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Assessing the Impact of Continuing Resolutions (CRs) on DoD Contract Obligation Rates

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Abstract

One concern often raised with the Department of Defense (DoD) Planning, Programming, Budgeting, and Execution (PPBE) process is the potential effect of continuing resolutions (CRs) on spending. Using DoD data on monthly total contract obligations from fiscal years (FYs) 2011–2023, this research examines whether CRs or other variables had a statistically significant effect on the monthly rate at which the DoD obligates funds on contracts. Linear regression models of obligation data find that budgetary CRs from Congress generally correlated with higher obligation rates in the few months after the full budget is passed (i.e., a bump in spending once managers know their authorized spending). The months affected varied by category ("color") of money. Also, in some Research, Development, Test, and Evaluation (RDT&E) budget activities, spending was also lower during CR months.

Introduction

In the Federal government, program and contract spending involve two basic steps:

- *Obligations*, which commit funds from the U.S. Treasury for payment of goods and services (e.g., on a contract).[1]

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[1] The Government Accountability Office (GAO; 2005) defines an *obligation* as "A definite commitment that creates a legal liability of the government for the payment of goods and services ordered or received, or a legal duty on the part of the United States that could mature into a legal liability by virtue of actions on the part of the other party beyond the control of the United States. Payment may be made immediately or in the future. An agency incurs an obligation, for example, when it places an order, signs a contract, awards a grant, purchases a service, or takes other actions that require the government to make payments to the public or from one government account to another" (p. 70).

- *Expenditures* (also called *outlays* or *disbursements*), which are the actual financial payments (money) from the U.S. Treasury to liquidate an obligation (e.g., upon receipt of goods or services under a contract).[2]

If Congress does not pass a Department of Defense (DoD) budget by the beginning of the fiscal year (FY) starting on October 1, Congress often passes one or more continuing resolutions (CRs) to provide interim funding until the final FY appropriations act is passed. Through quantitative analysis of actual DoD obligations, we examine whether, when, and to what extent monthly obligation rates are affected by operating under or after a CR rather than a final budget for the FY.

Obligation Rates and the Effects of Continuing Resolutions and Other Events

CRs often provide only partial funding—say, spending up to 80 or 90% of last year's appropriations—and usually prevent new program starts unless explicitly authorized in the CR. Also, if the final appropriations are lower than the requested budgets, then the program will likely need to replan and spend differently to reoptimize; this uncertainty makes it hard to know what to obligate during a CR. Even with CRs, final funding delays could potentially affect obligation rates on acquisition programs, procurement, sustainment, or operations. As a result, one might expect DoD obligations to be slower during a CR and then increase at a higher rate after a full budget is passed (i.e., showing an inflection point after the CR is passed).

In response to a request from the Commission on PPBE Reform, we conducted statistical analyses on available data to see if periods of CRs correlate with changes in the rate at which the DoD obligates funds.

Below, we first present summary data on CRs, followed by analysis of correlates that affect monthly obligation rates following the authorization and appropriation of funds for a FY's budget—including CRs and other variables. This includes analysis of the following major categories of funding: Research, Development, Test, and Evaluation (RDT&E), Procurement (PROC), Operation and Maintenance (O&M), Military Personnel (MILPERS), and Military Construction (MILCON).

Continuing Resolutions in Fiscal Years 2010–2022

When the U.S. Congress is unable to authorize and appropriate spending by the beginning of a FY, which starts on October 1, then Congress often passes one or more CRs. These resolutions provide interim funding to avoid a partial government shutdown until a full year-long budget (authorized and appropriations) can be enacted (for example, GAO, 2022). As shown in Figure 1, there were CRs in every FY from 2011–2022, as well as three lapses in appropriations that resulted in government shutdowns.

Table 1 lists the dates when final authorization and appropriation acts were passed by Congress and became law (usually when signed by the president of the United States). For our analysis, we coded a variable for each month after the full-year budget was passed to test for

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[2] The GAO (2005) defines an *outlay* (i.e., expenditure or disbursement) as "The issuance of checks, disbursement of cash, or electronic transfer of funds made to liquidate a federal obligation. Outlays also occur when interest on the Treasury debt held by the public accrues and when the government issues bonds, notes, debentures, monetary credits, or other cash-equivalent instruments in order to liquidate obligations" (pp. 73–74).

consistent changes in obligation rates after CRs were over. These months after budget (MABs) are also shown in Table 1.
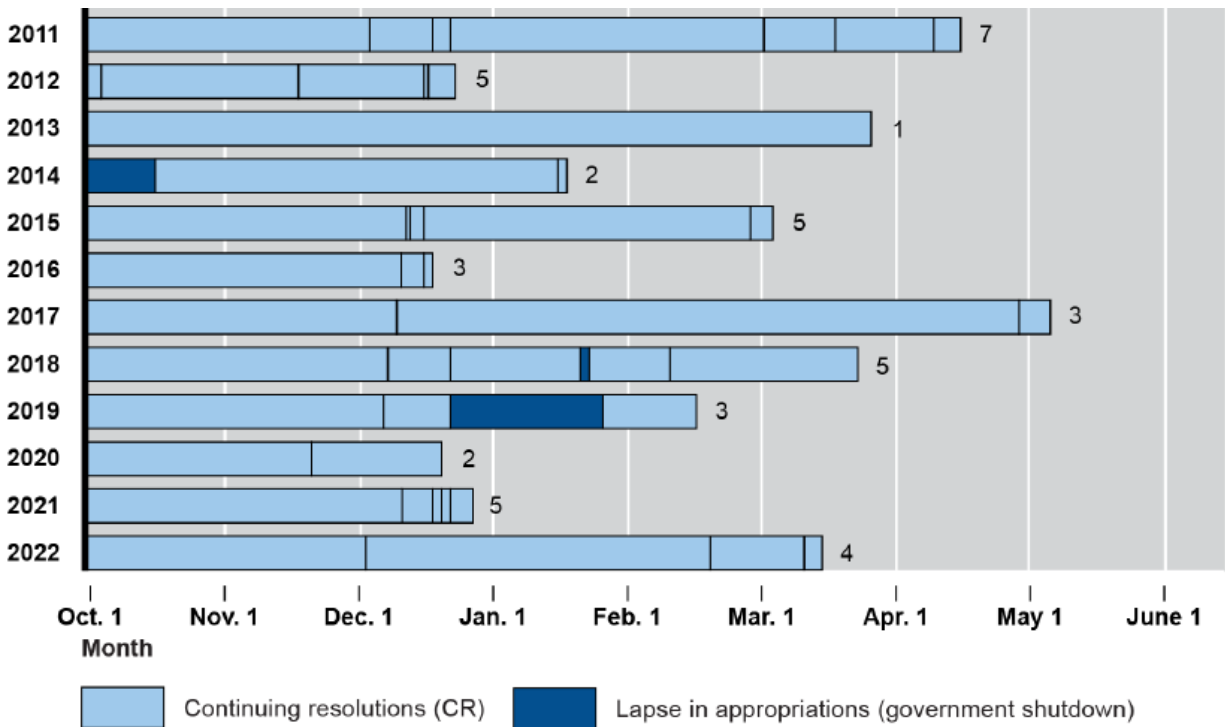

Figure 1. Number and Duration of Federal-Wide CRs and Lapses in Appropriations (FY 2011–2022)

(GAO, 2022)
NOTE: These are federal-wide CRs. In FY 2019, the DoD actually received its authorization and appropriation acts before the start of the FY.

Table 1. Dates of Final DoD Authorization and Appropriation Acts and MABs (FY 2011–2023)

(Commission on PPBE Reform, 2023)

FY	Authorizations	Appropriations	1 MAB	2 MAB	3 MAB	4 MAB
2011	1/7/2011	4/15/2011	April	May	June	July
2012	12/31/2011	12/23/2011	January	February	March	April
2013	½/2013	3/26/2013	April	May	June	July
2014	12/26/2013	1/17/2014	January	February	March	April
2015	12/19/2014	12/16/2014	January	February	March	April
2016	11/25/2015	12/18/2015	January	February	March	April
2017	12/23/2016	5/5/2017	May	June	July	August
2018	12/12/2017	3/3/2018	March	April	May	June
2019	8/13/2018	9/28/2018	October	November	December	January
2020	12/20/2019	12/20/2019	January	February	March	April
2021	1/1/2021	12/27/2020	January	February	March	April
2022	3/15/2022	3/15/2022	March	April	May	June
2023	12/23/2022	12/29/2022	January	February	March	April

NOTE: If there were at least 10 working days in the month that the final budget (appropriation) was passed, then the 1st month after budget (MAB) is the month of passage, else the following calendar month is the 1st MAB (1 MAB). For example, for FY 2014, passage was on 1/17/2014 with at least 10 working days in January, so 1 MAB was January. However, in FY 2015, passage was on 12/16/2014, so with the end-of-year holidays, we used January instead of December as the 1 MAB.

Monthly Obligation Rates by Categories of Funding

We obtained data from the DoD's Advana data environment on monthly obligated dollars for separate accounts (e.g., within military services or defense-wide) and categories of funding (RDT&E, Procurement, O&M, MILPERS, and MILCON) going back to FY 2011. The data also included a range of other categories, such as MILCON and smaller accounts, that are not analyzed in this paper.

We aggregated these data to obtain monthly obligation dollars by category across all accounts, then calculated the percentage obligated in each month compared to the total dollars obligated by the final month. For example, if the RDT&E obligated in month 2 (November of the first year) was $5,112,653, and the total obligated by month 24 (September of the second year) was $71,339,247, then the month 2 percentage is about 7.17% (= $5,112,653/$71,339,247). Table 2 lists the number of nominal months available to obligate by category of funding.

Table 2. Month Used for Final Obligation Values
(DoD, 2008)

Category	Years to Obligate	Final Month
RDT&E	2	24
Procurement	3	36
O&M	1	12
MILPERS	1	12
MILCON	5	60

Note: See Section 1.7.2.25 (years for new obligations unexpired). MILCON final month was based on when the reported obligations in the DoD data began to flatten on average.

This yielded a series of monthly obligation rates (percentages) for each FY's authorization and appropriation out to the end of those obligations. Thus, we have a 24-month series for FY

2011 RDT&E obligations. Likewise, we have 36-month, 12-month, and 12-month series of obligation rates for FY 2011 Proc, O&M, and MILPERS, respectively. This allows us to analyze the obligation rates for each FY's authorized and appropriated dollars separately, even when they extend into subsequent years (e.g., analyze the FY 2011 RDT&E dollars obligated in FY 2012 separately from the FY 2012 RDT&E dollars obligated in FY 2012).

RDT&E Monthly Obligation Rates

Figure 2 shows the cumulative RDT&E obligations as a percentage of the total by month 24 of the allotted time to obligate RDT&E. Note that 85.8% of the RDT&E is obligated by the end of the first year. Figure 3 shows these data as monthly obligation rates for the first year.
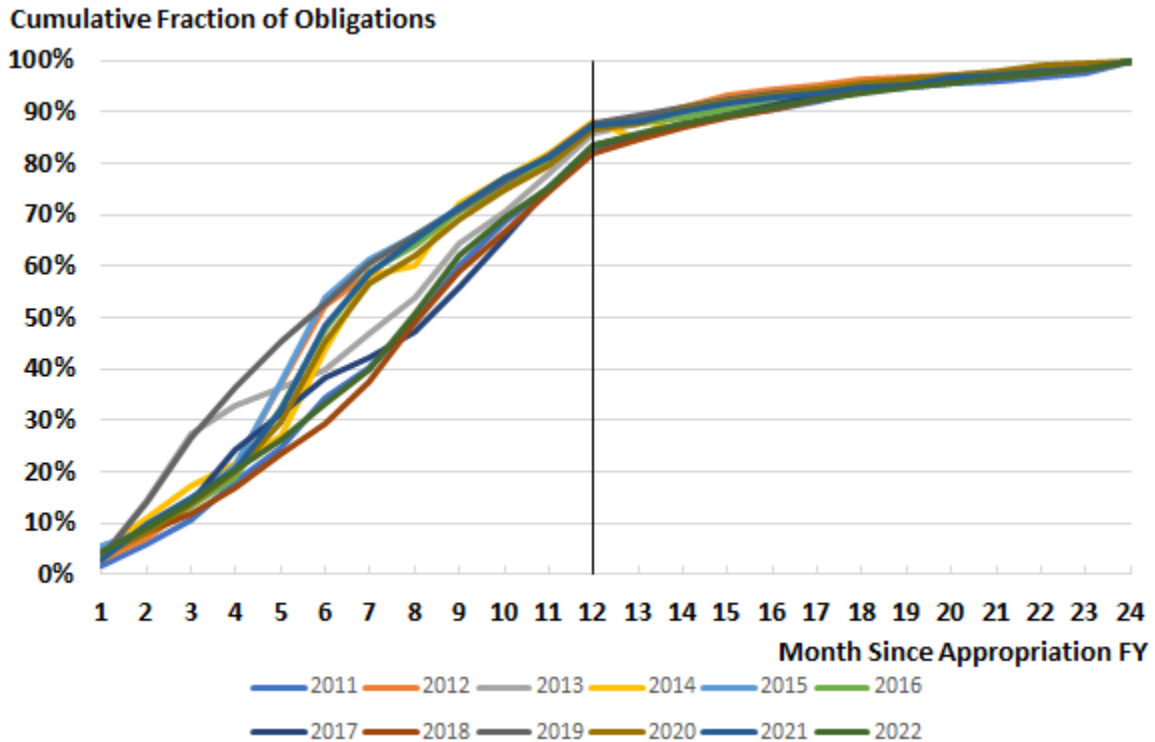

Figure 2. Fraction of Cumulative RDT&E Obligations by Month (FY 2011–2022 Appropriations)

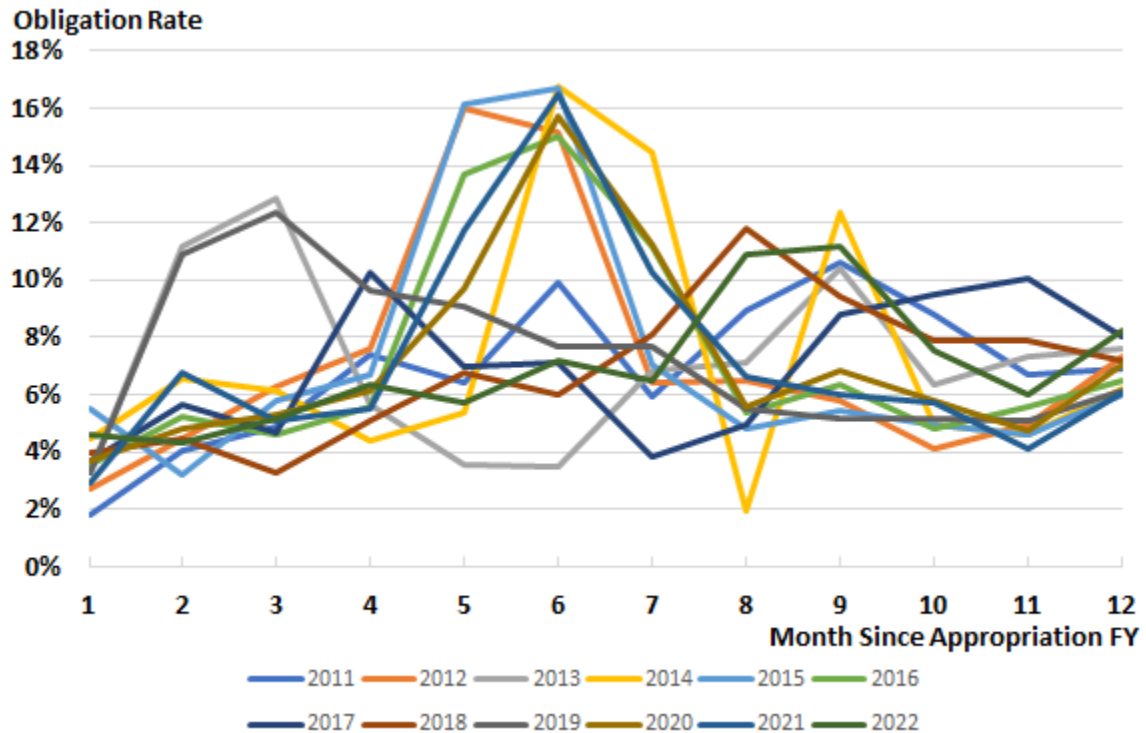NOTE: Month 1 is October of the FY in which the appropriations were made.

Figure 3. RDT&E Monthly Obligation Fractional Rates: Year 1 (FY 2011–2022 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.

Procurement Monthly Obligation Rates

Figure 4 shows the cumulative Procurement obligations as a percentage of the total by month 36. Note that on average, 72.3% of Procurement dollars are obligated by the end of the first year. Figure 5 shows these data as monthly obligation rates for the first year.
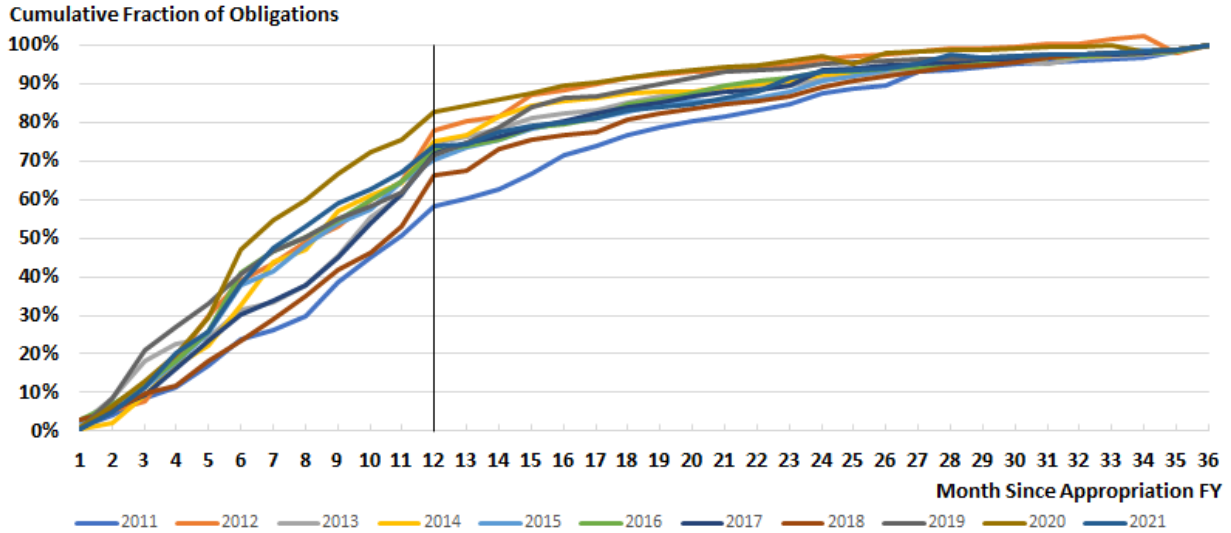
Figure 4. Fraction of Cumulative Procurement Obligations by Month (FY 2011–2021 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.
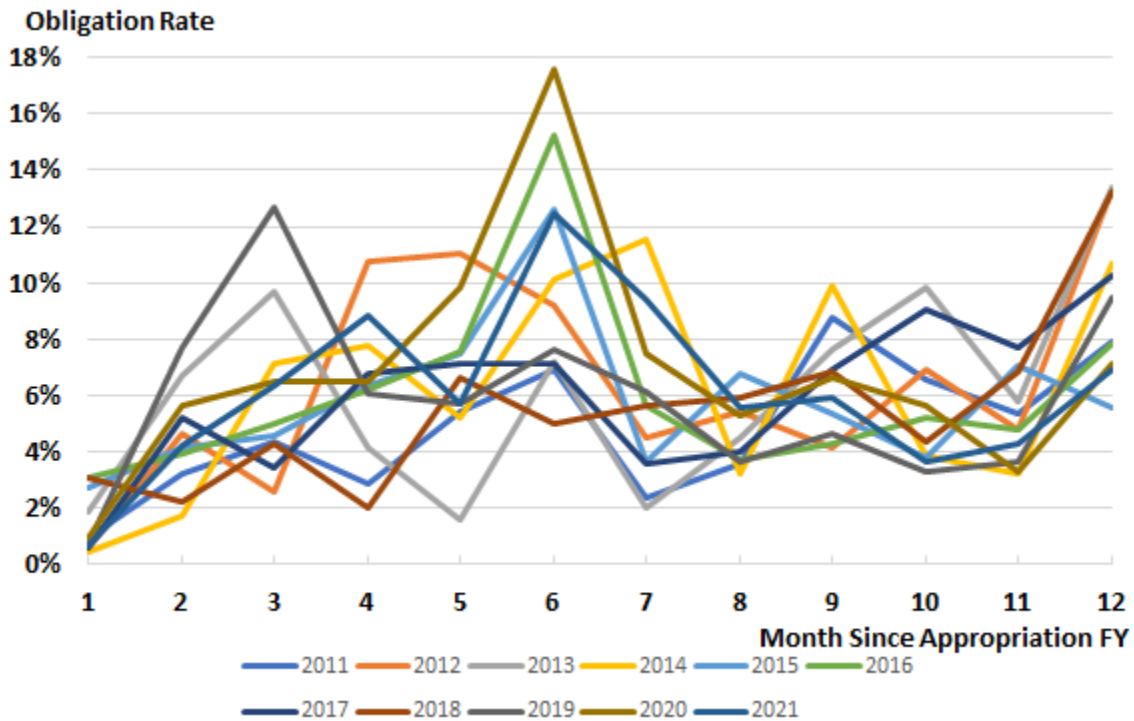

Figure 5. Procurement Monthly Obligation Fractional Rates: Year 1 (FY 2011–2021 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.

O&M Monthly Obligation Rates

Figure 6 shows the cumulative O&M obligations as a percentage of the total by the end of the FY. Figure 7 shows the monthly obligation rates for the year.
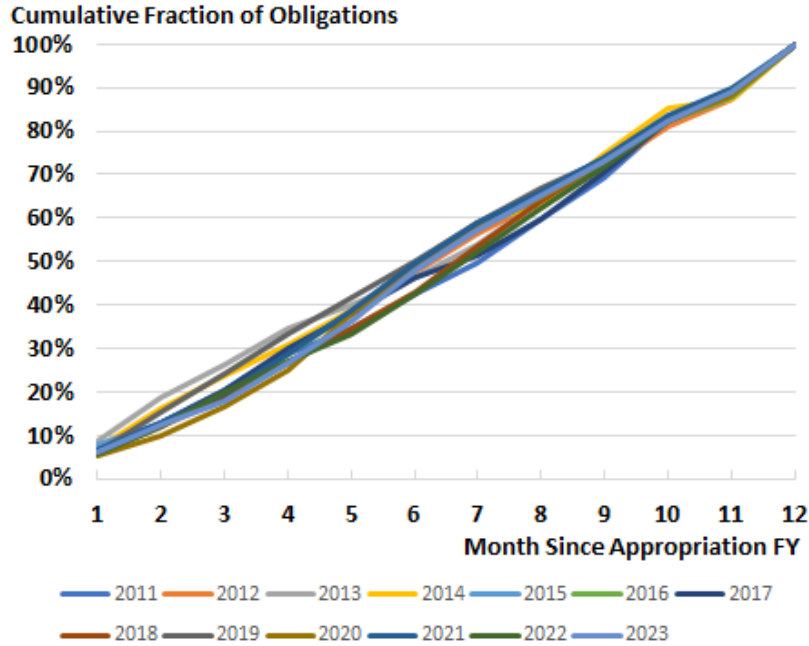
Figure 6. Fraction of Cumulative O&M Obligations by Month (FY 2011–2023 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.
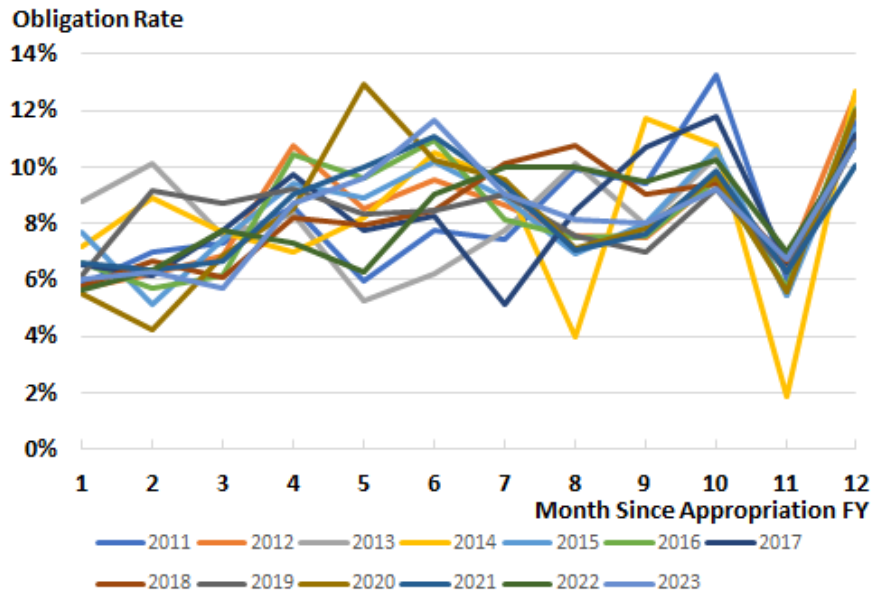

Figure 7. O&M Monthly Obligation Fractional Rates (FY 2011–2023 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.

Military Personnel Monthly Obligation Rates

Figure 8 shows the cumulative MILPERS obligations as a percentage of the total by month 36. Figure 9 shows these data as monthly obligation rates for the year available for obligation.
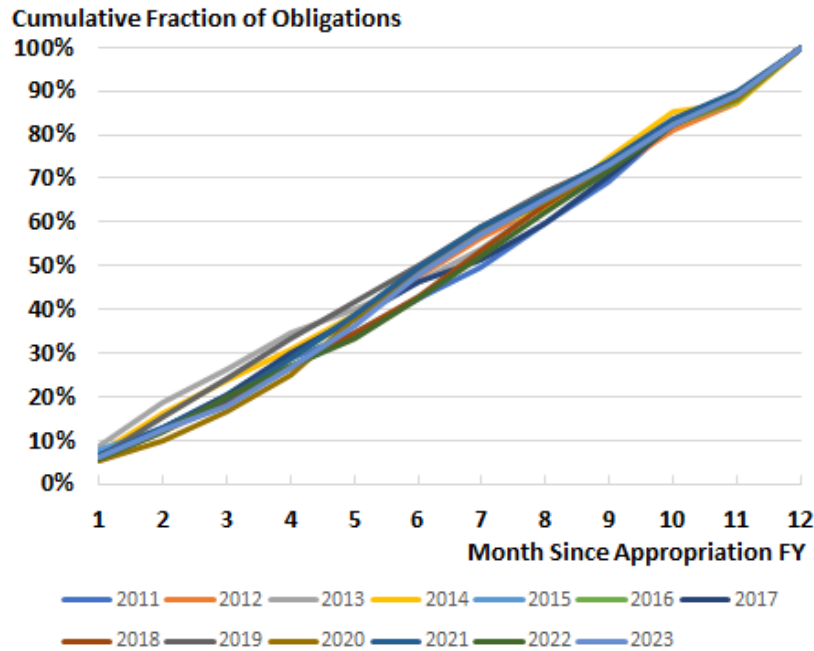

Figure 8. Fraction of Cumulative MILPERS Obligations by Month (FY 2011–2023 Appropriations)

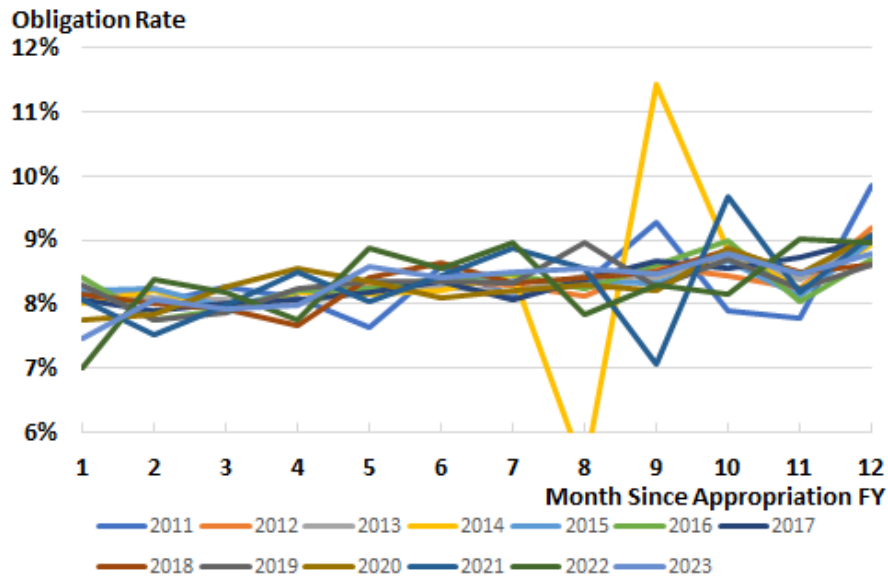NOTE: Month 1 is October of the FY in which the appropriations were made.

Figure 9. MILPERS Monthly Obligation Fractional Rates (FY 2011–2023 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.

MILCON Monthly Obligation Rates

Figure 10 shows the cumulative dollars obligated by month for MILCON in appropriation years FY 2011–2023. The larger obvious data issues were cleaned, especially through month 60, but what appear to be drops in data reporting can still be seen. Also, there continue to be significant obligations after month 36 (despite what the benchmarks seek).

Figure 11 shows the cumulative MILCON obligations as a percentage of the total by month 60. Because it is unclear what the final obligation values are (see Anton & Buettner, n.d., Figure 2-12), we used the value at month 60 as the final total for the actuals when calculating percentages of total. This skews the tail end of this chart and may not align with how the Comptroller applies the benchmarks against the total obligation authority values that they have. Thus, the values towards the end of these figures are less accurate.
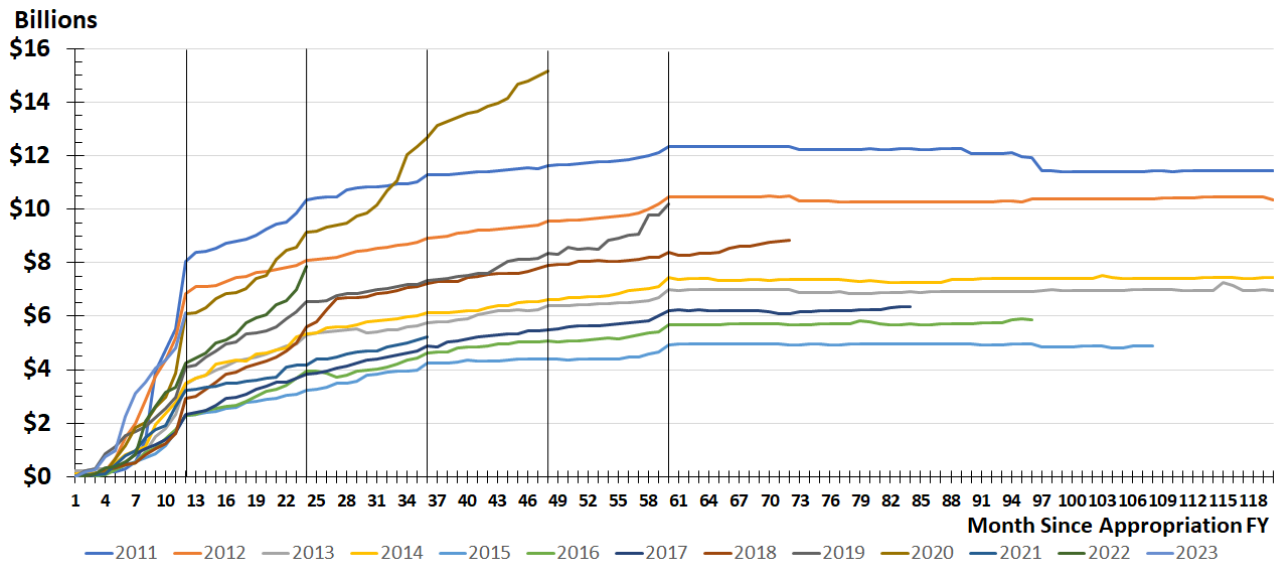

Figure 10. Cumulative MILCON Obligation Dollars by Month (FY 2011–2023 Appropriations)

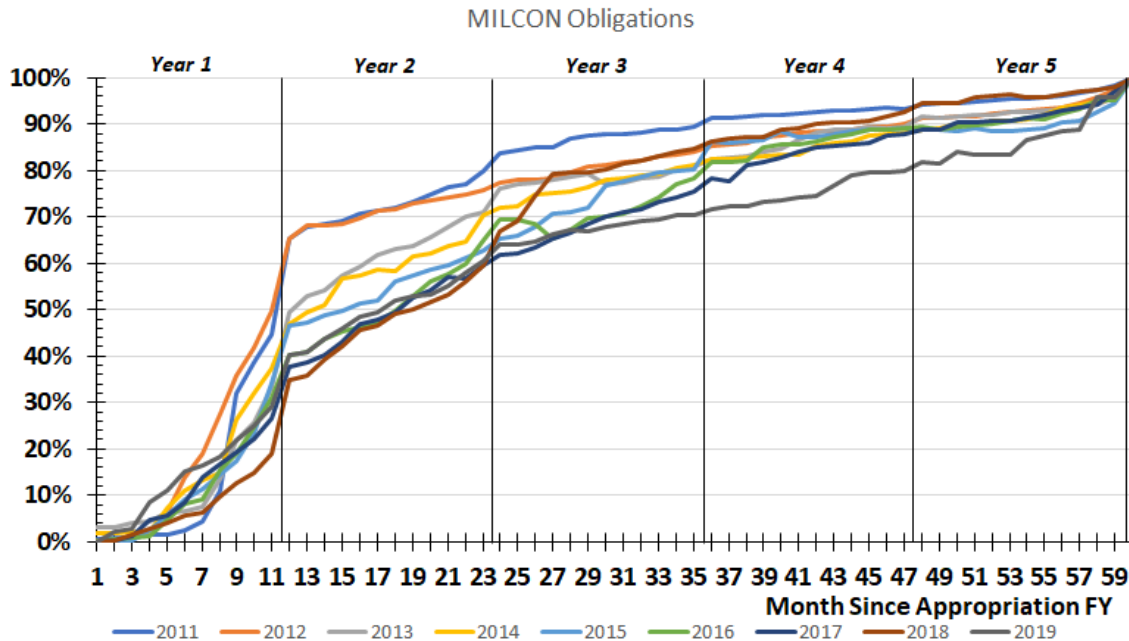NOTE: Month 1 is October of the FY in which the appropriations were made.

Figure 11. Fraction of Cumulative MILCON Obligations by Month (FY 2011–2019 Appropriations)

NOTE: Month 1 is October of the FY in which the appropriations were made.

CR and Other Effects on DoD Obligation Monthly Rates

Using the data from Advana, we conducted multivariate linear regressions on individual obligation categories (colors of money) to identify any variables that correlate with changes in the normal monthly obligation rates. Table 3 lists the variables tested for correlation (i.e., with a p-value no higher than 0.05). Visual examination of the monthly obligation rates indicated that the first year of obligation behaved differently than any subsequent years, so for multi-year appropriations (RDT&E and PROC), we conducted separate regressions for the first and subsequent years.

Table 4 summarizes the statistical results with the following observations.[3] The data are well modeled by a linear obligation rate (the constant base) with adjustments for the variables shown. For example, on average, the RDT&E rate in October of the first year of obligating a FY's appropriation was 5.9% − 2.3% = 3.6%. If March of the first spending year was also the third month after the budget was passed (3 MAB), then on average, the obligation rate would be about 5.9% + 6.3% + 2.3% = 14.5% (which is close to the actual value of 15.1% for FY 2012, for example).

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[3] Statistically, we note the following:

- While all have descent Adjusted R^2 values, the values for RDT&E (1st year), PROC, and O&M are the highest. Thus, the latter explain the variation in the data well.

- The models (the constant monthly linear contribution plus the contributions from the variables in the model) are fairly linear, with the RDT&E 1st-year for RDT&E and PROC (respectively) and O&M being very linear.

Table 3. Variables Tested for Effects on Monthly Obligation Rates

Type	Variables	
FY calendar month	October November December January February March	April May June July August September
Month after full budget passed	1 MAB 2 MAB 3 MAB 4 MAB 5 MAB	
Time (month #)	Time	

Table 4. Contributions of CR and Other Variables Affecting Obligation Rates (FY 2011–2023 Appropriations)

			RDT&E		PROC		O&M	MILPERS
			1st Year	2nd Year	1st Year	2nd–3rd Years		
Average Base	**Monthly Rate**	*Base rate:*	5.9%	1.7%	5.0%	2.0%	7.5%	7.9%
CR Effects	1st MAB	*If true, add:*					1.2%	
	2nd MAB	*If true, add:*	4.3%		1.8%		2.4%	
	3rd MAB	*If true, add:*	6.3%		4.6%		2.4%	
	4th MAB	*If true, add:*	3.7%		2.2%		1.6%	
Calendar Month Effects	October	*If true, add:*	−2.3%		−3.6%		−1.1%	
	November	*If true, add:*		0.9%		0.6%	−0.8%	
	December	*If true, add:*				0.9%		
	March	*If true, add:*	2.3%		2.6%	0.4%		
	July	*If true, add:*					2.4%	
	August	*If true, add:*					−1.8%	
	September	*If true, add:*		1.0%	4.6%	1.4%	4.1%	0.4%
Time Trend	**Time (month)**	*If true, add:*		−0.1%		−0.1%		0.1%

Linearity	**Multiple R**		0.80	0.58	0.77	0.66	0.84	0.48
% of variation explained	**Adjusted R²**		63%	32%	57%	43%	68%	22%

CRs affect obligation rates as a 2–3-month increase after the budget is passed. CRs affect obligations for RDT&E, PROC, and O&M but not MILPERS. These effects are seen predominantly as increased obligations in the second through fourth months after the budgets are passed but do not extend into subsequent months. The effect is strongest for RDT&E, wherein about a seventh (14.4%) of all RDT&E appears to be withheld until after the budget is passed, contributing to a bump of 14.4% spread over the second through fourth months after passage, about doubling the obligation rates in months 2–3 MAB and six-tenths higher in 4 MAB. This is true also for PROC and O&M, but the bump is smaller at 8.7% and 7.7%, respectively. With PROC

rates about double in 3 MAB and O&M rates about a third higher in 2–3 MAB. Interestingly, this effect is a short-lived bump rather than an inflection in the rates. MILPERS shows no significant post-CR effects.

Obligation rates are higher the month before the midyear appropriation review. For RDT&E and PROC, there is an increase in March of about 40–50%. This may be due to proactive increases in anticipation of the midyear budget reviews in the April and May timeframe. These reviews compare planned to actual obligation and expenditure rates and are "the beginning of major reprogramming activity within the Defense Department, to ensure all appropriated funds are used" (Department of the Air Force, 2022, p. 54).

CR and Other Effects on DoD Obligation Monthly Rates: RDT&E by Budget Activity

The analysis above examined RDT&E obligations together. Subsequently, we obtained DoD monthly RDT&E obligations data broken down by Budget Activity (BA) for appropriation FYs 2013, 2014, and 2017–2022. Table 5 shows the results of the linear regressions on the RDT&E monthly obligation rates as percentages of appropriation-year dollars associated variables across all of RDT&E (original Advana data) and broken down by S&T, development, and management accounts. Table 6 further shows the breakout of S&T by Budget Activity (BA) 1–3. RDT&E obligations for each FY extend for two years. The monthly obligation rates show a major inflection after the first year, so separate regressions were made for each obligation FY. These tables show the average percentage rates (the "average base") plus the additional percentage-points associated with the variables shown.

When breaking S&T and BAs out of the earlier aggregated RDT&E model uncovered a direct continuing resolution (CR) effect. BAs 2–3 (in S&T) and BA-6 (Management Support [Mgt]) had statistically significant reductions in monthly obligation rates in the first year of about 1.0 to 1.4%. That is in addition to the prior short-term increases in the few months after the full FY budget was passed (MAB). Both the increase in obligation rates in the first few MABs as well as the CR effects for RDT&E and BA-6 can be seen in Figure 12, which plots monthly obligation rates for different appropriation FYs with the budget passage (MABs) aligned instead of by calendar month. This figure also shows that the MAB result is larger for non-S&T but not BA-6 (which has the lowest and more inconsistent MAB effect). In addition, the CR effect also can be seen clearly in the S&T plot in Figure 13.
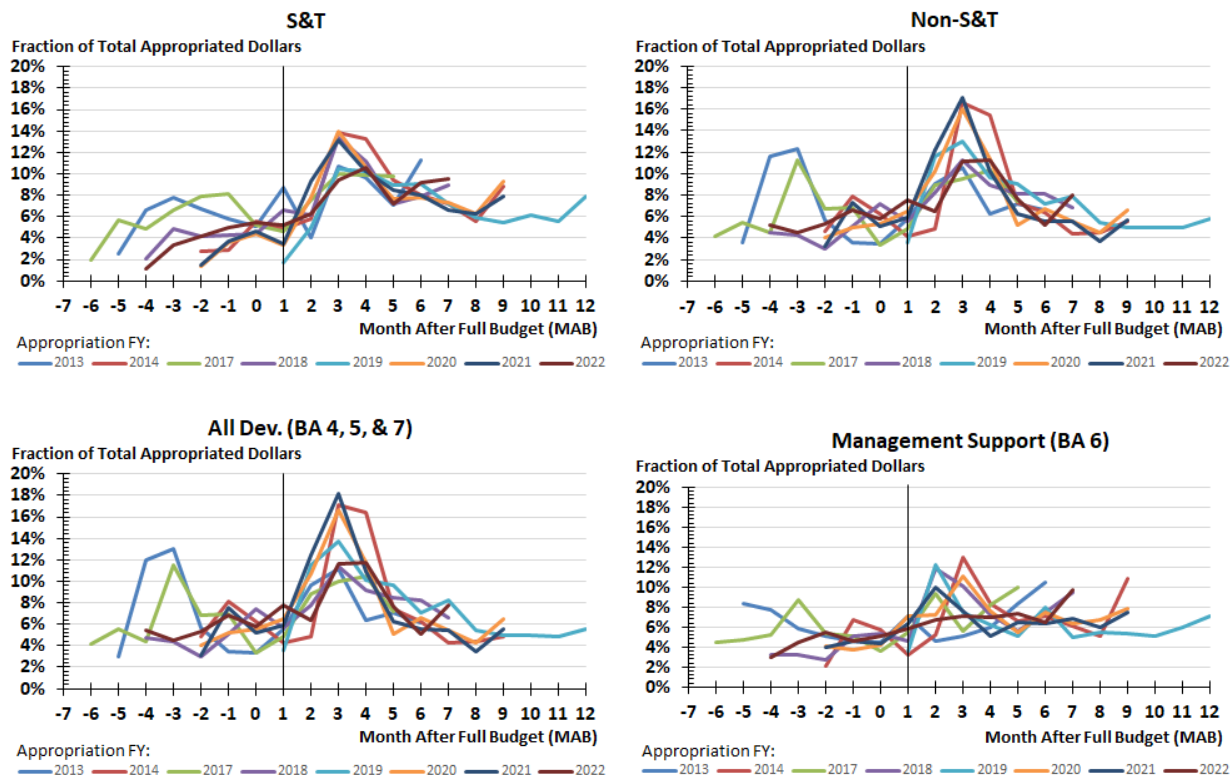
Figure 12. Monthly S&T Obligation Rates for Appropriation FYs Aligned to When the Full Budget Is Passed (FY 2013–2014, 2017–2022 Appropriations)

As an example of how to read the model results in Table 5 and Table 6, if January was the first month after the budget was passed (the "1 MAB") for an appropriation FY, then the model would predict the monthly appropriation rates shown in Table 7. In our data sample, appropriations from FYs 2014, 2020, and 2021 had their first MAB in January. Figure 13 shows that their incremental monthly obligation rates align to each other and to the model shown in Table 7 for FYs with January 1 MABs. Here, months 1–3 (October through December) operated under a CR and thus were below the base constant of 6.4%. The model showed that October was an additional 3.5 percentage points low and November an additional 1.1 percentage points lower than the baseline minus the CR effect. This can be seen in the lower-left of the figure. The first MAB is 1.6 percentage points lower in the model but rises significantly in MABs 3–8, then returns closer to the base constant with a final increase in September. The example shows that the expected cumulative obligations should be about 84% by September; the actuals for FYs 2014, 2020, and 2021 are 88.0%, 83.3%, and 83.1%, respectively (85% on average—close to 84% from the model).

Not only are there differences between S&T and non-S&T BAs, but the BAs within S&T show differences on which variables correlate with the monthly incremental obligation rates. For example, rates for BA-2 and BA-3 now show a significant drop in all months when there is a CR (-1.1 and -1.2 percentage points below the average base rate). There is neither such CR correlation in RDT&E overall nor any of the other account categories (Procurement, O&M, and MILPERS).

Table 5. Contributions of CR and Other Variables Affecting RDT&E Obligation Rates (FY 2013–2014, 2017–2022 Appropriations)

		1st Year of Availability				2nd Year of Availability			
		All	S&T	DEV	Mgt	All	S&T	DEV	Mgt
Avg. Base		5.9%	6.4%	6.0%	6.3%	1.7%	2.3%	1.6%	2.5%
Add CR Effects	CR		-1.0%		-1.4%				
	1 MAB		-1.6%						
	2 MAB	4.3%		3.0%	2.1%				
	3 MAB	6.3%	4.8%	7.1%	2.1%				
	4 MAB	3.7%	4.3%	4.8%					
	5 MAB		1.5%						
	6 MAB		1.8%						
Add Calendar Month Effects	Oct.	-2.3%	-3.5%	-1.9%				0.40%	-0.63%
	Nov.		-1.1%			0.91%		0.52%	
	Mar.	2.3%	1.6%	1.7%					0.68%
	Sept.		2.4%		2.9%	1.0%	1.3%	0.84%	1.3%
Time Trend	Time (mo.)					-0.10%	-0.15%	-0.10%	-0.10%
Adj. R2		63%	84%	60%	42%	32%	48%	50%	33%

MAB = month after budget is passed; CR = month under a continuing resolution (the months before 1 MAB); BA = Budget Activity; S&T = Science and Technology (BA-1, BA-2, and BA-3 combined); DEV = development (BA-4, BA-5, and BA-7 combined); Mgt = Management [Support] (BA-6); mo. = month; Oct. = October; Nov. = November; Jan. = January; Mar. = March; Aug. = August; Sept. = September.

Table 6. Contributions of CR and Other Variables Affecting RDT&E Obligation Rates (FY 2013–2014, 2017–2022 Appropriations)

		1st Year of Availability								2nd Year of Availability							
		All	BA-1	BA-2	BA-3	S&T	ACDP	BA-5,7	Mgt	All	BA-1	BA-2	BA-3	S&T	ACDP	BA-5,7	Mgt
Avg. Base		5.9	7.5	6.3	6.2	6.4	5.7	5.9	6.3	1.7	1.8	2.4	2.4	2.3	1.6	1.7	2.5
Add CR Effects	CR			-1.1	-1.2	-1.0			-1.4								
	1 MAB			-1.2	-1.6	-1.6											
	2 MAB	4.3					4.2	2.6	2.1								
	3 MAB	6.3	5.1	4.8	4.8	4.8	7.5	7.7	2.1								
	4 MAB	3.7	3.4	4.0	4.9	4.3	3.3	5.8									
	5 MAB			1.4	1.7	1.5		2.0									
	6 MAB			2.0	1.9	1.8											
Add Calendar Month Effects	Oct.	-2.3	-5.4		-3.6	-3.5		-2.5				-0.42				0.53	-0.63
	Nov.		-3.1		-0.95	-1.1	1.7			0.91						0.59	
	Jan.		-3.5														
	Mar.	2.3		1.5	2.0	1.6	2.5										0.68
	May														-0.48		
	July														0.51		
	Sept.			2.9	2.4	2.4			2.9	1.0	1.2	1.3	1.5	1.3	0.82	0.91	1.3
Time Trend	Time (mo.)									-0.10	-0.11	-0.17	-0.15	-0.15	-0.10	-0.11	-0.10

		All	BA-1	BA-2	BA-3	S&T	ACDP	BA-5,7	Mgt	All	BA-1	BA-2	BA-3	S&T	ACDP	BA-5,7	Mgt
Adj. R2		63%	54%	77%	87%	84%	56%	57%	42%	32%	21%	49%	39%	48%	22%	51%	33%

MAB = month after budget is passed; CR = month under a continuing resolution (the months before 1 MAB); BA = Budget Activity; S&T = Science and Technology (BA-1, BA-2, and BA-3 combined); ACDP = Advanced Component Development and Prototypes (BA-4); Mgt = Management [Support] (BA-6); mo. = month; Oct. = October; Nov. = November; Jan. = January; Mar. = March; Aug. = August; Sept. = September.

NOTE: The regression models for BA-1 and ACDP (highlighted in yellow) in the second year of availability are rather low, only explaining 21% and 22% of the variation in the data, respectively. Also, the data for appropriations from FY 2015 and 2016 were not available.

Table 7. Example of How to Read the Obligation Models

Monthly S&T Obligation Rates From the Model for a FY With Full Budget Passed in January

Mo.	#	Variables Active in that month	Avg. Base	+ Variable Effects (CR effects + Oct.–Sept. + MAB effects)	= Expected Obligation Rate
Oct.	1	CR & Oct.	6.4%	−1.0% − 3.5% *(the CR and Oct. constants)*	= 1.9%
Nov.	2	CR & Nov.	6.4%	−1.0% −1.1% *(the CR and Nov. constants)*	= 4.3%
Dec.	3	CR	6.4%	−1.0% *(the CR constant; no Dec. constant)*	= 5.4%
Jan.	4	1 MAB	6.4%	−1.6% *(the 1 MAB constant)*	= 4.8%
Feb.	5	2 MAB	6.4%	*(no 2 MAB constant in the model)*	= 6.4%
March	6	3 MAB & March	6.4%	+ 4.8% + 1.6% *(the 3 MAB and March constants)*	= 12.8%
April	7	4 MAB	6.4%	+ 4.3% *(the 4 MAB constant)*	= 10.7%
May	8	5 MAB	6.4%	+ 1.5% *(the 5 MAB constant)*	= 7.9%
June	9	6 MAB	6.4%	+ 1.8% *(the 6 MAB constant)*	= 8.2%
July	10	*none*	6.4%	*(no July constant in the model)*	= 6.4%
Aug.	11	*none*	6.4%	*(no Aug. constant in the model)*	= 6.4%
Sept.	12	Sept.	6.4%	+ 2.4% *(the Sept. constant)*	= 8.8%
				Subtotal for 1st Year	*84%*

NOTE: The constants from the S&T obligation model are taken from the second column in Table 5, which is the same as the fifth column in Table 6.

Figure 13. Monthly S&T Obligation Rates for Appropriation FYs With Full Budget Passed in January (FY 2014, 2020, and 2021 Appropriations)
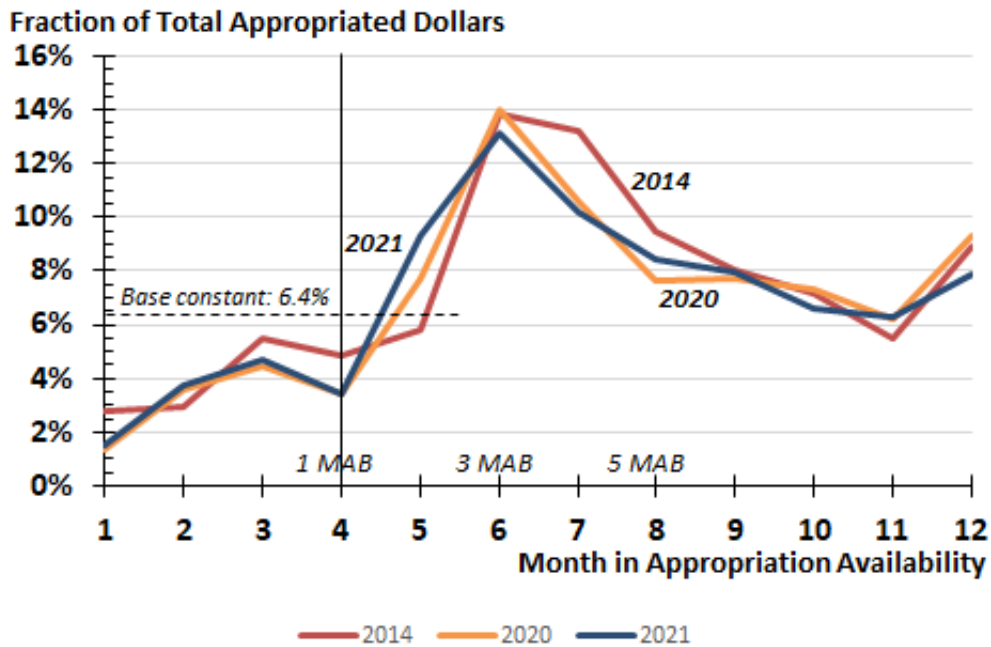
Conclusions on Obligation Benchmarks

Theory, data, and analysis identified several complications that affect the realism of the current Comptroller benchmark profiles.

Operating under CRs can also delay obligations. As mentioned earlier, while there is no general slowing of actual obligations during a CR (except for S&T and BA-6 within RDT&E), statistical analysis found statistically significant increases in several months after final appropriations are passed (see the MAB variable results in the regressions above. Tremaine and Seligman (2013) also published a survey of 229 DoD personnel. The survey indicated that CRs can delay obligations. Thus, there is quantitative and qualitative evidence supporting an adjustment in obligation benchmarks due to CRs. The three-month surge after budget passage may be due to new starts or to other program authorization and appropriation effects on obligations.

There is also a concern that the general restrictions on new starts during a CR drives the DoD to spend on older priorities rather than providing an ability to respond to new immediate threats and their associated reprioritizations on spending needs in the DoD.

Monthly DoD Expenditure Rates by Categories of Funding: Actual DoD Data

As with obligations, we obtained expenditure data from the DoD's Advana data environment in the form of monthly expended dollars (also called disbursements or outlays) for military services and defense-wide funding accounts for categories of funding (e.g., Army RDT&E, Navy Aircraft Procurement, Defense-Wide O&M, and Air Force Military Personnel) from FY 2011–2023. We aggregated these data to obtain monthly expenditure dollars by category across all accounts, then calculated the percentage expended in each month compared to the total dollars expended by the final month. Table 8 lists the time periods used to observe monthly expenditure rates and trends as a percentage of the final month. Although some trends will extend further in time, this provides a good window into the bulk of the trends for analysis.

Table 8. Month Used for Final Expenditure Values

Category	Years to Expend	Final Month
RDT&E	3	36
Procurement	3*	36*
O&M	2	24
MILPERS	1	12
MILCON	6**	72**

* We used 36 months as the reference time to expend PROC dollars, although some procurements have longer to obligate and disburse funds.
** In the DoD data, MILCON reached about 90% on average by the end of year 6.
NOTE: These periods provide us with a simple way to measure and observe expenditure trends and rates.

Conclusions and Recommendations

In this paper, we provided the bulk of our analytical work from our report to the PPBE Reform Commission (Anton & Buettner, n.d.). Based on these observations, we recommended that the DoD Comptroller consider modifying their benchmarks. Four optional variants were discussed in our report. The preferred option includes adding additional S-curve ramp-up elements on top of historical obligation behaviors and recommends replacing linear expenditure profiles with historical S-curve profiles. Table S-3 in our report summarizes our

recommendations.[4] Anton and Buettner (n.d.) also provide example benchmark tables that better reflect recent history as well as the correlative effects of month, CR, and time.

In addition to aligning expenditure benchmarks to actual data and theoretical objectives, such changes could help eliminate the negative side effects cited in theory and the literature that program managers may seek expenditures prematurely just to meet comptroller benchmarks at the expense of other program and department objectives of prudent use of the resources (see, for example, Marsalis, 2022; Commission on PPBE Reform, 2023, p. 33). Slight delays in switching to S-curves with their lower initial expenditure benchmarks should give program managers more time to get good deals for the program, the DoD, and taxpayers rather than having to rush negotiations and contracting to meet somewhat arbitrary benchmarks or risk losing their funding.

There would be some cultural and process adjustments for both Congress and the DoD (and industry) to adjusting the obligation and expenditure benchmark profiles over time, but the benefits could be improved performance given the financial resources provided by Congress and the taxpayers to the DoD. In the end, keep in mind the following insightful quote.

Suggested Future Research

These analyses have highlighted areas for future research that could lead to a deeper understanding of the effects from the recommendations made in Anton and Buettner (n.d.).

Assess obligation and expenditure rates at the account level within each category. For expedience, this research aggregated all the accounts within each funding category (RDT&E, PROC, O&M, MILPERS, and MILCON). There may be additional insights from statistical analysis at the account level. For example, there may be significant differences among the military departments or insights into the variation by account type (e.g., aircraft versus missiles).

Assess sources of obligation and expenditure data errors. As noted, there are some obvious errors in the reported data. Further research could identify these sources and help the Comptroller improve data reported to Advana. For example, some errors may just be that programs that have completed obligations or expenditures stopped reporting for a FY's appropriations, resulting in drops in the totals reported at the account level. Correcting such data issues will become increasingly important as these data are made more available for this type of longitudinal trend analysis. Also, further data cleaning of the MILCON data after the third year is warranted; this may enlighten exactly how long into the future MILCON obligation and expenditures extend—and by what fractions of the total.

Acknowledgements

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[4] Some of these conclusions and recommendations are also reflected in our companion NPS ARS 2024 paper, *Improving Comptroller Benchmarks on Program Spending* (Anton, Stalebrink, and Buettner, forthcoming), and that paper includes the tables from the forthcoming report.

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