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Do Accelerated Payments for DoD Contractors Help Small Businesses?

February 9, 2021

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Graduate School of Defense Management

Naval Postgraduate School

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Abstract

In 2011, the Department of Defense (DoD) set a goal of paying small business contractors within 15 days of invoice receipt rather than the standard 30 days. In 2012, other federal agencies also set a goal of accelerated payments to small businesses, and all agencies later expanded this goal to include all contractors regardless of size. We study whether small businesses benefited from these accelerated payment goals. Using a difference-in-difference design, we find that small business participation in government contracts rose following the setting of accelerated payments goals. Importantly, contracts for perishable foods and construction services, which were unaffected by the new accelerated payments policies, did not see an increase in small business participation. We also find that the benefits of accelerated payments are concentrated among small businesses with a backlog of ongoing projects. This is consistent with the hypothesis that accelerated payments alleviate the liquidity constraints that may be particularly acute for small businesses.



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Introduction

The federal government has long been interested in supporting small businesses. An often-used policy lever is the intentional purchasing of goods and services from smaller, as opposed to larger, businesses, commonly by setting aside prime contracts for small businesses or by requiring that prime contractors utilize small business subcontractors. However, simply directing more purchases toward small business may not be sufficient on its own if other challenges that are faced by these firms are not addressed. Credit constraints are one such challenge. Access to credit could be costly, and small businesses often do not have sufficient cash reserves to smooth short-term liquidity requirements. Cash constraints may, therefore, limit the amount of business that can be undertaken by small contractors, and this will limit the effectiveness of programs meant to increase small business purchases.

One specific difficulty that contributes to the cash crunch faced by small businesses is the mismatch between when firms incur costs and when they receive payments for the goods and services provided. One way to improve the cash flow of small businesses is to reduce the amount of time between when goods and services are provided and when payment from the government for those goods and services is received. Accelerated payments have recently received substantial interest, with several federal policy actions calling for the acceleration of payments to small business contractors. In this report, our objective is to evaluate whether small businesses performed better when payments were accelerated, which we measured by the degree of participation by small businesses as prime contractors in federal procurement.

In 2011, the Department of Defense (DoD) announced a policy of accelerated payments to small business contractors. Under this policy, payment to small businesses occurs within 15 days of the receipt of invoice, rather than the standard 30-day payment period. Over the months following the initial announcement, the DoD phased in the policy into its major payments systems beginning in June 2011

with the DoD's largest payment system, the Mechanization of Contract Administration Services (MOCAS) system. The Office of Management and Budget (OMB) in September 2011 outlined a goal to pay invoices within 15 days for all federal procurement. The policy of accelerated payments was later expanded to include all prime contractors regardless of size. Neither the DoD, nor the broader federal policy, altered the penalties the government faced for late payment; these penalties continued to only be incurred after the standard 30-day payment period. While the DoD implementation of the policy was clearly spelled out in its application to the major payment systems, the extent to which the other federal agencies complied is unclear.

To evaluate whether accelerated payments achieves the goal of positively impacting small businesses, we utilize data from the Federal Procurement Data System (FPDS), which contains the universe of nonclassified federal contract actions. These data do not contain information regarding direct measures of firm success such as employment, investment, or profits. Instead, we examine whether participation by small business prime contractors increased when accelerated payments were in place. While this is an indirect measure, as we discuss in more detail, this is an appropriate measure of the benefits to small businesses from accelerated payments. One reason is that encouraging small business participation is, in itself, often a goal of procurement policy. Moreover, economic theory suggests that by examining participation we can provide indirect evidence about whether small business performance is aided by accelerated payments. This is for two reasons. First, small businesses are more willing to enter the competition for contracts if they benefit from accelerated payments. Second, conditional on entry, they will be willing and able to bid more competitively to win the contract.

Our empirical approach utilizes the change in accelerated payments policy over time, as well as the differential impact that accelerated payments have on affected relative to unaffected products. Not all products were affected, since the payment period for construction contracts and for some food products was already less than 15 days. Contracts for these products were, therefore, unaffected by accelerated payments. The empirical approach is a difference-in-difference design,

where we consider the change in the number of contracts awarded to the average small business after the implementation of accelerated payments to the similar change for the average large business. Furthermore, this differential change for small versus large firms can be compared between affected and unaffected products, since contracts for construction services and many types of food products already had payment periods of less than 15 days. The appeal of this approach is that it can control for a myriad of factors that affect small businesses at a given time, so long as those economy-wide shocks similarly affect firms that provide affected and unaffected products. It can also account for changes over time that might affect all firms, both large and small.

Early payment receipt can help small businesses in several ways. First, accelerated payments increase the present value of contract payments, which results in a small benefit to contractors. Second, and likely more importantly, accelerated payments help the cash flow of a business. Prime contractors have obligations to their subcontractors and other suppliers and must manage the cash flow necessary to make on-time payments. Either suitable cash reserves, or lines of credit, must be maintained to meet short-term obligations. Firms may face borrowing constraints that limit their ability to meet short-term needs, necessitating holding cash reserves. This constraint may be particularly acute for small businesses, which have less access to both external and internal capital, which could be a barrier to taking on new work on top of ongoing projects. Accelerating payments could, therefore, assist small businesses in participating in government procurement and in supporting their growth. Encouraging small business participation and growth may, in fact, be cost effective for the government, as current small businesses become future, possibly more efficient, competitors.

For two similar reasons, helping small businesses through accelerated payments could be costly. First, the present value of contract payments is higher under accelerated payments. Given the favorable terms of federal borrowing, this is a lesser issue for government agencies than it is for the seller, though in the aggregate the impact is nontrivial. To get a sense of the scale of this cost, consider

the thought exercise of advancing the payment on all DoD contracts by 2 weeks.¹ DoD contracts in 2017 were worth \$320 billion, and advancing the payment on these contracts by 2 weeks increases the present value of this expenditure by around \$300 million.² Second, the procuring agency must itself also manage cash flow, and the DoD has raised concern that the expansion of accelerated payments has created cash constraints for some defense activities. Such constraints may pose a greater challenge for agencies than the increase in the present value of contract payments.

This report proceeds as follows. In the Literature Review section, we review the evidence regarding small businesses and government programs to assist them. We then describe the accelerated payments policies and the time line of their adoption in the section titled Accelerated Payments Policy. The next section contains a description of the data used in this study. Then, we provide a model that motivates the empirical specifications. Next we specify our empirical approach and present the results. Finally, we provide our conclusion.

¹ We do not attempt a cost–benefit analysis in this report. A proper measure of the cost of the program would require data on exactly how much more quickly payments were made. These data exist but are not publicly available. A proper measure of benefits would require dynamic estimates of how firm survival and efficiency may positively impact the operation of the procurement market. As we discuss in the conclusion, this is outside of the scope of our research.

² This is likely an overstatement of the costs of the program that we consider for two reasons. First, the accelerated payments policies we consider here are not expected to affect contracts for food or construction, which indicates that less than \$320 billion in DoD contracts were impacted. Second, compliance may not have been complete, signaling that some payments that should have been accelerated were, in fact, not accelerated.

Literature Review

It is often argued that small businesses are important because of their role as job creators and innovators (Birch, 1979) and because entrepreneurship is a potential pathway out of poverty (Glazer & Moynihan, 1970). Based on these arguments, lawmakers often enact public policies meant to help small businesses, commonly through public procurement programs that steer contracts or by providing terms that are particularly favorable to small, rather than large, businesses. The efficacy of these policies rests (1) on their ability to address the factors that contribute to the success of small businesses, and (2) the cost that the policies impose on the government. Our research fits within a robust literature in economics, which examines the factors that influence the success of small businesses and entrepreneurship as well as the subset of this literature that examines the costs and benefits of small business policies implemented via public procurement. Such policies may target small businesses generally, or they may take the form of affirmative action programs specifically intended to benefit minority- and women-owned enterprises.

Several factors may influence entrepreneurial activity and the formation, expansion, and survival of small businesses. Liquidity is a key constraint faced by small businesses, as it determines the access to capital needed to start a business and to meet short-run cash flow needs. It is also, therefore, closely related to accelerated payments. Fairlie and Krashinsky (2012) documented that easing liquidity constraints significantly boosts entrepreneurship. Holtz-Eakin et al. (1994) and Holtz-Eakin et al. (2005) also found similar effects of liquidity on entrepreneurs.

Most firms that qualify for minority- and women-owned business subsidies are small businesses, and so the constraints faced by these firms will be highly relevant for small business policy. Fairlie and Robb (2007) studied minority-owned enterprises and examined the factors that contribute to the disparities in business outcomes experienced by these firms compared to white-owned firms. Related to the role of liquidity in small business success, they found that these disparities are

influenced by access to startup capital. Black-owned businesses may face lending discrimination, as found by Blanchflower et al. (2003) and Cavalluzzo and Wolken (2005) and may also have less family wealth (Bates & Bates, 1997).

The costs and benefits of small business subsidies and affirmative action implemented through public procurement have been examined by several authors. Chatterji et al. (2014) examined the effects of affirmative action in city contracting on minority entrepreneurship, and Marion (2011) studied how affirmative action affects government purchases from minority- and women-owned enterprises. Nakabayashi (2013) examined the set-aside of government contracts for small enterprises in Japan, finding that approximately 40% of Small and Medium Enterprises (SMEs) would exit the procurement market if set-asides were removed. This would lead to a lack of competition that would ultimately increase government procurement costs. Marion (2007), Krasnokutskaya and Seim (2011), and Hubbard and Paarsch (2009) studied bid preferences for small businesses in government contracting. Denes (1997) assessed the cost of small business set-asides in federal contracting. Finally, Marion (2009) and Rosa (2020) examined the effect of affirmative action via subcontracting goals on government procurement cost.

Accelerated Payments Policy

Prompt Payment Act

The Prompt Payment Act (PPA), originally enacted in 1982 and subsequently revised in 1988, set several standards with respect to the speed at which federal contractors are paid for work performed or orders fulfilled (FAR 52.232-27, 2021). This act addressed the typically slow rate of payment by many federal agencies by setting a maximum time between receipt of invoice and payment, while including a series of exceptions that would provide even faster payments for particular types of goods. In this section, we describe these regulations, as well as the more recent efforts to further accelerate payments to the benefit of small business enterprises.

The PPA specified that for most government procurement, the due date of contractor payment is the later of the “30th day after the designated billing office receives a proper invoice from the contractor” or “the 30th day after government acceptance of supplies delivered or services performed” (Prompt Payment Act [PPA], 1988). Should the payment occur after the 30-day window, the contractor is automatically due interest penalties from the federal agency, and the calculation of those penalties is also codified into law. Furthermore, the PPA also governs payments by the contractors to its subcontractors. The contractor has 7 days upon receipt of payment from the government to pay its subcontractors or suppliers, provided that the subcontractor has provided satisfactory performance. The subcontractor in turn has 7 days to pay its own lower-tier subcontractors or suppliers.

For some types of goods and services, payments must be made in a much shorter time frame than the standard 30-day window, and these exceptions play a key role in identifying the impact of accelerated payments in our empirical work. Broadly speaking, the exceptions apply to all construction contracts and many types of food products, particularly perishable foods. For construction contracts, the payment deadline is 14 days after the payment request is made. For food products, suppliers of poultry, eggs, and frozen fish must be paid within 7 days. Suppliers of

perishable agricultural commodities must be paid within 10 days. Finally, dairy products and those foods made from edible fats or oils must be paid within 10 days.³ For products with a payment period of less than 15 days, the new accelerated payment goals should have, at most, a small impact on payment speed.

Accelerated Payments Policies

In early 2011, the DoD announced that it was setting new guidelines for the speed of payments to its contractors. This policy is codified into Subpart 232.9 of the Defense Federal Acquisition Regulations System (DFARS). Initially, the policy applied only to invoice payments to small business contractors. Soon after the adoption of accelerated payments by the DoD, guidelines from the OMB extended this policy to federal contracting more broadly, and accelerated payments were later further expanded to apply to all contracts regardless of the size of the contractor. Here, we describe the time line of the policy announcement and implementation.

Defense Acquisition Regulations System (DARS) Memorandum 2011-O0007 was issued on April 27, 2011, announcing that the DoD would commence implementation of DFARS 232.9303 accelerated payments to small business contractors (Assad, 2011). The new policy described a plan to pay contractors within 15 days of submitting a proper invoice. The implementation would occur in phases, with the initial phase focusing on the modification of the DoD's largest payment system, the MOCAS system. On June 28, 2011, the DoD announced in DARS Memorandum 2011-O00013 that "the Defense Finance and Accounting Service has completed modifications of MOCAS to provide for these accelerated payments to small business" (Ginman, 2011). Payment systems that account for a smaller share of DoD contracts followed. The list of payments systems and the dates they were implemented is listed in Table 1.

Table 1: Dates of DoD Payment System Implementation

³ This rather broad category includes "liquid milk, cheese, certain processed cheese products, butter, yogurt, ice cream, mayonnaise, salad dressings, and other similar products" (FAR 52.232-25, 2021).

Date of announcement	Payment system(s)
June 2011	MOCAS
October 2011	Standard Automated Voucher Examination System (SAVES)
January 2012	Automated Voucher Examining and Disbursement System (AVEDS) the Fuels Automated System (FAS)
May 2012	Corps of Engineers Financial Management System (CEFMS)
August 2012	Transportation Financial Management System (TFMS)
April 2013	Enterprise Business System (EBS) Financial Accounting and Budget System (FABS)
February 2014	OnePay, Integrated Accounts Payable Systems (IAPS) Computerized Accounts Payable System-Windows (CAPSW)
April 2014	Defense Agencies Initiative System

The relevant DFARS memos are 2011-O00013, 2012-O0001, 2012-O0002, 2012-O0006, 2012-O0011, 2013-O0008, 2014-O0006, and 2014-O0015 respectively.

In September 2011, after the initial DoD announcement, the federal government announced a directive for all agencies to make accelerated payments to small business prime contractors within 15 days of invoice (Lew, 2011). Then, in July 2012 the federal government extended the accelerated payments policy to include all federal prime contractors—not just small businesses—including those vendors selling to the DoD.⁴ While it is not clear when each particular agency implemented this in practice, the DoD announced that its payment systems had incorporated this change in August 2012. In February 2013, the DoD canceled the accelerated payments for large prime contractors, and the policy reverted to only accelerating payments for small businesses, though it was required to reinstate accelerated payments for large prime contractors in July 2014. In summary, accelerated payments was the stated policy of the DoD from April 2011 onward for small businesses, and from July 2012 until February 2013 and from August 2014 onwards for large businesses. Accelerated payments was the stated policy of federal contracting more broadly from September 2011 onward for small businesses and

⁴ This policy change also inserted a clause directing the prime contractor to accelerate payments to their small business subcontractors. It is unclear whether this additional clause was binding, since prime contractors were already required to pay any subcontractors within 7 days.

from July 2012 onward for large businesses.

Evidence presented by the DoD indicates that they complied with the policy: “In practice, the Defense Financial Accounting Service (DFAS) currently provides accelerated payments to nearly all DoD contractors, as permitted by law” (DoD, 2019). The average time to pay an invoice by MOCAS was under 15 days, as of early 2018 (McDuff, 2019). Unfortunately, we were not able to find direct evidence about whether other federal agencies complied with the policies. The issue of whether or not federal agencies strictly adhered to the accelerated payments policies is important and potentially relevant. These policies did not carry with them financial penalties for noncompliance. Neither the DoD in its actions previously described, nor the broader federal action, altered the rules regarding interest penalties for late payments by agencies. Some federal agencies may have, therefore, viewed accelerated payments as nonbinding and may not have implemented the policy as directed. Only for the DoD, with the pronouncements that MOCAS and other key payments systems had been altered, can we say with confidence that the accelerated payments policies were in fact implemented. To assess compliance more thoroughly, we would need to observe data on time-to-payment. Such data are likely contained within the Contract Performance Assessment Reporting System (CPARS), but these data are not publicly available, and we were not able to gain access in the time frame of the current project.

Table 2: Time Line of Accelerated Payments Policies

Date	Action	Referenced order
April 2011	DoD accelerated payments for SB primes	DARS 2011-O0007
June 2011	DoD implements acc. pay in MOCAS	DARS 2011-O00013
Sep. 2011	Acc. pay for federal SB primes	OMB M-11-32
July 2012	Acc. pay for all federal primes	OMB M-12-16
Aug. 2012	Implements M-12-16 for DoD primes	DARS 2012-O0014
Feb. 2013	Cancels acc. pay for DoD large primes	DARS 2012-O0014
Aug. 2014	Reinstates for DoD large primes	DARS 2014-O0019

Qualifying as a Small Business

Which firms qualify as a small business varies substantially across product types. The Small Business Administration (SBA) outlines the criteria that are used to determine qualification as a small business in federal contracting. The SBA defines threshold values for employment and revenue that vary by industry classification of the firm. If either employment or revenue exceed these values, the firm does not qualify as a small business. The most common thresholds for manufacturing companies are 500 employees and average annual revenues of \$7.5 million. A majority of firms in the FPDS at one time or another are listed as a small business, and small business status can, therefore, change over time as a firm expands or contracts. In our empirical work, rather than using a dichotomous indicator for small business status, we instead use the fraction of contracts in which the firm participated as a small business across all years of the data.

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Data

Our data come from the universe of contracting actions for the Fiscal Years 2010–2015, obtained from the Federal Procurement Data System–Next Generation (FPDS). All unclassified contracts above a mandated minimum value must be reported in this system. Contracts are identified by the contracting firm’s Data Universal Number System (DUNS) number, a unique firm identifier that allows us to track firms across procurements and form firm-specific measures of contract backlog. As mentioned above, backlog is a measure of how many contracts a firm has underway at any point in time, and high backlog can limit firms’ ability to take on new work. Other important characteristics of a contract that are reported in the FPDS are the number of offers, whether the firm is a small business, the agency requesting proposals, whether the contract was competitively awarded, the date the contract was signed and the date it was effective, and the expected completion date. There are also several variables that we use to determine the type of action, including any referenced indefinite delivery vehicle (IDV), whether the referenced action is a modification, and the reason for this modification.

These data also provide the product service code, describing the type of product provided, and the North American Industry Classification System (NAICS) code for the associated industry. The good or service being purchased can then be categorized as food, construction, or some other type of good, which allows us to determine whether the accelerated payments policy was likely to be binding, or if the product already had a payment time under 15 days. The focus of our empirical work is on new contract awards—not revisions, change orders, or exercised options of existing contracts. Our objective is to evaluate how accelerated payments affect small business willingness and ability to take on new work. This is best reflected in new contracts. For the summary statistics presented in this section, and for all the other empirical estimation that follows, the sample of contract actions are only new contract awards.

Types of Contracts

There are two broad categories of federal contracts, direct contract awards (DCA) and task order awards (TOA). A DCA is the simplest type of contract. It is awarded to a single vendor, with specifications set by the agency to which funding has been obligated. DCAs can be either a definitive contract, which is typically a contract agreeing to purchase a good or service that is noncommoditized (i.e., unique), or it can be a purchase order for a commoditized good or service. The initial agreement is recorded in FPDS, as well as any further modifications to that agreement.

A TOA is also with a single vendor but is awarded under a broader contract or an IDV with that vendor. The IDV is with a particular vendor, and then the vendor can be issued delivery orders or purchase agreements under the IDV. The IDV will typically have a ceiling on the amount of the order. The FPDS lists detailed information about the broader IDV with which the order is associated, as well as each order against that IDV.

The distinction between TOAs and DCAs is important to note, as these two types of actions need to be treated differently. For the empirical analysis, the most appropriate focus is on new DCAs and on orders against existing IDVs that are not simply fulfilling an already-agreed-upon delivery. The objective of this report is to document whether small businesses are able to take on more work and participate in more contracting when accelerated payments are in place, and DCAs clearly reflect this. However, it is ambiguous whether a new delivery under an existing IDV represents a willingness to take on new work or a vendor simply fulfilling prior obligations. On one hand, some IDVs may be under a broader federal supply schedule, and when a federal agency orders under this supply schedule, it will buy from vendors that are willing to sell. This type of order will, therefore, reflect the firm's contemporaneous interest in supplying the good. On the other hand, with other forms of the IDV, such as an indefinite delivery contract, the vendor may have agreed in advance to deliver the goods to an agency on demand up to a cap. New orders against this IDV, therefore, do not reflect the willingness of the contractor to

participate in that moment but rather their willingness to participate when the IDV was entered into.

To evaluate whether an order against an IDV is appropriate for inclusion in the empirical analysis, we consider the extent of competition. Specifically, if an order was subject to competition, then it suggests that the order was effectively new, and participating in the competition reflects the firm's contemporaneous interest in taking on further work.

As described in Section III, payment periods shorter than 15 days already applied for construction services and many types of food products. For procurement of these goods, accelerated payments should have no effect. The product and service code (PSC) of the product is listed in the data, which allows us to identify those products for which the treatment is expected to have no effect. The codes for food are 8905 (meat, poultry and fish); 8910 (dairy, foods, and eggs); 8915 (fruits and vegetables); and 8945 (oils and fats). Similarly, accelerated payments policies were not binding for construction contracts, which already had payment time frames shorter than 15 days. The PSC can also be used to distinguish these contracts. The code Y1 (construction of structures and facilities) includes all federal construction work, from roads, bridges, and buildings to fuel supply facilities and heating and cooling plants.

In Table 3, we present the composition of federal IDV contract awards across the relevant product categories separately for DoD and non-DoD procurement. In Table 4, we present similar figures for DCAs. In the DoD, most new IDV contract actions are not food or construction and are, therefore, covered by accelerated payments. The average year sees 63,351 new IDV food awards and 2,904 construction awards compared with 534,151 contracts for other types of goods. The dollar value of new IDV contracts is also heavily tilted toward non-food and construction, though not to quite the same degree the number of contracts. For non-DoD contracts, we see that most IDV awards are neither food nor construction. The average year sees 449,104 new IDV awards for goods that would be affected by accelerated payments and only 2,439 between perishable food and construction.

When considering DCAs, we again see that most new contract awards are affected by the accelerated payments policy. Within the DoD, only 193 DCAs were made in an average year for food products that would be unaffected by accelerated payments. Only 1,696 new DoD DCAs are for construction contracts in the average year. These compare to an average of 273,825 awards that are affected by accelerated payments.

Table 3: Average Annual IDV Actions by Product Type

	Non-DoD		DoD	
	Actions	Obligated amount (millions)	Actions	Obligated amount (millions)
Construction	1377	776	2904	3320
Food	1059	341	63351	2783
Other	449104	32630	534151	57461

Table 4: Average Annual DCAs by Product Type

	Non-DoD		DoD	
	Actions	Obligated amt (millions)	Actions	Obligated amt (millions)
Construction	2315	2692	1696	5607
Food	8732	1633	193	4.1
Other	248121	13739	273825	30982

Small business participation declines substantially as the size of the award grows. Table 5 shows the share of federal contracts awarded to small businesses separately for DCAs and IDVs. Across all action types, small businesses are awarded 47% of contracts. For most contracts (98.8%), the obligated amount is below \$1 million in value. For contracts between \$10 million and \$20 million, 31% go to small businesses. Contracts between \$20 million and \$30 million are awarded to small businesses 21% of the time, and this drops to just 12% of contracts over \$30 million. The pattern is highly pronounced for both DCAs and IDVs, though overall IDVs are less frequently awarded to small businesses.

Table 5: Small Business Share of Awards by Obligated Amount

	All	DCA	IDV
0 to 1mm	0.469	0.613	0.396
1 to 10mm	0.435	0.547	0.390
10 to 20mm	0.309	0.374	0.274
20 - 30mm	0.207	0.241	0.188
>30mm	0.116	0.097	0.132
All	0.470	0.612	0.396

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Model of Contract Participation

In this section, we present a simple model of contract participation. This provides the theoretical basis for examining participation as an outcome. In a competitive procurement, winning a government contract reflects two factors, the likelihood of entry into the competition for the contract and the likelihood of winning the contract conditional on entry. If small businesses benefit from accelerated payments, then both of these dimensions will be affected.

A firm's decision to enter the competition for a contract depends on their expected profits. The expected profits are the likelihood that the submitted offer is successful multiplied by the profits the firm will earn if it is awarded the contract:

$$E[\Pi] = Pr(win) * (\Pi|win).$$

If it were costless to participate in the competition for contract, then the firm would submit an offer for all contracts where it stood a chance to earn positive expected profits. However, submitting an offer is not costless. In addition to the administrative cost of preparing a bid, the firm needs to invest time and resources in understanding the contract requirements and the cost of meeting those requirements. Let the cost of participating in the competition for a contract be K . Entry will occur if the expected profits of entry exceed these fixed costs:

$$E[\Pi] = Pr(win) * (\Pi|win) \geq K. \quad (1)$$

Accelerated payments improve both the probability of winning and the profits of the firm conditional on winning. In a first-price auction, a commonly used mechanism to award government procurement contracts, the probability of winning is $Pr(b_i < b - i)$, where $b - i$ represents the lowest bid of the firm's competitors. A widely accepted result in the auction literature is that the firm's optimal bid is monotonically related to its cost (Krishna, 2009). In other words, as the firm's costs decline, the firm is able to submit a lower bid, and the lower the bid is, the higher the likelihood that $b < b - i$. Under accelerated payments, the bidder can complete the project more inexpensively because the bidder's cost of capital is lower since they

receive payments more quickly. Furthermore, the opportunity cost of taking on the project has gone down by expanding the firm's capacity constraint. Put differently, receiving a contract may reduce the firm's ability to take on other work. This opportunity cost will be incorporated into the firm's bids. So, we expect that if small businesses benefit from accelerated payments, then the probability of winning increases for those firms.

Similarly, the firm's profits conditional on winning could positively depend on accelerated payments as well. The profits upon winning a first-price auction are

$$\Pi|_{\text{win}} = b - c$$

which is the firm's bid less its cost. For all the reasons just described, firm cost c declines with accelerated payments and, therefore, $\Pi|_{\text{win}}$ increases.

We also now discuss two added dimensions that we do not model directly. First is the role of project backlog. A common finding in the procurement literature is that firms have limited capacity, and firms with a backlog of incomplete projects have difficulty taking on new work; this can interact with programs that affect the volume of business.⁵ We anticipate that firms with existing projects underway will find accelerated payments particularly valuable, as they can take on new work with additional confidence that cash flow will be sufficient to meet obligations to suppliers on projects that are already underway.

A second dimension that we do not model is the possibility that firms may substitute across contracts in response to incentives that vary across contracts at a point in time. Limited productive capacity to complete the work in the contract, or limited managerial capacity to prepare bids, require firms to be selective about the contracts for which they will compete. If the accelerated payments policy makes one type of procurement contract more appealing, then this could induce a substitution

⁵ For instance, Balat (2014) estimated how the effectiveness of the American Recovery and Reinvestment Act was affected by the sudden surge of projects when highway construction firms have upward sloping marginal cost curves. Jofre-Bonet and Pesendorfer (2003) estimated the response of forward-looking firms, where contractors anticipate the effect that winning an auction today will have on the likelihood of winning future contracts via increased backlog.

across procurement auctions. While we do not model this phenomenon directly, we will discuss the empirical implications of this issue below.

Empirical Implications

This simple model illustrates how we can uncover the benefits of accelerated payments for small businesses in the federal procurement data. Using the FPDS, we cannot measure the profitability of the firm. Nor can we directly measure other outcomes of interest that relate to accelerated payments, such as the firm's cash flow. However, the model suggests that we can study the benefits of accelerated payments by examining contract awards. Consider again Equation 1. Accelerated payments can increase both terms on the left-hand side of the inequality. As both $Pr(\text{win})$ and $\Pi|\text{win}$ increase, the likelihood that the firm participates in the bidding for an auction increases. As both participation in competition for contracts and the likelihood of winning those contracts increase, then firms will win more contracts. Looking at the number of awarded contracts is, therefore, a valid measure of whether the accelerated payments policy increases the profits of small businesses.

In the empirical section, we connect this to the data in two ways. First, we examine the number of contract awards by month at the firm level. The hypothesis that we test is whether the average small business receives more government contracts in months where accelerated payments were in place. In light of the theory discussion above, we separately consider firms with and without a backlog of existing projects in order to test whether the benefits of accelerated payments depend on the backlog.

The second outcome we examine is the number of offers made by firms for contracts set aside for small businesses. As suggested by Equation 1, the desire to participate in an auction should increase under accelerated payments. In general, the data do not contain information about the bidders for a contract, only the number of offers submitted. Therefore, we are not able to observe the number of bids by small businesses. Many contracts are specifically set aside for small businesses. Others are set aside for disadvantaged business enterprises, which are a subset of the small businesses. Thus, we can observe the number of small businesses that

enter the competition for set-aside contracts.

The question of substitution across auctions is highly relevant here. It is possible that accelerated payments increase auction participation of small businesses across the board, which would show up in the data as an increase in the number of offers for set-aside contracts. Alternatively, accelerated payments could allow small businesses to be more competitive for procurement contracts that are open to general competition. Small businesses might substitute toward general competition auctions, and set-aside participation could, in fact, decline. Even if the accelerated payments policy raises the desire of small businesses to participate in the competition for contracts, the predicted impact on the number of set-aside offers is ambiguous.

Empirical Approach

Using these policy changes described above, we can estimate the effect of accelerated payments on small businesses. We do so by examining the participation of small businesses in federal contracts and determining whether participation becomes more likely when accelerated payments are in place. We take a difference-in-difference (DD) approach, examining the difference in small business participation on contracts when accelerated payments are in effect compared to times when they are not, and we compare this difference to the same difference for large businesses. We also conduct this exercise separately for affected and unaffected products. We expect no effect for unaffected products, so performing this estimation is a placebo exercise. If other factors aside from accelerated payments were affecting small business participation, then these should be witnessed in participation in contracts for placebo products as well.

We aggregate the data to the firm-month level, so that the variable of interest is the number of contracts that a firm is awarded in a given month.⁶ Doing so creates a data set that is too large to be practical—approximately 28 million observations. We therefore take a 25% random sample of the firms in the data, which leaves 7.2 million firm-month observations. Let y_{it} denote the number of contract awards received by firm i in time period t . Let Y^S_0 be the average level of participation of small businesses prior to the adoption of accelerated payments, and let Y^S_1 be the participation after. The change from the period without accelerated payments to after is given by $\Delta Y^S = Y^S_1 - Y^S_0$. The DD estimate of the effect of accelerated payments on small business participation is the difference in this change between small and large firms: $\gamma = \Delta Y^S - \Delta Y^L$. The linear regression specification that yields the DD

⁶ We measure participation using the number of contracts rather than the dollar value of those contracts. We do so for two reasons. First, there is a close connection between this measure and the theoretical concepts discussed above. Second, the measures of contract value in the data may not reflect the expected value of the contract. Contractors form expectations regarding change orders, whether the options in the contract will be exercised, whether they intend to agree to extra work, and so on. Expectations about these variables may be influenced by the accelerated payments policy itself. For these reasons, measuring participation by the number of contracts has a clearer interpretation and is likely to more accurately measure the underlying theoretical concepts.

estimates is as follows:

$$y_{it} = \beta_0 + \gamma A_t * S_i + \rho_i + \varphi_t + \varrho_{it} \quad (2)$$

In this regression, the variable A_t is an indicator for being in a period of time where accelerated payments are in effect, and S_i is an indicator for whether firm i is a small business. Since small business status can change over time endogenously, when we implement this regression specification we instead include the fraction of contracts in which the firm participated as a small business. The parameters ρ_i and φ_t represent firm and time fixed effects, respectively. The coefficient of interest is γ , which is the DD effect of accelerated payments on small business contract awards.

To connect this regression equation to the intuitive description of the DD estimates above, the first difference for small firms is $\Delta Y^S = E[y_i|A = 1, S = 1] - E[y_i|A = 0, S = 1]$, with a similar definition for large firms. This difference removes the firm fixed effect, ρ_i , which accounts for all differences across firms that are fixed over time, including any time-constant effects of being a small business. The second difference is $E[\Delta Y^S] - E[\Delta Y^L]$. This difference removes any time-specific factors, φ_t , that affect all firms equally.

The main confounder in a DD specification is the presence of unobserved time-varying shocks that differentially affect the treated group. Put differently, if an unobserved variable increases small business participation in contracting (and does not impact large business participation), and this variable happened to increase in the accelerated payments period, then the DD results would be biased in favor of finding an effect. As an example, changes in credit availability may differentially affect small businesses, and if credit availability changed for some reason during the accelerated payments period, then the impact of accelerated payments would also include this effect of credit on participation. This concern is difficult to address directly, though it can be addressed indirectly using a placebo exercise. We estimate the parameter γ for food and construction contracts separately, which should be affected little by accelerated payments, if at all. If there was an unobserved shock affecting small businesses in the accelerated payments period, it should show up in

this estimate. If the estimated γ is instead small and statistically indistinguishable from zero for food and construction, then we can rule out this source of bias under the assumption that unobserved small business shocks that are correlated with accelerated payments impact all firm types equally.

In practice, there are two treatment periods that are relevant—the time where accelerated payments applied only to small businesses and the period where the policy applied to all firms. We, therefore, introduce two separate indicators for the accelerated payments treatment period rather than a single indicator, A_{it} . Our expectation is that small businesses are impacted more by accelerated payments and, therefore, should see a benefit relative to large businesses even when the policy applies to all firms. That said, the effects of these two periods on small business contract participation could be different. On one hand, expanding the application of accelerated payments to large businesses may reduce any advantage in bidding that small firms enjoyed when they alone received accelerated payments. On the other hand, the period of time where accelerated payments applied only to small businesses was fairly brief. If the policy took time to have an effect, then the impact may only be observed during the later treatment period. The reason for a delayed impact could be because some DoD payment systems were slow to be converted. Alternatively, as previously described, one mechanism for the effect of accelerated payments that we explore is the role of a firm's backlog. Faster payments may improve a firm's ability to take on multiple projects, so the effects of the policy could amplify over time.

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Results

Small Business Contract Awards

In this section, we present our main set of results. We show how small business contract awards changed during the period of accelerated payments, providing separate estimates for DoD contracts versus awards by other federal agencies. We begin by providing estimates for all product types together, and we subsequently break the data apart by broad product category.

In Table 6, we present the results for contract awards made by the DoD. In the first column of this table, we present the results from regressing the logarithm of the number of contract awards made to a firm during a month on the interaction between the small business indicator and the two treatment windows. We find very little impact for the average small business of the accelerated payments program. The interaction between the small business indicator and the first treatment window was negative and very small in magnitude.⁷ It is statistically significant, but it is important to note that this is because the coefficient is precisely estimated with over 7 million observations. With 95% confidence, we can rule out an effect size smaller than -0.009 log points, which is less than a one percentage point effect on contract participation by small businesses.

The main result masks a heterogeneous effect depending on firm backlog. In Columns 2 and 3, we split the sample between firms with and without unfinished contracts. For small businesses with a positive amount of backlog, there is a positive and statistically significant effect of accelerated payments. The first treatment window has a moderately small positive effect— 0.026 log points—on the contract awards to small businesses. During the second treatment window, small businesses saw higher contract awards of 0.064 log points compared to when accelerated payments were not in place. For firms without backlog, the estimated impact was

⁷ In this section, we refer to the period where accelerated payments applied only to small businesses as the “first treatment window” and the period where accelerated payments applied to all firms as the “second treatment window.”

nearly zero. Compared to the period without accelerated payments, the difference in contract awards to small businesses was virtually zero—around 0.0005 log points.

In Table 7 we present a similar set of results for other federal agencies. The pattern of results is similar, though the effects are much smaller in magnitude than for DoD small business contractors. Accelerated payments are associated with a small negative effect on log contract awards to small businesses. Though statistically significant, the effect is very small and precisely estimated. The difference in small business participation from the time of no accelerated payments to the first treatment window is just -0.005 log points, and small businesses in the second treatment window receive only -0.0024 fewer log points of contracts. As was the case for DoD contractors, any positive effect of accelerated payments is observed for firms with a backlog of incomplete contracts. The first treatment window effect is 0.011 and the second treatment window effect is 0.026 . These point estimates are statistically significant and meaningful, yet they are smaller in magnitude than for the DoD. The smaller effect of accelerated payments in non-DoD contracts is likely due to the clearer implementation of accelerated payments.

By Product Type

As previously discussed, accelerated payments policies should have little effect on construction contracts and many types of food contracts; these already are paid inside of 15 days, so a policy of accelerating payments will not be binding. This fact can be used as a placebo exercise to verify the results.

Table 6: Log Participation by Firm-Month, DoD Contracts

	(1) All firms	(2) Have backlog	(3) No backlog
SB*DoD Treatment for SB	-0.0059*** (0.0014)	0.026* (0.010)	0.00054 (0.00037)
SB*DoD Treatment for all firms	-0.0028 (0.0015)	0.064*** (0.013)	0.00049 (0.00039)
Observations	7,195,104	540,386	6,649,598
R-Squared	0.45	0.66	0.10

The dependent variable is the log of one plus the number of contracts won by a firm in a month. The estimation sample is 25% random sample of the firms ever receiving contracts between 2008 and 2015. The variable SB is the percentage of times the firm participated as a small business from 2008 and 2015. In parentheses is the standard error clustered by firm. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively, and refer to inference using the asymptotic standard error.

In Table 8, we present the results of estimating our base specifications separately for contracts for affected versus unaffected products. In the first three columns, we present the results for unaffected food and construction contracts. For these contracts, the effect of accelerated payments is extremely small for the average small business. The point estimates of the coefficient on the interaction term between the small business indicator and treatment windows one and two are 0.00025 and 0.00018. These coefficient estimates are small and precisely estimated. In Column 2, we present the estimates for firms with backlog. We see that there is an effect of accelerated payments on the participation of small businesses for food and construction contracts. The effect is not as large as the main effect found earlier, but it is noticeable. The estimated treatment effect of accelerated payments on the participation of small businesses on these contracts is 0.0064 during the first treatment window and 0.011 during the second treatment window. It is worth noting that even though these products did not directly benefit from accelerated payments, it is still possible that firms with backlog could benefit. Such firms would more quickly receive payment for the backlog contracts. In Column 3 of Table 8, we find that small businesses without backlog had virtually the same likelihood of contract participation during the accelerated payments period as when it was not in place.

In Columns 4–6 of Table 8, we present the results for contracts for non–food

and construction products—those directly affected by the change in payments policy. We see that the effects of accelerated payments are strongest for these types of contracts, and in particular for participation by firms with backlog. Small businesses with backlog experienced an increase in participation by 0.022 log points during the first treatment window and 0.056 log points during the second treatment window. It is not surprising that these values are close to the main findings presented in Table 6, as most contracts are not for construction products or for the subset of food products that already had accelerated payments. The important point is that the effect for the affected products is approximately 5 times as large as the effect for unaffected products.

Table 7: Log Participation by Firm-Month, Non-DoD Contracts

	(1) All firms	(2) Have backlog	(3) No backlog
SB*Non-DoD Treatment for SB	-0.0052*** (0.00075)	0.011* (0.0049)	-0.0024*** (0.00042)
SB*Non-DoD Treatment for all firms	-0.0024*** (0.00072)	0.026*** (0.0069)	-0.0010** (0.00031)
Observations	7195104	856910	6330678
R-Squared	0.28	0.49	0.081

The dependent variable is the log of one plus the number of contracts won by a firm in a month. The estimation sample is 25% random sample of the firms ever receiving contracts between 2008 and 2015. The variable SB is the percentage of times the firm participated as a small business from 2008 and 2015.

In parenthesis is the standard error clustered by firm.

*, **, *** denote significance at the 10%, 5%, and 1% level, respectively, and refers to inference using the asymptotic standard error.

Table 8: Log Participation by Firm-Month, DoD Contracts

	Food/Constr.			Non-Food/Constr.		
	(1) All firms	(2) Have backlog	(3) No backlog	(4) All firms	(5) Have backlog	(6) No backlog
SB*DoD Treatment for SB	0.00025 (0.00028)	0.0064** (0.0024)	0.000088 (0.000086)	-0.0062*** (0.0013)	0.022* (0.010)	0.00045 (0.00036)
SB*DoD Treatment for all firms	0.00018 (0.00047)	0.011*** (0.0031)	0.00011 (0.00011)	-0.0031* (0.0015)	0.056*** (0.013)	0.00038 (0.00037)
Observations	7195104	540386	6649598	7195104	540386	6649598
R-Squared	0.32	0.66	0.13	0.45	0.65	0.098

The dependent variable is the log of one plus the number of contracts won by a firm in a month. The estimation sample is 25% random sample of the firms ever receiving contracts between 2008 and 2015. The variable SB is the percentage of times the firm participated as a small business from 2008 and 2015.

In parenthesis is the standard error clustered by firm.

*, **, *** denote significance at the 10%, 5%, and 1% level, respectively, and refers to inference using the asymptotic standard error.

Restricting to Active Firms

One concern with the results just presented is that many firms are not active at a particular point in time. Inactive firms will not be affected by accelerated payments, and the overall effect of accelerated payments may be larger than what we estimated. In this section, we restrict the estimation sample to only active firms, which we define as firms who won at least one contract within the same year as the sample observation. In other words, if a firm did not win a contract in 2012, we do not include that firm's 2012 observations in the regression.

In Table 10, we present the base results for the DoD using this restricted sample, separately for food/construction and for other types of goods. The results mirror the estimates presented in Table 8 but are larger in magnitude. The average effect of accelerated payments is estimated to be small and insignificant for food and construction products for the average firm. For firms with backlog, there is a statistically significant increase in small business participation. Firms without backlog do not witness an increase in participation for food or construction contracts.

In the final three columns of Table 10, we present similar estimates for non-food or construction contracts. For the average active firm, the estimated effect of accelerated payments is small in magnitude. The active firms with backlog have a

substantial increase in participation, particularly in the second transfer window. This estimate is larger in magnitude than the estimate for all firms. Active small businesses without backlog do not witness an increase in contract participation.

Offers on Set-Aside Contracts

In this section, we examine the number of offers by small businesses on set-aside contracts. If accelerated payments benefit small businesses, we expect that the desire to participate in auctions increases. In general, it is not possible to determine the number of bids submitted by small businesses by action. Only the total number of offers can be determined. With small business set-asides, all bids are presumably from small businesses. By examining the number of offers for set-asides, we can then determine whether the number of bids submitted by small businesses increases when accelerated payments are in place.

Table 9: Log Participation by Firm-Month, Non-DoD Contracts

	(1)	Food/Constr.		(4)	Non-Food/Constr.	
	All firms	(2) Have backlog	(3) No backlog	All firms	(5) Have backlog	(6) No backlog
SB*Non-DoD Treatment for SB	0.0000087 (0.00014)	-0.00045 (0.00035)	-0.000023 (0.00015)	-0.0052*** (0.00074)	0.028*** (0.0053)	-0.0027*** (0.00060)
SB*Non-DoD Treatment for all firms	0.00033** (0.00012)	0.00017 (0.00031)	0.00029* (0.00013)	-0.0027*** (0.00071)	0.048*** (0.0082)	-0.0018** (0.00056)
Observations	7195104	540386	6649598	7195104	540386	6649598
R-Squared	0.34	0.15	0.35	0.28	0.57	0.18

The dependent variable is the log of one plus the number of contracts won by a firm in a month. The estimation sample is 25% random sample of the firms ever receiving contracts between 2008 and 2015. The variable SB is the percentage of times the firm participated as a small business from 2008 and 2015.

In parenthesis is the standard error clustered by firm.

*, **, *** denote significance at the 10%, 5%, and 1% level, respectively, and refers to inference using the asymptotic standard error.

Table 10: Log Participation by Firm-Month, DoD Contracts, Active Firms

	(1) All firms	Food/Constr. (2) Have backlog	(3) No backlog	(4) All firms	Non-Food/Constr. (5) Have backlog	(6) No backlog
SB*DoD Treatment for SB	0.00018 (0.00034)	0.014** (0.0050)	0.000077 (0.00012)	-0.0064*** (0.0015)	0.025 (0.018)	0.00086 (0.00053)
SB*DoD Treatment for all firms	0.00014 (0.00062)	0.019** (0.0065)	0.00015 (0.00016)	-0.0034 (0.0019)	0.081** (0.025)	0.00096 (0.00054)
Observations	5552407	236316	5312924	5552407	236316	5312924
R-Squared	0.42	0.79	0.20	0.58	0.76	0.17

The dependent variable is the log of one plus the number of contracts won by a firm in a month. The estimation sample is 25% random sample of the firms ever receiving contracts between 2008 and 2015. The variable SB is the percentage of times the firm participated as a small business from 2008 and 2015. Active firms are those that participated in at least one other contract during that calendar year.

In parenthesis is the standard error clustered by firm.

*, **, *** denote significance at the 10%, 5%, and 1% level, respectively, and refers to inference using the asymptotic standard error.

One disadvantage of this approach is that it cannot account for substitution across set-aside contracts and those with open competition. In particular, accelerated payments may allow a small business to participate to a greater extent in open competition auctions. However, we expect that accelerated payments should lead to greater bidding participation in both set-aside and non-set-aside contracts rather than a substitution between the two.

Table 11 presents the results. We do not find evidence of an increase in the offers for set-aside contracts. This is true when considering all federal set-aside contracts or when estimating the effect specifically for DoD contracts. In fact, the opposite held true during the second transfer window. For DoD set-aside contracts, fewer offers were made during the second treatment window than during the time when accelerated payments were not in effect. To the extent that accelerated payments increase the desire of small businesses to compete for government contracts, this result suggests that small businesses are substituting toward the open competition auctions.

Table 11: Number of Offers for Contracts Set-Aside for Small Business

	All set-aside contracts				DoD set-aside contracts			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SB treatment*Affected product	0.15 (0.20)	0.060 (0.20)	-0.028 (0.024)	-0.035 (0.024)	-0.14*** (0.034)	-0.14*** (0.034)	-0.038 (0.044)	-0.032 (0.037)
LB treatment*Affected product			-0.0017 (0.016)	-0.0017 (0.016)			-0.16*** (0.035)	-0.17*** (0.029)
Food	7.37*** (0.32)	7.32*** (0.33)	1.02*** (0.036)	1.01*** (0.036)	-0.45*** (0.040)	-0.45*** (0.040)	-0.49*** (0.036)	-0.48*** (0.037)
Construction	0.42*** (0.16)	-0.063 (0.16)	0.065*** (0.021)	0.033 (0.021)	0.064** (0.025)	0.064** (0.025)	0.077*** (0.024)	0.051* (0.026)
Food*DoD	-9.91*** (0.36)	-9.40*** (0.36)	-1.35*** (0.043)	-1.32*** (0.045)				
Constr*DoD	1.87*** (0.30)	1.66*** (0.24)	0.085*** (0.029)	0.075** (0.029)				
Log obligated amount		0.23*** (0.018)		0.015*** (0.0029)				0.0096** (0.0042)
IDV	1.21*** (0.090)	1.25*** (0.074)	0.22*** (0.016)	0.22*** (0.014)	0.23*** (0.026)	0.23*** (0.026)	0.23*** (0.026)	0.23*** (0.024)
Observations	1496174	1484886	1491331	1480098	897286	897286	897286	892136
R-Squared	0.055	0.061	0.074	0.076	0.026	0.026	0.026	0.027

Standard errors corrected for clustering at the year*month level are in parentheses. *, **, *** denote significance at the 10%, 5%, and 1% level, respectively.

The unit of observation is a contract action that is set aside for small business, including any set aside where size was a criteria, such as set asides for Disadvantaged Business Enterprises and firms in Hubzones.

SB treatment is the period of time in which payments to small business contractors were supposed to be accelerated, with a similar definition for “LB treatment.” Affected products are not construction contracts or most types of foods, both of which were already subject to a payment period of less than 15 days.

All specifications include year*month fixed effects.

Conclusion

In this report, we consider the impact of a federal procurement policy that accelerated payments to contractors. The policy was initiated by the DoD, first applying only to small business contractors. It was later adopted by all federal agencies and subsequently extended to all federal contractors regardless of size. Reducing the time between invoice and payment is desirable for contractors because of the lag between when costs are incurred and payments are received. Firms rely on internal and external sources of capital to fill this gap. This poses particular challenges for small businesses, which are likely to have lower cash reserves and less access to inexpensive credit. The impact of accelerated payments will likely be largest for this set of firms, allowing them to be more competitive for contracts and take on additional work.

Our findings indicate that small businesses participated in more contracts during the time when accelerated payments were in place. The estimated effect was stronger for DoD contracts, for which the adoption of accelerated payments was apparently more widespread. Our empirical design exploits the fact that accelerated payments did not affect all products equally; invoice payments for contracts for perishable foods and construction services were already accelerated, and the policy should not affect the payment of these goods. We find that the modest rise in small business participation after the introduction of accelerated payments was observed only in contracts not involving food or construction.

Our findings lend support to the contention that small businesses benefit from accelerated payments. More generally, our findings are also consistent with the hypothesis that liquidity constraints pose a greater challenge for small businesses, which suggests that policies such as set-asides that direct more contracts to small businesses may be more effective if coupled with policies that alleviate constraints faced by small businesses.

Further research is called for along two dimensions. First, our conclusions would be bolstered by evidence of how the payment behavior of agencies

responded to the accelerated payments policies. We currently have only indirect evidence on this point. Second, evaluating the costs and benefits of accelerated payments would be a key input into policy discussions. Conducting such an analysis may require an understanding of the long-run effects of policies on small businesses. If the survival and growth of firms is enhanced by accelerated payments, then this improves the operation of federal procurement markets and should therefore be counted among the benefits of the policy. This is a nontrivial exercise that is outside the scope of this report.

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