(2)	(3)	(4)
	MERG	FEIS	MERG [2SRI]	FEIS [2SRI]
DRG aid (US)	0.022** (0.009)	0.032*** (0.011)	0.017* (0.010)	0.026** (0.013)
GDP per capita	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
GDP growth (annual %)	-0.062** (0.019)	-0.043* (0.023)	-0.061*** (0.019)	-0.043* (0.023)

⁷ Using the 2SRI procedure, we find no meaningful differences between the “baseline” and endogeneity-corrected models for any of the analyses in this report, i.e. there is no instance where the differences in effect size are greater than .01 and there are differences in significance levels.

	(1)	(2)	(3)	(4)
	MERG	FEIS	MERG [2SRI]	FEIS [2SRI]
Intrastate conflict	-0.511 (0.451)	-0.697 (0.707)	-0.503 (0.450)	-0.690 (0.707)
Interstate conflict	1.674 (1.232)	1.826 (1.455)	1.620 (1.232)	1.747 (1.342)
Non-DRG aid (US)	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.002 (0.002)
Non-DRG aid (Others)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
DRG aid (Other donors)	0.002** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.003*** (0.001)
Neighborhood	12.569 (8.428)	7.244 (13.188)	12.913 (8.423)	7.449 (13.186)
Trade openness	0.007 (0.008)	0.012 (0.012)	0.007 (0.008)	0.011 (0.012)
Resource wealth	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)
Ethnic Fractionalization	6.053 (6.094)		6.163 (6.086)	
Prior democracy	0.946*** (0.088)		0.945*** (0.088)	
Trend	0.885*** (0.274)		0.888*** (0.274)	
Trend*Fractionalization	-0.047 (0.358)		-0.054 (0.357)	
Trend*Prior Democracy	-0.019*** (0.005)		-0.019*** (0.005)	
Control Function			0.052 (0.033)	0.071* (0.043)
N	1685	1733	1685	1733
Log-L	-4972.8	-4678.9	-4971.6	-4676.6

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

As can be seen, the endogeneity-corrected impact of DRG Assistance is statistically significant in both the MERG and FEIS models, with values somewhat smaller than in the uncorrected columns 1 and 2, respectively. The difference in magnitude can be attributable to a weak positive effect of the “control function” in both models, demonstrating that the unobservable factors influencing DRG Assistance are, on balance, positively associated with electoral democracy. Once this process is taken into account, the estimate of the causal impact of DRG Assistance is slightly lessened from the non-endogeneity baseline model in columns 1 and 2 (and Table 1 above).

We present several alternative endogeneity models in Table 3. In columns 1 and 2, we use purely “external” instruments, supplementing the Implicit Price Deflator with a second instrument noted from our previous review of the literature, the total size of the country’s population (in millions). This was the initial endogeneity model presented in our Phase II top-line report in December 2017. It can be seen that in this model, the impact of DRG Assistance is substantially *greater* than in the baseline model, reaching statistical significance in the FEIS model. The increase in magnitude of the DRG effect is attributable in both cases to the *negative* effect of the control function, such that the unobservables influencing DRG Assistance are associated with *lower* levels of electoral democracy. However, further analysis shows that these instruments are not sufficiently “strong”, yielding an F ratio associated with the two variables of 6.23, well below the standard threshold of 10.0. We therefore deem these results to be less credible than those in Table 2 above.

In columns 3 and 4, we follow the “deeper lag” strategy for identifying instruments by augmenting the baseline-corrected endogeneity model (Implicit Price Deflator and the Lewbel heteroskedastic product terms) with the *twice-lagged* value of USAID DRG Assistance. This model produces nearly identical estimates of the impact of DRG Assistance as was found in the baseline-corrected model, and somewhat closer in magnitude to the original baseline model without endogeneity corrections. The DRG Assistance effect is statistically significant in both the MERG and FEIS versions, and both show a weakly positive control function effect as well. This model, of course, loses an additional wave of analysis due to the need to include the twice-lagged variable, and for this reason we do not estimate models with additional lagged values of the DRG Assistance variable as instruments.

Table 3. Alternative Endogeneity Models, Electoral Democracy, 2001-14

	(1)	(2)	(3)	(4)
	External Only MERG	External Only FEIS	Baseline Plus Lag Aid MERG	Baseline Plus Lag Aid FEIS
DRG aid (US)	0.233 (0.167)	0.130** (0.057)	0.019* (0.010)	0.029** (0.012)
GDP per capita	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
GDP growth (annual %)	-0.053*** (0.020)	-0.041* (0.023)	-0.065*** (0.021)	-0.046 (0.029)
Intrastate conflict	-0.892* (0.542)	-0.845 (0.709)	-0.426 (0.492)	-0.489 (0.728)
Interstate conflict	4.076* (2.266)	3.006* (1.571)	1.705 (1.314)	1.814 (1.498)

	(1)	(2)	(3)	(4)
	External Only MERG	External Only FEIS	Baseline Plus Lag Aid MERG	Baseline Plus Lag Aid FEIS
Non-DRG aid (US)	-0.025 (0.019)	-0.014** (0.007)	-0.002 (0.002)	-0.002 (0.002)
Non-DRG aid (Others)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
DRG aid (Other donors)	0.001 (0.001)	0.002** (0.001)	0.002** (0.001)	0.003*** (0.001)
Neighborhood	8.284 (9.083)	-1.602 (14.442)	15.013* (8.841)	10.870 (16.179)
Trade openness	0.007 (0.008)	0.014 (0.012)	0.007 (0.009)	0.021 (0.016)
Resource wealth	-0.000* (0.000)	-0.000* (0.000)	-0.000* (0.000)	-0.000 (0.000)
Ethnic Fractionalization	4.670 (6.190)		6.461 (6.359)	
Prior democracy	0.959*** (0.089)		0.966*** (0.093)	
Trend	0.631* (0.341)		0.930*** (0.328)	
Trend*Fractionalization	0.273 (0.439)		-0.056 (0.428)	
Trend*Prior Democracy	-0.017*** (0.005)		-0.021*** (0.006)	
Control Function	-0.211 (0.168)	-0.101* (0.057)	0.065* (0.037)	0.090* (0.048)
N	1685	1733	1447	1485
Log-L	-4972.0	-4677.5	-4317.2	-3986.9

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

It should be noted that we were unable to estimate an endogeneity-correction model that passed all of the relevant statistical tests associated with instrumental variable (or 2SRI) analyses. Our baseline-correction and the lag-baseline-correction model pass the threshold for “strong” instruments”. But none of the models pass the so-called Sargan-Hansen test for the exogeneity of the instrument set, where the instrument set is assumed to be completely unrelated to the second-stage error term. To this extent, there may still be unaccounted for endogeneity in the model. But our best estimates, following standard practices in the contemporary instrumental variables literature, is of a DRG Assistance effect between .02 and .03 on the electoral democracy scale for every million dollars spent, with the effects being nearly the same in models that correct for endogeneity as in those that do not. We take this to indicate that, on balance, USAID

DRG outlays are systematically unrelated to expected levels or trends in democratic outcomes, or, more accurately, that USAID investments in “tough” or negative-trending cases are slightly outweighed by investments in cases trending in a positive democratic direction. And once these processes are taken into account, the impact of USAID DRG Assistance is, as in the original non-endogeneity models, weakly positive.

4.3. STRUCTURAL BREAK

We employed the longer series, which combine FAE and Green-Richter data, to assess the possibility of a historical change in the effects of DRG aid. Alternative tests suggested a structural break in the statistical effects circa 2001.

Table 4 illustrates the results for our analysis of the weighted average series. Here, the coefficient for DRG aid represents the impact of US democracy assistance between 1992 and 2001, while the coefficient for DRG aid after 2001 represents the change in this impact from 2002 to 2014. For both outcome measures, DRG aid from the US is positively associated with democratic development during the earlier period (confirming the findings of our earlier studies) but its effect declines significantly during the later era.

Table 4. Analysis of Structural Break (2001), 1992-2014 (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.10*** (0.03)	0.11*** (0.04)	0.07*** (0.02)	0.08** (0.04)
Period 2002-2014 # DRG aid (US)	-0.06* (0.03)	-0.06 (0.04)	-0.05** (0.02)	-0.05 (0.03)
Period 2002-2014	0.71 (2.08)	0.89** (0.44)	2.10 (1.53)	0.78** (0.33)
N	2591	2734	2591	2734
Log-L	-7602.4	-7570.5	-6816.2	-6736.6

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

These results suggest the existence of a structural break around 2001; up until this year, the effect of US democracy assistance on democratic outcomes was strong and significant, but it became weaker—in line with the results in Table 2—from 2002 onward. However, we cannot say with certainty whether this finding represents a “true” structural break (i.e. a change in consequences of aid after 2001) or is instead the result of data issues (i.e. the incompatibility of Green-Richter and FAE).

Box 1: Differences between the Green-Richter and FAE Series

The Green-Richter and FAE datasets account for expenditures differently:

The Green-Richter dataset contains planned foreign assistance obligations from “actual appropriation”—meaning a procurement was planned and likely executed for each activity. It tracks the fiscal year in which funds are appropriated, but not necessarily when those funds are obligated or disbursed. The dataset comprises 44,958 records that capture the composition of USAID budgets for specific activities in all sectors between 1990 and 2008.

The FAE dataset is the closest approximation of actual foreign assistance expenditures, with recorded transaction information disaggregated by implementing mechanism (i.e. activity), implementing agency, program area, and fiscal year of obligation and disbursement among other factors, between 2001-2017. The dataset comprises the entire universe of obligations and disbursements using Phoenix, an internal USAID financial reporting system. To ensure comparability between the two data sets, 32,755 activities were drawn from obligations reported in FAE.

Data source:	Green-Richter	Foreign Aid Explorer
Coverage Period used in study:	1992-2007	2001-2014
Reporting:	Planned Foreign Assistance by Fiscal Year Appropriation	Recorded Fiscal Year Transaction
Type of Foreign Assistance Measurement:	Planned Obligations	Actual Obligations and Disbursements (Obligations used for comparability)

4.4. ALTERNATIVE MEASURES OF AID

Previous research suggests that empirical estimates of the effects of aid depend in part on how aid is measured (Altincekic and Bearce 2014; Heckelman and Knack 2008). To ensure that our findings are robust to alternative specifications of aid, we employ three alternative measures of aid commonly found in the relevant literature:

1. We take the natural log of total aid in millions of constant 2011 US dollars to allow for the possibility of diminishing returns (Carnegie and Marinov 2017). The formula employed for the transformation is $\ln(1 + \text{DRG})$.
2. We divide total aid by recipient's GDP, as the same amount of aid can be expected to make more of a difference in a relatively poor society than it does in a wealthy country (Altunbas and Thornton 2014; Donno and Neureiter 2017).
3. We take the natural log of total aid divided by recipient's population size (i.e. aid per capita), since a heavily populated country requires, ceteris paribus, more aid than a less populated one (Bermeo 2011; 2016).

Tables 5-7 replicate the baseline models for the three alternative measures of aid, using the FAE series for 2001-14. The results for aid in percent of recipient's GDP (Table 6) and per capita (Table 7) suggest a positive but insignificant effect of democracy assistance in recipient countries.

However, DRG aid from the US has a positive and significant effect when aid is measured as the log of total aid in millions of constant 2011 US dollars (Table 5). This result hints at the possibility of diminishing returns, discussed in section 4.6.1.1.

Table 5. Transformations of Aid - Log, 2001-14 (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.58*** (0.22)	0.69*** (0.21)	0.39** (0.15)	0.48*** (0.15)
N	1685	1733	1685	1733
Log-L	-4968.4	-4675.3	-4404.1	-4054.5

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

Table 6. Transformations of Aid - Aid/GDP, 2001-14 (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	161.17 (177.62)	193.88 (187.32)	-1.18 (1.33)	-0.02 (1.38)
N	1683	1724	1683	1724
Log-L	-4968.3	-4660.9	3184.8	3752.1

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

Table 7. Transformations of Aid - Aid Per Capita, 2001-14 (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.24 (0.22)	0.30 (0.27)	0.17 (0.16)	0.22 (0.16)
N	1685	1726	1685	1726
Log-L	-4977.4	-4672.6	-4411.6	-4052.6

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

4.5. PROGRAM AREAS

We analyzed the effect of DRG aid on Program Area outcomes, using measures developed from the Varieties of Democracy project. The DRG Learning Division identified relevant outcome indicators based on program elements. We combined those V-Dem items into four program-area outcome measures (Rule of Law and Human Rights, Good Governance, Political Competition and Consensus-Building, and Civil Society and Media) using the procedure described in section 2.2.2.

Tables 8-11 replicate the baseline models substituting program-area investments for the overall measure of DRG investment, and substituting specific democratic outcomes for the general measures of democracy analyzed earlier. The results show an inconsistent and generally insignificant set of findings. The effects of Rule of Law and Human Rights (AID210)⁸ and Civil Society and Media (AID240)⁹ are insignificant for their related outcome measure, as well as for the other three program outcomes. DRG investment in Good Governance (AID220) exhibits a positive and significant effect on its related outcome, similar in magnitude to the baseline effects found in Table 2 above; it also has a positive and significant effect on political competition and consensus-building and, to a lesser extent, outcomes related to civil society and media in recipient countries.

Table 8. Analyses Predicting Rule of Law and Human Rights Democratic Outcome, 2001-14 (Controls not listed)

	(1)	(2)
	MERG	FEIS
	b/se	b/se
DRG aid, Rule of Law/Human Rights	0.01 (0.04)	0.01 (0.04)
DRG aid, Good Governance	-0.00 (0.01)	0.01 (0.01)
DRG aid, Competition and Consensus	0.00 (0.02)	-0.00 (0.01)
DRG aid, Civil Society and Media	0.01 (0.01)	0.01 (0.01)
N	1685	1733
Log-L	-3993.4	-3617.9

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

⁸ We also found insignificant results examining the effect of Rule of Law and Human rights program area investment on V-Dem sub-indices constructed to examine separately Rule of Law and Human Rights outcomes.

⁹ We also found insignificant results examining the effect of Civil Society and Media program area investment on V-Dem sub-indices constructed to examine separately Civil Society and Independent Media - Free Flow of Information.

Table 9. Analyses Predicting Good Governance Democratic Outcome, 2001-14 (Controls not listed)

	(1)	(2)
	MERG	FEIS
	b/se	b/se
DRG aid, Rule of Law/Human Rights	0.03 (0.04)	0.02 (0.04)
DRG aid, Good Governance	0.02** (0.01)	0.03** (0.01)
DRG aid, Competition and Consensus	-0.01 (0.02)	-0.01 (0.02)
DRG aid, Civil Society and Media	-0.01 (0.01)	-0.01 (0.01)
N	1528	1574
Log-L	-3768.7	-3368.7

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

Conversely, DRG investment in Political Competition and Consensus-Building (AID230) has an insignificant effect in the MERG model for its related outcome, and an anomalous negative and significant effect in the FEIS model for its related outcome measure as well as for the index capturing civil society and media. Given the inconsistent pattern across models and the large number of models estimated for this section of the report, we are reluctant to offer a causal interpretation for this negative effect in few FEIS models. Altogether, the results in this section do not provide strong evidence regarding the differential impact of investments in particular program areas.

Table 10. Analyses Predicting Competition and Consensus Building Democratic Outcome, 2001-14 (Controls not listed)

	(1)	(2)
	MERG	FEIS
	b/se	b/se
DRG aid, Rule of Law/Human Rights	0.01 (0.05)	-0.01 (0.05)
DRG aid, Good Governance	0.02* (0.01)	0.04*** (0.01)
DRG aid, Competition and Consensus	-0.03 (0.02)	-0.04** (0.02)

	(1)	(2)
	MERG	FEIS
	b/se	b/se
DRG aid, Civil Society and Media	-0.00 (0.02)	-0.00 (0.01)
N	1641	1689
Log-L	-4240.8	-3938.6

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

Table 11. Analyses Predicting Civil Society and Media Democratic Outcome, 2001-14 (Controls not listed)

	(1)	(2)
	MERG	FEIS
	b/se	b/se
DRG aid, Rule of Law/Human Rights	0.01 (0.05)	0.02 (0.05)
DRG aid, Good Governance	0.00 (0.01)	0.03** (0.01)
DRG aid, Competition and Consensus	-0.03 (0.02)	-0.04* (0.02)
DRG aid, Civil Society and Media	0.01 (0.02)	0.01 (0.01)
N	1684	1732
Log-L	-4397.1	-4037.8

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

4.6. INTERACTION MODELS

All interaction models presented in this section condition the effect of overall DRG investment on a moderating variable. For greater clarity, all subsections follow a consistent structure: the first paragraph introduces the moderator, followed by a table summarizing the statistical results of the interaction model. The coefficient for the main aid term in each table—labeled “DRG aid (US)” —captures the impact of a million-dollar investment when the moderator has a value of zero. The coefficient for the interaction term reflects the change in the size of the DRG coefficient as the moderating factor increases by one unit. After each table, we offer a substantive interpretation of the results. All control variables are included in the analysis, but their coefficients are not reported in the summary tables to save space.

Because moderators with continuous values allow for considerable change in the size of the DRG effect, and because the conditional effect of DRG may be statistically

significant only for some range of the moderating variable, all subsections close with figures that plot the marginal effect of a million-dollar investment (and its 95% confidence interval) over the range of the moderator.

4.6.1. Patterns of Investment

4.6.1.1. Cumulative Spending

As a first approximation to patterns of investment, we allowed the effect of DRG to vary with levels of investment over the past four years. Because our measure is already lagged by one year, prior levels of DRG also reflect this lag. For example, for any country observation in 2010, the main DRG measure corresponds to the two-year running average for 2008-2009, and the four-year average corresponds to yearly investment in 2004-2008. Sample size is therefore reduced ($N = 1235$) as a result of the loss of four years at the beginning of each panel. The following table summarizes the result of this analysis. The coefficient for DRG aid reflects the impact of a million-dollar “green field” investment, i.e., in a country where no DRG program has been present over the past four years.

Table 12. Effect of DRG, Conditional on Cumulative Spending (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.0489** (0.0196)	0.0473** (0.0230)	0.0306** (0.0140)	0.0336** (0.0156)
DRG aid (US) # Aid, past 4 years	-0.0001* (0.0001)	-0.0001* (0.0001)	-0.0001* (0.0000)	-0.0001* (0.0000)
Aid, past 4 years	0.0465** (0.0206)	0.0402** (0.0157)	0.0352** (0.0156)	0.0335** (0.0130)
N	1205	1235	1205	1235

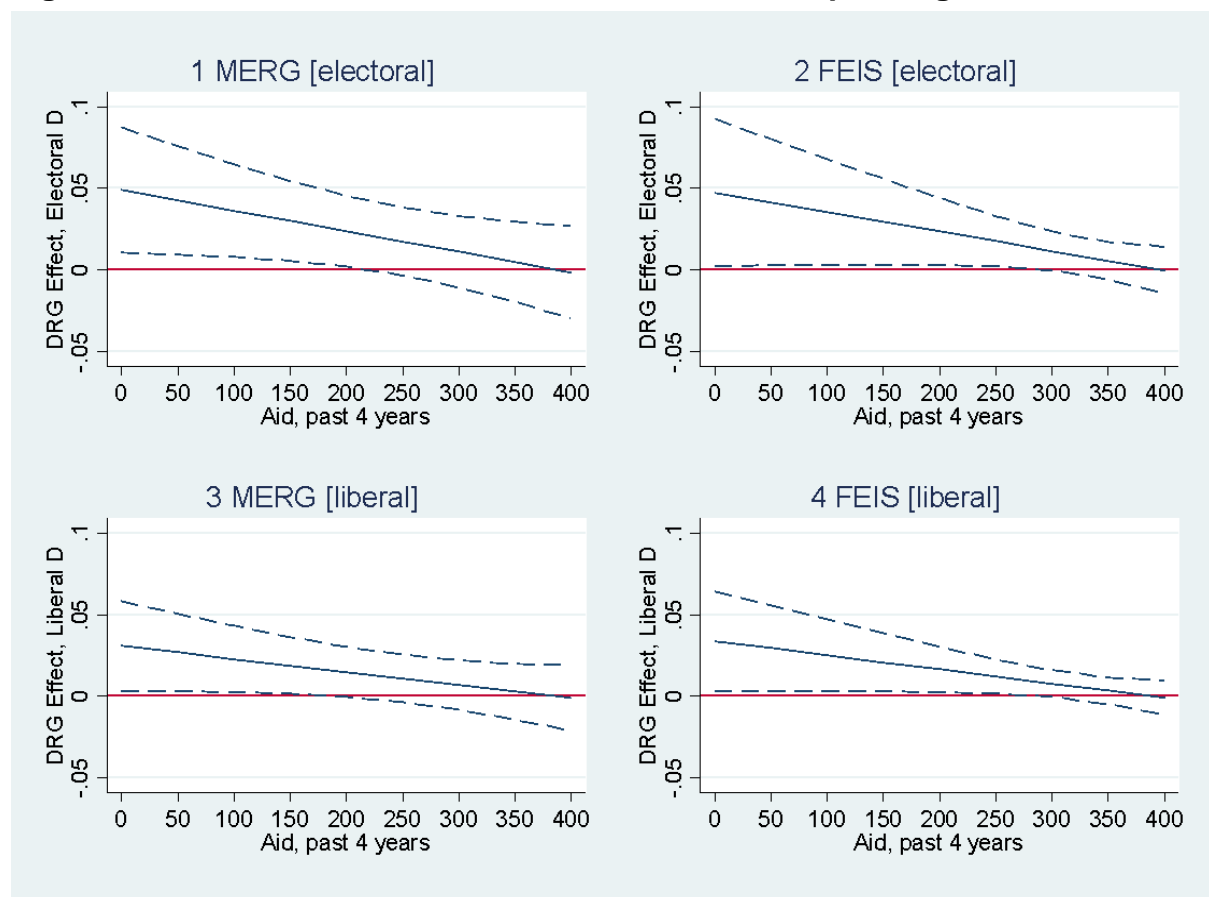
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The results in Table 12 above indicate that “green field” investments have positive and statistically significant effects on both electoral and liberal democracy, and that the marginal impact of every additional million declines with higher levels of past investment (since the coefficient for the interaction term is negative and significant). This finding reinforces the evidence of diminishing returns presented in section 4.4, where the logarithmic transformation of aid suggests a similar conclusion: every additional dollar “matters less” as the pool of prior DRG investment becomes greater.

This analysis has substantive implications for the identification of a hypothetical “sweet spot” level of investment. In alternative tests (e.g., using a quadratic transformation of aid), this pattern of diminishing returns emerged recurrently, confirming that the marginal impact of aid is greater at lowest levels of prior investment. To clarify this point: moving from 0 to 1 million dollars may not be sufficient to achieve the goals of a specific program. But the impact of investing a million dollars at this stage is expected to be greater than its impact when outlays grow from 100 to 101 million.

Figure 1 below depicts the marginal effect of a million dollars at different levels of past aid, according to the four models. The panels consistently suggest that the effect of aid becomes statistically indistinguishable from zero (at $p < .05$) roughly in the range between 200 and 300 million per year over a four-year period. This is an unusually high DRG average for a four-year period, roughly corresponding to four-year averages observed in Iraq in 2008-13 and in Afghanistan 2012-16. (The highest value is Iraq in 2010, at 399 million.)

Figure 1. Effect of DRG, Conditional on Cumulative Spending



4.6.1.2. Volatility in Spending

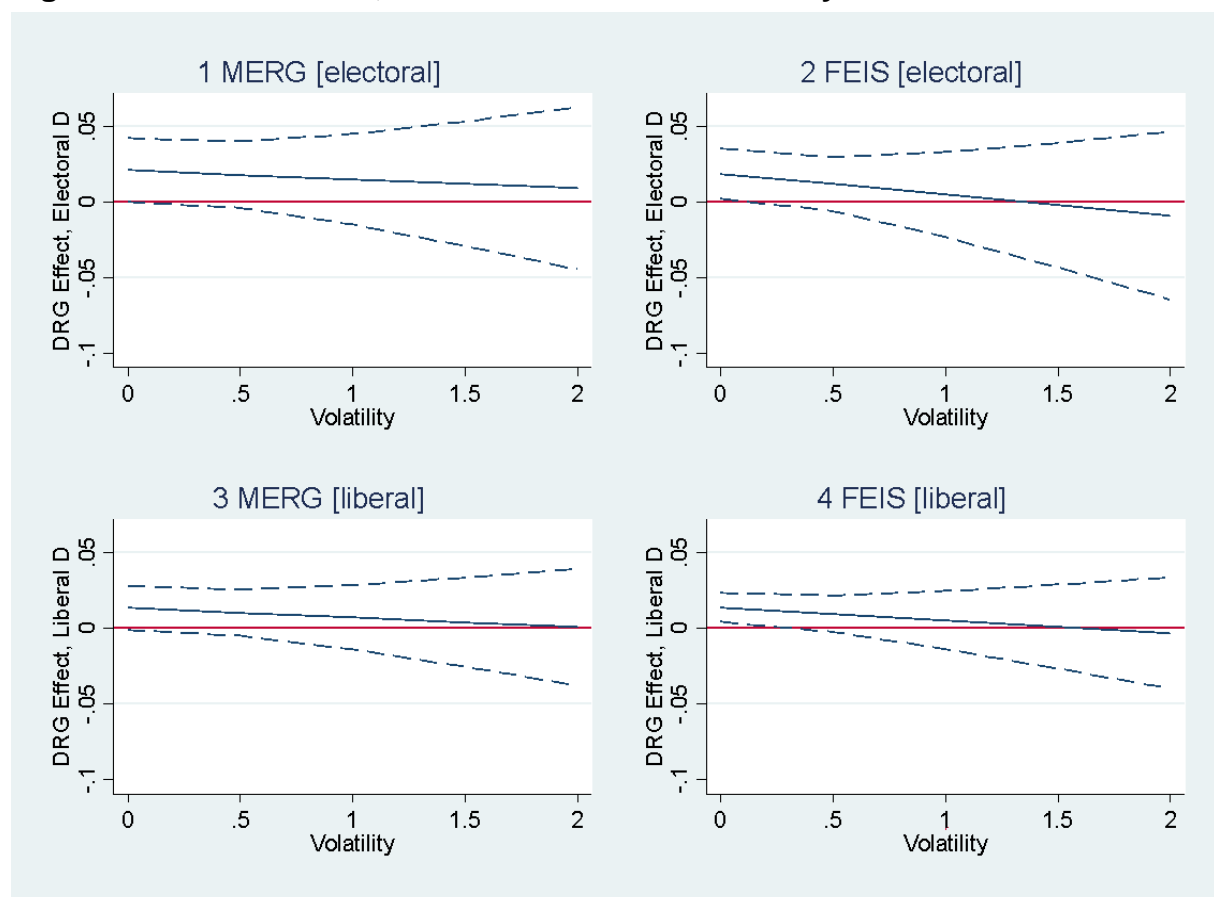
We also explored the possibility that the impact of aid will vary with the level of volatility in investment. Volatility is measured as the standard deviation in annual levels of DRG over the past four years, divided by the average level of investment in this period (to normalize the scores and discount diminishing returns, described in the previous section). This measure ranges roughly between 0 (a consistent investment every year) to 2 (wide fluctuations from year to year). The main coefficient for DRG in the next table thus reflects the impact of aid in the absence of volatility.

Table 13. Effect of DRG, Conditional on DRG Volatility (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.02* (0.01)	0.02** (0.01)	0.01* (0.01)	0.01*** (0.00)
DRG aid (US) # Volatility	-0.01 (0.01)	-0.01 (0.02)	-0.01 (0.01)	-0.01 (0.01)
Volatility	0.11 (0.50)	0.93* (0.49)	0.16 (0.35)	0.53* (0.32)
N	996	1026	996	1026

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

The results in Table 13 above show that the contribution of DRG declines when investment is volatile over time. The coefficient for the main term is positive and significant, but the interaction terms are consistently negative, reflecting an erosion of DRG effects when investment becomes inconsistent. Although the coefficients for the interaction terms are statistically insignificant—suggesting that the absolute size of the marginal effect for DRG is hard to distinguish when volatility = 0 and when volatility = 1, volatility makes the effects of aid less certain. Figure 2 below shows that the conditional coefficient for DRG becomes statistically insignificant (at $p < .05$) already at relatively low levels of volatility.

Figure 2. Effect of DRG, Conditional on DRG Volatility

4.6.1.3. Dispersion of Spending Across Program Areas

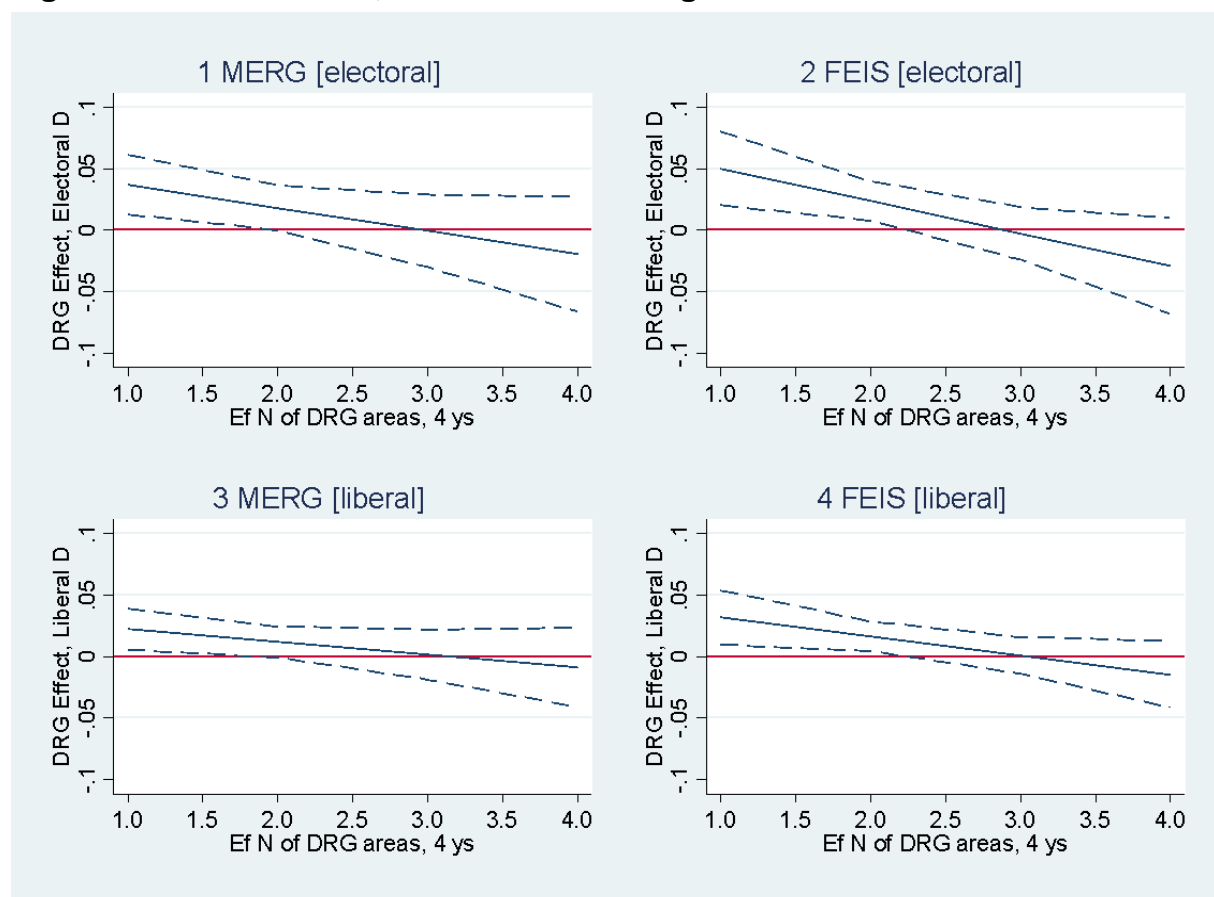
The third pattern of spending analyzed as a potential moderator of impact was the degree of dispersion across program areas. Given the period under study, we employed the four-program area classification prevailing until fiscal year 2016. Our measure of program fractionalization takes a value of 1 when all DRG funding is concentrated in a single area and 4 when all program areas are of equal size (a very unlikely event, of course). The formula for the index is $1/\Sigma p^2$, where p represents the proportion of total DRG in each program area over the past four years. The index can therefore be interpreted as a measure of the *effective number of program areas* in each country. In cases with no DRG investment in recent years, the index by construction acquires a value of 0. To separate the interpretation of this variable when recent aid was absent and when it was present, the model also includes a dummy variable capturing cases in which there was no investment over the past four years. The coefficient for the main DRG term in the table thus reflects the effect of aid in “green field” cases, where the absence of program fragmentation in the recent past simply reflects that there was no investment.

Table 14. Effect of DRG, Conditional on Program Fractionalization (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.06*** (0.02)	0.08*** (0.03)	0.03** (0.01)	0.05*** (0.02)
DRG aid (US) # Number of DRG Program areas, 4 years	-0.02* (0.01)	-0.03** (0.01)	-0.01 (0.01)	-0.02** (0.01)
Number of DRG Program areas, 4 years	-0.02 (0.32)	0.08 (0.34)	0.09 (0.22)	0.17 (0.24)
No DRG in last 4 years	-0.53 (0.53)	-0.67 (0.51)	-0.38 (0.36)	-0.48 (0.34)
Constant	7.02 (5.68)	35.06*** (10.43)	3.54 (5.27)	29.20*** (7.16)
N	1685	1727	1685	1727

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

The results in Table 14 show that greater dispersion of the investment weakens the impact of aid. An additional million dollars produces greater impact when it is allocated to a single area than when it is spread across multiple program areas. Figure 3 plots the marginal effects of DRG at different levels of program fractionalization. The plots indicate that the effect of aid becomes indistinguishable from zero ($p < .05$) when the effective number of areas becomes approximately greater than two.

Figure 3. Effect of DRG, Conditional on Program Fractionalization

4.6.2. Time-Varying Moderators

4.6.2.1. Administration

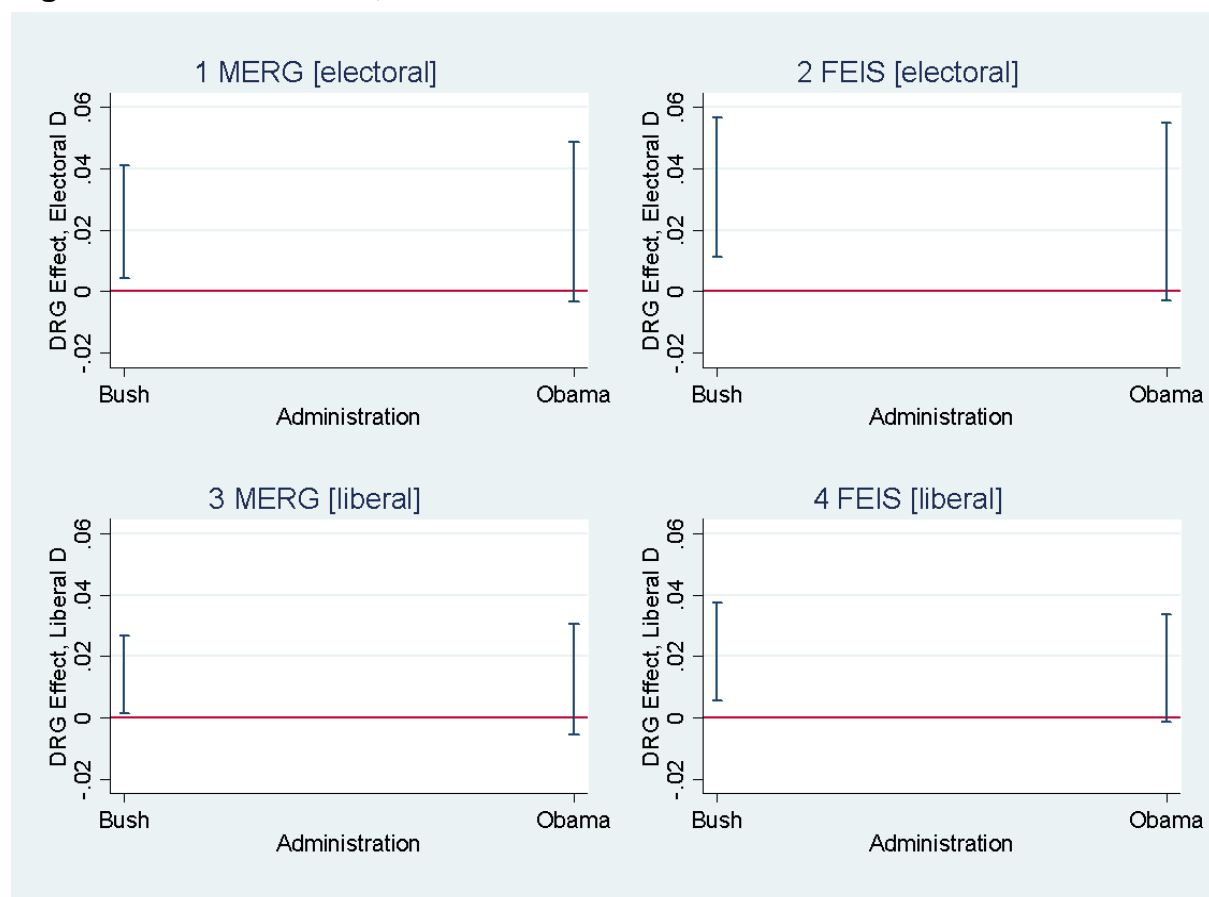
We allowed the effect of DRG investment to vary across administrations. Given the period covered by our study (2001-2014), we coded the moderator as a dichotomous variable with a value of 0 for the Bush administration and 1 for the Obama administration. The main coefficient for DRG in Table 15 therefore captures the effect of aid during the Bush era. The coefficient for the interaction captures the difference in the effects of aid between the two periods.

Table 15. Effect of DRG, Conditional on Administration (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
	b/se	b/se	b/se	b/se
DRG aid (US)	0.0227** (0.01)	0.0340*** (0.0116)	0.0141** (0.0064)	0.0215*** (0.0081)
Obama Admin # DRG aid (US)	0.0001 (0.0100)	-0.0080 (0.0135)	-0.0016 (0.0069)	-0.0054 (0.0085)
Obama Administration	0.0989 (0.4610)	0.2089 (0.5638)	0.2493 (0.3163)	0.3574 (0.3674)
N	1566	1612	1566	1612

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

The results indicate that the *size* of the effect of a million-dollar investment was similar during the Bush and the Obama administrations (the coefficient for the interaction term is statistically insignificant across models). The statistical *significance* of this effect, however, is stronger for the Bush era. Figure 4 presents the effect of aid for each administration, according to the four models. The plots suggest that effect of aid, albeit similar in magnitude, was more sharply distinguishable from zero during the earlier period. The impact of DRG is positive and significant ($p < .05$) during the Bush era, and marginally significant ($p < .10$) during the Obama period, except in the MERG model for liberal democracy. These findings reinforce the broader historical conclusion section 4.3, which suggest that the effect of DRG has become more uncertain over time.

Figure 4. Effect of DRG, Conditional on Administration

4.6.2.2. Military Assistance

We also explored the possibility that the impact of aid will vary with the amount of US security sector assistance (aka “military aid”) given to the recipient. This variable is measured in two ways: as a percent of all US security assistance allocated worldwide in the same year, and in millions of US dollars. Data was extracted from the Greenbook.

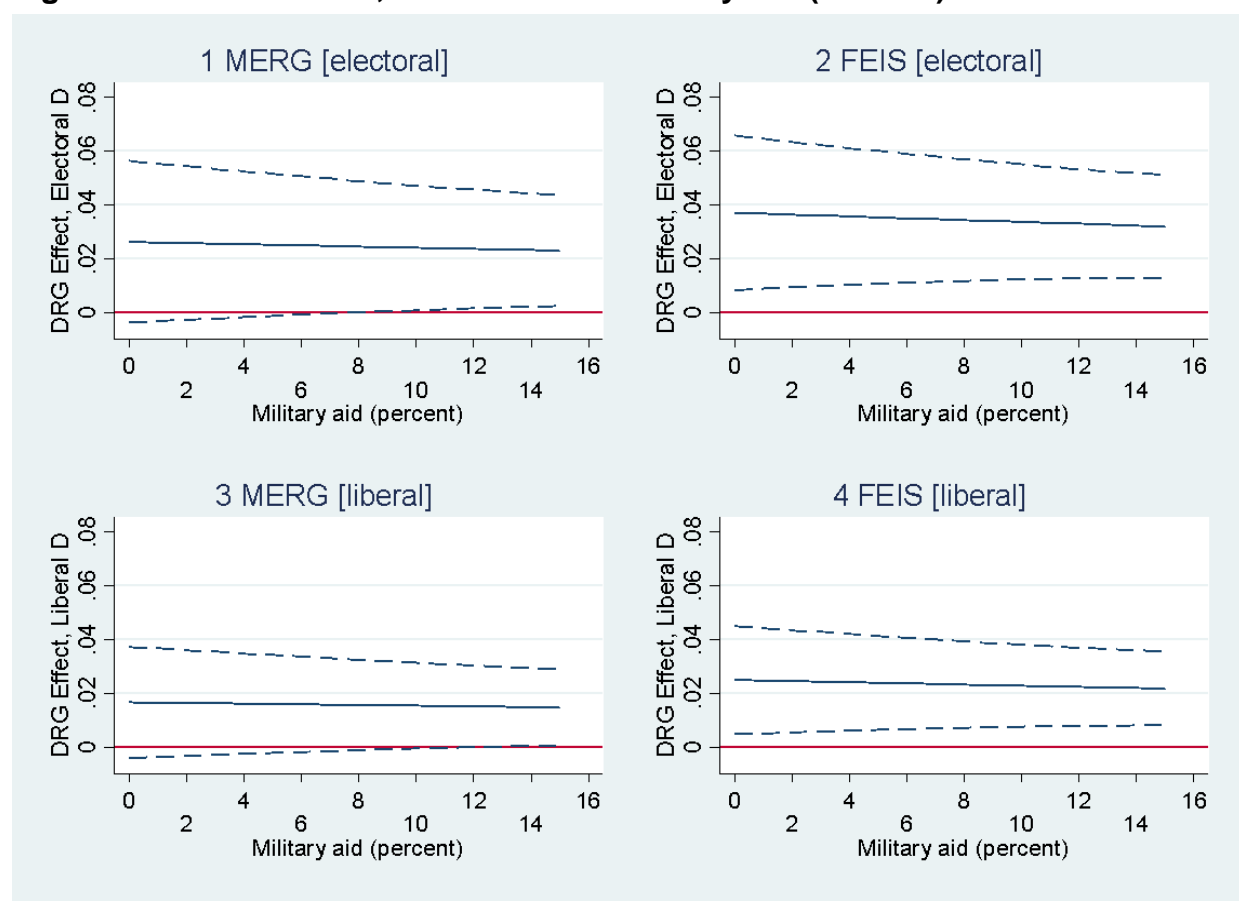
The percent of all security assistance allocated to a single country ranges between 0 and roughly 55 percent (Afghanistan 2011), though a large number of observations (about a quarter) are clustered at zero. The main coefficient for DRG in the next table thus reflects the impact of aid in the absence of military aid.

Table 16. Effect of DRG, Conditional on Military Aid Percent (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.0261* (0.0153)	0.0369** (0.0146)	0.0165 (0.0106)	0.0248** (0.0103)
DRG aid (US) # Military aid (percent)	-0.0002 (0.0005)	-0.0003 (0.0006)	-0.0001 (0.0003)	-0.0002 (0.0004)
Military aid (percent)	0.0703 (0.0708)	0.1234 (0.0768)	0.0318 (0.0485)	0.0578 (0.0402)
N	1685	1733	1685	1733

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

The results in Table 16 above show that the contribution of DRG declines when the recipient country receives a large amount of military aid relative to other types of foreign assistance. The coefficient for the main term is positive and significant, but the interaction terms are consistently negative, reflecting an erosion of DRG effects when military aid increases. Although the coefficients for the interaction terms are statistically insignificant, military aid makes the effects of aid less certain. Figure 5 below shows that the positive effect of DRG aid becomes smaller as military aid becomes a more prominent component of a recipient's overall foreign assistance.

Figure 5. Effect of DRG, Conditional on Military Aid (Percent)

As an alternative measure of military assistance, we use the total amount of US military assistance given to a recipient in a particular year (in millions of 2016 dollars). This variable ranges between 0 and roughly 11,000, though a large number of observations (about a quarter) are clustered at zero. The main coefficient for DRG in the next table thus reflects the impact of aid in the absence of military aid.

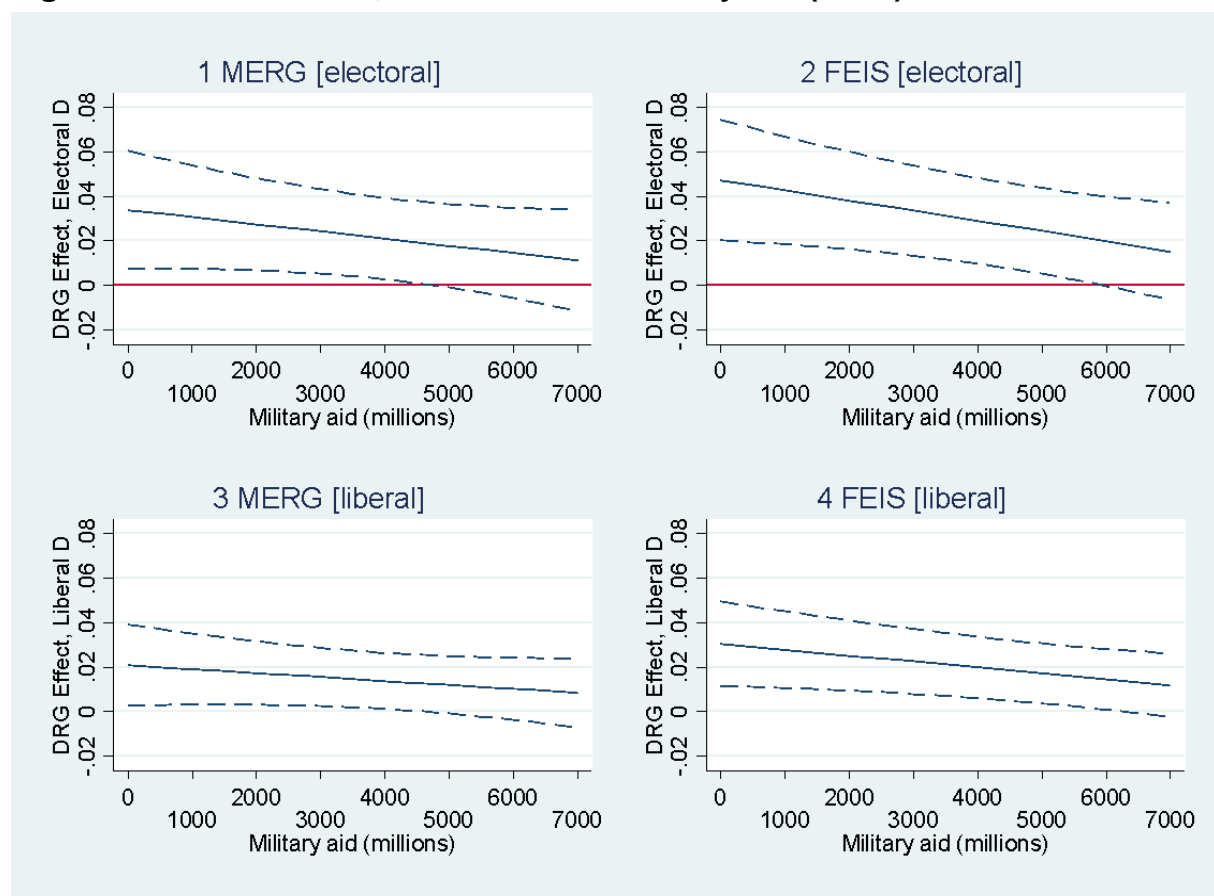
Table 17. Effect of DRG, Conditional on Military Aid Total (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.0338** (0.0135)	0.0472*** (0.0138)	0.0207** (0.0093)	0.0304*** (0.0097)
DRG aid (US) # Military aid (millions)	-0.000003 (0.000002)	-0.000005** (0.000002)	-0.000002 (0.000002)	-0.000003** (0.000001)
Military aid (millions)	0.0007 (0.0005)	0.0011* (0.0006)	0.0003 (0.0003)	0.0006 (0.0004)
N	1685	1733	1685	1733

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

The results in Table 17 above show that large amounts of military aid undermine the impact of aid. An additional million dollars produces greater impact when it is allocated to countries which do not receive military aid from the US. Figure 6 below plots the marginal effects of DRG under different levels of military assistance. The plots indicate that the effect of DRG aid declines with increasing amounts of military assistance and becomes indistinguishable from zero ($p < .05$) at around \$4 billion. This threshold is quite high, as only three countries in the sample (Poland, Iraq, and Afghanistan) receive more than \$4 billion in military assistance annually.

Figure 6. Effect of DRG, Conditional on Military Aid (Total)



4.6.2.3. Regime Types

Next, we allowed the effect of DRG investment to vary across different regime types. Data on recipients' regime type come from Anckar and Fredriksson (2018), who distinguish between three types of democratic regimes (parliamentary, presidential, and semi-presidential) as well as four types of autocratic regimes (party-based, personalist,

military, and absolute monarchy).¹⁰ Parliamentary regime type is the omitted category, meaning that the coefficient for DRG in Table 18 captures the effect of aid in recipient countries with a parliamentary system.

Table 18. Effect of DRG, Conditional on Regime Type I (Controls not listed)

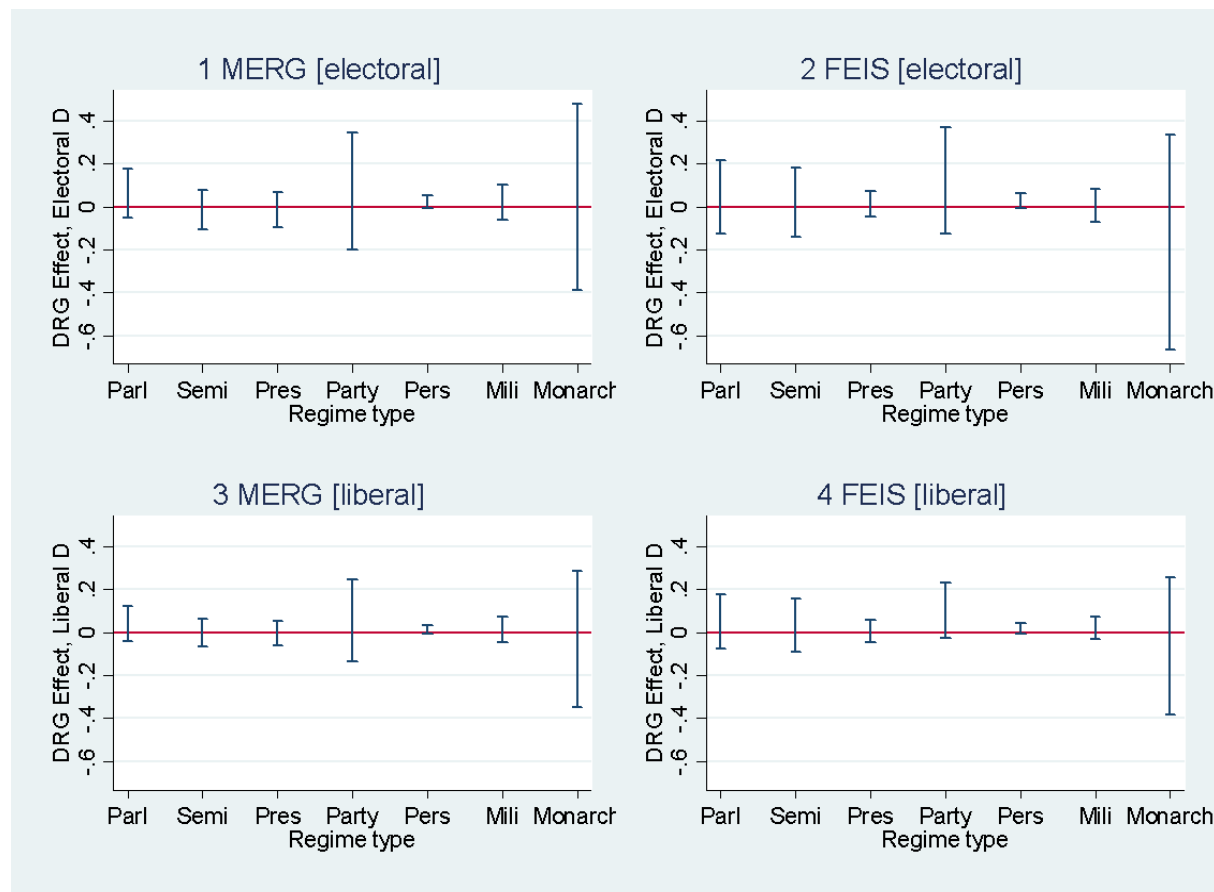
	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.06 (0.06)	0.05 (0.09)	0.04 (0.04)	0.05 (0.06)
Semi-Presidential # DRG aid (US)	-0.08 (0.06)	-0.03 (0.10)	-0.04 (0.04)	-0.02 (0.07)
Presidential # DRG aid (US)	-0.08 (0.07)	-0.03 (0.09)	-0.05 (0.05)	-0.04 (0.07)
Party-Based # DRG aid (US)	0.01 (0.15)	0.08 (0.15)	0.01 (0.11)	0.05 (0.09)
Personal # DRG aid (US)	-0.04 (0.06)	-0.02 (0.09)	-0.03 (0.04)	-0.03 (0.07)
Military # DRG aid (US)	-0.04 (0.07)	-0.04 (0.10)	-0.03 (0.05)	-0.03 (0.07)
Monarchy # DRG aid (US)	-0.02 (0.23)	-0.21 (0.28)	-0.07 (0.17)	-0.11 (0.18)
Semi-Presidential	6.03*** (1.91)	7.88 (5.34)	4.64*** (1.39)	5.98* (3.07)
Presidential	4.33** (1.90)	7.99* (4.65)	2.96** (1.40)	5.92** (2.88)
Party-Based	3.01 (2.18)	5.98 (5.36)	2.05 (1.60)	3.90 (2.83)
Personal	-3.15** (1.58)	0.15 (3.99)	-1.84 (1.15)	0.46 (2.46)
Military	-2.21 (1.62)	0.07 (4.06)	-0.71 (1.17)	1.02 (2.32)
Monarchy	-8.95*** (3.45)	-1.13 (13.53)	-3.33 (2.72)	-1.57 (8.39)
N	1630	1671	1630	1671

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

¹⁰ Anckar and Fredriksson (2018) distinguish between two additional types of autocratic regimes, oligarchies and semi-monarchies. However, none of the observations in our analyses fall in either of these two categories, so they are irrelevant for our purposes.

The results indicate that the effect of a million-dollar investment was similar across regime types (the coefficient for the interaction term is statistically insignificant across models). In addition, the graphs in Figure 7 below show that the significance of this effect is equal for all regimes. Therefore, using Anckar and Frederiksson's (2018) data, regime type does not condition the effect of DRG aid on democratic outcomes.

Figure 7. Effect of DRG, Conditional on Regime Type I



As an alternative measure of regime type, we use data provided by V-Dem (Luhmann et al. 2018). The Regimes in the World (RIW) distinguishes between four different types of political regimes: closed autocracy, electoral autocracy, electoral democracy, and liberal democracy. Closed autocracy is the omitted category, meaning that the coefficient for DRG in Table 19 captures the effect of aid in recipient countries with a restrictive authoritarian regime.

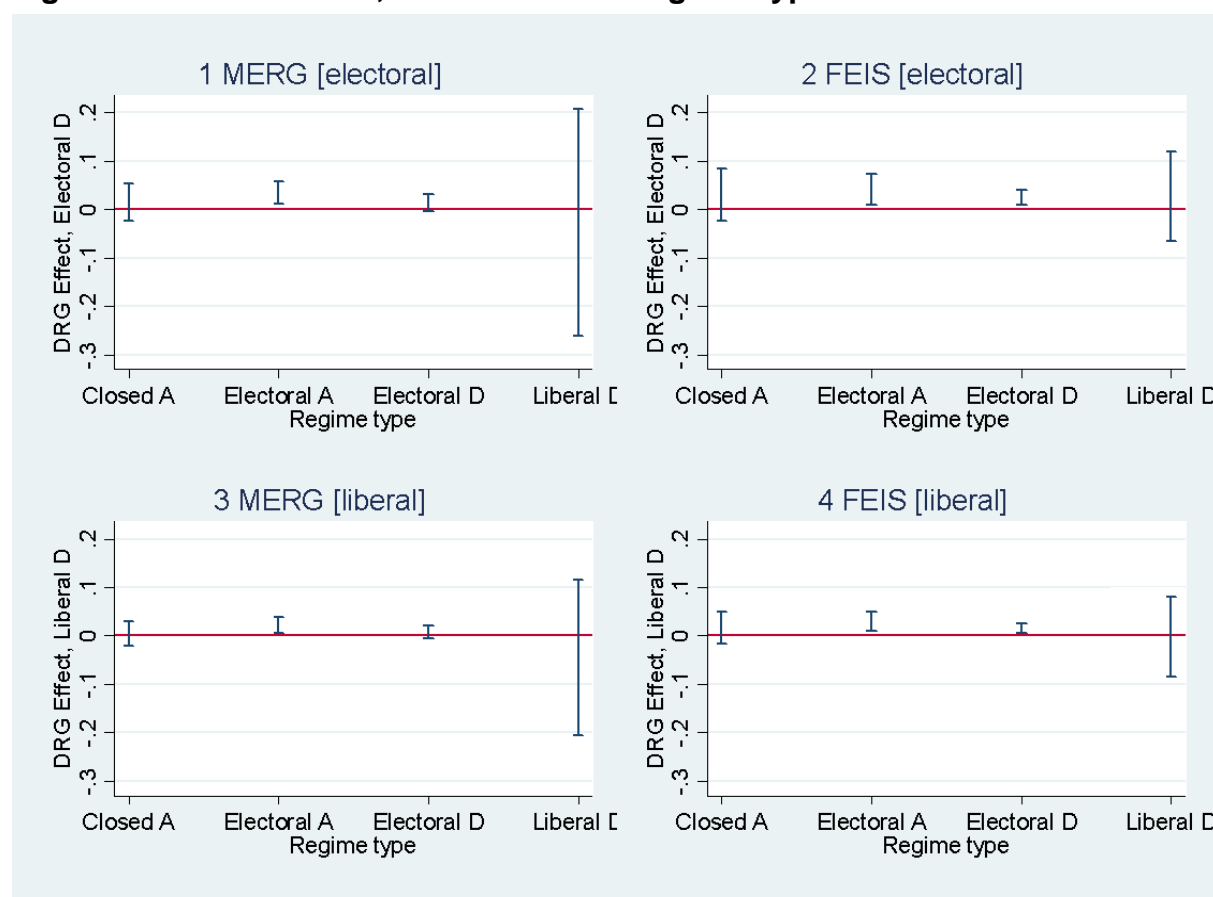
The results indicate that the *size* of the effect of a million-dollar investment was similar across regime types (the coefficient for the interaction term is statistically insignificant across all models but one). The statistical *significance* of this effect, however, is stronger for electoral autocracies. Figure 8 below presents the effect of aid for each

regime type, according to the four models. The plots suggest that effect of aid, albeit similar in magnitude, was more sharply distinguishable from zero in electoral autocracies. The effect of DRG is positive and significant ($p < .05$) for electoral autocracies, and marginally significant ($p < .10$) for electoral democracies. These findings suggest that DRG aid has no systematic impact in countries that are already highly democratic or highly authoritarian.

Table 19. Effect of DRG, Conditional on Regime Type II (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.015 (0.019)	0.031 (0.027)	0.004 (0.013)	0.016 (0.017)
Electoral Auto # DRG aid (US)	0.020 (0.013)	0.011 (0.028)	0.018** (0.009)	0.013 (0.017)
Electoral Dem # DRG aid (US)	-0.001 (0.017)	-0.007 (0.026)	0.004 (0.012)	-0.001 (0.016)
Liberal Dem # DRG aid (US)	-0.042 (0.121)	-0.004 (0.056)	-0.048 (0.083)	-0.018 (0.046)
Electoral Autocracy	0.533 (0.715)	2.855 (2.032)	-0.256 (0.491)	0.587 (1.325)
Electoral Democracy	3.605*** (0.872)	6.798*** (2.356)	1.939*** (0.601)	3.452** (1.583)
Liberal Democracy	6.007*** (1.361)	8.322*** (2.579)	3.680*** (0.948)	4.808*** (1.748)
N	1685	1733	1685	1733

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

Figure 8. Effect of DRG, Conditional on Regime Type II

4.6.2.4. State Fragility

We also explored the possibility that the impact of aid will vary with state fragility. Data on state fragility are provided by the Center for Systemic Peace (Marshall and Elzinga-Marshall 2017). This variable ranges between 0 and 25, with higher values representing greater fragility. The main coefficient for DRG in Table 20 thus reflects the impact of aid in the absence of fragility, that is, in a perfectly robust regime.

Table 20. Effect of DRG, Conditional on State Fragility (Controls not listed)

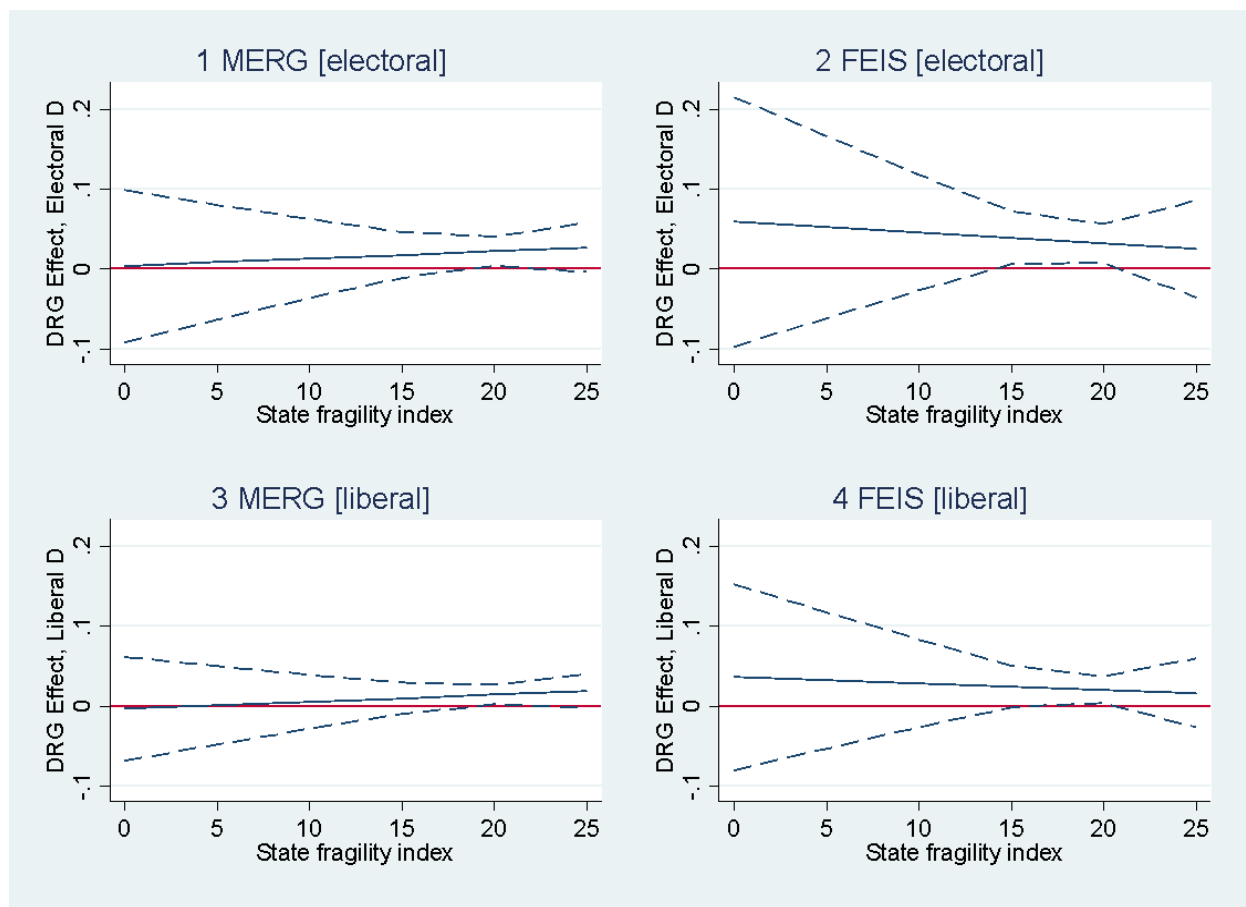
	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.0035 (0.0485)	0.0589 (0.0796)	-0.0034 (0.0331)	0.0361 (0.0593)
DRG aid (US) # State fragility index	0.0009 (0.0024)	-0.0014 (0.0043)	0.0009 (0.0016)	-0.0008 (0.0032)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
State fragility index	-0.3262*** (0.1201)	-0.1851 (0.1882)	-0.2222*** (0.0847)	-0.0814 (0.1293)
N	1658	1705	1658	1705

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

The results indicate that the size of the effect of a million-dollar investment was similar across different levels of state fragility. In addition, the graphs below show that the significance of this effect does not vary consistently with fragility. Figure 9 below plots the marginal effects of DRG at different levels of the moderator. The plots indicate that the effect of DRG aid is indistinguishable from zero for most values of the state fragility index (except in the FEIS model for electoral democracy, where DRG aid has a positive effect on democracy at fragility values of around 18).

Figure 9. Effect of DRG, Conditional on State Fragility



4.6.2.5. Youth Bulge

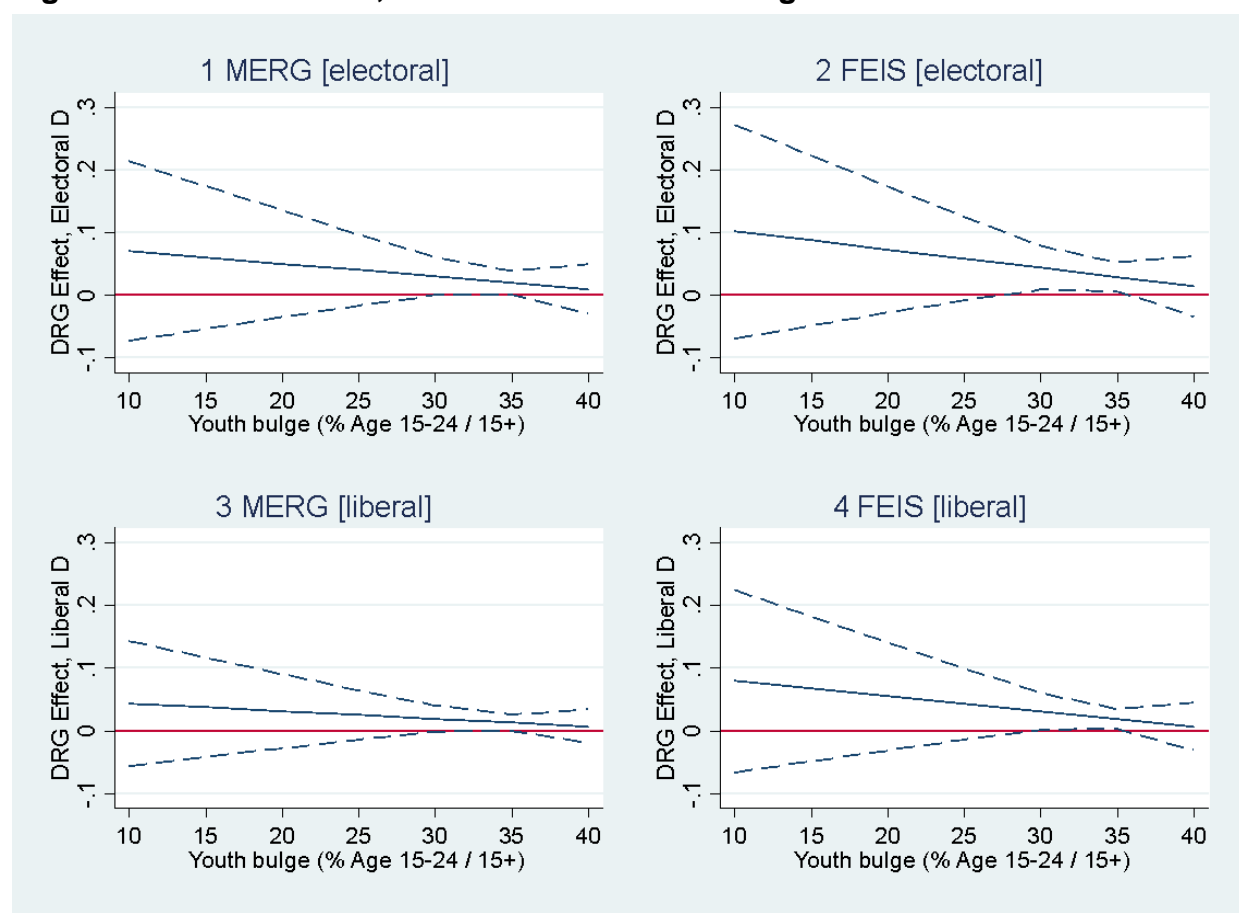
We are interested in the role of a burgeoning youth population (Beehner 2007; Lin 2012), as a moderator for DRG effects. We measure the country's youth bulge as the percentage of individuals aged 15-24 relative to all individuals 15 or older (Urdal 2006). Series are based on the UN Department of Economic and Social Affairs population figures (UNESA 2017). The variable ranges roughly from 11 to 41. The main coefficient for DRG in the next table thus reflects the impact of aid in a country with no youth bulge.

Table 21. Effect of DRG, Conditional on Youth Bulge I (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.090 (0.103)	0.131 (0.123)	0.056 (0.072)	0.103 (0.104)
DRG aid (US) # Youth bulge	-0.002 (0.003)	-0.003 (0.004)	-0.001 (0.002)	-0.002 (0.003)
Youth bulge (% Age 15-24 / 15+)	-0.009 (0.194)	0.034 (0.253)	-0.053 (0.168)	-0.062 (0.187)
N	1685	1733	1685	1733

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

The results in Table 21 suggest that the effect of a million-dollar investment tends to decline with a greater proportion of young people. However, the graphs below show that the effect tends to be insignificant for much of the range of the moderating variable (probably reflecting a lower frequency of cases with low values, and thus greater uncertainty for estimates). The plots indicate that the effect of DRG aid is indistinguishable from zero for most values of the youth bulge variable, except at values between roughly 30 and 35 percent, which represent a very common pattern, characterizing about one-quarter of the cases.

Figure 10. Effect of DRG, Conditional on Youth Bulge I

As an alternative measure of the youth bulge, we use the number of individuals aged 15-24 relative to the total population. This variable ranges roughly from 9 to 26 percent. The main coefficient for DRG in the next table thus reflects the impact of aid in a country with a minimal youth bulge.

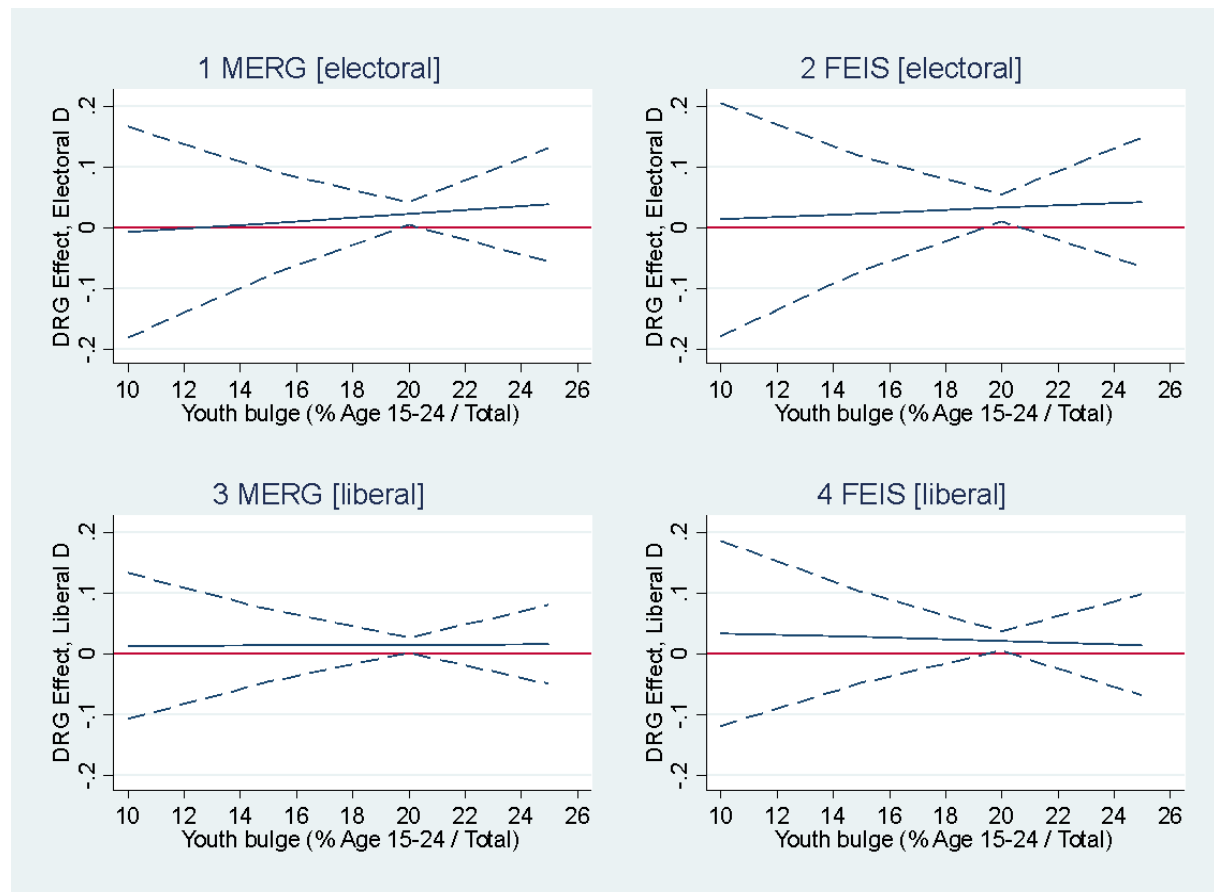
Table 22. Effect of DRG, Conditional on Youth Bulge II (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	-0.038 (0.179)	-0.007 (0.198)	0.01 (0.12)	0.05 (0.16)
DRG aid (US) # Youth bulge	0.003 (0.009)	0.002 (0.010)	0.00 (0.01)	-0.00 (0.01)
Youth bulge (% Age 15-24 / Total)	-0.007 (0.324)	0.034 (0.291)	0.02 (0.26)	-0.00 (0.23)
N	1685	1733	1685	1733

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

Using this alternative measure, the results in Table 22 indicate that the size of the effect of a million-dollar investment is similar across different age distributions. In addition, the graphs below show that the significance of this effect does not vary much with age distribution. The plots indicate that the effect of DRG aid is indistinguishable from zero for most values of the youth bulge variable, except at values of around 20 percent, which concentrate a majority of the observations and thus provide greater certainty for estimates.

Figure 11. Effect of DRG, Conditional on Youth Bulge II



4.6.2.6. Neighborhood Democracy

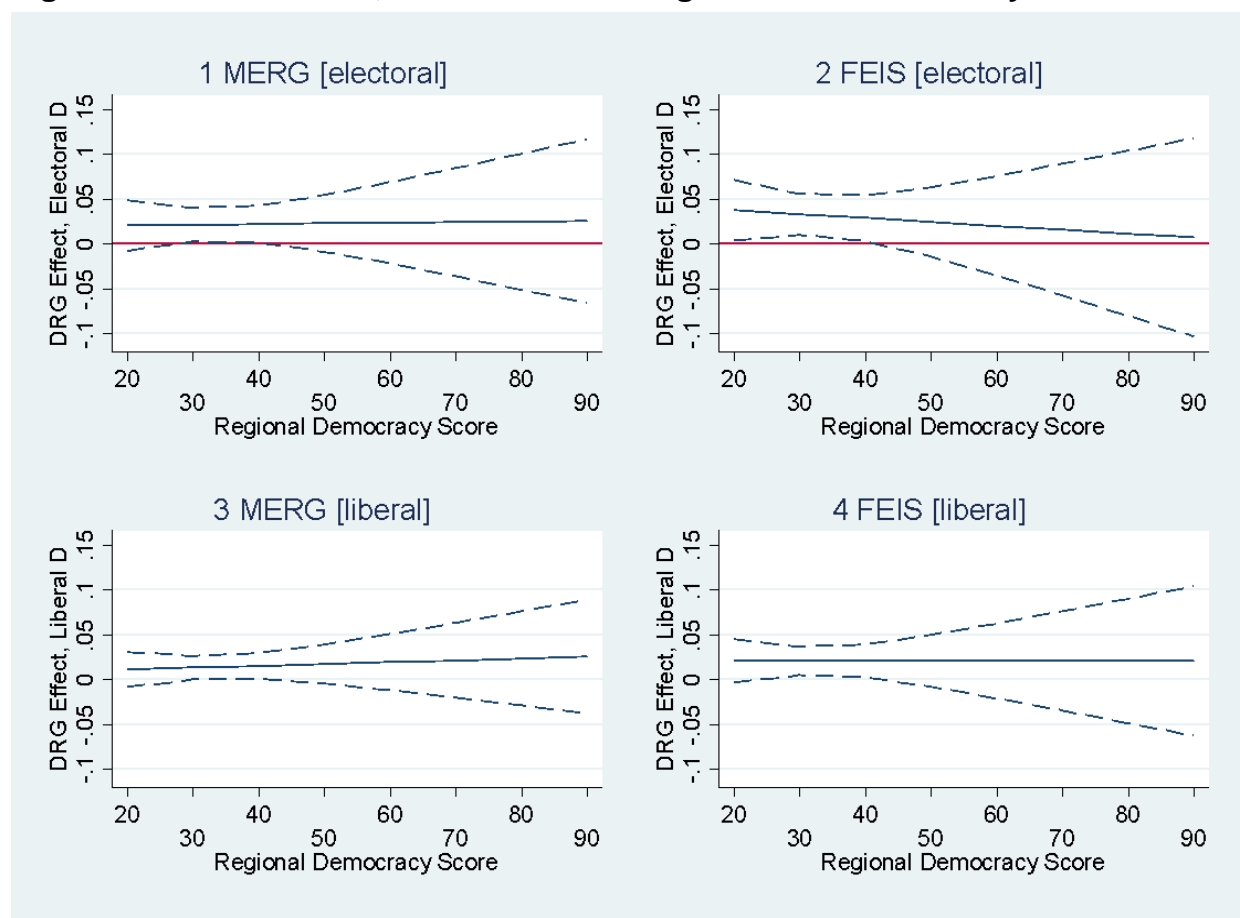
We also explored the possibility that the impact of aid will vary with the level of democratic development in a recipient's region. We measure neighborhood democracy via the annual mean of the V-Dem Electoral Democracy Index in a country's region. To this end, we categorized recipient countries into one of six geographic regions: Latin America, Eastern Europe, Sub-Saharan Africa, the Middle East, and Asia. This variable ranges between 0.23 and 0.71, with higher values representing a more democratic neighborhood. The main coefficient for DRG in Table 23 thus reflects the impact of aid in an autocratic neighborhood.

Table 23. Effect of DRG, Conditional on Neighborhood Democracy (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.0193 (0.0290)	0.0459 (0.0345)	0.0068 (0.0201)	0.0208 (0.0255)
DRG aid (US) # Regional Dem	0.0001 (0.0008)	-0.0004 (0.0010)	0.0002 (0.0006)	-0.0000 (0.0007)
Regional Democracy Score	0.1248 (0.0849)	0.0832 (0.1350)	0.0055 (0.0678)	-0.0064 (0.0930)
N	1685	1733	1685	1733

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

The results indicate that the size of the effect of a million-dollar investment was similar across different levels of neighborhood democracy. In addition, the graphs below show that the significance of this effect does not vary consistently with the level of democratic development in a recipient's region. Figure 12 below plots the marginal effects of DRG at different levels of the moderator. The plots indicate that the effect of DRG aid is indistinguishable from zero for most values of neighborhood democracy (except in the FEIS model for electoral democracy, where DRG aid has a positive effect on recipient countries' democratic development at neighborhood democracy values of around 30).

Figure 12. Effect of DRG, Conditional on Neighborhood Democracy

4.6.3. Country-Level Moderators

Next, we examined DRG investment across country characteristics that do not change over time, including measures of Colonial History, Ethnic Fractionalization, and Region. Because these moderators are time-invariant, the FEIS models cannot be estimated due to collinearity issues. The analyses proceed below using MERG models, comparing electoral and liberal democracy outcomes.

4.6.3.1 Colonial Legacies

We examined differences in the effectiveness of DRG investment among countries with different colonial histories. These findings are summarized in table 23 below. Our colonial history variable codes the “primary colonial ruler” from the International Correlates of War (ICOW) Colonial History Data Set. The measure records the foreign power that was most responsible for shaping the development of the country, ruling over the majority of the territory or for the longest time (in cases where the colony changed hands one or more times before independence). We used the United Kingdom (UK) as a baseline category. The main coefficient for DRG in Table 23 therefore

captures the effect of aid under former British rule. The coefficient for the interactions capture the difference in the effects of aid among recipients that were former British colonies and recipients with different colonial legacies.

The results in Table 24 below suggest that there are several differences in how colonial history affects the democratic outcomes of countries that receive DRG aid. The effect of DRG investment is greater in countries with French colonial history, compared to British colonies. The difference between French and British colonies is statistically significant ($p < .01$ electoral democracy, $p < .05$ liberal democracy). The effect of DRG for countries with other colonial histories is statistically indistinguishable from the baseline effect among former British colonies.

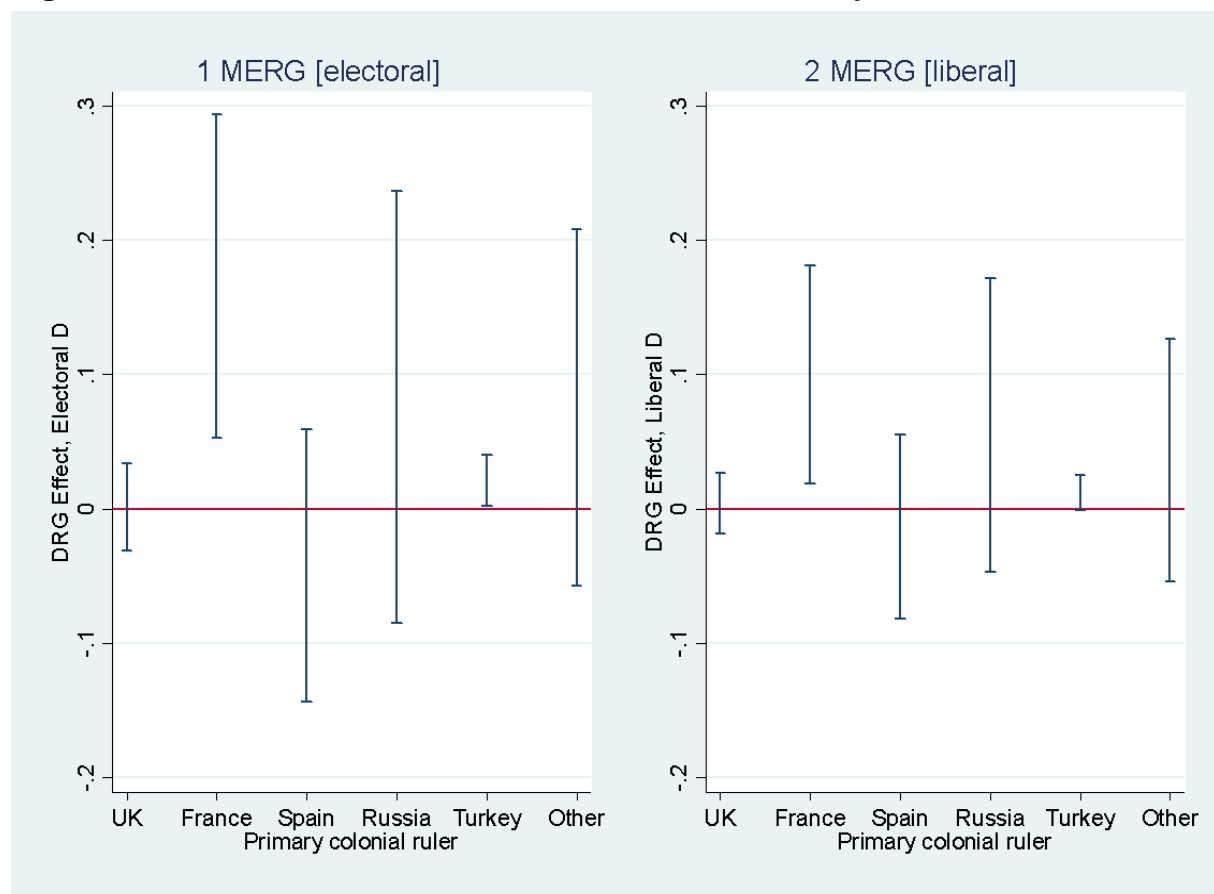
Table 24. Effect of DRG, Conditional on Colonial History (Controls not listed)

	(1)	(2)
	MERG [electoral]	MERG [liberal]
DRG aid (US)	0.001 (0.017)	0.004 (0.011)
French # DRG aid (US)	0.173*** (0.063)	0.096** (0.043)
Spanish # DRG aid (US)	-0.043 (0.054)	-0.017 (0.037)
Russian # DRG aid (US)	0.075 (0.084)	0.058 (0.057)
Turkish # DRG aid (US)	0.020 (0.018)	0.008 (0.012)
Other # DRG aid (US)	0.074 (0.070)	0.032 (0.048)
French	1.126 (3.520)	-0.822 (3.572)
Spanish	9.175** (4.186)	4.494 (4.158)
Russian	-13.233*** (4.732)	-14.574*** (4.803)
Turkish	-1.168 (4.573)	-0.043 (4.642)
Other	12.330*** (4.031)	13.778*** (4.104)
N	1570	1570

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

The marginal effect of DRG investment for different colonial histories is presented in Figure 13, based on the two models, along with conditional standard errors for each estimate. The plots suggest that the effect of aid is more consistent for former French and Ottoman territories. The conditional coefficients for former French and Turkish colonies are positive and significant at the .05 level. The effect of aid in the former British, Spanish, Russian, and other territories is statistically insignificant.

Figure 13. Effect of DRG, Conditional on Colonial History



4.6.3.2. Ethnic Fractionalization

We examined differences in the effectiveness of DRG investment among countries with different levels of ethnic fractionalization. Our measure is an average index of ethnic fractionalization for 1960-2003 (Annett 2001; Fearon 2003; Fearon and Laitin 2003), where values close to zero indicate high homogeneity, and values close to one indicate extreme ethnic fractionalization.

The results are reported in Table 25 below. The main coefficient for DRG captures the effect of aid under ethnic homogeneity, and the coefficient for the interaction captures the difference in the effects under extreme ethnic fractionalization. The results suggest

that DRG investment makes a greater contribution in countries that are more ethnically homogeneous. The effect is stronger and statistically significant (at the .05 level) for Electoral Democracy but is smaller and loses significance with the liberal democracy measure.

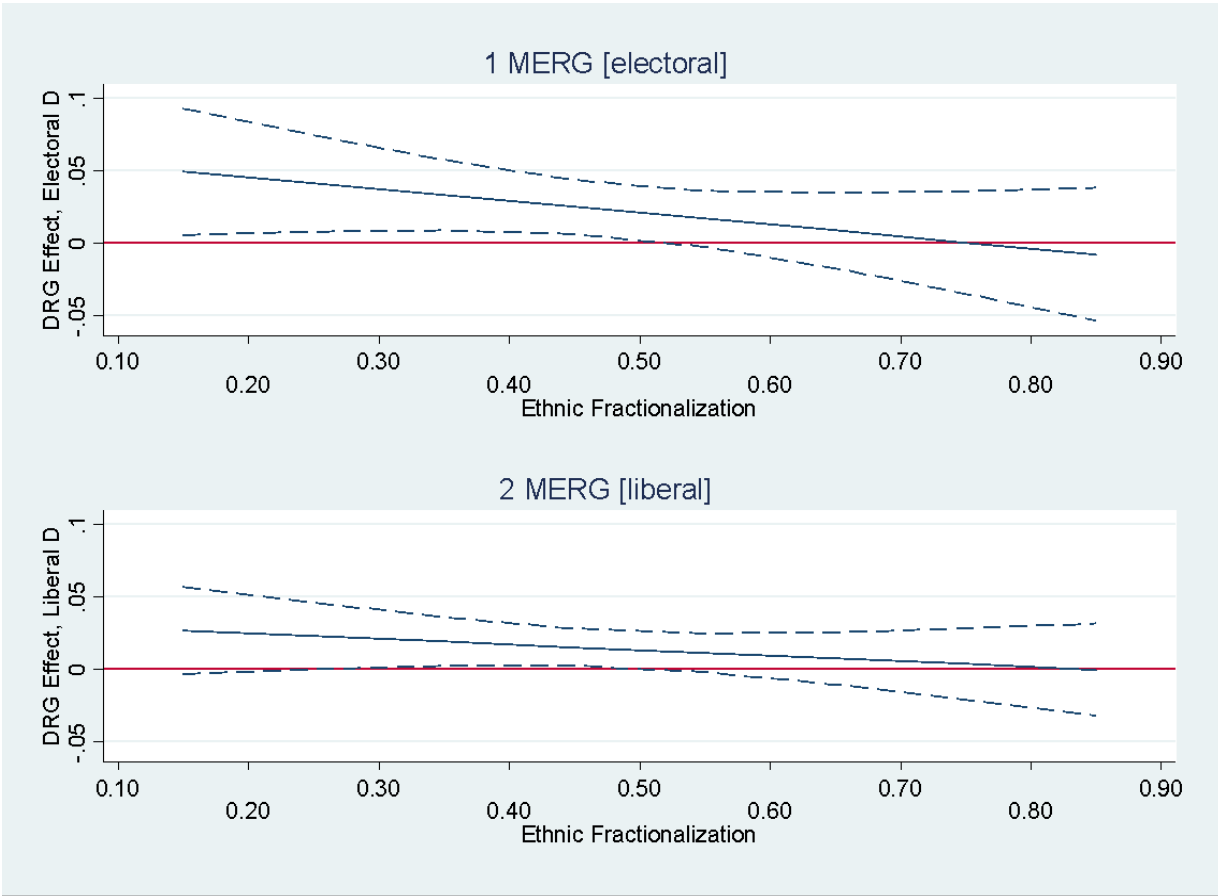
Table 25. Effect of DRG, Conditional on Ethnic Fractionalization (Controls not listed)

	(1)	(2)
	MERG [electoral]	MERG [liberal]
DRG aid (US)	0.06** (0.03)	0.03 (0.02)
DRG aid (US) # Ethnic Fractionalization	-0.08 (0.06)	-0.04 (0.04)
Ethnic Fractionalization	6.15 (6.09)	1.79 (6.01)
N	1685	1685

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

Figure 14 below presents the marginal effect of DRG investment for different levels of ethnic fractionalization. Dotted lines represent the 95 percent confidence intervals based on the conditional standard errors. The marginal effect of DRG is significant and is strongest at low levels of ethnic fractionalization (high homogeneity). The effect decreases as the level of fractionalization increases, and as it approaches .50, the effect of DRG investment becomes insignificant. For the liberal democracy measure, the effect is significant between .25-.50 on the fractionalization index.

Figure 14. Effect of DRG, Conditional on Ethnic Fractionalization



4.6.3.3. Regions

We analyzed regional patterns, examining differences in the effectiveness of DRG investment among countries in different regions. We used Latin America as a baseline category and estimated the differences for the following regions: Eastern Europe, Sub-Saharan Africa, the Middle East, and Asia. The results are reported in Table 26 below. The effect of aid in each region is apparently lower than in Latin America. However, none of the regions differs significantly from the baseline Latin America estimate.

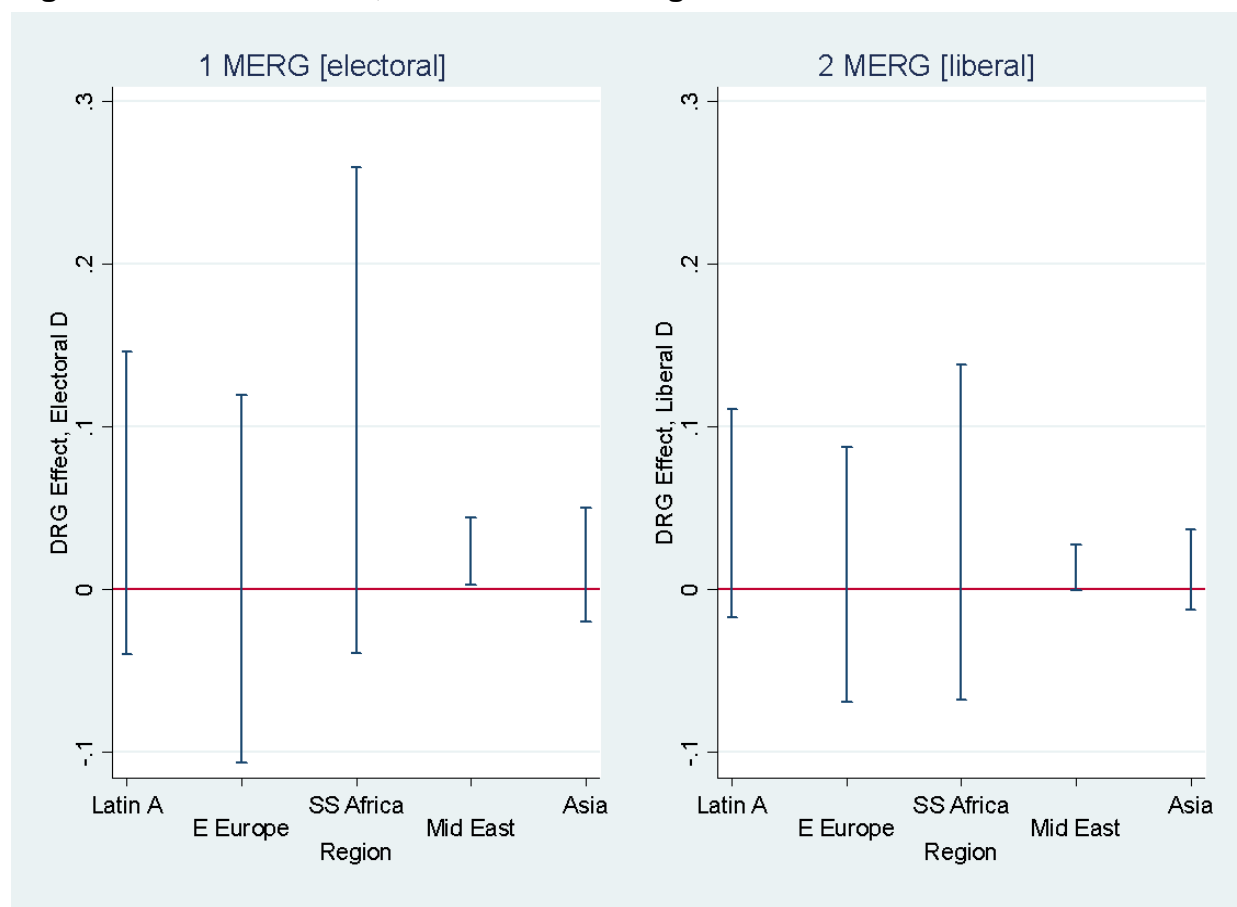
Table 26. Effect of DRG, Conditional on Region (Controls not listed)

	(1)	(2)
	MERG [electoral]	MERG [liberal]
DRG aid (US)	0.05 (0.05)	0.05 (0.03)
E Europe # DRG aid (US)	-0.05 (0.07)	-0.04 (0.05)

	(1)	(2)
	MERG [electoral]	MERG [liberal]
SS Africa # DRG aid (US)	0.06 (0.09)	-0.01 (0.06)
Mid East # DRG aid (US)	-0.03 (0.05)	-0.03 (0.03)
Asia # DRG aid (US)	-0.04 (0.05)	-0.03 (0.03)
E Europe	-6.90 (4.38)	-2.19 (4.56)
SS Africa	-12.39** (5.01)	-6.65 (4.89)
Mid East	-22.06*** (6.52)	-15.25** (6.07)
Asia	-20.42*** (4.97)	-14.31*** (4.82)
N	1685	1685

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

Figure 15 illustrates the marginal effects of DRG investment by region and the conditional standard errors for each estimate. The impact of DRG investment is positive and significant for the Middle East, yet virtually indistinguishable from the baseline effect. The effects are largest though statistically insignificant for Latin America and Sub Saharan Africa, and in Eastern Europe and Asia, the effect is not only insignificant, but virtually indistinguishable from the baseline effect.

Figure 15. Effect of DRG, Conditional on Region

4.7. DEMOCRATIC BREAKTHROUGHS

For the next set of analyses, we explored whether the level of DRG support during a democratic transition affects in any way the subsequent democratic trajectory of the country. For this purpose, we identified 41 episodes of democratic transition in our sample,¹¹ and estimated the average level of DRG investment during the transition year, the previous year, and the following year. This variable is then employed to model if the trajectory of the country changes in the post-transition years.

The model employed for this purpose is a modified version of the estimator presented in equation (1), such that:

$$y_{it} = \pi_{0i} + \pi_{1i}t + \pi_2 DRG_{it} + \pi_3 t_{POST} + \pi_k v_{kit} + \epsilon_{it} \quad (1B)$$

¹¹ To code these transitions, we rely on the regime type data provided by V-Dem. To be coded as a transition, two conditions must be met: a) a move from any type of autocracy (closed or electoral) to any type of democracy (electoral or liberal); and b) four years of democracy after the transition (no backsliding). If there were multiple democratic transitions for the same country, we only coded the first transition as a democratic breakthrough.

Where t_{POST} is a time counter that takes a value of 0 for all years before a transition (and for countries that did not experience a transition), and measures the number of years elapsed since the transition otherwise. The coefficient for π_3 thus “corrects” the country-specific trend set by π_1 in each case. In turn, this post-transition trend is modeled as:

$$\pi_3 = B_{30} + B_{31}DRGB_i \quad (2B)$$

Where DRGB indicates the level of DRG investment at the time of the breakthrough.

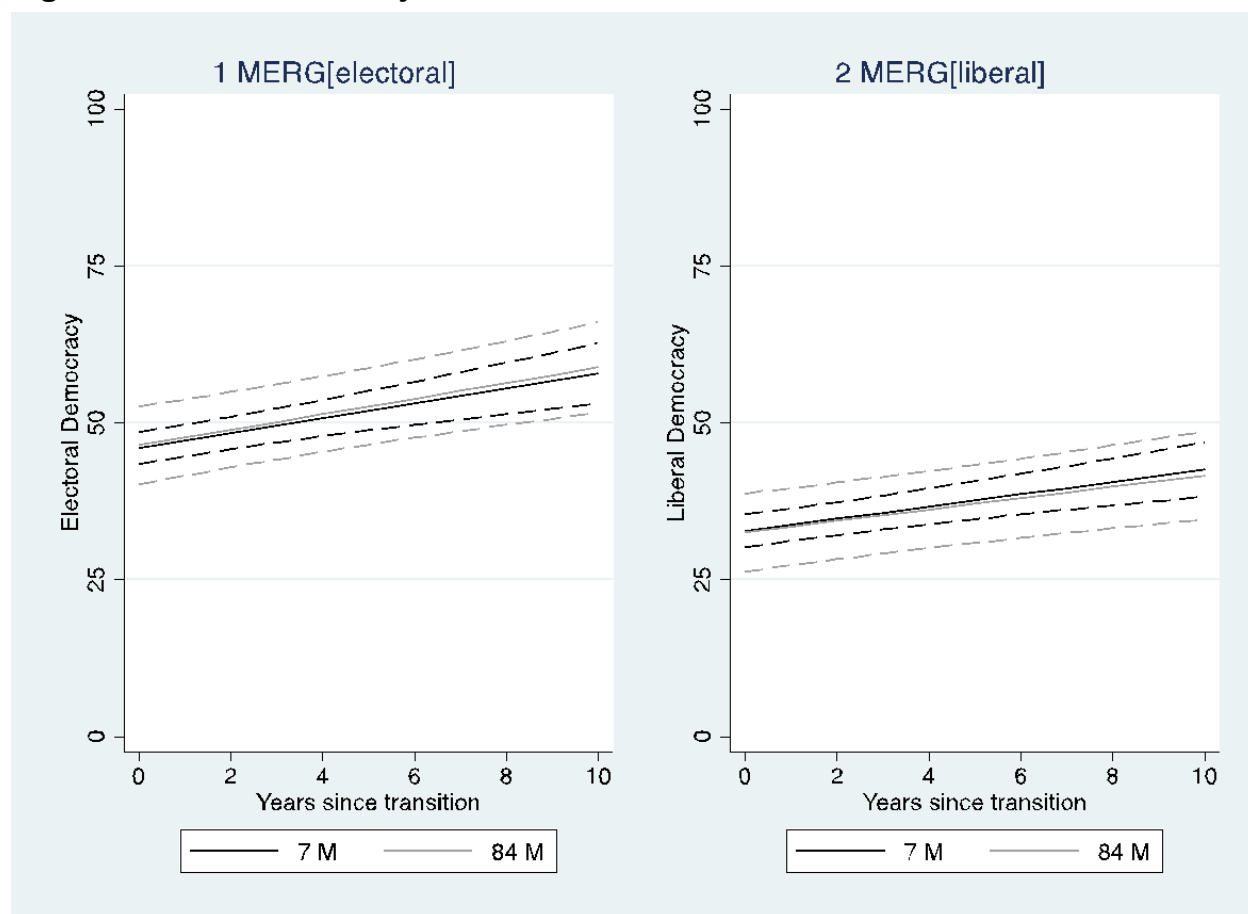
Table 27 summarizes the results of this analysis for electoral and liberal democracies (control variables were included in the models, but are omitted from the table to save space). The results indicate that levels of democracy—not surprisingly—increase in the years following a democratic transition, but the rate of progress is *not* significantly shaped by the level of investment during the breakthrough years.

Table 27. Breakthrough Analyses (Controls not listed)

	(1)	(2)
	MERG [electoral]	MERG [liberal]
DRG aid (US)	0.022** (0.009)	0.014** (0.006)
DRG at transition	0.005 (0.037)	-0.003 (0.037)
Years since transition	1.181*** (0.235)	0.986*** (0.199)
Years since transition # DRG at transition	0.001 (0.003)	-0.001 (0.002)
N	1685	1685
Log-L	-4959.0	-4395.3

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

Based on those results, Figure 16 plots the expected democratic trajectories of two hypothetical countries during the decade after the transition, in terms of both electoral and liberal democracy. The first country received an average of 7 million dollars during the early years (close to the average for recipients), while the second country received 84 million (about two standard deviations from the mean). The simulations for electoral and liberal democracy are similar: the trajectories of the two countries are not distinctively different despite differences in initial investment efforts.

Figure 16. Democratic Trajectories Under Two Levels of Initial Investment

4.8. DEMOCRATIC BACKSLIDING

As a counterpart to the analysis of democratic breakthroughs, we also analyzed the effects of DRG assistance in contexts of democratic backsliding. The results generally indicate that the effects of aid are more uncertain in contexts of democratic erosion, although the effect on electoral democracy appears to be similar in all contexts. The analysis also suggests that DRG assistance is particularly ineffective to promote liberal democracy in hostile contexts of backsliding.

We estimated the effect of DRG in contexts of backsliding using two strategies. In the first analysis, we estimated the country's ongoing trend in democratization as the overall change in levels of electoral (or liberal) democracy observed over the past four years. We then employed the four-year change variable as a moderator for the effect of DRG assistance. The results, presented in Table 28, suggest a slight reduction in the effect of aid for countries with an upward trend (perhaps because of ceiling effects), but no significance differences in DRG effects across contexts. The MERG models in this section controlled for the negative change in the overall post-2001 global trend in

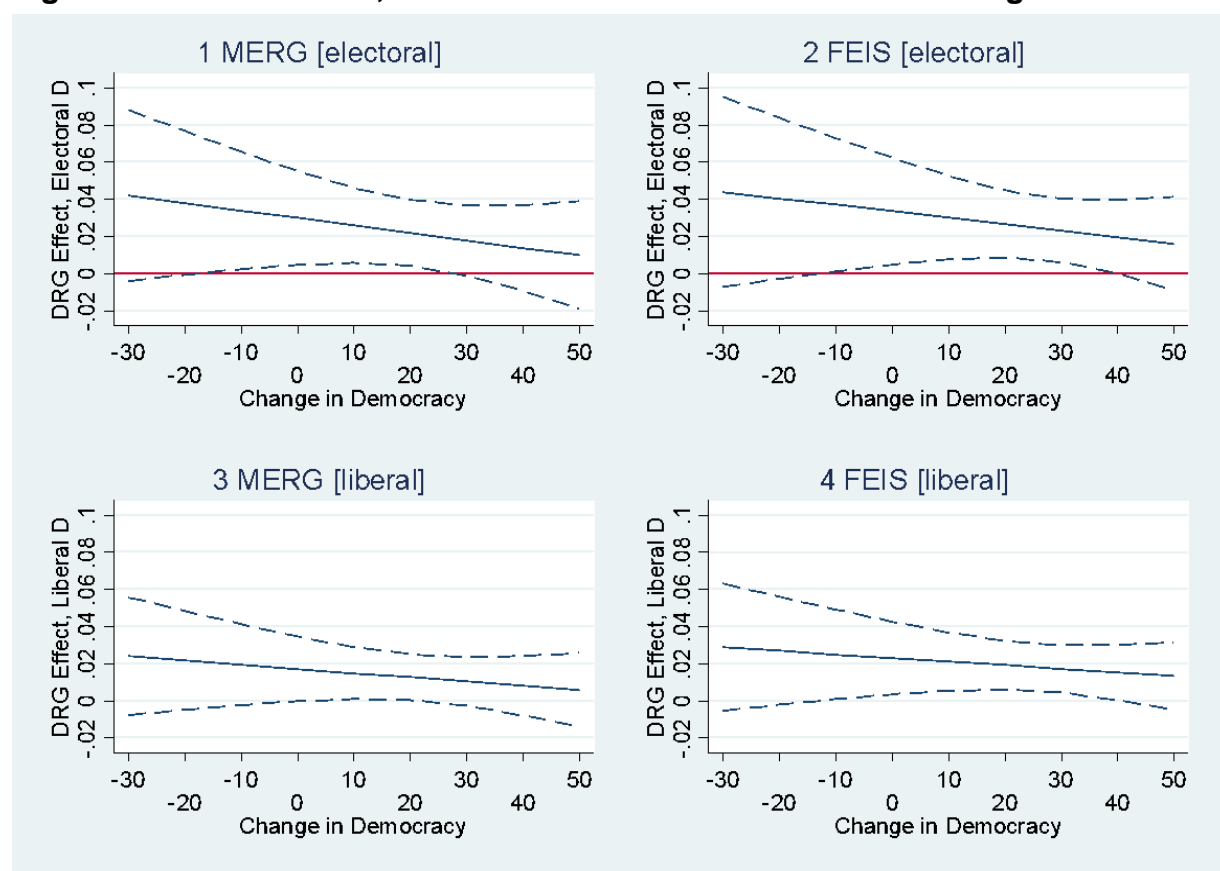
democratization, and the FEIS models controlled as well for differential post-2001 democratization trends for each country.

Table 28. Effect of DRG, Conditional on Recent Changes in Democracy (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.0298** (0.0129)	0.0334** (0.0147)	0.0171* (0.0089)	0.0230** (0.0100)
DRG aid (US) # Change in Democracy	-0.0004 (0.0004)	-0.0003 (0.0004)	-0.0002 (0.0003)	-0.0002 (0.0003)
Change in Democracy	0.1284*** (0.0182)	0.2973*** (0.0292)	0.0906*** (0.0126)	0.1743*** (0.0226)
N	1681	1721	1681	1721

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

Figure 17 shows that, although the effects of aid tend to decline in better contexts, estimates of DRG impact are within the same broad confidence interval for the whole range of the moderator. Confidence intervals are broader for extreme positive or negative changes, which are less common.

Figure 17. Effect of DRG, Conditional on Recent Democratic Change

The second analysis identified 45 episodes of autocratization in the 2001-14 period based on Lührmann and Morgan (2018). We modeled whether the effect of DRG aid was different during those episodes. The results, presented in Table 29, below, suggest that the contribution of DRG to electoral democracy is similar in “normal” contexts and in contexts of autocratization. In contrast, the contribution of DRG investment to liberal democracy drops significantly in contexts of backsliding.

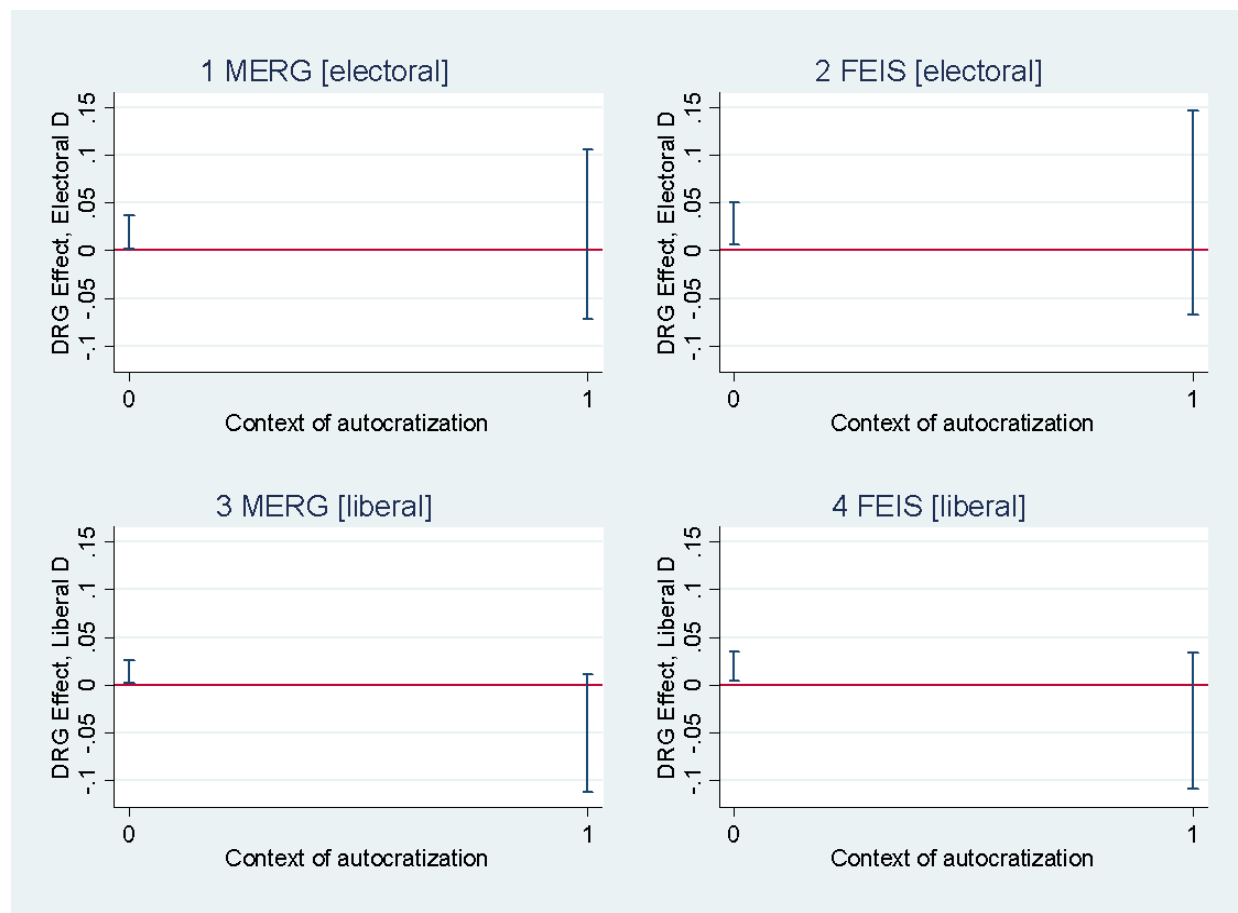
Table 29. Effect of DRG, Conditional on Autocratization (Controls not listed)

	(1)	(2)	(3)	(4)
	MERG [electoral]	FEIS [electoral]	MERG [liberal]	FEIS [liberal]
DRG aid (US)	0.019** (0.009)	0.028** (0.011)	0.013** (0.006)	0.020** (0.008)
backsliding=1 # DRG aid (US)	-0.002 (0.045)	0.012 (0.055)	-0.064** (0.031)	-0.057 (0.037)
backsliding=1	-6.761*** (0.623)	-6.110*** (1.435)	-3.948*** (0.432)	-3.634*** (0.795)
N	1685	1733	1685	1733

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

Figure 18 below compares the marginal effects of DRG in both contexts. The estimates indicate that the effects are positive and significant in “normal” contexts, but quite uncertain and statistically insignificant in contexts of autocratization. The drop in the size of the effects is quite visible in the case of liberal democracy. The marginal effects become negative, although we cannot conclude that DRG produces a negative impact on liberal democracy in contexts of autocratization, because the broad confidence intervals indicate that the estimates are statistically indistinguishable from zero.

Figure 18. Effect of DRG, Conditional on Autocratization



5. CONCLUSION

In sum, the effect of DRG expenditures on overall levels of democracy is positive but weak in the contemporary period (2001-2014). In analyses with the longer series (1992-2014) combining FAE and Green-Richter data, we find a structural break in the statistical effects circa 2001. DRG aid from the US is positively associated with democratic development during the earlier period (confirming the findings of our earlier studies) but its effect declined significantly during the contemporary era.

We tested whether the conclusions were altered with different measures of DRG expenditures -- the natural log of total aid to allow for the possibility of diminishing returns, total aid divided by the recipient's GDP, and total aid divided by the recipient's population. The results suggest the possibility of diminishing returns, as the log of DRG expenditures is statistically significant across all models. Additional evidence of diminishing returns was also found in interaction models showing that the marginal effect of aid declines when average outlays over the past four years have been higher.

In models estimating the impact of the expenditures in the four DRG program areas, we find no effects on any of the program-specific democratic outcomes in the 2001-2014 period, with the exception of expenditures in program area 220 (Good Governance). These effects, however, are quite modest in size.

We estimated a series of interaction models to explore the possibility that the effect of DRG investment on democracy is conditioned by different types of moderating variables. We analyzed three classes of moderators: patterns of investment, time-varying moderators, and country-level moderators. Among the most important results, we find that DRG investment has a greater effect on democracy when levels of prior investment are low, when investments are stable, and when investments are concentrated in few program areas.

Our results also suggest that DRG aid has a greater effect on democracy when levels of US military assistance are low, when the recipient country lies in the middle of the regime spectrum (neither too democratic nor too autocratic), and, for outcomes related to liberal democracy, when the country is not otherwise "backsliding" toward greater autocracy. Lastly, we found some evidence that DRG aid has a greater effect on democracy when the recipient country is ethnically homogenous and is a former French colony.

6. APPENDICES

6.1. V-DEM INDICATORS FOR PROGRAM ELEMENTS

PROGRAM AREA / ELEMENT	V-DEM INDICATORS
1. Rule of law and Human Rights	(5 program elements measured)
Constitutions, laws and legal systems (1 indicator)	Transparent laws: v2cltrnslw
Culture of lawfulness (0 indicators)	(None)
Checks and balances with judicial independence and supremacy of law (8 indicators)	Executive respects constitution: v2exrescon Compliance with judiciary: v2jucomp Compliance with high court: v2juhccomp High court independence: v2juhcind Lower court independence: v2juncind Judicial purges: v2jupurge Government attacks on judiciary: v2jupoatch Judicial accountability: v2juaccnt
Justice systems and institutions (0 indicators)	(None)
Fairness and access to justice (2 indicators)	Access to justice for men: v2clacjstm Access to justice for women: v2clacjstw
Human rights systems, policies, and protection (8 indicators)	No forced labor: (v2clslavem + v2clslavef)/2 Property rights: (v2clprptym + v2clprptyw)/2 Freedom of foreign movement: v2clfmov Domestic movement: (v2cldmovem + v2cldmovew)/2 Freedom of religion: v2clrelig Religious organization: v2csrlgrop Political killings: v2clkill Freedom from torture: v2cltort
Transitional justice (0 indicators)	(None)
Equal rights for marginalized groups (5 indicators)	Social class equality civil liberties: v2clacjust Social group equality civil liberties: v2clsocgrp Power distributed by gender: v2pepwrgrn Power by socioeconomic position: v2pepwrse Power distributed by social group: v2pepwrsoc
2. Good Governance	(4 program elements measured)
Legislative authority (4 indicators)	Legislature questions officials: v2lgqstexp Legislature investigates: v2lginvstp Legislature opposition parties: v2lgoppart Legislature controls resources: v2lgfunds
Non-security executive authority (2 indicators)	Rigorous public administration: v2clrspct Executive oversight: v2lgotovst

PROGRAM AREA / ELEMENT	V-DEM INDICATORS
Local government and decentralization (4 indicators)	Local government exists: v2ellocgov Regional government exists: v2elreggov Local government elected: v2ellocelc Local offices relative power: v2ellocpwr
Anti-corruption reforms (6 indicators)	Legislature corrupt activities: v2lgcrprt Judicial corruption: v2jucorrdc Public sector corrupt exchanges: v2excrptps Public sector theft: v2exthtfts Executive bribery: v2exbribe Executive embezzlement: v2exembez
Executive authority - security (civilian) (0 indicators)	(None)
3. Political competition and Consensus	(3 program elements measured)
Consensus-building processes (3 indicators)	Respect counterarguments: v2dlcountr Range of consultation: v2dlconslt Engaged society: v2dlengage
Elections and political processes (1 aggregate indicator)	Clean elections: v2xel_frefair
Political parties (7 indicators)	Party bans: v2psparban Barriers to parties: v2psbars Opposition parties autonomy: v2psoppaut Party organizations: v2psorgs Party branches: v2psprbrch Party linkages: v2psprbrch Distinct party platforms: v2psplats
4. Civil Society and Independent Media	(4 program elements measured)
Enabling environment for civil society (2 indicators)	CSO entry and exit: v2cseeorgs CSO repression: v2csreprss
Civil society organizational capacity development (1 indicator)	CSO participatory environment: v2csprtcpt
Civic education, citizen participation and public accountability (1 indicator)	CSO consultation: v2cscnsult
Civic education and democratic culture (0 indicators)	(None)
Democratic labor and trade unions (0 indicators)	(None)

PROGRAM AREA / ELEMENT	V-DEM INDICATORS
Enabling environment for media and free flow of information (7 indicators)	Government censorship: v2mecenefm Harassment of journalists: v2meharjrn Media self-censorship: v2meslfcen Media bias: v2mebias Print/broadcast media critical: v2mecrit Print/broadcast media perspectives: v2merange Internet censorship: v2mecenefi
Professional and institutional capacities of media (0 indicators)	(None)
Outlets and infrastructure (0 indicators)	(None)

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