13 June 2012 | 29 pages

Sequester Playbook & the Way Forward

There's Still Value in Defense Despite the Damoclean Sword

Industry Overview

Jason Gursky
+1-415-951-1672
jason.gursky@citi.com

Jonathan Raviv
jonathan.raviv@citi.com

- **What's New —** Sequestration is rapidly approaching. But, despite the consensus view that it'd harm the economy & national security, there seems to be little agreement out there for de-arming the mechanism. In these pages, we lay out our sequester expectations & think about the way forward for defense investing. We will host a call next Tuesday with former OMB Director Peter Orszag to help unravel some of the mysteries of sequester & the DC budget battles. See below for call details.

- **Our Sequester Expectations** — We don't expect sequester to be implemented as written, but rather for there to be a *face-saving deal for both sides*: a deal that reduces defense spending by an additional ~$480B over 10Y, but does so in a more logical manner by back-loading the cuts (vs. the front-load of sequester). This allows Democrats to say they protected non-defense spending & allows the GOP to say they saved DoD from what the SecDef has described as the "doomsday" scenario. Furthermore, we expect future budgets to favor the investment accounts as recent policy statements by DoD leadership portend a further shift toward spending in the "tooth" vs. the "tail." As such, we're maintaining our estimates for defense companies.

- **Sequester is Messy and No One Believes In It** — The sequester is a messy phenomenon, as it's evident to us that no one in DC knows how it will be implemented, primarily because the law was written assuming it would never actually come to pass. While the uncertainty makes it nearly impossible for the Pentagon to make decisions, it also creates considerable flexibility on the part of the implementation agency (namely, the OMB, which is part of the White House) should sequestration come to pass. Overall, no one has made decisions or sorted out sequestration & there is still overwhelming disagreement as to how it will work. In our view, this makes it very unlikely it will be implemented as written. Full discussion below.

- **Buy Defense Stocks If...**you think sequestration is much ado about nothing, that the various actors (White House, Pentagon, Congress) can come up with a gimmicky fix that allows defense funds to continue to flow, or if you believe in our forecast of there being a face-saving deal. Also, buy if you think we'll have a relatively hawkish President Romney come January 2013. We have Buy-ratings on RTN, LMT, NOC and GD.

- **Hold Off to Buy the Dips If...**you think the political drama has only just begun & Congress doesn't address sequester until the last minute (December 31, 2012), if at all.

- **Conference Call on Tuesday 6/19, 10am ET –** Guest speaker: Peter Orszag (former OMB Director & Current Citi Vice Chairman of Global Banking)

  – Dial: 719-457-6877. Passcode: 233-4063. Title: "Sequester Playbook & the Way Forward." Further details on page 24.

See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.

Contents

Sequestration Playbook

Congress put itself in a lurch when the Super Committee failed last November, but with the day of reckoning upon it (Jan 2), we expect Congress to find some face-saving measure which won't be such a terrible outcome for the defense industry. Until then, hold onto your hats as hyperbole and budget hysteria will rule the airwaves (not to mention a presidential election and debt ceiling increase).

When the (not so) Super Committee failed to reach a budget agreement in late November 2011, a budgetary mechanism (sequestration) went into effect that is set to force a ~10% reduction in the defense budget in January 2013. The sequestration trigger was designed to be so unacceptable that it would force the Committee to come to an agreement, but Washington DC these days never fails to surprise (to the downside).

In the following pages we prepare investors for what the Pentagon terms a "doomsday scenario," and we argue that the most likely outcome is a face-saving measure that avoids sequestration (but not without some bumps along the way).

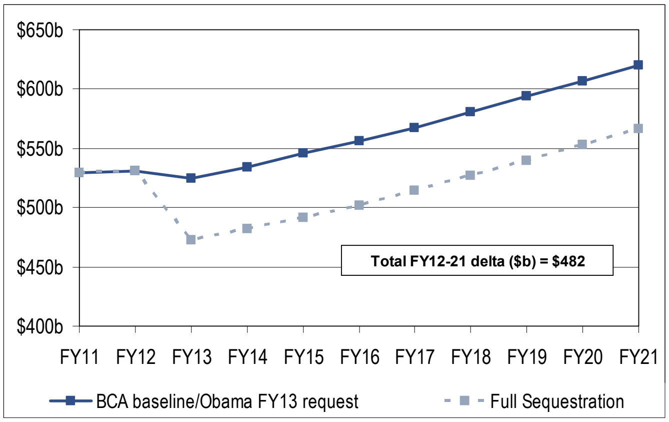
What We Expect

While we expect Congress to find some gimmick to avoid the sequester…the tool employed to avoid the reductions & placate both parties likely still involves reducing defense spending by almost $1T over 10Y…but in a more manageable fashion. The net effect is a flattish nominal base budget over 10Y.

We're relatively constructive on the sequester outlook to the extent that we don't expect it to take effect as currently written. Instead, we expect a last-minute, face-saving deal that *still adds* an incremental ~$480b of savings over 10Y, but does so in a more manageable fashion by evenly spreading out the costs across the years. The net effect is a flattish nominal base budget for 10Y (Figure 2).

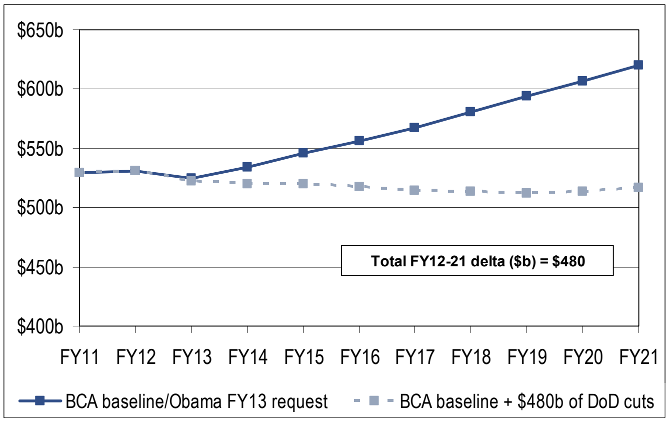
In our view, such a plan would allow the Democrats to say they preserved non-defense discretionary spending and the Republicans to claim victory for averting the forced ~11% y/y reduction in FY13 and tax increases. To be sure: essentially doubling the cuts of the BCA over 10Y (although at a smoother cadence) will raise the ire of the GOP and defense hawks, but we remind investors that these are political games being played and that cuts planned for 2019 rarely come to pass, thus making them relatively more palatable for a GOP dedicated to cutting spending and keeping taxes low.

Figure 1. We don't expect: front-loaded ~$480b over 10Y (sequester)



Source: Citi Investment Research and Analysis

Figure 2. We do expect: more manageable back-loaded ~$480b



Source: Citi Investment Research and Analysis

Summary Budget Outlook

We now see $480b in further reductions beyond the BCA vs. our previous expectation of $250b. This forecast essentially flat lines growth.

Whereas we previously expected $250b in reductions over 10Y vs. the BCA baseline, we now expect $480b in further reductions vs. the BCA baseline. We remind investors that these are on top of the $480b in reductions already put in place by the BCA. Thus, our new forecast reflects almost $1T in 10Y reductions vs. the DoD's pre-BCA plan. Our new forecast essentially flat lines growth over 10Y.

Figure 3. Citi Budget Forecast: Old vs. New

												CAGR			
	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY12-21	FY11-21	FY11-16	FY13-17
BCA baseline	529	531	525	534	546	556	567	581	594	607	620	1.74%	1.60%	0.99%	1.94%
Nominal y/y %		*0.3%*	*(1.1%)*	*1.7%*	*2.2%*	*1.8%*	*2.0%*	*2.4%*	*2.2%*	*2.2%*	*2.2%*				
Old Citi	529	531	524	527	532	536	540	546	551	558	566	0.72%	0.68%	0.26%	0.74%
Nominal y/y %		*0.3%*	*(1.4%)*	*0.5%*	*1.1%*	*0.7%*	*0.7%*	*1.2%*	*1.0%*	*1.2%*	*1.4%*				
New Citi	529	531	523	520	520	518	514	514	512	513	517	(0.30%)	(0.23%)	(0.44%)	(0.40%)
Nominal y/y %		*0.3%*	*(1.6%)*	*(0.6%)*	*0.0%*	*(0.4%)*	*(0.6%)*	*(0.1%)*	*(0.3%)*	*0.2%*	*0.7%*				

Source: Citi Investment Research and Analysis

We expect the investment account to outgrow the budget.

We expect the investment account to outgrow the other accounts as the DoD shifts spending from tail to tooth and spends more procuring proven technologies. This will require hard decisions across the board, but in our view there are large non-weapons cost centers DoD can attack in order generate savings.

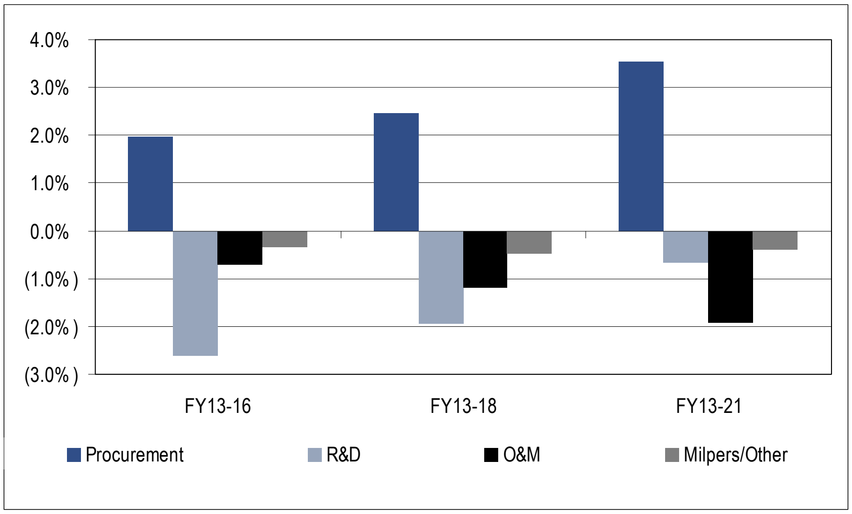
Figure 4. Summary Budget Outlook (reflects $480b reduction over 10Y vs. BCA baseline)

											CAGR			
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY11-16	FY12-16	FY13-17	FY12-21
Base budget (nominal $)	531	523	520	520	518	514	514	512	513	517	(0.4%)	(0.6%)	(0.4%)	(0.3%)
y/y nominal growth	*0.3%*	*(1.6%)*	*(0.6%)*	*0.0%*	*(0.4%)*	*(0.6%)*	*(0.1%)*	*(0.3%)*	*0.2%*	*0.7%*				
Investment Account (nominal $)	179	167	165	165	167	169	173	179	185	195	(1.2%)	(1.6%)	0.4%	1.0%
y/y nominal growth	*0.2%*	*(6.5%)*	*(1.3%)*	*0.4%*	*1.2%*	*1.2%*	*2.1%*	*3.3%*	*3.7%*	*5.1%*				
Procurement	106	98	99	101	104	107	111	116	122	129	0.1%	(0.5%)	2.2%	2.2%
y/y nominal growth	*2.8%*	*(7.6%)*	*0.7%*	*2.3%*	*2.9%*	*2.8%*	*3.6%*	*4.7%*	*5.0%*	*6.4%*				
R&D	72	69	66	65	64	63	62	63	64	65	(3.2%)	(3.2%)	(2.3%)	(1.2%)
y/y nominal growth	*(3.4%)*	*(5.0%)*	*(4.0%)*	*(2.3%)*	*(1.5%)*	*(1.4%)*	*(0.5%)*	*0.7%*	*1.2%*	*2.6%*				
O&M (nominal $)	197	198	198	197	194	191	187	183	178	170	(0.4%)	(0.4%)	(1.0%)	(1.7%)
y/y nominal growth	*(0.5%)*	*0.5%*	*(0.2%)*	*(0.6%)*	*(1.3%)*	*(1.8%)*	*(2.0%)*	*(2.0%)*	*(3.0%)*	*(4.5%)*				
Milpers & Other (nominal $)	156	158	157	157	156	154	154	151	151	153	0.3%	0.1%	(0.5%)	(0.2%)
y/y nominal growth	*1.2%*	*1.3%*	*(0.4%)*	*0.3%*	*(0.9%)*	*(1.2%)*	*(0.2%)*	*(2.2%)*	*0.0%*	*1.3%*				

Source: Citi Investment Research and Analysis

We expect procurement to outgrow the other accounts over the next 3, 5, and 8 years as DoD shifts spending from "tail" to "tooth."

Figure 5. CAGRs by Account



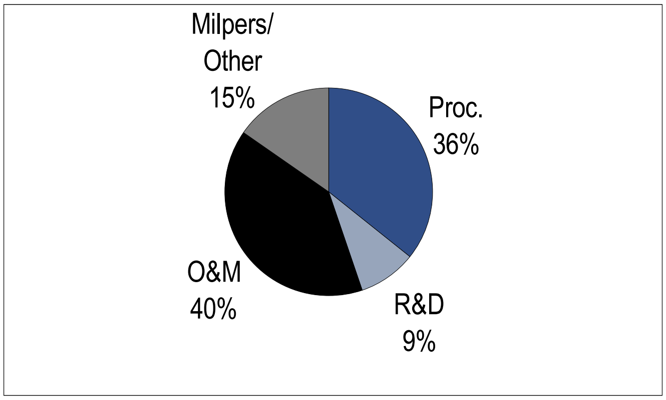
Source: Citi Investment Research and Analysis

Impact by Account

We expect the 10Y reduction plan to hit the non-investment accounts more severely since shifting long-term cost curve assumptions can generate significant savings.

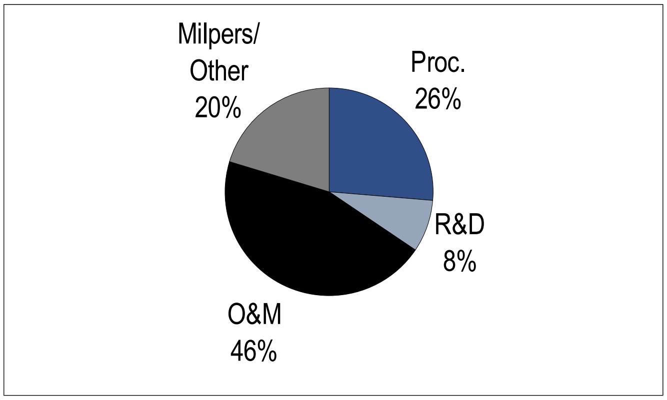
We expect DoD to generate long-term savings by planning to replace even more "tail" spending with "tooth," creating a leaner and more potent fighting force. While this shift is not achievable in the short-term, long-term cost curve assumptions can be shifted today as to produce large amounts of savings over the long-term. Thus, we expect the investment account to contribute relatively more in the short term (FY13-17) vs. over the long-term (FY12-21) (Figure 6, Figure 7).

Figure 6. Short-term Contribution Rate (F13-17E)



Source: Citi Investment Research and Analysis

Figure 7. Long-term Contribution Rate (FY12-21)



Source: Citi Investment Research and Analysis

On the following pages, we review each account and how our new forecast differs from the old.

Investment Account

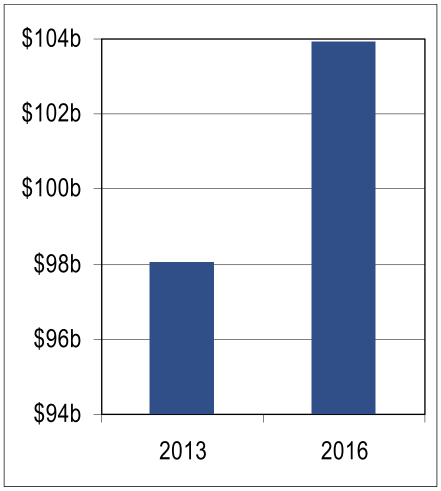
We expect investment account reductions to disproportionately hit the R&D account as the Pentagon spends more procuring proven technologies. This does not mean the Pentagon is giving on its seed corn; we still see R&D spending staying above $60b over the next decade. But we expect the procurement to R&D ratio (P:R&D) to rise from 1.4x in FY13 to ~2x in FY21 (the resulting positive impact on margins is discussed in "Resilient Margins" below.

Figure 8. Investment Account Outlook

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	CAGR FY12-21	CAGR FY11-21	CAGR FY11-16	CAGR FY13-17
Old Citi	179	168	168	171	174	179	184	190	196	203	1.4%	1.3%	(0.4%)	1.6%
Nominal y/y %	*0.2%*	*(6.2%)*	*0.5%*	*1.3%*	*2.3%*	*2.4%*	*3.1%*	*2.9%*	*3.4%*	*3.6%*				
New Citi	179	167	165	165	167	169	173	179	185	195	1.0%	0.9%	(1.2%)	0.4%
Nominal y/y %	*0.2%*	*(6.5%)*	*(1.3%)*	*0.4%*	*1.2%*	*1.2%*	*2.1%*	*3.3%*	*3.7%*	*5.1%*				

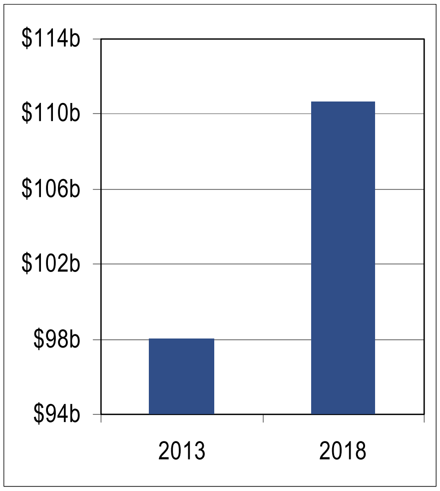
Source: Citi Investment Research and Analysis

Figure 9. 3Y Procurement CAGR = 2.0%



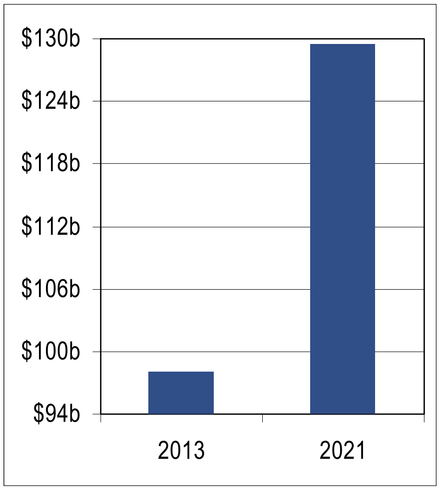
Source: Citi Investment Research and Analysis

Figure 10. 5Y Procurement CAGR = 2.5%



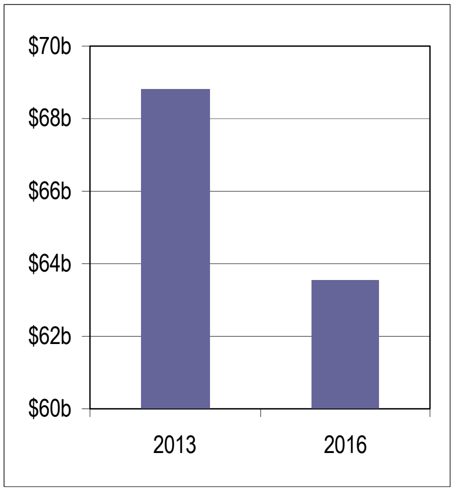
Source: Citi Investment Research and Analysis

Figure 11. 8Y Procurement CAGR = 3.5%



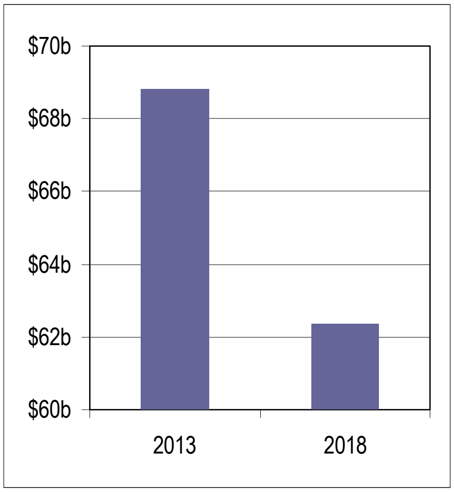
Source: Citi Investment Research and Analysis

Figure 12. 3Y R&D CAGR = (2.6%)



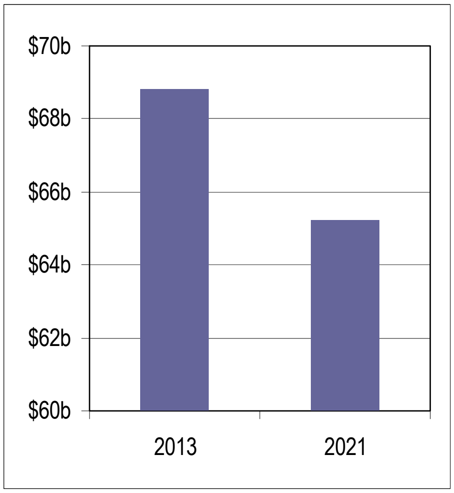
Source: Citi Investment Research and Analysis

Figure 13. 5Y R&D CAGR = (1.9%)



Source: Citi Investment Research and Analysis

Figure 14. 8Y R&D CAGR = (0.7%)



Source: Citi Investment Research and Analysis

Operations & Maintenance

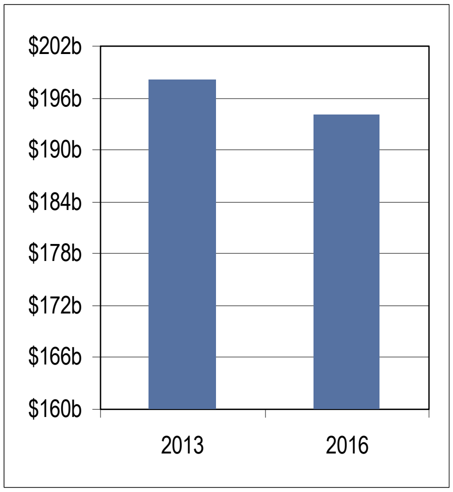
We expect Operations & Maintenance Accounts to contribute the plurality of savings over 10Y because this account includes the majority of long-term costs that can be changed on adjusting some assumptions today. This ranges from limiting Tricare benefits for retirees (~$110b over 10Y) to consolidating DoD's retail activities ($9b over 10Y).[1] But we expect these savings to be slow-going at first since it takes time for long-term cost curve shifts to generate savings. The overall long-term reduction in O&M vs. the increase in investment accounts contributes to DoD's tail-to-tooth spending strategy. Our model has O&M going from comprising 38% of the budget in FY13 to 33% in FY21E.

Figure 15. O&M Outlook

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	CAGR FY12-21	CAGR FY11-21	CAGR FY11-16	CAGR FY13-17
Old Citi	197	199	200	202	202	201	201	201	200	197	(0.0%)	(0.1%)	0.4%	0.4%
Nominal y/y %	*(0.5%)*	*0.7%*	*0.9%*	*0.8%*	*(0.0%)*	*(0.2%)*	*(0.1%)*	*0.1%*	*(0.7%)*	*(1.6%)*				
New Citi	197	198	198	197	194	191	187	183	178	170	(1.7%)	(1.5%)	(0.4%)	(1.0%)
Nominal y/y %	*(0.5%)*	*0.5%*	*(0.2%)*	*(0.6%)*	*(1.3%)*	*(1.8%)*	*(2.0%)*	*(2.0%)*	*(3.0%)*	*(4.5%)*				

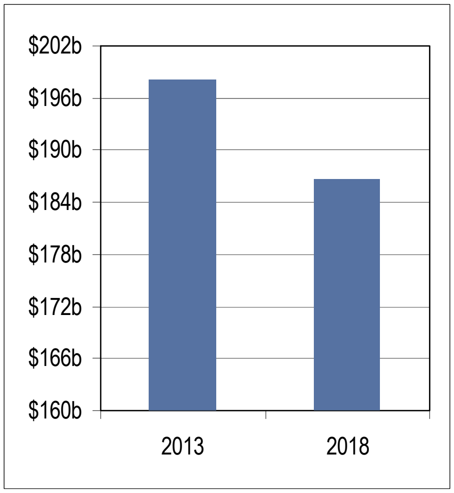
Source: Citi Investment Research and Analysis

Figure 16. 3Y O&M CAGR = (0.7%)



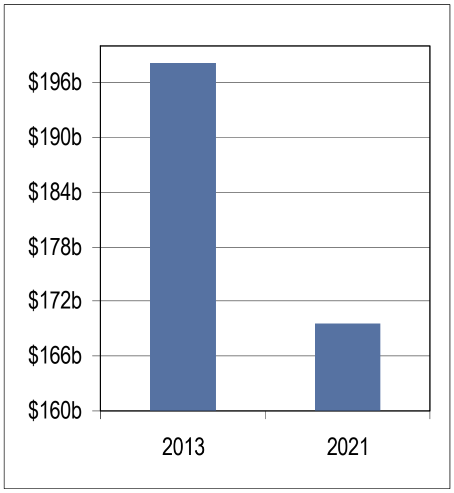
Source: Citi Investment Research and Analysis

Figure 17. 5Y O&M CAGR = (1.2%)



Source: Citi Investment Research and Analysis

Figure 18. 8Y O&M CAGR = (1.9%)



Source: Citi Investment Research and Analysis

[1] CBO Budget Options, March 2011

Military Personnel

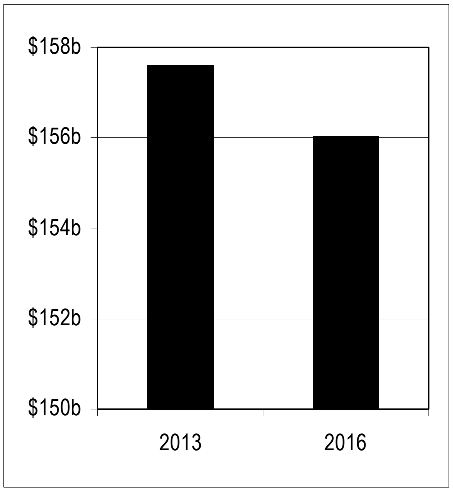
The balance of the budget is made up mostly of military personnel costs (largely soldiers' wages). The rest of the budget is taken up by military construction accounts that typically scale in sympathy with force structure and headcount. Like O&M, its tough to rapidly realize Milpers savings. As such we see Milpers contributing 15% of near-term reductions, but 20% over the long-term.

Figure 19. Milpers/Other Outlook

											CAGR			
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY12-21	FY11-21	FY11-16	FY13-17
Old Citi	156	158	158	160	160	159	161	160	162	166	0.8%	0.8%	0.8%	0.3%
Nominal y/y %	*1.2%*	*1.4%*	*0.1%*	*1.2%*	*(0.1%)*	*(0.2%)*	*0.7%*	*(0.1%)*	*1.2%*	*2.6%*				
New Citi	156	158	157	157	156	154	154	151	151	153	(0.2%)	(0.1%)	0.3%	(0.5%)
Nominal y/y %	*1.2%*	*1.3%*	*(0.4%)*	*0.3%*	*(0.9%)*	*(1.2%)*	*(0.2%)*	*(2.2%)*	*0.0%*	*1.3%*				

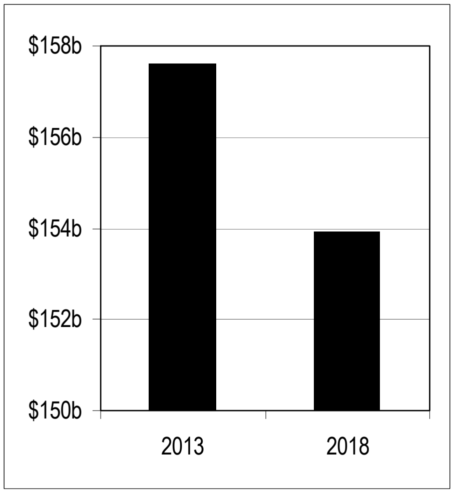
Source: Citi Investment Research and Analysis

Figure 20. 3Y Milpers/Other CAGR = (0.3%)



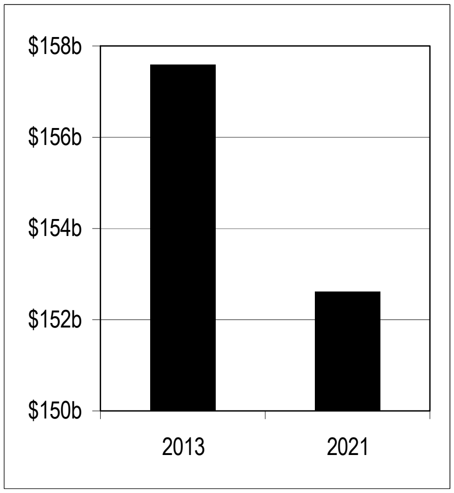
Source: Citi Investment Research and Analysis

Figure 21. 5Y Milpers/Other CAGR = (0.5%)



Source: Citi Investment Research and Analysis

Figure 22. 8Y Milpers/Other CAGR = (0.4%)



Source: Citi Investment Research and Analysis

What is Sequestration?

The sequester process technically only applies to FY13, which (under current law) would see a forced reduction to the appropriated budget. Lower spending caps (not sequestration) in FY14-21 achieve the targeted 10Y savings.

Sequestration is a process by which spending levels are automatically reduced in order to bring projected budget levels in line with statutory goals.[2] It was first established in 1985 by the Gramm-Rudman-Hollings Act in order to compel Congress and the President to achieve deficit reduction through careful legislative action, as opposed to an automatic mechanism.[3] The law has been amended several times over the years (Figure 23), most recently in August 2011 in the Budget Control Act (BCA), which was cobbled together last summer as part of the debt deal: Congress would raise the debt ceiling if it agreed to reduce the deficit by a similar amount over 10Y (~$2.3T). The first tranche of cuts came in the form of discretionary spending caps (worth $840b over 10Y), and second tranche was to come from a Super Committee which was tasked to find the rest by any means necessary, lest it suffer automatically imposed reductions to discretionary (and some mandatory) spending. When the Committee failed to agree to a comprehensive plan in November 2011, a sequestration was triggered for the FY13 budget, and new lower spending caps went into place for FY14-21. Together, these are designed to achieve the incremental $1.2T of deficit reduction that the Super Committee failed to find.

Figure 23. Budget Control Legislation History

Year	Name	Description
FY85	Balanced Budget Act	Created deficit targets & established sequestration as way to enforce them. Set balanced budget target of FY91.
FY87	Balanced Budget Reaffirmation Act	Vested power w/ OMB vs. GAO due to unconstitutionality of previous mechanism. Also extended balanced budget target to FY93.
FY90	Budget Enforcement Act	Replaced deficit targets w/ 2 new mechanisms: discretionary spending limits & pay-as-you-go (PAYGO). Target extended to FY95.
FY93	Omnibus Budget Reconciliation Act	Establishes discretionary limits and PAYGO requirement extended by 3Y (to FY98)
FY97	Budget Enforcement Act	Establishes discretionary limits and PAYGO requirement extended to FY02
FY98	Transportation Equity Act	Created new discretionary spending limits; set to expire in FY02
FY03	PL 107-312	Terminated PAYGO requirement (discretionary limits expired in FY02)
FY10	Pay-as-You-Go Act	Re-established PAYGO mechanism
FY11	Budget Control Act	New spending limits + Super Committee/sequester process for reducing deficit by ~$2.3T over 10Y. Also raised debt ceiling.

Source: Citi Investment Research and Analysis, Congressional Research Service

Sequestration is typically used as a statutory commitment mechanism for Congress, forcing it to come up with responsible spending plans. Sometimes, this commitment mechanism fails & Congress has to do what Congress does best: weasel its way out of it.

Sequester is most often used as an incentive to keep Congress honest in its spending plans. In other words, think about the budget and employ a thoughtful, strategic spending plan *or* be subject to automatic spending cuts that don't prioritize spending, and instead spread the cuts evenly across the budget (the "peanut butter" approach).

At this point, it's worth pointing out the clear time mismatch in these sorts of deals: Congress will raise the debt ceiling today, but the associated deficit reduction is only achieved over 10Y (in which time anything can happen). Thus, sequesters and related budget controls often placate a short-term political need (and have historically constrained spending in a or 2 years), but over the long-run the budget tends to move in unanticipated ways due to domestic/international realities/needs as well as Congressional meddling designed to avoid budget rules. Despite the gimmickry, statutory budget limits do manage to restrain budgets. As a former CBO director said about the Gramm Rudman bill, it "may not have brought the deficit cows back into the barn, but it has kept them from stampeding over the cliff."[4]

[2] "Budget Sequesters: A Brief Review." Congressional Research Service. March 8, 2004.

[3] "The Sequestration Process." Congressional Research Service. March 19, 2001.

[4] Statutory Limits on Total Spending as a Method of Budget Control." Congressional Research Service. July 26, 2011.

Sequestration History

Sequestration has only been on the books since 1985, and has not actually had a material impact on budgets in ~20 years due to government gimmickry.

From FY86 to FY02, five sequesters were triggered as a result of the government not adhering to statutory spending/deficit goals. However, since FY91, Congress and the President have largely avoided the actual sequesters (i.e. forced fund reduction) from taking place in a material way mostly through the use of budget gimmickry, including designating certain spending as an "emergency requirement," or by enacting new laws that change the sequestration process.[5] Since FY90 (when the discretionary spending limits came into effect) Congress and the President have intervened in the normal operation of the enforcement at least four times.[6] As is evident in Figure 24, the sequester mechanism has lost its impact over time.

Figure 24. Sequester History

Year	Duration	Outlay Savings ($b)	Uniform reduction %	Outcome
FY86	1 year	11.7	4.9% defense 4.3% non-defense	Full savings achieved in line with FY85 Balanced Budget Act (Gramm-Rudman)
FY88	3 months (Oct 20 - Dec 22 1987)	20	10.5% defense 8.5% non-defense	Reductions superseded by budget agreement
FY90	1 year	16.1	4.3% defense 5.3% non-defense	Savings reduced to $4.55b by subsequent law (designed to lessen sequestation's impact)
FY91	5 months	0.19	1.9% international 0.0013% domestic	Savings reduced to $1.4m by subsequent law (rescinded the original sequester)
FY92-02	None	None	-	No sequesters but President & Congress enacted legislation preventing a sequester in several instances
FY03-06	None	None	-	Sequesters prevented due to elmination of PAYGO requirement in FY02 (not re-established until FY10)

Source: Citi Investment Research and Analysis, Congressional Research Service, House Budget Committee

In our view, this typical kick-the-can strategy worked when the country's debt rating were less of a focus. But with rating agencies and deficit hawks watching Congress more closely than ever before (not helped by the Eurozone debt crises), similar gimmicks might be tough to employ this time around. For that reason, we expect Congress will be forced to find some face-saving debt deal after the election.

Mechanics

The Super Committee's failure (Nov 2011) automatically triggered the BCA's sequester, but on a 13 month time lag. When January 2, 2013 rolls around, ~11% of budget authority is set to be removed from defense discretionary spending.

A sequester is officially triggered when the Office of Management and Budget (OMB) issues a report within 15 days after the end of a congressional session. The report determines whether the relevant spending caps or PAYGO requirements have been breached, and then dictates how sequester is to be implemented. In Figure 24, we saw that material sequesters as technically defined (i.e. cancellation of budgetary resources) are few and far between over history (thanks to Congress legislating around them in concert with the President).

However, the Super Committee's failure in November 2011 automatically triggered the sequester mechanism, but on a 13 month time delay. This feature alone sets the BCA apart from previous sequesters in that the potential reductions loom for over a year with an expressed desire on both sides of the political aisle to cancel them.

[5] "Budget Sequesters: A Brief Review." Congressional Research Service. March 8, 2004.

[6] "Techniques for Preventing a Budget Sequester." Congressional Research Service. March 8, 2002.

As written, sequester mechanics are highly untenable/disruptive & were never designed to be implemented (only to serve as a coercion tool)

The mechanics are still somewhat unclear this year, but if Congress doesn't do anything to change the current law (and passes the FY13 budget in line with the proposed level) we'll see a report from OMB prior to January 2, 2013 instructing agencies how to conform with the BCA, which likely involves reducing appropriated funds by ~11% at the program level (the law technically stipulates reductions be taken at the lowest level). If this sounds untenable, it's because it was originally designed to be an impactful enforcement mechanism. The President can choose to exempt military personnel from the forced reductions since it's not a great idea to stop paying the folks with all the guns.

If Congress doesn't address the sequester, then defense budgets will be subject to sequestration in early January. It'll be up to the OMB what percentage to apply to what accounts.

So if Congress appropriates spending levels before the beginning of the new calendar year, and they're above those laid out in BCA, the President will be forced to order a sequestration. In this scenario, security spending would be reduced as much as it takes to fall beneath the defense cap of $472b. Now, it's not clear from the legislation exactly what percentage reduction will be foisted upon what accounts. Our estimates suggest anywhere from 4% to 11% reductions across a variety of accounts (could include $88b OCO and $84b in unobligated balances). In the standard scenario (base budget only), the defense budget would have to give up a further $53b, or 10% of the FY13 requested budget of $525b.

Considerations

The President likely exempts personnel accounts from sequestration, making the impact on the other accounts greater.

- **Military personnel:** If the military personnel account (Milpers) is excluded from the sequestration reductions, the other accounts suffer a greater reduction as the required reduction is spread out among fewer accounts. We would expect the President to exempt personnel accounts.

In our view, the decision to include OCO in the mandatory reductions is a political ploy by the White House to force Congressional action.

- **OCO applicability:** A contentious issue is whether OCO accounts will be impacted by sequestration. At first, most believed that OCO is completely exempt. However, OMB has reportedly decided that OCO funds (likely excluding military personnel) would also be subject to mandatory reductions. In our view, this is a political decision by the Administration to turn up the pressure on Congress.

Unobligated balances could be also subject to sequestration, lessening the impact on the FY13 budget but could be disruptive for companies' funded backlogs.

- **Unobligated balances:** Bloomberg points out that sequestration is applied to "total budgetary resources," which includes unobligated balances (funds appropriated in previous years that yet to be spent). Some claim that including previous years' unobligated balances offers the DoD flexibility and obviates the need to make as difficult a set of decisions.[7] Bloomberg calculates an unobligated balance of $83.5b, implying an 8.6% reduction from the President's proposed $525b budget. It's tough to say how this would impact the industrial base since different companies have different programs in different stages. But we could see a rush for program managers to obligate funds before January 2 since already-obligated balances will not be subject to sequester.

Continuing Resolutions

We expect another CR this year as Congress is unlikely to be able to pass a budget before the FY begins on Oct 1.

Congress passes a continuing resolution (CR) when it's unable to pass a full-year budget by the end of the government fiscal year (September 30). This has happened more often than note of late due to the hyper-politicized nature of Congress these days, with a CR infamously funding FY11 for over half the fiscal year before a budget was passed. Such long CR created considerable pressure for contracts, since DoD was restricted to spending 80% of the previous year's levels and only on continuing activities (i.e. no new program starts). There's a strong

[7] Brancato, Kevin and Robert Levinson. "Pentagon Sequester to Hit Past Years' Funds." Bloomberg Government. May 29, 2012.

chance of another CR this year funding at least the first 2 months of the FY since we don't expect Congress to be able to pass a budget before the election in early November.

In our view, Congress is somewhat incentivized to pass stop-gap CRs vs. a regular full-year budget since a CR would slow the implementation of the required cuts. But, this isn't great for industry since a CR sequester likely makes DoD's decision-making even more difficult.

How the CR impacts sequestration is unclear because the delayed trigger mechanism is unprecedented. However, it appears to be the case that this mechanism actually incentivizes Congress to pass a CR (rather than a full-year budget) since it would delay the full impact of the required reductions which would be doled out in the same ratio as the CR. For instance, if Congress passed a 4-month CR, only 1/3 (4/12s) of the cuts would occur on January 2.[8] The accountability-focused OMB Watch points out that the total cuts would still be the same at the end of the year, but a CR would create a multi-step process for their implementation. In true Congressional style, the CR could be used to delay the need to make a decision on FY13 *and* delay the full brunt of sequestration cuts since only a portion apply at a time. This is certainly not a positive outcome for the Pentagon or for industry, but as long as Congress doesn't pass a FY13 budget, the sequestration reductions occur only in parts, during which time legislators probably hold out hope that after the CR they can form a budget.

Other readings of the legislation appear to imply that the CR scenario would a yield a higher post-sequestration budget since the dollar reductions would be taken from the annualized CR rate vs. the current year budget. If the previous year's appropriated budget was higher than the current year's, the percentage reduction wouldn't be as large. Either way you read it, there appears to be an incentive for Congress to continue to kick the can.

Full Sequestration Impact

If the sequestration were implemented as is and only applied to the base budget, investment accounts could take as much as a 21% hit all at once (although the impact on outlays would naturally be more spread out).

Assuming Congress does nothing between now and January 2, 2013 except pass a budget that is higher than the sequestration caps, DoD needs to find $54.7b of savings vs. the proposed FY13 defense budget of $525b (~10.5%). Assuming the President excludes Milpers, the $55b represents a 14% reduction. In our view, the short-term nature of the requirement (i.e. funds are sequestered today) means that the investment account would get hit more severely than the O&M accounts since its easier to reduce goods purchases rapidly. With this in mind, investment accounts likely contribute 60-70% of the reductions (a 21% hit), while O&M takes a 9% hit. In our view, these calculations probably represent the worst-case scenario since most other scenarios involve the inclusion of other funds or previous years' unobligated balances that would lessen the blow. We also highlight that budget authority is not the same as outlays, since the government spends appropriated budgets over several years. So a budget reduction today does not automatically reduce outlays by the same amount immediately; outlay reductions are more spread out.

Figure 25. Full Sequestration Impact

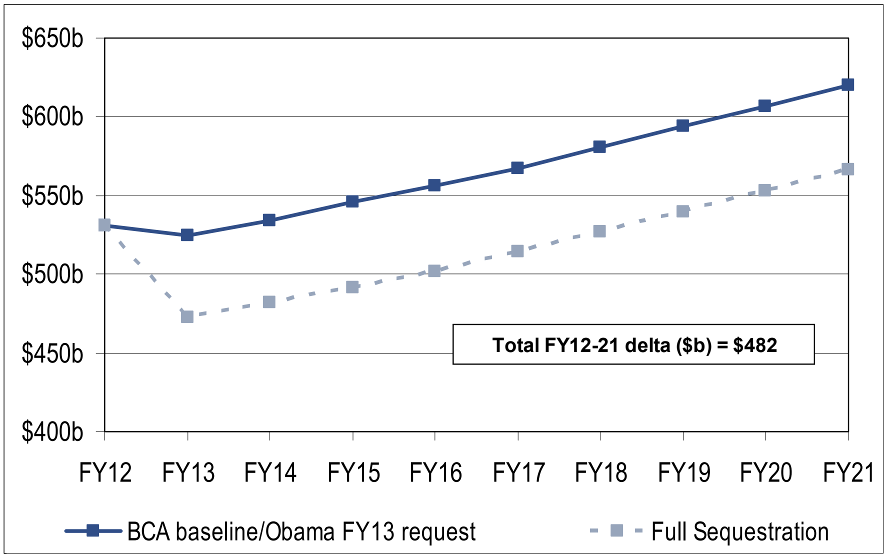
											CAGR			
	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY12-21	FY11-21	FY11-16	FY13-17
BCA baseline/Obama FY13 request	531	525	534	546	556	567	581	594	607	620	1.74%	1.60%	0.99%	1.94%
Nominal y/y %	*0.3%*	*(1.1%)*	*1.7%*	*2.2%*	*1.8%*	*2.0%*	*2.4%*	*2.2%*	*2.2%*	*2.2%*				
Full Sequestration	531	472	482	491	502	515	527	539	553	566	0.72%	0.68%	(1.05%)	2.16%
Nominal y/y %	*0.3%*	*(11.1%)*	*2.0%*	*2.0%*	*2.1%*	*2.5%*	*2.4%*	*2.4%*	*2.5%*	*2.4%*				
Annual delta vs. BCA baseline	0	(53)	(52)	(55)	(54)	(52)	(54)	(55)	(54)	(54)	(102 bps)	(92 bps)	(204 bps)	22 bps

Total FY12-21 delta ($b) = $482

Source: Citi Investment Research and Analysis

8 OMB Watch, August 2, 2011. www.ombwatch.org.

Figure 26. Full Sequestration Impact



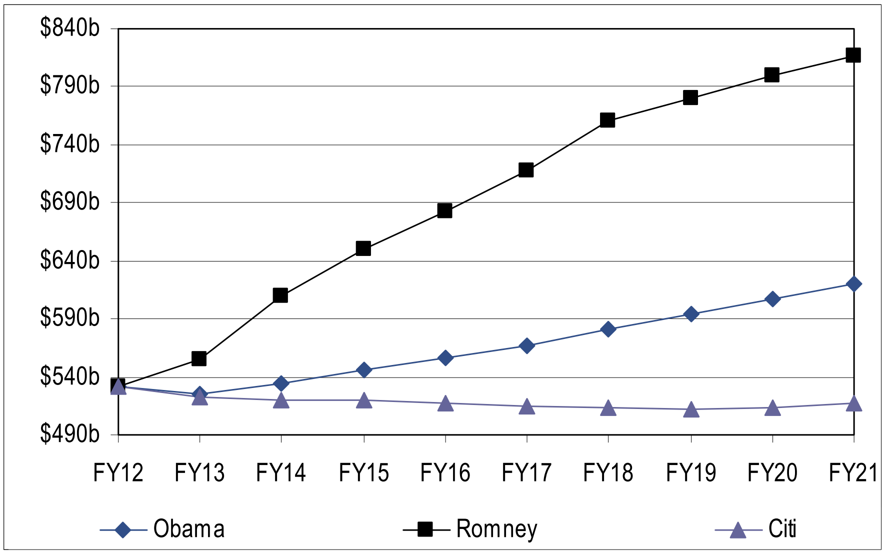
Source: Citi Investment Research and Analysis

The Romney Put

Mitt Romney says he wants to peg defense spending to 4% of GDP. This adds $1.2T to the Obama plan over 10Y, but we don't see any chance of it ever being implemented.

GOP President Candidate Mitt Romney actually proposes pegging defense spending to 4% of GDP. In our view this is a poorly conceived plan, but we do highlight it as a major difference between the Presidential hopefuls. For this reason, we expect defense to receive strong GOP support this election season, but we don't expect the 4% plan to ever go into effect. However, the Romney plan would add $1.2T to the Obama plan over 10Y, and almost $2T vs. our forecast (Figure 27).

Figure 27. The Romney Plan



Source: Citi Investment Research and Analysis

What they're saying

Despite the consensus that sequestration is dangerous, neither Congress nor the White House has come up with a politically palatable plan to disarm the trigger.

The discussion hasn't changed much since last August's debt deal with no one supporting the idea of an across-the-board ~10% sequester on January 2, 2013. At the same time, however, no one in Congress has proposed a solution to the problem that would be acceptable to all sides. At this point in the year, it appears as if each side in the debate is attempting to scare the other one into blinking first. The Republicans are proposing plans that avoid disarm sequestration by cutting more deeply in non-defense discretionary spending, while the Democrats are still insisting on a balanced deficit reduction plan. Indeed, the GOP budget plan looks to reduce the amount of reductions made to the 10Y budget plan, and actually add back funds previously taken away by the BCA. In an interesting development, the White House-controlled OMB claims that OCO funds will be subject to sequester. We remind investors that OMB has the final say on how sequestration is implemented, so we consider this OCO ruling an attempt to force the GOP to give into the White House's demands for a balanced deficit reduction approach. Of course, GOP will argue that the OMB did not *have* to subject the OCO budget to sequestration. But this is all part and parcel of normal DC discourse.

Figure 28. What They're Saying

Defense Secretary Leon Panetta	There isn't any member I've talked to that doesn't think that sequester is a disaster… All of them understand that it's the wrong way to go. And I just have to hope that ultimately, they will find the courage and leadership to be able to address that issue, de-trigger sequester, deal with the other challenges that are out there and try to do it as soon as possible because frankly, the longer this drags on, the more of an impact it has in terms of the planning process and in terms of the budget process. And frankly, even though we're not planning for sequester to take place because it is such a disastrous step if it occurs, it still has an impact within the department and outside the department for planning purposes. (April 16, 2012). Sequestration "…would have a devastating effect on not only national defense but I think on the rest of the country. It's totally unacceptable, and frankly our political leaders cannot allow it to happen. That's where I'm coming from on this issue. (May 3, 2012)
Deputy Defense Secretary Ash Carter	"People have asked, 'are we planning for sequestration?' The secretary of defense has said no we're not — maybe later in the summer...Planning has certain rational tone to it, but Congress in writing the Budget Control Act did not design sequester to be rational. Sequester was supposed to be ... a trigger so irrational that the prospect of it would drive and force the leadership to do what was needed Sequester will "disrupt thousands of contracts and programs, Both the size and the nature of sequester nullify strategy." (May 30, 2012)
White House Press Secretary Jay Carney	If you take a balanced approach that includes hard choices by Republicans and hard choices by Democrats, you can achieve a result that can reduce our deficit over 10 years by over $4 trillion, that can allow for substantial but not damaging cuts in our non-defense discretionary spending and our defense spending, cuts that are manageable, the kinds that the President supports. Because, as you know, this administration, the President, the Secretary of Defense do not support cuts the size of which would be brought about by that -- if that sequester were to take effect. (June 4, 2012)
Chief of Staff, U.S. Army General Raymond Odierno	[W]hat even makes sequestration worse is we have no say in where the cuts come. It is directed across every element of our budget, and it's a certain percentage. So what that would cause us to do is increase the pace of our end strength reductions. It would cause a hollowness -- significant hollowness in the force. It would probably cause us to breach many contracts that we already have in place because we would not meet the current requirements that we have on our developmental contracts. So it would affect every asset that we have in every area. So that's the concern. (May 10, 2012)
Chairman of House Budget Committee Congressman Paul Ryan (R-WI)	If there's one thing that we have bipartisan agreement on, if there's one area where we agree with the president and the secretary of defense, it's that this sequester will decimate our military at a time when our men and women are overseas fighting in a war, in a world that has become much more dangerous. (May 8, 2012)
Controller (OMB) Dan Wefel	The president has made clear that Congress can and should act to avoid the sequester. The intention of the sequester was to drive Congress to a compromise through the threat of mutually disagreeable cuts to both defense and non-defense discretionary funding. If allowed to occur, the sequester would be highly destructive to national security and domestic priorities and core government functions. (April 25, 2012)
Speaker of the House Congressman John Boehner (R-OH)	[W]hen it comes to what's going to happen to our military with these cuts in January, you can imagine that there are a lot of people concerned. The Defense Secretary's made clear that these cuts will devastate out ability to keep our country safe. The White House has admitted that these cuts will have a devastating impact on our military. So where is their plan? It's as simple as that. (May 16, 2012)
Ranking Member of the House Budget Committee Rep. Chris Van Hollen (D-MD)	[T]here's no disagreement about the need to replace the meat ax cuts from the sequester with an alternative approach to reducing the deficit by at least $1.2 trillion. And I want to emphasize that fact. The meat-ax across-the-board cuts to both defense and non-defense are a reckless way to reduce the deficit. And we need a responsible alternative. (May 14, 2012)
Member of the Senate Committee on Foreign Relations and the Select Committee on Intelligence Senator Marco Rubio (R-FL)	The good news is that I can't find anyone around here who actually thinks this is a good idea. Everybody agrees that this would be catastrophic. The bad news is that we can't find enough people around here who want to do anything about it right away. (March 29, 2012)
Lockheed CEO Bob Stevens	The aerospace and defense industry cannot wait until a lame duck session (of Congress) to deal with the consequences of sequestration. We are already taking action by not hiring and training new workers, not investing in new plants and equipment and not investing in new R&D

Source: The Dangers of Deep Defense Cuts. AEI, FPI, Heritage Foundation. May 31, 2012; Citi Investment Research and Analysis

Timeline

- **Throughout 2012 – Political bickering (no surprise here)**
  We expect Congressional factions to offer various solutions to avoid sequester throughout the Summer, all the while having to deal with the other major fiscal items set to expire at the end of the year. There's also the small matter of Presidential debates which will include the outwardly hawkish Mitt Romney who argues that defense spending should be floored at 4% of GDP (Obama's FY13 budget predicts it will fall to 2.7% by 2017).

- **July/August – Potential for White House report on sequestration plan**
  GOP is looking to pass legislation requiring the President to submit a detailed report on the sequestration. Some legislation requires the report by July 9, others talk about August.

- **September 30 – End of Government FY12**
  If Congress is unable to pass a FY13 budget, it will have to put a CR in place beginning on October 1 lest it allow a government shutdown. While CR-related disruptions are typically negative for DoD and industry, sequestration planning is already pressuring the system so the CR will be relatively minor distraction.

- **Fall/Winter 2012 – OMB sequestration preview report:**
  Assuming Congress hasn't moved, OMB will issue a sequestration preview report laying out how it intends to calculate and dole out the reductions

- **November 2 (i.e. 60 days before sequestration) – Layoff notices go out**
  Defense companies are threatening to send out layoff notices to employees due to the 1988 WARN Act requiring 60 day advance notice of potential lay off.

- **November 6 – Election Day**
  We expect the task of diffusing sequestration to fall to the lame duck Congress.

- **January 2, 2013 – Sequestration Day**
  OMB calculates and allocates reductions to the various accounts, and the President orders sequestration (i.e. budget cancellation).The reduction amount reduced is calculated by multiplying the baseline level of budgetary resources (could include unobligated balances, could include OCO) by a uniform percentage necessary to achieve an amount equal to the calculated caps.

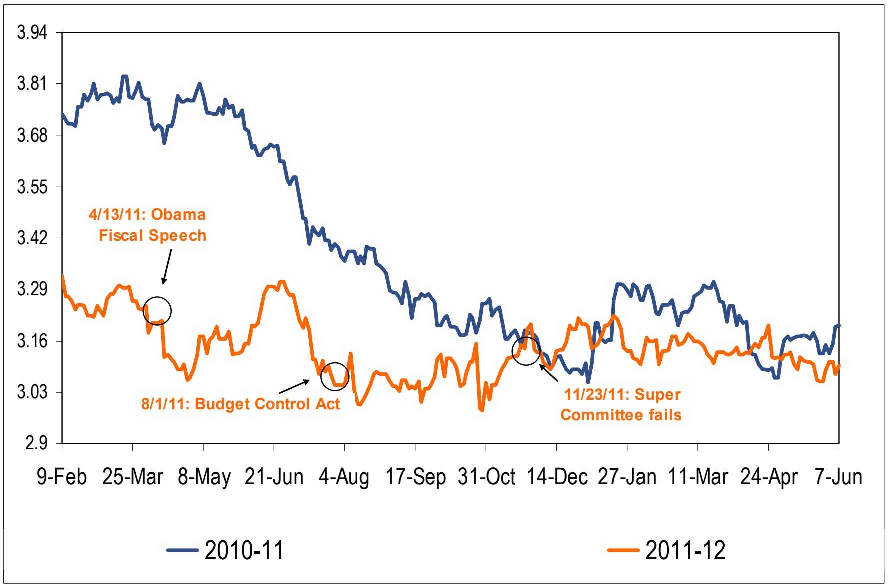
Stock Performance

Defense shares are seeing their typical summer slowdown. If one has a dire view on sequester, then there's probably still room to the downside since stocks aren't fully pricing in its implementation. However, we're not as dire on sequester and are therefore more constructive on stocks.

Defense prime shares are roughly flat on a relative basis since the Super Committee failed in late November 2011. Last year, we saw a choppy summer turn negative as a national default loomed large due to the debt ceiling debate. And then as the fall and winter wore on, defense outperformed due to broader macro weakness. With budget concerns back on the table, defense shares are once again seeing the typical summer doldrums.

In our view underperformance reflects too dour a view on future budgets, although we acknowledge that the sequestration is a real overhang. If one has a dire view on sequester, then there is likely still a trade to the downside as the stocks are not fully pricing in its implementation. However, we do not have as dire a view on sequester and therefore remain constructive.

Figure 29. Defense Prime Relative Price Performance (vs. S&P 500)



Source: Citi Investment Research and Analysis

What's Priced In & Valuation?

The market is pricing in too much bad news into defense shares, as current valuations reveal an expectation of perpetually negative free cash flows.

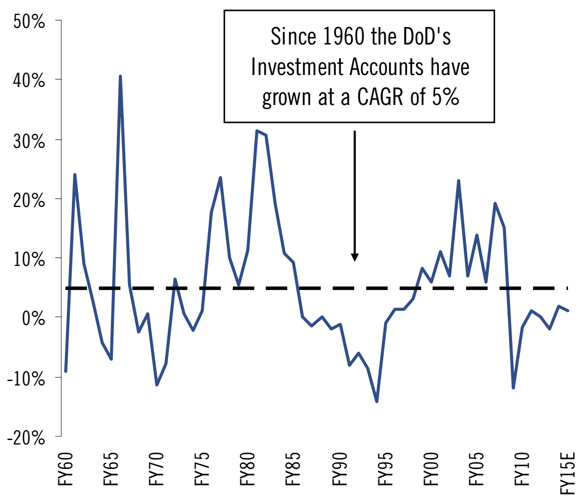
In our view, there's a disconnect between market fears and strategic realities: we think investors are pricing in negative growth (indefinitely) into defense stocks. To come to such a conclusion we compare the percentage of market cap tied to zero growth. We arrive at the zero growth market value by reversing the perpetual DCF calculation (divide 2011 UFCF by the WACC less a growth rate of zero). Our math shows that current market values imply perpetual declines in defense companies' FCF whether one uses 2011 as the base year, or averages 2008-10 (Figure 30). In our view, this is too pessimistic since DoD investment accounts grow over time; ~3-5% nominally over the long-term. This is driven by a persistent need to refresh and update military equipment (Figure 31).

Figure 30. Zero-Growth Scenario

	Zero-Growth Mkt Value ($m) using 2011	Current Mkt Value ($m)	Mkt Value Attributable to Zero Growth	Mkt-Implied Perpetual FCF Growth Rate
GD	$27,848	$23,100	120.6%	(1.8%)
LMT	$45,603	$27,039	168.7%	(4.3%)
NOC	$24,561	$15,032	163.4%	(5.4%)
RTN	$27,668	$17,194	160.9%	(4.6%)
	Zero-Growth Mkt Value ($m) using 2008-10 avg.	**Current Mkt Value ($m)**	**Mkt Value Attributable to Zero Growth**	**Mkt-Implied Perpetual FCF Growth Rate**
GD	$26,896	$23,100	116.4%	(1.4%)
LMT	$40,165	$27,039	148.5%	(3.1%)
NOC	$17,133	$15,032	114.0%	(1.1%)
RTN	$27,671	$17,194	160.9%	(4.8%)

Source: Citi Investment Research and Analysis, FactSet

Figure 31. Annual Investment Account Growth



Source: DoD

From a valuation perspective, defense primes are cheaper than they appear since most sell-side estimates include FAS/CAS expense, which is mostly reimbursable. For instance, 2012 P/E is 1-3 turns lower for these names excluding pension headwind in 2012 (Figure 32). We note that this is not applicable to NOC which likely sees pension income in 2012E-2013E. Broadly speaking, 2012 defense valuation is attractive from an adjusted basis as the primes are trading at an average discount of 29% to the market on an adjusted basis vs. our expectation that defense names should trade at 20-25% given the budget environment.

Figure 32. Defense Prime Comp Table

	2012				2013				2014			
	EPS	Adj. EPS	P/E	Adj. P/E	EPS	Adj. EPS	P/E	Adj. P/E	EPS	Adj. EPS	P/E	Adj. P/E
GD	$7.16	$7.16	9.0x	9.0x	$7.55	$7.55	8.5x	8.5x	$8.12	$8.12	7.9x	7.9x
HII	$3.00	$4.00	12.1x	9.1x	$3.94	$4.59	9.2x	7.9x	$4.84	$5.22	7.5x	6.9x
LMT	$7.88	$9.67	10.6x	8.6x	$8.43	$9.33	9.9x	8.9x	$9.37	$9.60	8.9x	8.7x
NOC	$6.88	$6.54	8.7x	9.1x	$7.00	$6.38	8.5x	9.4x	$7.36	$6.70	8.1x	8.9x
RTN	$5.19	$5.77	9.9x	8.9x	$5.60	$5.70	9.2x	9.1x	$6.18	$5.62	8.3x	9.2x
Average			**10.0x**	**8.9x**			**9.1x**	**8.7x**			**8.1x**	**8.3x**
SPX			**12.7x**	**12.7x**			**11.6x**	**11.6x**				
Discount			21%	29%			22%	25%				

Source: Citi Investment Research and Analysis
Note: We use Consensus (Thomson) estimates for EPS and Citi estimates for the FAS/CAS impact to arrive at Adjusted EPS.

We Still See Value in Defense

In our view, there's still value in defense as sales and margins are unlikely to be as weak as expected.

We're relatively constructive on defense sales and margins, neither of which we expect to fall precipitously in the near-term.

Nominally Flat US budgets

As we've described in the previous pages, we expect a debt deal that essentially flattens the US defense budget for 10Y. While no one knows what the future holds in store from a strategic/threat perspective, we do not see many opportunities for significant upside or downside movement over the horizon.

Strong International Demand

We expect healthy international demand, although the market is far smaller than the US. But the Middle East and Asia likely drive continued demand for fighter jets, missile defense, and advanced electronics. Coupled with the US' push to liberalize exports, and expect growth in direct commercial (DCS) and foreign military sales (FMS). The State Department reported that it approved $44.3b of export licenses in FY11 (+30% y/y), driven in large part by increases in DCS requests for India and Brazil. Meanwhile, the Defense Department expects almost $60b of FMS agreements in 2012 (+71% y/y), driven by the $29b Saudi package.

Below, we've sketched out some of the major international deals in the pipeline.

Figure 33. Select International Pipeline

Opportunity	Quantity	Value ($m)	Timing	Potential Company/Platform
AIR				
India Lift + Patrol	10 - 16	4,100	2011	BA C-17
India Light Helo	197	1,500	2012	EADS AS550, Kamov Ka-226
India Combat Helo	22	TBD	TBD	BA AH-64 Apache, Mi-28 (Russia)
India Heavy Lift Helo	15	TBD	TBD	BA CH-47, Mi-26
India Naval Helo	55	2,200	2012 -13	EADS NH90, Sikorsky Seahawk, Bell 429
India Tanker	6	2,000	TBD	A330, IL-78
India Trainer	57	750	2010	BAE Hawk
India Medium Maritime Patrol	6 - 9	TBD	2012	TBD
India Med-Range Maritime Recon	6	TBD	2012	BA P-8I, Others TBD
India Lift	56	TBD	2012	Airbus C-295, Alenia C-27J
India Lift	45	TBD	2011	Multirole Transport Aircraft (MTA) (JV btw Russia & India)
Indonesia Trainers	16	400	2011	KAI T-50
Indonesia Helo	6	TBD	TBD	EADS EC725
Korea Helo (AH-X)	36	1,500	2012	BA AH-64 Apache, EADS EC665 Tiger, Bell AH-1Z
Malaysia AEW	2	TBD	TBD	Saab/Embraer EMB-145, NOC E-2D
Malaysia Helo (ASW)	6	TBD	TBD	Sikorsky MH-60R, Agusta AW159, EADS Tiger
Singapore Helo	30	TBD	TBD	EADS NH90, EC725
Taiwan Helo	30	TBD	2012	BA Apache Block III
Thailand Helo	3	235	2011	Sikorsky UH-60M BlackHawk
FIGHTER				
Australia Fighter	100	TBD	TBD	LMT F-35
India Fighter (MMRCA)	126	10,500	2012	Dassault Rafale, Eurofighter Typhoon
India Fighter	270	12,000	2011	Su-30MKI
India Fighter (5G)	> 300	25,000	TBD	Fifth Generation Fighter Aircraft (FGFA) (JV btw Russia & India)
Japan F-X Fighter	42	4,000	2011	LMT F-35
Japan F-XX Fighter	200-250	TBD	2020	TBD
Korea F-16 upgrade	169	TBD	2012	LMT, BAE, NOC SABR, RTN RACR
Korea F-X Phase III	60	9,000	2012	LMT F-35, BA F-15, Eurofighter Typhoon, T-50 PAK-FA
Malaysia Fighters (MRCA)	18	TBD	TBD	BA F-18, Dassault Rafale, Gripen, Typhoon, Su-30, MiG-35
Taiwan Fighters	66	> 3,100	TBD	LMT F-16
Thailand Fighter Upgrade	18	700	2011	LMT F-16, NOC components
Vietnam Fighters	12	~2,000	2010	Su-30MKK
MISSILE				
Japan Missile Defense	TBD	TBD	TBD	RTN NCADE
Taiwan Missile Defense	TBD	700	4Q11	RTN/LMT Patriot (685m announced Dec 19)
Taiwan Missile Defense	4	1,100	2H10	RTN/LMT Patriot

Source: Citi Investment Research and Analysis

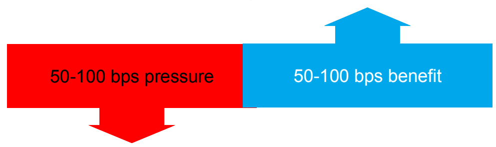
Resilient Margins

We expect resilient margins as fiscal pressures are offset by a positive sales mix-shift.

We expect margins to remain resilient as fiscal pressures are offset by a positive mix-shift in sales (more procurement and more international). In our view, companies have also had time to anticipate the coming drawdown, so in some respects they are busy "out-cutting" the DoD by reducing headcount and closing facilities.

Figure 34. Defense Margin Outlook

Near-Term Pressure	Long-Term Resiliency
▼ Contract scrutiny & low-price competitions	▲ Shift of DoD spending from R&D to Procurement
▼ Time & material contracts coming to end	▲ Increasing international mix
▼ Lengthening sales cycle creates inefficiencies	▲ Increased use of fixed price contracts
▼ Diminished ability to spread fixed costs	▲ Company-led cost reductions



Source: Citi Investment Research and Analysis

Structural Shift in DoD Buying Behavior

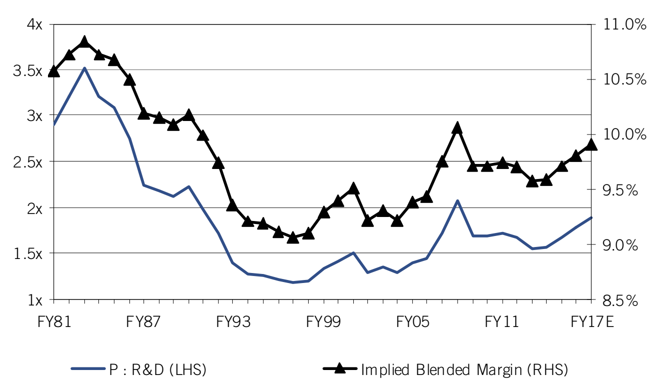
An increase in the procurement-to-R&D spending ratio likely benefits defense company margins as DoD buys more mature products to focus on today's needs vs. developing new weapons with uncertain benefits. Since defense companies typically earn higher margins on production vs. development, we see a higher margin revenue mix for defense companies going forward. We note that the FY13 Procurement to R&D spending ratio (P:R&D) is ~1.6x, but DoD forecasts it to grow to 1.89x by FY17E (was as high as 3.5x in the mid-1980s). In our view, each turn in the ratio can create 50 – 100 bps margin expansion.

Figure 35. Typical Defense Margin Stack

More Emphasis Here	International Production	15%+
	Domestic Production	10% to 15%
Less Emphasis Here	Low-Rate Initial Production	5% to 10%
	RDT&E	0% to 5%

Source: Citi Investment Research and Analysis

Figure 36. P:R&D Implied Defense Margin

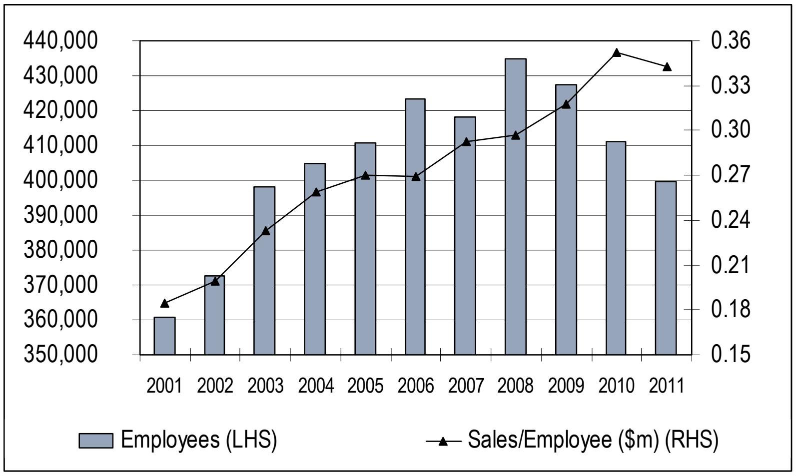


Source: Citi Investment Research and Analysis

Leaner Headcount

We note that the US defense industry has been steadily shedding employees since peaking in 2008. As headcount has come down, sales efficiency has increased which we expect to help support resilient margins.

Figure 37. Defense Industry Headcount



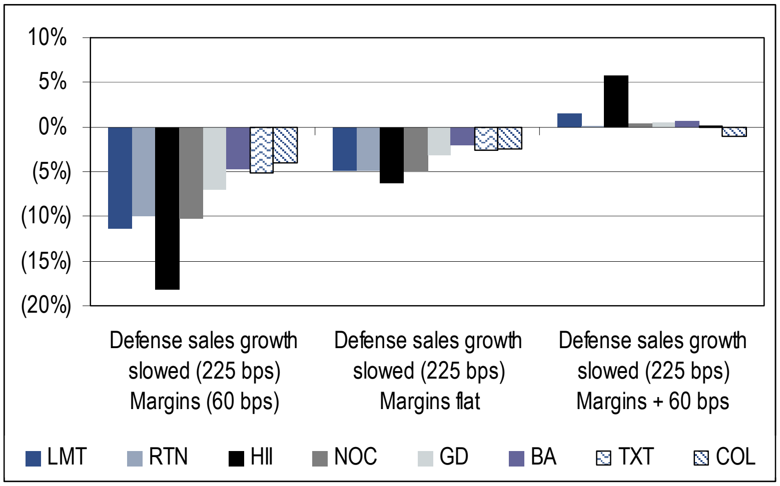
Source: Citi Investment Research and Analysis
Note: Includes LMT, RTN, NOC, HII, GD

The Defense Stress Test

We've stressed the EPS estimates for 8 of our companies under coverage with material defense exposure. We've stressed sales growth by 225 bps in each direction, and margins by 60 bps in each direction. In our view, the lower left-hand quadrant of the sensitivity tables (Figure 39-Figure 46) is a fair view of the future, in which growth slows but margins are resilient to marginally up. Figure 38 is a summary of the impact on 2013 in 3 different scenarios.

The chart demonstrates the percentage impact on our 2013 estimates in 3 slowed sales scenarios: margins down 60 bps, flat margins, and margins up 60 bps. As expected, the defense primes see the largest impact in each direction, while commercially-exposed companies such Boeing, Textron, and Rockwell see less EPS degradation.

Figure 38. 2013 EPS Impact on Defense Companies



Source: Citi Investment Research and Analysis

Figure 39. LMT FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(11.4%)	(9.9%)	(8.3%)	(6.8%)	(5.2%)	(3.7%)	(2.1%)
(40)	(9.2%)	(7.7%)	(6.1%)	(4.5%)	(2.9%)	(1.3%)	0.3%
(20)	(7.1%)	(5.5%)	(3.9%)	(2.3%)	(0.6%)	1.0%	2.6%
0	(4.9%)	(3.3%)	(1.6%)	0.0%	1.7%	3.3%	5.0%
+20	(2.7%)	(1.1%)	0.6%	2.3%	4.0%	5.7%	7.4%
+40	(0.6%)	1.1%	2.8%	4.5%	6.2%	8.0%	9.7%
+60	1.6%	3.3%	5.0%	6.8%	8.5%	10.3%	12.1%

Source: Citi Investment Research and Analysis

Figure 40. RTN FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(9.9%)	(8.3%)	(6.8%)	(5.2%)	(3.7%)	(2.1%)	(0.5%)
(40)	(8.2%)	(6.7%)	(5.1%)	(3.5%)	(1.9%)	(0.3%)	1.4%
(20)	(6.6%)	(5.0%)	(3.4%)	(1.7%)	(0.1%)	1.5%	3.2%
0	(4.9%)	(3.3%)	(1.6%)	0.0%	1.7%	3.3%	5.0%
+20	(3.2%)	(1.6%)	0.1%	1.7%	3.4%	5.1%	6.8%
+40	(1.6%)	0.1%	1.8%	3.5%	5.2%	6.9%	8.7%
+60	0.1%	1.8%	3.5%	5.2%	7.0%	8.7%	10.5%

Source: Citi Investment Research and Analysis

Figure 41. NOC FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(10.2%)	(8.7%)	(7.1%)	(5.5%)	(4.0%)	(2.4%)	(0.7%)
(40)	(8.5%)	(6.9%)	(5.3%)	(3.7%)	(2.1%)	(0.5%)	1.2%
(20)	(6.7%)	(5.1%)	(3.5%)	(1.8%)	(0.2%)	1.5%	3.1%
0	(4.9%)	(3.3%)	(1.7%)	0.0%	1.7%	3.4%	5.1%
+20	(3.2%)	(1.5%)	0.2%	1.8%	3.6%	5.3%	7.0%
+40	(1.4%)	0.3%	2.0%	3.7%	5.4%	7.2%	8.9%
+60	0.3%	2.1%	3.8%	5.5%	7.3%	9.1%	10.9%

Source: Citi Investment Research and Analysis

Figure 42. HII FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(18.2%)	(16.3%)	(14.4%)	(12.6%)	(10.6%)	(8.7%)	(6.8%)
(40)	(14.2%)	(12.3%)	(10.3%)	(8.4%)	(6.4%)	(4.4%)	(2.4%)
(20)	(10.2%)	(8.2%)	(6.2%)	(4.2%)	(2.1%)	(0.1%)	2.0%
0	(6.2%)	(4.2%)	(2.1%)	0.0%	2.1%	4.2%	6.3%
+20	(2.2%)	(0.1%)	2.0%	4.2%	6.3%	8.5%	10.7%
+40	1.8%	4.0%	6.2%	8.4%	10.6%	12.8%	15.1%
+60	5.8%	8.0%	10.3%	12.6%	14.8%	17.2%	19.5%

Source: Citi Investment Research and Analysis

Figure 43. GD FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(6.9%)	(5.9%)	(4.9%)	(3.9%)	(2.8%)	(1.8%)	(0.8%)
(40)	(5.7%)	(4.7%)	(3.6%)	(2.6%)	(1.5%)	(0.5%)	0.6%
(20)	(4.5%)	(3.4%)	(2.4%)	(1.3%)	(0.2%)	0.9%	1.9%
0	(3.2%)	(2.2%)	(1.1%)	0.0%	1.1%	2.2%	3.3%
+20	(2.0%)	(0.9%)	0.2%	1.3%	2.4%	3.5%	4.7%
+40	(0.8%)	0.3%	1.5%	2.6%	3.7%	4.9%	6.0%
+60	0.5%	1.6%	2.7%	3.9%	5.0%	6.2%	7.4%

Source: Citi Investment Research and Analysis
Note: Margins and sales impacted only at defense segment(s)

Figure 44. BA FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(4.7%)	(4.0%)	(3.4%)	(2.8%)	(2.2%)	(1.5%)	(0.9%)
(40)	(3.8%)	(3.1%)	(2.5%)	(1.9%)	(1.2%)	(0.6%)	0.1%
(20)	(2.9%)	(2.2%)	(1.6%)	(0.9%)	(0.3%)	0.4%	1.1%
0	(2.0%)	(1.3%)	(0.7%)	0.0%	0.7%	1.4%	2.0%
+20	(1.1%)	(0.4%)	0.2%	0.9%	1.6%	2.3%	3.0%
+40	(0.2%)	0.5%	1.2%	1.9%	2.6%	3.3%	4.0%
+60	0.7%	1.4%	2.1%	2.8%	3.5%	4.2%	5.0%

Source: Citi Investment Research and Analysis
Note: Margins and sales impacted only at defense segment(s)

Figure 45. TXT FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(5.2%)	(4.4%)	(3.6%)	(2.7%)	(1.9%)	(1.1%)	(0.2%)
(40)	(4.3%)	(3.5%)	(2.7%)	(1.8%)	(1.0%)	(0.1%)	0.7%
(20)	(3.4%)	(2.6%)	(1.8%)	(0.9%)	(0.1%)	0.8%	1.7%
0	(2.6%)	(1.7%)	(0.9%)	0.0%	0.9%	1.7%	2.6%
+20	(1.7%)	(0.8%)	0.0%	0.9%	1.8%	2.7%	3.6%
+40	(0.8%)	0.1%	0.9%	1.8%	2.7%	3.6%	4.5%
+60	0.1%	0.9%	1.8%	2.7%	3.6%	4.6%	5.5%

Source: Citi Investment Research and Analysis
Note: Margins and sales impacted only at defense segment(s)

Figure 46. COL FY13 EPS Sensitivity

	Sales (+/- bps)						
Margin (+/- bps)	(225)	(150)	(75)	0	+75	+150	+225
(60)	(3.9%)	(3.2%)	(2.4%)	(1.5%)	(0.7%)	0.1%	0.9%
(40)	(3.5%)	(2.7%)	(1.8%)	(1.0%)	(0.2%)	0.6%	1.4%
(20)	(3.0%)	(2.2%)	(1.3%)	(0.5%)	0.3%	1.1%	2.0%
0	(2.5%)	(1.7%)	(0.8%)	0.0%	0.8%	1.7%	2.5%
+20	(2.0%)	(1.2%)	(0.3%)	0.5%	1.4%	2.2%	3.1%
+40	(1.5%)	(0.6%)	0.2%	1.0%	1.9%	2.7%	3.6%
+60	(1.0%)	(0.1%)	0.7%	1.5%	2.4%	3.3%	4.1%

Source: Citi Investment Research and Analysis
Note: Margins and sales impacted only at defense segment(s)

Resilient Shareholder Returns

In our view, resilient sales and margins combine with FAS/CAS harmonization to generate resilient cash flows.

We expect defense companies to continue generating robust cash levels due to resilient sales/margins, no material change in the cash-heavy nature of the business, and FAS/CAS harmonization (for more on FAS/CAS see: FAS/CAS – Why You Should Care). We do note, however, that there will likely be some near-term pressure from pension funding requirements driven by weak equity markets. However, we see rising dividends & falling share counts driving returns during the coming slowdown. In fact, we posit that most companies are, or will be targeting ~10-13% cash returns to shareholders through a combination of dividends and share repurchases this year.

Since 2006, defense primes (GD, LMT, NOC, RTN) have returned 71% of operating cash flow to shareholders via dividends and share repurchases (50% toward repos, 21% toward dividends) (Figure 47). We expect the primes to continue returning 55%+ of operating cash flow to shareholders through 2014E (Figure 48).

Figure 47. Defense Prime Cash Deployment (2006-11)

	GD	LMT	NOC	RTN	Total
OCF	$17,268	$23,377	$14,558	$12,782	**$67,984**
Dividends	3,218	4,862	3,058	2,917	**14,055**
Share repos	4,776	13,909	8,127	7,594	**34,406**
Returned to s/h	**$7,994**	**$18,771**	**$11,185**	**$10,511**	**$48,461**
as % of OCF	46%	80%	77%	82%	**71%**

Source: Citi Investment Research and Analysis, FactSet

Figure 48. Defense Prime Cash Deployment (2011-14E)

	2011	2012E	2013E	2014E
OCF	$11,749	$10,755	$11,429	$11,604
Dividends	2,899	3,153	3,064	2,939
Share repos	7,280	3,492	3,813	3,447
Returned to s/h	**$10,179**	**$6,645**	**$6,877**	**$6,386**
as % of OCF	87%	62%	60%	55%

Source: Citi Investment Research and Analysis, FactSet

In our view, shareholder friendly cash deployment is underpinned by our resilient OCF estimates set against relatively modest capex requirements, driving low double digit FCF yields vs. current share prices (Figure 49).

Figure 49. Cash Flow Comp Sheet

	Dividends		Free Cash Flow						Operating Cash Flow		
	Dividends / quarter ($)	Dividend Yield (%)	FY12E CIRA ($m)	FY12E FCF Yield	FY13E CIRA ($m)	FY13E FCF Yield	FY14E CIRA ($m)	FY14E FCF Yield	FY12E ($m)	FY13E ($m)	FY14E ($m)
General Dynamics Corp.	0.51	3.18%	2,150.8	9.5%	2,853.2	12.5%	2,581.9	11.3%	2,576	3,284	3,019
Lockheed Martin Corp.	1.00	4.80%	2,962.0	11.0%	2,711.4	10.0%	3,022.9	11.2%	3,843	3,711	4,023
Northrop Grumman Corp.	0.55	3.68%	2,101.9	14.0%	1,920.8	12.8%	1,914.4	12.7%	2,483	2,321	2,314
Raytheon Co.	0.50	3.88%	1,447.7	8.4%	1,713.0	9.9%	1,847.2	10.7%	1,853	2,113	2,247
A&D Average		**2.08%**		**7.8%**		**9.1%**		**9.9%**			
Defense Prime Avg.		**3.89%**		**10.7%**		**11.3%**		**11.5%**			
S&P 500		**2.26%**									
10Y UST		**1.64%**									

Source: Citi Investment Research and Analysis

Leveraged Buybacks

Strong balance sheets and a focus on share repurchases are a potentially potent combination as defense primes ratchet up their debt levels and reduce their share counts. For the purposes of this simulation, the target leverage ratio of 2.8x is based on the DoD-sanctioned ratio HII was allowed when it spun off from NOC last spring. We see an average accretion opportunity of 63% among the primes when running this simulation, with NOC leading the way at 100%+ accretion opportunity (Figure 50). General Dynamics (GD), Rockwell Collins (COL), and Lockheed Martin (LMT) have already pursued a leveraged buyback strategy to various degrees, but we see the accretion opportunities for the defense primes given historically low debt rates.

Figure 50. Leveraged Buyback Simulation (based on our coverage universe)

	GD	LMT	NOC	RTN	BA	PCP	TXT	COL	DGI
Net Debt (Cash)	1,276	2,954	1,251	1,065	4,906	(1,087)	3,805	539	339
LTM EBITDA	4,360	4,958	3,804	3,425	8,185	1,735	1,004	1,049	150
Current Net Debt/EBITDA	0.3x	0.6x	0.3x	0.3x	0.6x	(0.6x)	3.8x	0.5x	2.3x
Target Net Debt/EBITDA	2.8x	2.8x	2.8x	2.8x	2.8x	2.8x	2.8x	2.8x	2.8x
Potential Additional Debt ($m)	10,932	10,928	9,400	8,525	18,012	5,945	NA	2,398	80
Potential Shares Repurchased (m)	171	131	157	165	258	36	NA	48	5
% of Float	*48.0%*	*40.4%*	*62.5%*	*49.5%*	*33.9%*	*24.9%*	NA	*32.6%*	*10.9%*
Share Repo Accretion	$6.57	$5.30	$11.73	$5.15	$2.39	$2.80	NA	$2.14	$0.09
Add'l Interest Expense Dilution	($2.62)	($2.57)	($4.29)	($2.23)	($1.50)	($2.38)	NA	($1.11)	($0.07)
Net Accretion (Dilution) vs. 2012E EPS	**$3.95**	**$2.72**	**$7.44**	**$2.91**	**$0.88**	**$0.41**	**NA**	**$1.03**	**$0.02**
% Acc (Dil) vs. 2012E EPS	*56%*	*35%*	*106%*	*55%*	*19%*	*5%*	NA	*23%*	*3%*

Source: Citi Investment Research and Analysis, FactSet
Note: Assumes 6.5% debt cost

We note that this phenomenon is not particularly new since the primes have been steadily buying down their share count and increasing debt levels over the past few years. Indeed, we first identified this potential last April around the time of the HII spin (see: DoD Sets the Leverage Bar With NOC Spin - Potential Implications Help Diminish the Value Trap Argument).

Average accretion in is overstated to the extent that companies are unlikely to lever to the full 2.8x, but it's understated since our simulation assumes a 6.5% debt cost which is likely too high given where defense companies have recently raised debt (Figure 51). Please see Figure 52 for a sensitivity analysis of how average accretion varies with leverage and debt cost. We note that the leveraged buyback exercise is at least 20% accretive at 2.0x leverage for debt costing all the way up to 10% (2x leverage is in line with CACI's recently discussed targets, see CACI Supports Our Leveraged Buyback Thesis). And at 6% cost of debt and 1x leverage, the leveraged buyback is still 10% accretive.

Figure 51. Select Defense Capital Raises

Date	Ticker	Amt ($m)	Coupon	Maturity
9/9/2011	LMT	600	4.85%	30Y
		900	3.35%	10Y
		500	2.13%	5Y
12/6/11	RTN	425	4.70%	30Y
		575	1.40%	3Y
10/20/10	RTN	600	4.88%	30Y
		1,000	3.13%	10Y
		400	1.63%	5Y
11/8/10	NOC	300	5.05%	30Y
		700	3.50%	10Y
		500	1.85%	5Y
7/12/11	GD	500	3.88%	10Y
		500	2.25%	5Y
		500	1.38%	4Y
11/21/11	COL	250	3.10%	10Y

Source: Citi Investment Research and Analysis

Figure 52. Average Accretion Sensitivity

		Target Net Debt/EBITDA							
		1.0x	1.3x	1.5x	1.8x	2.0x	2.3x	2.5x	2.8x
Cost of Debt	4%	12%	17%	24%	31%	40%	50%	63%	78%
	5%	11%	16%	22%	29%	37%	46%	58%	72%
	6%	10%	14%	20%	26%	33%	42%	52%	65%
	7%	9%	13%	18%	23%	30%	38%	47%	59%
	8%	8%	12%	16%	21%	27%	34%	42%	53%
	9%	7%	10%	14%	18%	24%	30%	37%	46%
	10%	6%	9%	12%	16%	20%	26%	32%	40%
	11%	5%	7%	10%	13%	17%	21%	27%	34%
	12%	4%	6%	8%	11%	14%	17%	22%	27%
	13%	3%	5%	6%	8%	10%	13%	17%	21%
	14%	2%	3%	4%	6%	7%	9%	12%	15%
	15%	1%	2%	2%	3%	4%	5%	6%	8%
	16%	0%	0%	0%	1%	1%	1%	1%	2%

Source: Citi Investment Research and Analysis
Note: Average includes GD, LMT, NOC, RTN

Conference Call w/ Peter Orszag

We're hosting a conference call on Tuesday, June, 19 with Peter Orszag, Vice Chairman of Global Banking at Citi and former OMB Director in the Obama White House. Mr. Orszag will share his vast expertise and experiences addressing the coming fiscal cliff, sequestration, and the expected impact on defense spending in both the near- and long-term.

For defense industry analysts, the call will address how DoD and OMB leaders will likely cope with budget uncertainty and the prospects of sequester in the near-term, and on the likely outcomes for defense spending over the long-term.

Specifically, the call will attempt to answer the following:

- Is there increasing willingness in Washington to avoid the fiscal cliff? If so, will all aspects of the cliff (expiration of tax cuts, sequester, debt ceiling) be negotiated as a package or piecemeal?
- Is there a policy solution that is acceptable to both political parties? If so, what is it? Does the solution need to be face-saving so that both parties can claim victory?
- What impact will elections results in November have on the fiscal cliff negotiations and likely outcomes?
- Is it realistic for DoD to manage through a 10% y/y decline in its budget next year as prescribed in the sequester?
- What mechanisms are available to DoD and OMB to soften the impacts of sequester?
- How willing are Republicans and Democrats to continue to cut defense spending? Will DoD be sacrificed in this next round of budget negotiations?

Mr. Orszag's recent Bloomberg pieces:

http://www.bloomberg.com/news/2012-06-05/barbell-approach-only-way-to-lift-heavy-economy.htm

http://www.bloomberg.com/news/2012-05-29/cap-and-punt-is-the-wrong-way-to-cut-future-deficits.html

Details:

Date: Tuesday, June 19
Time: 10:00 AM ET - 11:00 AM ET
Guest speaker: Peter Orszag, Vice Chairman of Global Banking at Citi and former OMB Director
Hosted by: Jason Gursky, Citi Research, Aerospace & Defense Senior Analyst

Dial-in: 719-457-6877
Passcode: 233-4063

Replay available for 30 days:
US/CAN toll free: 888-203-1112
Intl toll: 719-457-0820
Passcode: 233-4063

Companies mentioned:

Boeing Co. (BA.N; US$72.58; 1); Rockwell Collins, Inc. (COL.N; US$50.38; 2); General Dynamics Corp. (GD.N; US$64.13; 1); Huntington Ingalls Industries (HII.N; US$36.71; 1); Lockheed Martin Corp. (LMT.N; US$83.37; 1); Northrop Grumman Corp. (NOC.N; US$59.93; 1); Raytheon Co. (RTN.N; US$52.37; 1); Textron Inc. (TXT.N; US$24.52; 2)

Appendix A-1

Analyst Certification

The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.

IMPORTANT DISCLOSURES

Analysts' compensation is determined based upon activities and services intended to benefit the investor clients of Citigroup Global Markets Inc. and its affiliates ("the Firm"). Like all Firm employees, analysts receive compensation that is impacted by overall firm profitability which includes investment banking revenues.

For important disclosures (including copies of historical disclosures) regarding the companies that are the subject of this Citi Investment Research & Analysis product ("the Product"), please contact Citi Investment Research & Analysis, 388 Greenwich Street, 28th Floor, New York, NY, 10013, Attention: Legal/Compliance [E6WYB6412478]. In addition, the same important disclosures, with the exception of the Valuation and Risk assessments and historical disclosures, are contained on the Firm's disclosure website at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures. Valuation and Risk assessments can be found in the text of the most recent research note/report regarding the subject company. Historical disclosures (for up to the past three years) will be provided upon request.

Citi Investment Research & Analysis Ratings Distribution

	12 Month Rating			*Relative Rating*		
Data current as of 31 Mar 2012	**Buy**	**Hold**	**Sell**	**Buy**	**Hold**	**Sell**
Citi Investment Research & Analysis Global Fundamental Coverage	52%	37%	11%	10%	79%	10%
% of companies in each rating category that are investment banking clients	44%	42%	40%	47%	42%	43%

Guide to Citi Investment Research & Analysis (CIRA) Fundamental Research Investment Ratings:

CIRA's stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.

Risk rating takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.

Investment Ratings: CIRA's investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment catalysts to derive a positive or negative investment view, they may elect with the approval of CIRA management not to assign a target price and, thus, not derive an ETR. Analysts may place covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and / or trading in the company's securities (e.g. trading suspension). As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis. To satisfy regulatory requirements, we correspond Under Review and Neutral to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.

Relative three-month ratings: CIRA may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

Prior to October 8, 2011, the firm's stock recommendation system included a risk rating and an investment rating. **Risk ratings,** which took into account both price volatility and fundamental criteria, were: Low (L), Medium (M), High (H), and Speculative (S). **Investment Ratings** of Buy, Hold and Sell were a function of CIRA's expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating. Additionally, analysts could have placed covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed "Under Review" were monitored daily by management and as practically possible, the analyst published a note re-establishing a rating and investment thesis. For securities in developed markets (US, UK, Europe, Japan, and Australia/New Zealand), investment ratings were:Buy (1) (expected total return of 10% or more for Low-Risk stocks, 15% or more for Medium-Risk stocks, 20% or more for High-Risk stocks, and 35% or more for Speculative stocks); Hold (2) (0%-10% for Low-Risk stocks, 0%-15% for Medium-Risk stocks, 0%-20% for High-Risk stocks, and 0%-35% for Speculative stocks); and Sell (3) (negative total return). For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings were:Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

Investment ratings are determined by the ranges described above at the time of initiation of coverage, a change in investment and/or risk rating, or a change in target price (subject to limited management discretion). At other times, the expected total returns may fall outside of these ranges because of market price movements and/or other short-term volatility or trading patterns. Such interim deviations from specified ranges will be permitted but will become subject to

review by Research Management. Your decision to buy or sell a security should be based upon your personal investment objectives and should be made only after evaluating the stock's expected performance and risk.

NON-US RESEARCH ANALYST DISCLOSURES

Non-US research analysts who have prepared this report (i.e., all research analysts listed below other than those identified as employed by Citigroup Global Markets Inc.) are not registered/qualified as research analysts with FINRA. Such research analysts may not be associated persons of the member organization and therefore may not be subject to the NYSE Rule 472 and NASD Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account. The legal entities employing the authors of this report are listed below:

Citigroup Global Markets Inc	Jason Gursky; Jonathan Raviv

OTHER DISCLOSURES

For securities recommended in the Product in which the Firm is not a market maker, the Firm is a liquidity provider in the issuers' financial instruments and may act as principal in connection with such transactions. The Firm is a regular issuer of traded financial instruments linked to securities that may have been recommended in the Product. The Firm regularly trades in the securities of the issuer(s) discussed in the Product. The Firm may engage in securities transactions in a manner inconsistent with the Product and, with respect to securities covered by the Product, will buy or sell from customers on a principal basis.

Securities recommended, offered, or sold by the Firm: (i) are not insured by the Federal Deposit Insurance Corporation; (ii) are not deposits or other obligations of any insured depository institution (including Citibank); and (iii) are subject to investment risks, including the possible loss of the principal amount invested. Although information has been obtained from and is based upon sources that the Firm believes to be reliable, we do not guarantee its accuracy and it may be incomplete and condensed. Note, however, that the Firm has taken all reasonable steps to determine the accuracy and completeness of the disclosures made in the Important Disclosures section of the Product. The Firm's research department has received assistance from the subject company(ies) referred to in this Product including, but not limited to, discussions with management of the subject company(ies). Firm policy prohibits research analysts from sending draft research to subject companies. However, it should be presumed that the author of the Product has had discussions with the subject company to ensure factual accuracy prior to publication. All opinions, projections and estimates constitute the judgment of the author as of the date of the Product and these, plus any other information contained in the Product, are subject to change without notice. Prices and availability of financial instruments also are subject to change without notice. Notwithstanding other departments within the Firm advising the companies discussed in this Product, information obtained in such role is not used in the preparation of the Product. Although Citi Investment Research & Analysis (CIRA) does not set a predetermined frequency for publication, if the Product is a fundamental research report, it is the intention of CIRA to provide research coverage of the/those issuer(s) mentioned therein, including in response to news affecting this issuer, subject to applicable quiet periods and capacity constraints. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security. Any decision to purchase securities mentioned in the Product must take into account existing public information on such security or any registered prospectus.

Investing in non-U.S. securities, including ADRs, may entail certain risks. The securities of non-U.S. issuers may not be registered with, nor be subject to the reporting requirements of the U.S. Securities and Exchange Commission. There may be limited information available on foreign securities. Foreign companies are generally not subject to uniform audit and reporting standards, practices and requirements comparable to those in the U.S. Securities of some foreign companies may be less liquid and their prices more volatile than securities of comparable U.S. companies. In addition, exchange rate movements may have an adverse effect on the value of an investment in a foreign stock and its corresponding dividend payment for U.S. investors. Net dividends to ADR investors are estimated, using withholding tax rates conventions, deemed accurate, but investors are urged to consult their tax advisor for exact dividend computations. Investors who have received the Product from the Firm may be prohibited in certain states or other jurisdictions from purchasing securities mentioned in the Product from the Firm. Please ask your Financial Consultant for additional details. Citigroup Global Markets Inc. takes responsibility for the Product in the United States. Any orders by US investors resulting from the information contained in the Product may be placed only through Citigroup Global Markets Inc.

Important Disclosures for Morgan Stanley Smith Barney LLC Customers: Morgan Stanley & Co. LLC (Morgan Stanley) research reports may be available about the companies that are the subject of this Citi Investment Research & Analysis (CIRA) research report. Ask your Financial Advisor or use smithbarney.com to view any available Morgan Stanley research reports in addition to CIRA research reports.
Important disclosure regarding the relationship between the companies that are the subject of this CIRA research report and Morgan Stanley Smith Barney LLC and its affiliates are available at the Morgan Stanley Smith Barney disclosure website at www.morganstanleysmithbarney.com/researchdisclosures.
For Morgan Stanley and Citigroup Global Markets, Inc. specific disclosures, you may refer to www.morganstanley.com/researchdisclosures and https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.
This CIRA research report has been reviewed and approved on behalf of Morgan Stanley Smith Barney LLC. This review and approval was conducted by the same person who reviewed this research report on behalf of CIRA. This could create a conflict of interest.

The Citigroup legal entity that takes responsibility for the production of the Product is the legal entity which the first named author is employed by. The Product is made available in **Australia** through Citigroup Global Markets Australia Pty Ltd. (ABN 64 003 114 832 and AFSL No. 240992), participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in Australia to Private Banking wholesale clients through Citigroup Pty Limited (ABN 88 004 325 080 and AFSL 238098). Citigroup Pty Limited provides all financial product advice to Australian Private Banking wholesale clients through bankers and relationship managers. If there is any doubt about the suitability of investments held in Citigroup Private Bank accounts, investors should contact the Citigroup Private Bank in Australia. Citigroup companies may compensate affiliates and their representatives for providing products and services to clients. The Product is made available in **Brazil** by Citigroup Global Markets Brasil - CCTVM SA, which is regulated by CVM - Comissão de Valores Mobiliários, BACEN - Brazilian Central Bank, APIMEC - Associação dos Analistas e Profissionais de Investimento do Mercado de Capitais and ANBID - Associação Nacional dos Bancos de Investimento. Av. Paulista, 1111 - 11º andar - CEP. 01311920 - São Paulo - SP. If the Product is being made available in certain provinces of **Canada** by Citigroup Global Markets (Canada) Inc. ("CGM Canada"), CGM Canada has approved the Product. Citigroup Place, 123 Front Street West, Suite 1100, Toronto, Ontario M5J 2M3. This product is available in **Chile** through Banchile Corredores de Bolsa S.A., an indirect subsidiary of Citigroup Inc., which is regulated by the Superintendencia de Valores y Seguros. Agustinas 975, piso 2, Santiago, Chile. The Product is made available in **France** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 1-5 Rue Paul Cézanne, 8ème, Paris, France. The Product is distributed in

Germany by Citigroup Global Markets Deutschland AG ("CGMD"), which is regulated by Bundesanstalt fuer Finanzdienstleistungsaufsicht (BaFin). CGMD, Reuterweg 16, 60323 Frankfurt am Main. Research which relates to "securities" (as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong)) is issued in **Hong Kong** by, or on behalf of, Citigroup Global Markets Asia Limited which takes full responsibility for its content. Citigroup Global Markets Asia Ltd. is regulated by Hong Kong Securities and Futures Commission. If the Research is made available through Citibank, N.A., Hong Kong Branch, for its clients in Citi Private Bank, it is made available by Citibank N.A., Citibank Tower, Citibank Plaza, 3 Garden Road, Hong Kong. Citibank N.A. is regulated by the Hong Kong Monetary Authority. Please contact your Private Banker in Citibank N.A., Hong Kong, Branch if you have any queries on or any matters arising from or in connection with this document. The Product is made available in **India** by Citigroup Global Markets India Private Limited, which is regulated by Securities and Exchange Board of India. Bakhtawar, Nariman Point, Mumbai 400-021. The Product is made available in **Indonesia** through PT Citigroup Securities Indonesia. 5/F, Citibank Tower, Bapindo Plaza, Jl. Jend. Sudirman Kav. 54-55, Jakarta 12190. Neither this Product nor any copy hereof may be distributed in Indonesia or to any Indonesian citizens wherever they are domiciled or to Indonesian residents except in compliance with applicable capital market laws and regulations. This Product is not an offer of securities in Indonesia. The securities referred to in this Product have not been registered with the Capital Market and Financial Institutions Supervisory Agency (BAPEPAM-LK) pursuant to relevant capital market laws and regulations, and may not be offered or sold within the territory of the Republic of Indonesia or to Indonesian citizens through a public offering or in circumstances which constitute an offer within the meaning of the Indonesian capital market laws and regulations. The Product is made available in **Israel** through Citibank NA, regulated by the Bank of Israel and the Israeli Securities Authority. Citibank, N.A, Platinum Building, 21 Ha'arba'ah St, Tel Aviv, Israel. The Product is made available in **Italy** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. Via dei Mercanti, 12, Milan, 20121, Italy. The Product is made available in **Japan** by Citigroup Global Markets Japan Inc. ("CGMJ"), which is regulated by Financial Services Agency, Securities and Exchange Surveillance Commission, Japan Securities Dealers Association, Tokyo Stock Exchange and Osaka Securities Exchange. Shin-Marunouchi Building, 1-5-1 Marunouchi, Chiyoda-ku, Tokyo 100-6520 Japan. If the Product was distributed by SMBC Nikko Securities Inc. it is being so distributed under license. In the event that an error is found in an CGMJ research report, a revised version will be posted on the Firm's Citi Velocity website. If you have questions regarding Citi Velocity, please call (81 3) 6270-3019 for help. The Product is made available in **Korea** by Citigroup Global Markets Korea Securities Ltd., which is regulated by the Financial Services Commission, the Financial Supervisory Service and the Korea Financial Investment Association (KOFIA). Citibank Building, 39 Da-dong, Jung-gu, Seoul 110-180, Korea. KOFIA makes available registration information of research analysts on its website. Please visit the following website if you wish to find KOFIA registration information on research analysts of Citigroup Global Markets Korea Securities Ltd. http://dis.kofia.or.kr/fs/dis2/fundMgr/DISFundMgrAnalystPop.jsp?companyCd2=A03030&pageDiv=02. The Product is made available in **Malaysia** by Citigroup Global Markets Malaysia Sdn Bhd (Company No. 460819-D) (“CGMM”) to its clients and CGMM takes responsibility for its contents. CGMM is regulated by the Securities Commission of Malaysia. Please contact CGMM at Level 43 Menara Citibank, 165 Jalan Ampang, 50450 Kuala Lumpur, Malaysia in respect of any matters arising from, or in connection with, the Product. The Product is made available in **Mexico** by Acciones y Valores Banamex, S.A. De C. V., Casa de Bolsa, Integrante del Grupo Financiero Banamex ("Accival") which is a wholly owned subsidiary of Citigroup Inc. and is regulated by Comision Nacional Bancaria y de Valores. Reforma 398, Col. Juarez, 06600 Mexico, D.F. In **New Zealand** the Product is made available to ‘wholesale clients’ only as defined by s5C(1) of the Financial Advisers Act 2008 (‘FAA’) through Citigroup Global Markets Australia Pty Ltd (ABN 64 003 114 832 and AFSL No. 240992), an overseas financial adviser as defined by the FAA, participant of the ASX Group and regulated by the Australian Securities & Investments Commission. Citigroup Centre, 2 Park Street, Sydney, NSW 2000. The Product is made available in **Pakistan** by Citibank N.A. Pakistan branch, which is regulated by the State Bank of Pakistan and Securities Exchange Commission, Pakistan. AWT Plaza, 1.1. Chundrigar Road, P.O. Box 4889, Karachi-74200. The Product is made available in the **Philippines** through Citicorp Financial Services and Insurance Brokerage Philippines, Inc., which is regulated by the Philippines Securities and Exchange Commission. 20th Floor Citibank Square Bldg. The Product is made available in the Philippines through Citibank NA Philippines branch, Citibank Tower, 8741 Paseo De Roxas, Makati City, Manila. Citibank NA Philippines NA is regulated by The Bangko Sentral ng Pilipinas. The Product is made available in **Poland** by Dom Maklerski Banku Handlowego SA an indirect subsidiary of Citigroup Inc., which is regulated by Komisja Nadzoru Finansowego. Dom Maklerski Banku Handlowego S.A. ul.Senatorska 16, 00-923 Warszawa. The Product is made available in the **Russian Federation** through ZAO Citibank, which is licensed to carry out banking activities in the Russian Federation in accordance with the general banking license issued by the Central Bank of the Russian Federation and brokerage activities in accordance with the license issued by the Federal Service for Financial Markets. Neither the Product nor any information contained in the Product shall be considered as advertising the securities mentioned in this report within the territory of the Russian Federation or outside the Russian Federation. The Product does not constitute an appraisal within the meaning of the Federal Law of the Russian Federation of 29 July 1998 No. 135-FZ (as amended) On Appraisal Activities in the Russian Federation. 8-10 Gasheka Street, 125047 Moscow. The Product is made available in **Singapore** through Citigroup Global Markets Singapore Pte. Ltd. (“CGMSPL”), a capital markets services license holder, and regulated by Monetary Authority of Singapore. Please contact CGMSPL at 8 Marina View, 21st Floor Asia Square Tower 1, Singapore 018960, in respect of any matters arising from, or in connection with, the analysis of this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). The Product is made available by The Citigroup Private Bank in Singapore through Citibank, N.A., Singapore Branch, a licensed bank in Singapore that is regulated by Monetary Authority of Singapore. Please contact your Private Banker in Citibank N.A., Singapore Branch if you have any queries on or any matters arising from or in connection with this document. This report is intended for recipients who are accredited, expert and institutional investors as defined under the Securities and Futures Act (Cap. 289). This report is distributed in Singapore by Citibank Singapore Ltd ("CSL") to selected Citigold/Citigold Private Clients. CSL provides no independent research or analysis of the substance or in preparation of this report. Please contact your Citigold//Citigold Private Client Relationship Manager in CSL if you have any queries on or any matters arising from or in connection with this report. This report is intended for recipients who are accredited investors as defined under the Securities and Futures Act (Cap. 289). Citigroup Global Markets (Pty) Ltd. is incorporated in the **Republic of South Africa** (company registration number 2000/025866/07) and its registered office is at 145 West Street, Sandton, 2196, Saxonwold. Citigroup Global Markets (Pty) Ltd. is regulated by JSE Securities Exchange South Africa, South African Reserve Bank and the Financial Services Board. The investments and services contained herein are not available to private customers in South Africa. The Product is made available in **Spain** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. 29 Jose Ortega Y Gasset, 4th Floor, Madrid, 28006, Spain. The Product is made available in the **Republic of China** through Citigroup Global Markets Taiwan Securities Company Ltd. ("CGMTS"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan and/or through Citibank Securities (Taiwan) Company Limited ("CSTL"), 14 and 15F, No. 1, Songzhi Road, Taipei 110, Taiwan, subject to the respective license scope of each entity and the applicable laws and regulations in the Republic of China. CGMTS and CSTL are both regulated by the Securities and Futures Bureau of the Financial Supervisory Commission of Taiwan, the Republic of China. No portion of the Product may be reproduced or quoted in the Republic of China by the press or any third parties [without the written authorization of CGMTS and CSTL]. If the Product covers securities which are not

allowed to be offered or traded in the Republic of China, neither the Product nor any information contained in the Product shall be considered as advertising the securities or making recommendation of the securities in the Republic of China. The Product is for informational purposes only and is not intended as an offer or solicitation for the purchase or sale of a security or financial products. Any decision to purchase securities or financial products mentioned in the Product must take into account existing public information on such security or the financial products or any registered prospectus. The Product is made available in **Thailand** through Citicorp Securities (Thailand) Ltd., which is regulated by the Securities and Exchange Commission of Thailand. 18/F, 22/F and 29/F, 82 North Sathorn Road, Silom, Bangrak, Bangkok 10500, Thailand. The Product is made available in **Turkey** through Citibank AS which is regulated by Capital Markets Board. Tekfen Tower, Eski Buyukdere Caddesi # 209 Kat 2B, 23294 Levent, Istanbul, Turkey. In the **U.A.E**, these materials (the "Materials") are communicated by Citigroup Global Markets Limited, DIFC branch ("CGML"), an entity registered in the Dubai International Financial Center ("DIFC") and licensed and regulated by the Dubai Financial Services Authority ("DFSA") to Professional Clients and Market Counterparties only and should not be relied upon or distributed to Retail Clients. A distribution of the different CIRA ratings distribution, in percentage terms for Investments in each sector covered is made available on request. Financial products and/or services to which the Materials relate will only be made available to Professional Clients and Market Counterparties. The Product is made available in **United Kingdom** by Citigroup Global Markets Limited, which is authorised and regulated by Financial Services Authority. This material may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA and further details as to where this may be the case are available upon request in respect of this material. Citigroup Centre, Canada Square, Canary Wharf, London, E14 5LB. The Product is made available in **United States** by Citigroup Global Markets Inc, which is a member of FINRA and registered with the US Securities and Exchange Commission. 388 Greenwich Street, New York, NY 10013. Unless specified to the contrary, within EU Member States, the Product is made available by Citigroup Global Markets Limited, which is regulated by Financial Services Authority.

Pursuant to Comissão de Valores Mobiliários Rule 483, Citi is required to disclose whether a Citi related company or business has a commercial relationship with the subject company. Considering that Citi operates multiple businesses in more than 100 countries around the world, it is likely that Citi has a commercial relationship with the subject company.

Many European regulators require that a firm must establish, implement and make available a policy for managing conflicts of interest arising as a result of publication or distribution of investment research. The policy applicable to CIRA's Products can be found at https://www.citivelocity.com/cvr/eppublic/citi_research_disclosures.

Compensation of equity research analysts is determined by equity research management and Citigroup's senior management and is not linked to specific transactions or recommendations.

The Product may have been distributed simultaneously, in multiple formats, to the Firm's worldwide institutional and retail customers. The Product is not to be construed as providing investment services in any jurisdiction where the provision of such services would not be permitted.

Subject to the nature and contents of the Product, the investments described therein are subject to fluctuations in price and/or value and investors may get back less than originally invested. Certain high-volatility investments can be subject to sudden and large falls in value that could equal or exceed the amount invested. Certain investments contained in the Product may have tax implications for private customers whereby levels and basis of taxation may be subject to change. If in doubt, investors should seek advice from a tax adviser. The Product does not purport to identify the nature of the specific market or other risks associated with a particular transaction. Advice in the Product is general and should not be construed as personal advice given it has been prepared without taking account of the objectives, financial situation or needs of any particular investor. Accordingly, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to their objectives, financial situation and needs. Prior to acquiring any financial product, it is the client's responsibility to obtain the relevant offer document for the product and consider it before making a decision as to whether to purchase the product.

With the exception of our product that is made available only to Qualified Institutional Buyers (QIBs), CIRA concurrently disseminates its research via proprietary and non-proprietary electronic distribution platforms. Periodically, individual CIRA analysts may also opt to circulate research posted on such platforms to one or more clients by email. Such email distribution is discretionary and is done only after the research has been disseminated via the aforementioned distribution channels. CIRA simultaneously distributes product that is limited to QIBs only through email distribution.

The level and types of services provided by CIRA analysts to clients may vary depending on various factors such as the client’s individual preferences as to the frequency and manner of receiving communications from analysts, the client’s risk profile and investment focus and perspective (e.g. market-wide, sector specific, long term, short-term etc.), the size and scope of the overall client relationship with Citi and legal and regulatory constraints.

CIRA product may source data from dataCentral. dataCentral is a CIRA proprietary database, which includes Citi estimates, data from company reports and feeds from Reuters and Datastream.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST