2017 Mid-Year Report and 2018 Preview

The WhatTheyThink Economic and Research Center's Overview of the Current Economic State of the Printing Industry

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Introduction

Last December, we published the *Forecast 2017* report that looked back at 2016 and looked ahead to 2017. Drupa has come and gone, so 2017 has a quiet year, relatively speaking, despite the forthcoming PRINT 17. We haven't seen anything truly revolutionary hit the market, but there have been some interesting things happening just below the surface of things. Inkjet continues to be the topic *du jour*, and what's interesting is that the conversation has shifted largely away from inkjet engines themselves and more toward the pre- and postpress processes supporting the presses. The action today is in software at the front end, and finishing at the back end. (And, in a weird way, vice versa.) In finishing, digital embellishments have especially become a hot area. Expect these areas to get a lot of play at PRINT 17 in September.

Looking at the big picture, the macroeconomic situation continues to be a bit of a mixed bag. The Washington show continues, and for all of its daily freakishness, "inertia" is the word of the year, and we're probably fortunate that the economy is running tolerably well (either spectacular nor dismal) on autopilot (or "inertia" in the Newtonian sense that a body in motion will remain in motion until acted upon by an outside force). Can that last for a sustained period of time? One tries to be optimistic. On the plus side, there haven't any major asset bubbles in danger of bursting, so if a recession is in the offing, it won't be a dramatic crash. Even then, re-setting to "normal" may seem traumatic to some of an audience.

On another plus side, if you go to industry events and talk with printers, there is very little sense of doom and gloom. It's really just us analysts who worry over shipments and profits and business conditions data, while those actually doing the printing are just getting on with it. Maybe that's as it should be. New print applications are making this an exciting time to be in the industry—and it's not just us saying that—and even if it's not 1998 it's at least not 2008. So there's that.

Still, as we point out in the forthcoming new book, *The Third Wave*, there is another wave of technological disruption on the horizon, and we'll talk about that at length in Section 7.

The data we present in this report from our June 2017 survey of print business owners and executives give us a pretty good idea what is going on.

Before we dive into the data, though, we need to dwell for a bit on one of our major survey caveats: the effect of survivor bias on industry data.

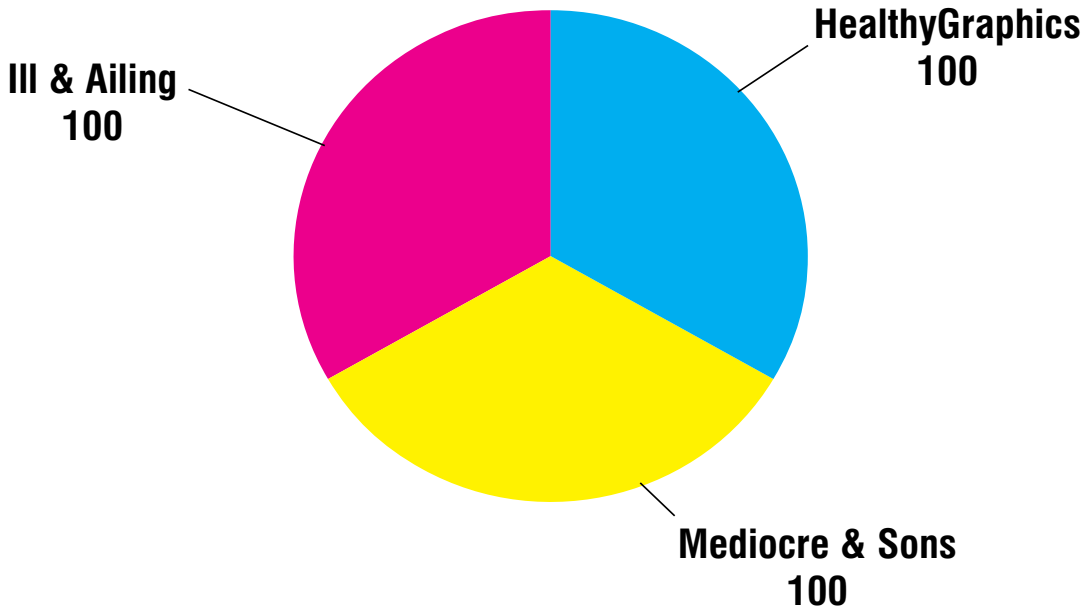
Survivor Bias

At a time when the industry is undergoing extensive consolidation—which it has been for some time now—it's important to look at industry statistics with an eye toward spotting what we call "survivor bias." Survivor bias is a result of the fact that really unhealthy print businesses have exited the industry, and the ones that survived are healthier than the ones who went out of business. That's nothing unusual; it's almost always what happens in markets. But how they perceive the remaining print landscape may not be a true reflection of the overall market.

Here's what we mean.

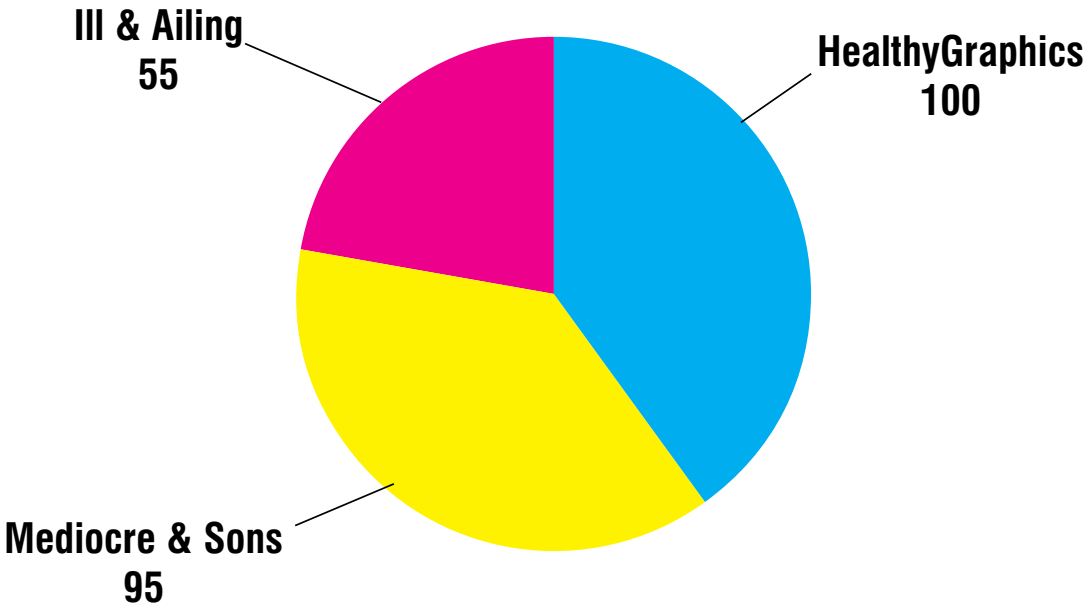
Say you have a given print market with three printers. One is doing really well (HealthyGraphics), one is doing OK but not great ("Mediocre & Sons Printing"), and one is doing very badly ("Ill & Ailing Co."). Assume at the outset that in their region, the overall market for print is 300 print buyers, at this point in time, they each serve 100 customers:

Figure 1. The initial market—My Three Printers Market=300 customers



These three printers plug away merrily for a period of time. Now, say there is some sort of upheaval—50 of those customers are gone. Some may have moved away, some may have had their marketing budgets cut and thus stopped printing things, relying instead on digital or social media, and some may have gone out of business or been acquired. In a word, the market for print shrinks. When the smoke clears, there are only 250 customers spread among these three shops. The healthy printer keeps all its original customers, the mediocre printer loses a little bit, and the sick printer loses the most:

Figure 2. Upheaval! The market changes
Market=250 customers

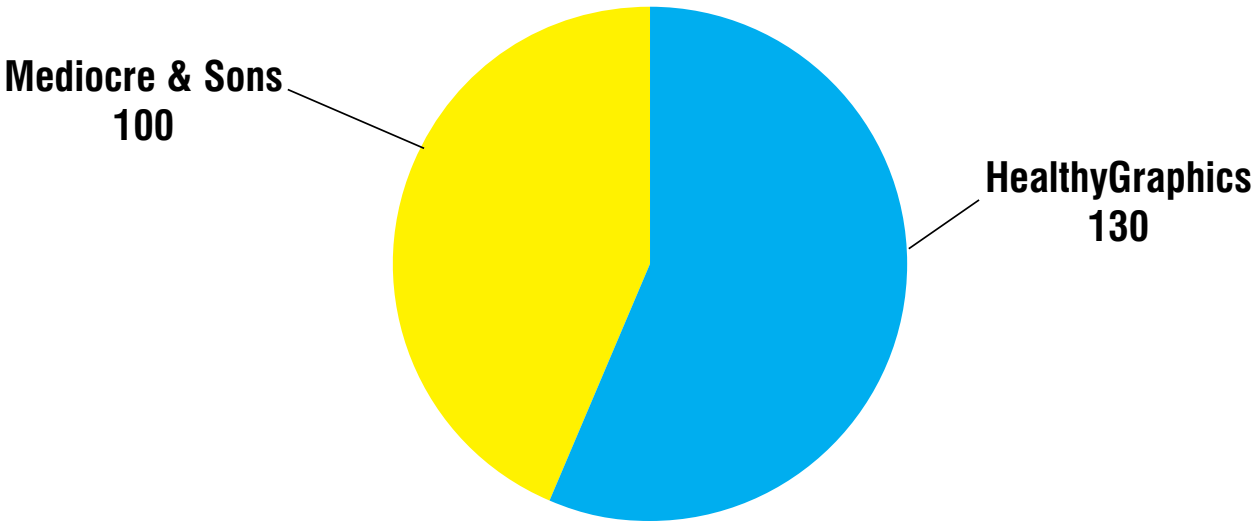


How does each of these printers describe the prevailing economy?

- HealthyGraphics: "Business isn't growing strongly, but we're holding steady." (What they say on our survey: "Business conditions have stayed about the same.")
- Mediocre & Sons: "Business is tough, but we've only lost 5% of our business." (What they say on our survey: "Business decreased up to 5%.")
- Ill & Ailing Co.: "We're in a recession. Things are terrible. We have to go out and sell harder." (What they say on our survey: "Business decreased more than 10%.")

Things go on like that for a bit and ultimately Harold Ill and Dennis Ailing of Ill & Ailing decide to pack it in, and the company exits the market (so it goes). As a result, both the healthy printer and the mediocre printer each pick up some of the volume from the I&A's customers. However, at the same time, another 20 of print customers have themselves left the market, or at least the print market:

Figure 3. And then there were two...the printing landscape changes
Market=230 customers



How do the printers now describe the prevailing market?

- HealthyGraphics: "Business is great! We're up 30%." (What they say on our survey: "Business increased more than 10%.")
- Mediocre & Sons: "Hey, business is pretty good! We were down 10%, now we're up *more than 10%* from where we were since we went from 90 to 100 accounts. This is because we're smart. We're terrific executives. Next year will be even better." (What they say on our survey: "Business increased more than 10%.")
- Ill & Ailing: "I played a round of golf this morning, and Dennis is going sailing later today. Retirement is great!" (What they say on our survey: Nothing.)

When things are good, you're a genius. When things are bad, it's the economy. Right? However, neither of these things was the case in this example. Because look at what happened to the overall market for print:

Table 1. The effects of survivor bias on market perception

	Time Period 1	Time Period 2		Time Period 3	
Market size/ change (number of accounts)	300	250	-17%	230	-8%
Healthy printer	100	100	0%	130	+30%
Mediocre printer	100	95	-5%	100	+11%
Sick printer	100	55	-45%	-	-
What the market survey says	"All printers are doing the same"	"We did a survey and only one out of three printers said business was holding steady."		"Printers are doing great; survey respondents said that business is up 10%+!"	
What really happened	Flat market	Market shrank by -17%		Market shrank by -8%	

Even when aggregate business conditions were up, the print market still declined. So the survivor bias phenomenon leads to a false assessment of business conditions that ends up being reflected in the way participants in industry surveys answer questions about business performance. When we ask whether business increased in the past year, both the healthy printer and the mediocre printer would say, "yes," skewing the results in a positive direction because the sick printer is lolling in the Florida sun and isn't around any longer to select any of the "business is declining" survey options.

Now, you might say, "Well so what? If the industry is left with healthy printers, isn't that a good thing? Isn't that what usually happens in a dynamic market?" If it were the case that the *only* variable in this example was the health of the printers, then yes, it would be a good thing. But that's *not* the only variable. The more important variable is the number of print customers—the overall market for print. In our theoretical example, that kept declining, an effect that the relative health of the remaining printers masked. If that keeps declining, then the mediocre printer will become the sick printer, and the healthy printer a mediocre printer. Lather, rinse, repeat, and the next time there is a survey, the shops that are left are still in the roughly the same position as our example and will say the same basic things. It's just that the numbers will be smaller. At some point, you may just have the healthy printer who has all the print business in the area. So he'll be doing quite well. For a while...

Now, this is not to say that survey results are useless; if they were, we wouldn't keep doing them. It's only during times of consolidation that this becomes an issue. Over the years, we've done surveys where respondents were quite frank about how bad their business conditions were, and we've seen survey results that we felt accurately did reflect an industry that was in better shape then it had been previously.

Survey data need to be looked at in the context of what we know about the market both in terms of broader statistics like changes in monthly printing shipments and other general economic data, as well as anecdotal evidence gleaned from talking with printers and printers' suppliers and vendors. Other data in the survey also help shed a light on business conditions data.

There are telltale signs of survivor bias lurking in the data if you know where to look for them. It comes down to interpreting data that you know just can't be true, or at least don't tell the whole story. There is a bit of that in Section 4 of this report.

So keep this idea in mind as you read through the data in this report. You will see generally upbeat numbers for many respondents in the business conditions segment of the survey, even though industry shipments have taken a very bad turn since Fall 2016. Surveys are for winners, it seems. Printers having trouble staying afloat have to keep paddling; they don't have time for surveys.

That's the end of our lecture. Except perhaps for this comment: if you're a printer who has been a survivor, stay vigilant. When business is great, everyone thinks they're a genius. When business is bad, you really need to be one to adapt and reposition.

How This Report Is Organized

If you've used any of our reports in the past, you are familiar with the structure:

Section 1 provides our survey results pertaining to printing industry business conditions for 2017 compared to 2016—specifically, revenues, number of jobs, and profitability.

Section 2 provides our survey results about business challenges and planned investments.

Section 3 contains the results of some questions we asked about technology or process changes. Are offset jobs increasing or decreasing? Digital jobs? What about wide-format jobs? And what about non-print marketing services?

Section 4 looks at a miscellany of issues. Are shops hiring based on marketing experience or industry experience? Is there any sense of a "generation gap" between employees and customers? So shops provide analytics or ROI data for customers, and do they help with marketing automation? Do printers for alliances to outsource print and non-print projects?

Section 5 looks at intended trade show attendance.

Section 6 rounds up some general macroeconomic data, as well as industry-specific data about shipments, profits, and capital expenditures.

Section 7 looks at the top trends to keep an eye on as we head into PRINT 17 and 2018.

Section 8 is Dr. Joe's industry forecast.

For More Information

For more information on this report or other WhatTheyThink products and services, please contact Cary Sherburne at 603-430-5463 or cary@whattheythink.com, or visit www.whattheythink.com.

For private presentation or discussion of the results, please contact Ms. Sherburne for information about fees and arrangements.

1. Business Conditions

In June 2017, the WhatTheyThink Economics and Research Center's (ERC) survey asked print business executives and owners about their current business conditions. Specifically, we asked about their perception of year-to-date 2017 business conditions compared to this time last year.

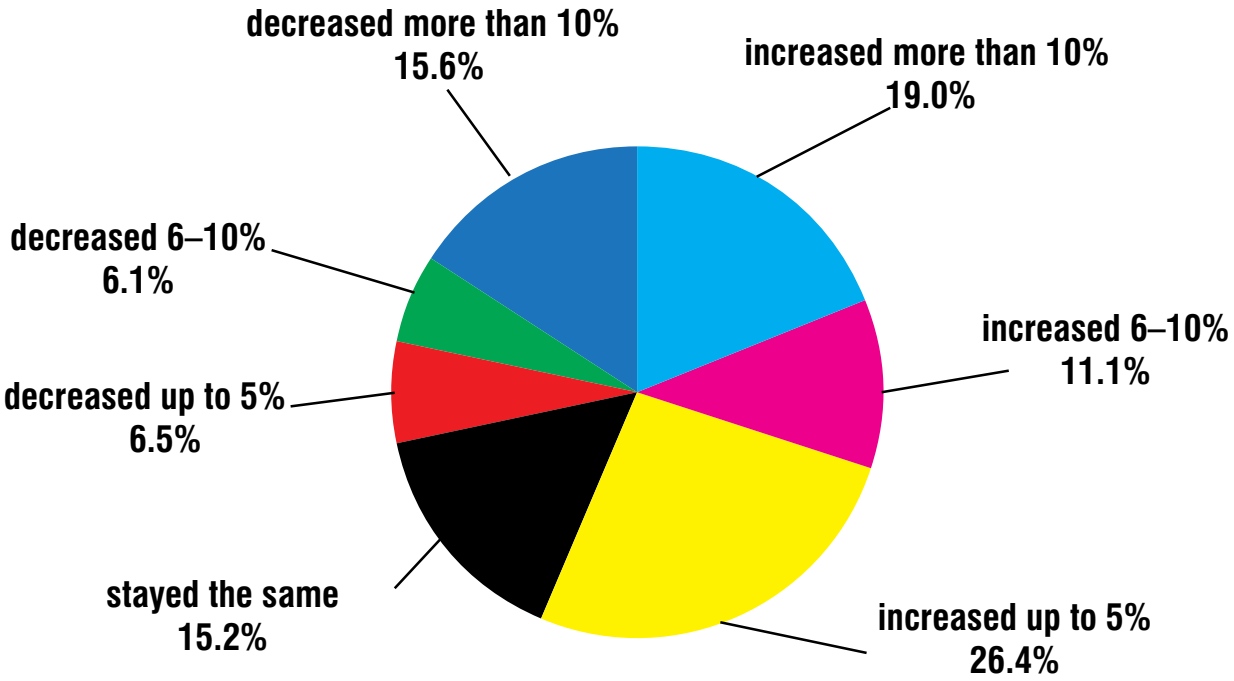
Instead of asking about generic "business conditions," we asked specially about:

- revenues
- number of jobs
- profits

Revenues

In terms of revenues, we found in our survey that respondents' business in the first half of 2017 has not been awful, although at mid-year, revenues are not growing as much as had been reported in 2016. Thirty percent of respondents said that revenues had increased by six percent or more compared to the first half of 2016 (what we classify as "growing" in the table below), and 21% of respondents said that revenues had declined by six percent or more ("shrinking"). Just about half (48%) of respondents were "holding" steady—revenues were unchanged, or increased/decreased by less than six percent.

Figure 4. In terms of your 2017 revenues so far this year at this location only, how do they compare to the first half of 2016?
All respondents, June 2017
Average change: +1.4%



Growing	30%
Holding	48%
Shrinking	21%

In this report, we break establishments down into four employee size classifications: very small (1–9 employees), small (10–49 employees), mid-size (50–99 employees), and large (100+ employees). There are interesting distinctions among these four groups.

Very Small Printers—For the smallest of shops, 31% reported that revenues were growing, 45% reported that revenues were holding steady, and 24% that revenues were shrinking. More than one-fifth of them (22%) reported a revenue increase of 10 percent or more. The average change in revenues was +1.3%.

Small Printers—Small shops were doing slightly better than their micro-brethren: average change in revenues from the first half of 2016 to the first half of 2017 was +1.8%. Three out of 10 shops reported that revenues were growing, more than half (54%) reported that revenues were holding steady, and only 16% said that revenues were shrinking. While these folks were doing better on average, note that only 15% said that revenues increased 10 percent or more. Still, be careful of survivor bias when looking at the business conditions data for these shops (see Introduction).

Mid-Size Printers—These shops aren't doing quite as well as the small and very small printers; average change in revenues was only +1.1%, although one-third (33%) reported that

revenues were growing, one-half (50%) said that revenues were holding, and 17% said that revenues were shrinking. Only 13% said that revenues increased by more than 10 percent.

Large Printers—In some ways it's ironic; the biggest companies in the industry appear to be faring the worst. The average change in revenues was +0.8%. Less than one-fourth (24%) reported that revenues were growing, nearly two-thirds (64%) said that revenues were holding steady, and 12% said that revenues were shrinking. A scant 2% said that revenues increased by more than 10 percent.

So what is happening with the large establishments? In a way, they represent survivor bias in action, and perhaps paint a more photorealistic picture of the industry than the rosier data downmarket. Large printers can endure declining business conditions better and for longer than smaller printers. A very small, small, or even mid-size shop can't weather too many economic storms before they need to close up shop. As a result, there aren't too many failing small businesses—the Ill & Ailings of the world, to use our example company from the Introduction—left to take our survey. In contrast, poorly performing large companies can limp around and linger far longer, and often have enough assets to sell to others or investment bankers to guide them to new debt issuance. That's right…just what we need: more printers with heavy debt loads.

Still, we should be encouraged to an extent that, at least in terms of frozen moments in time, those smaller businesses are indeed healthier than the ones that exited the industry. However, it doesn't necessarily mean that the market for print is growing.

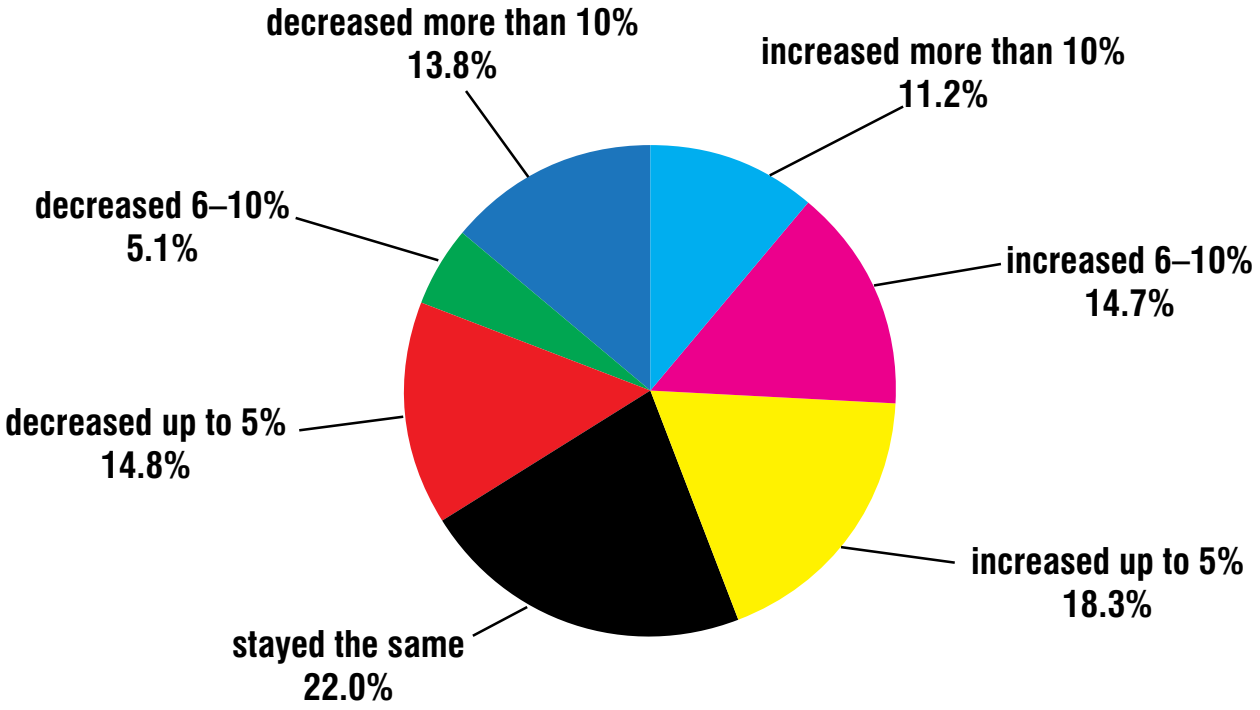
Table 2. In terms of your 2017 revenues so far this year at this location only, how do they compare to the first half of 2016? Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	21.5%	15.2%	12.5%	2.1%
increased 6-10%	9.0%	14.3%	20.3%	21.7%
increased up to 5%	28.3%	24.1%	14.1%	18.4%
stayed the same	15.1%	14.7%	12.5%	24.9%
decreased up to 5%	1.9%	15.2%	23.4%	20.6%
decreased 6-10%	4.8%	9.4%	6.3%	8.6%
decreased more than 10%	19.3%	7.0%	10.9%	3.2%
growing	30.5%	29.5%	32.8%	23.8%
holding	45.3%	54.0%	50.0%	64.0%
shrinking	24.1%	16.4%	17.2%	11.9%
average change	1.3%	1.8%	1.1%	0.8%

Number of Jobs

In terms of number of jobs, one-fourth (26%) of respondents said that jobs had increased by six percent or more compared to the first half of 2016, while 19% said that jobs had declined by six percent or more ("shrinking"). More than one-half (55%) of respondents said the number of jobs was holding steady. Only 11% of respondents said that the number of jobs had increased by more than ten percent. Overall, the average change in the number of jobs was +0.5%.

Figure 5. In terms of your 2017 jobs/orders so far this year at this location only, how do they compare to the first half of 2016?
All respondents, June 2017
Average change: +0.5%



Growing	25.9%
Holding	55.1%
Shrinking	18.9%

Very Small Printers—For the smallest shops, one-fourth reported that the number of jobs was growing, 53% reported that revenues were holding steady, and 22% said that the number of jobs was shrinking. Only 11% reported a jobs increase of 10 percent or more. The average change in number of jobs was -0.3%.

Small Printers—In terms of jobs, small shops are doing a bit better than the very small shops: the average change in jobs from the first half of 2016 to the first half of 2017 was +2.3%, the best of the four size categories. Three out of 10 shops (30%) reported that jobs

were growing, 57% reported that jobs were holding steady, and only 11% said that jobs were shrinking. However, only 12% said that the number of jobs increased 10 percent or more.

Mid-Size Printers—These shops aren't doing quite as well as the small shops, but they're still doing better than very small printers; average change in number of jobs was +1.7%, although 28% reported that jobs were growing, 59% said that jobs were holding, and 13% said that jobs were shrinking. Only 11% said that jobs increased by more than 10 percent.

Large Printers—The average change in number of jobs for the largest print businesses was +1.9%—better than small and mid-size printers, but a few ticks below the small printers. One-fourth (24%) reported that jobs were growing, seven out of 10 said that jobs were holding steady, and a scant 6% said that jobs were shrinking. Only 5% said that jobs increased by more than 10 percent.

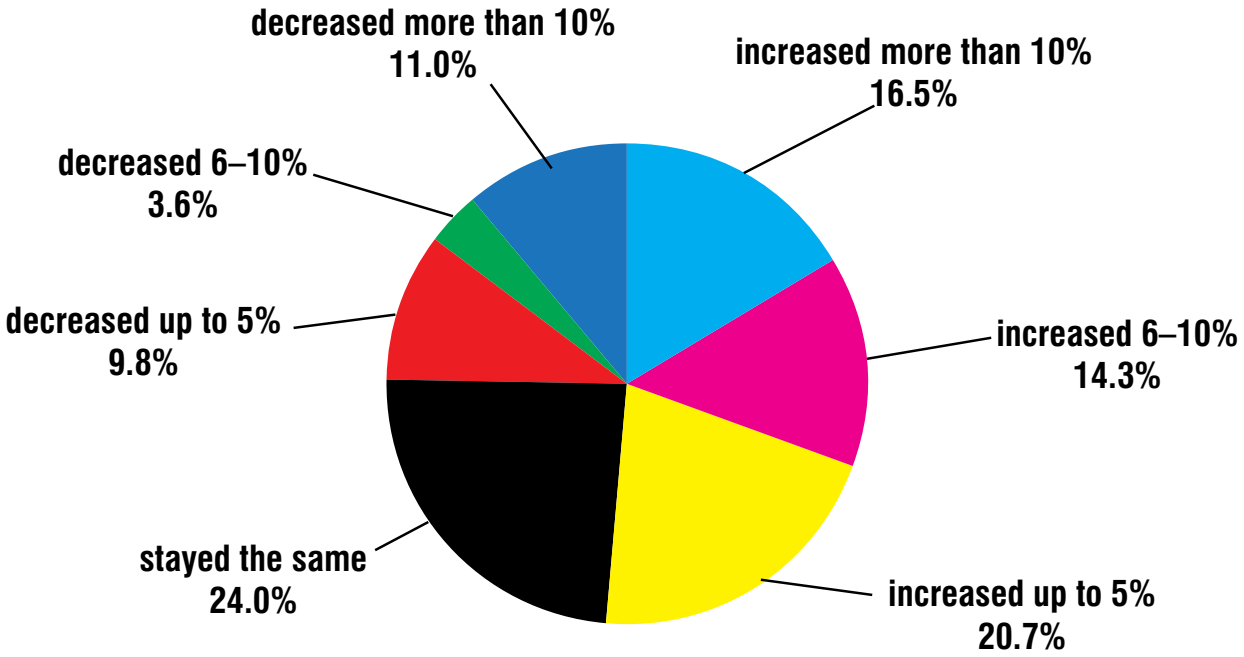
Table 3. In terms of your 2017 jobs/orders so far this year at this location only, how do they compare to the first half of 2016? Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	11.3%	12.0%	10.9%	4.6%
increased 6-10%	13.3%	18.0%	17.2%	19.5%
increased up to 5%	16.3%	23.8%	20.3%	20.6%
stayed the same	22.4%	18.6%	26.6%	31.0%
decreased up to 5%	14.3%	16.2%	12.5%	18.3%
decreased 6-10%	4.0%	8.2%	4.7%	5.7%
decreased more than 10%	18.4%	3.0%	7.8%	0.0%
growing	24.6%	30.0%	28.1%	24.1%
holding	53.0%	58.6%	59.4%	69.9%
shrinking	22.4%	11.3%	12.5%	5.7%
average change	-0.3%	2.3%	1.7%	1.9%

Profitability

In terms of profitability, almost one-third (31%) of respondents said that overall profitability had increased by six percent or more compared to the first half of 2016, and only 15% said that profits had declined by six percent or more. The bulk of respondents (55%) said that profits were holding steady. Still, 16% of respondents said that profits had increased by more than 10 percent. Overall, average profitability was up +1.9%.

Figure 6. In terms of your 2017 profits so far this year at this location only, how do they compare to the first half of 2016?
All respondents, June 2017
Average change: +1.9%



Growing	30.8%
Holding	54.5%
Shrinking	14.6%

Very Small Printers—Three out of 10 small printers reported that profits were growing, 54% reported that profit were holding steady, and 16% said that the profits were shrinking. Sixteen percent reported a profitability increase of 10 percent or more. The average change in profitability for very small printers was +1.7%.

Small Printers—In terms of profits, small shops are doing a better than the very small shops: the average change in profits from the first half of 2016 to the first half of 2017 was +2.9%. More than one-third (36%) reported that profits were growing, 53% reported that profits were holding steady, and only 11% said that profits were shrinking. Sixteen percent said that profits increased 10 percent or more.

Mid-Size Printers—In terms of profitability the mid-size shops appear to be doing the best of the four size categories. The average change in profitability was +3.1%, with 33% reporting that profits were growing, 60% that profits were holding, and 6% that profits were shrinking. Sixteen percent said that profits increased by more than 10 percent.

Large Printers—For the largest print businesses, overall, profits declined -0.1%. Only 13% reported that profits were growing, seven out of 10 said that profits were holding steady, and 16% said that profits were shrinking. Only 7% said that profits increased by more than 10 percent.

Table 4. In terms of your 2017 profits so far this year at this location only, how do they compare to the first half of 2016? Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	16.4%	18.1%	15.8%	6.9%
increased 6-10%	13.3%	17.8%	17.4%	6.9%
increased up to 5%	22.4%	16.6%	14.3%	22.0%
stayed the same	24.4%	20.8%	30.1%	30.1%
decreased up to 5%	7.1%	15.7%	15.8%	17.4%
decreased 6-10%	3.0%	4.6%	4.7%	9.3%
decreased more than 10%	13.3%	6.3%	1.6%	6.9%
growing	29.7%	36.0%	33.2%	13.8%
holding	54.0%	53.1%	60.2%	69.5%
shrinking	16.3%	10.9%	6.3%	16.2%
average change	1.7%	2.9%	3.1%	-0.1%

Business Conditions Summary

As you saw in the commentary throughout this section, for each size classification, we calculated an average change in revenues, jobs/orders, and profits, which are summarized in the table below. In general, we calculated[1] a 1.4% industry average increase in revenues, a 0.5% increase in orders, and a 1.9% increase in profits.

For all but the very small and small shops, growth in the number of jobs/orders has been outpacing revenues, although generally not profits. This is the short-run digital printing situation, and a reason why there is such an acute interest in and demand for automation: short-run digital jobs are increasing (as anyone will tell you) but obviously don't have an average revenue per total job that is as high as a long offset run. In order to make up the price differential, a shop has to take in as many jobs as is possible to realize the same revenue. Now it becomes a controlling costs issue, as well as a productivity problem because there are more makereadies (yes, digital jobs have makeready, except much of it has to do with data). To increase revenue, more jobs need to be processed, which means that jobs needs to be processed much more quickly. To increase profits, costs need to be controlled.

Keep these in mind when looking at the challenges and investments data in the next section.

Interestingly, very small and small businesses don't seem to have this problem. Yes, there is more than a little bit of a survivor bias component to all of this, remember that businesses at the small end of the spectrum didn't start out in offset. A lot of them were digital from the get go, so they were used to—from the start—the economics of short-run digital, and could contain costs and boost productivity accordingly. In other words, they never had to navigate the transition from offset to digital.

Table 5. Jan–Jun 2017 vs. Jan–Jun 2016 Average Percentage Change in Revenues, Orders, and Profits
Respondents by employee size, June 2016

	All Responses	1–9 employees	10–49 employees	50–99 employees	100+ employees
Change in revenues	1.4%	1.3%	1.8%	1.1%	0.8%
Change in jobs	0.5%	-0.3%	2.3%	1.7%	1.9%
Change in profits	1.9%	1.7%	2.9%	3.1%	-0.1%

[1] The estimates were calculated using the mid-points of the percentage ranges, and used 12% for the "10% or more" category.

2. Challenges and Investments

What do print businesses see as their top challenges and what are they planning on buying to meet those challenges?

As we always say, these kinds of questions help qualify the data obtained in the business conditions section of the survey—or determine why those conditions are what they are. These questions' responses also help verify or refute business conditions data which may not be entirely objective measures of a company's performance.

Top Business Challenges

Challenges differ depending on the size of the business, although not wildly. Each business and each business class has its own dynamics. Even a challenge like "economic conditions" has nuances to it. For example, smaller shops may be more affected by local economic conditions than the overall national economy, while for the largest businesses, the reverse may be the case.

Even something like "capabilities of sales personnel" will mean something different to a small shop (whose "salesperson" may be the owner) vs. a large plant.

So we need to bear these things in mind and not paint every business in the printing industry with the same brush.

Overall, the top business challenge was "capabilities of sales personnel," selected by 20% of respondents, up from the 28% who said this in our Fall 2016 survey.

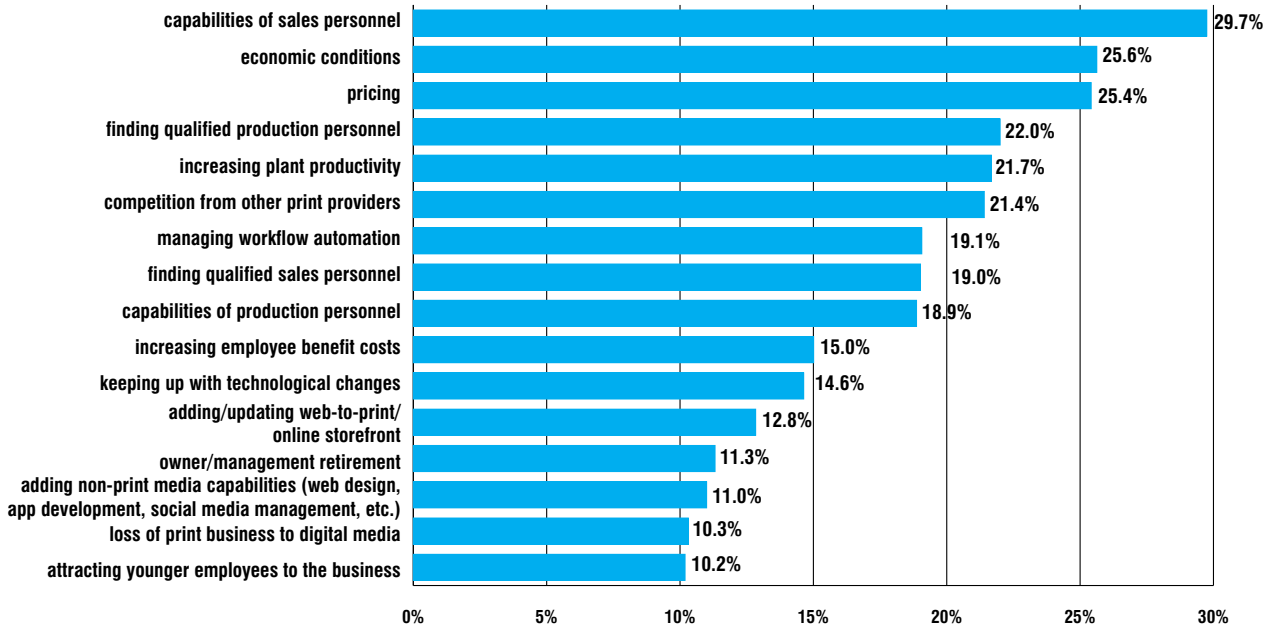
At number two was the previous number one, "economic conditions," selected by 26% of respondents, down from 44% last fall. At last, people are starting to get the sense that their problems lie elsewhere.

The number three challenge was "pricing" at 25%, down one percentage point from last fall. This is a perennial challenge that never seems to get resolved, especially as new printing technologies and new print products and applications come to market, further muddying what were already pretty muddy waters.

At number four was "finding qualified production personnel" at 22%, up from 17%—this is a significant challenge that is becoming more and more acute, especially as shops add new kinds of specialty printing applications, and "software programming" becomes a major part of the print production process, especially in variable-data-based production inkjet.

Rounding out the top five is "increasing plant productivity," also at 22%, down from 31%. Faster hardware, more automation, and more reliance on software are helping alleviate this challenge, although a lot of work still needs to be done. Remember the revenue/jobs growth mismatch in the previous section? This is where that issue manifests itself.

Figure 7. In the next 12 months, which of the following will be your biggest business challenges?
All respondents, June 2017 (multiple responses permitted)



There are some differences in the top challenges by establishment size.

Very Small Printers—The top three challenges for the smallest shops are:

- "capabilities of sales personnel"—25%
- "economic conditions"—24%
- "pricing"—23%

They need to drum up more work, even in a lukewarm economy, and in a price-sensitive market. We said in the last section that these folks never had to make the shift from long-run offset to short-run digital, so they never had that particular pricing problem. But these shops do a lot more commodity work, so pricing amongst the competition can be a little cutthroat.

Small Printers—The top three challenges for the 10–49-employee shops are:

- "capabilities of sales personnel"—41%
- "increasing plant productivity"—36%
- "managing workflow automation"—34%

In other words, their salespeople need to know to sell digital vs. offset, and at the same time they need to cope with the productivity issue, getting jobs in and out as quickly as possible

Mid-Size Printers—The top three challenges for the 50–99-employee shops are:

- "increasing plant productivity"—41%

- "competition from other print providers"—36%
- "finding qualified sales personnel"—36%

Yep: productivity, just like everyone else. This size cohort was the most challenged by competition. Differentiation becomes an issue for these folks. And they need their salespeople to help convey that difference.

Large Printers—The top three challenges for the 100+-employee plants are:

- "capabilities of sales personnel"—41 %
- "increasing plant productivity"—38%
- "finding qualified sales personnel" and "pricing"—both at 35%

Hmm...it seems they're stuck with underperforming sales reps and they can't even find decent replacements! Pricing becomes an issue, especially as these plants add digital capabilities to capture short-run work. This—and the productivity problem—is where the transition from offset issue manifests itself,

Table 6. In the next 12 months, which of the following will be your biggest business challenges?
Respondents by employee size, June 2017 (multiple responses permitted)

	1–9 employees	10–49 employees	50–99 employees	100+ employees
capabilities of sales personnel	25.4%	41.0%	31.3%	41.2%
economic conditions	23.8%	30.2%	26.6%	30.4%
pricing	23.4%	29.0%	31.3%	34.7%
finding qualified production personnel	18.3%	30.9%	29.7%	28.1%
increasing plant productivity	15.1%	35.8%	40.6%	38.0%
competition from other print providers	17.0%	30.4%	35.9%	32.6%
managing workflow automation	12.9%	34.4%	31.3%	27.2%
finding qualified sales personnel	12.9%	32.3%	35.9%	34.7%
capabilities of production personnel	20.5%	15.7%	14.1%	11.9%
increasing employee benefit costs	14.1%	17.1%	17.2%	16.3%
keeping up with technological changes	13.2%	21.5%	7.8%	5.4%
adding/updating web-to-print/online storefront	10.0%	23.6%	6.3%	5.4%
owner/management retirement	14.1%	5.4%	3.1%	3.2%
adding non-print media capabilities (web design, app development, social media management, etc.)	12.2%	8.9%	7.8%	4.3%
loss of print business to digital media	9.0%	13.6%	15.6%	8.6%
attracting younger employees to the business	2.9%	26.4%	28.1%	28.1%
selling our business	10.0%	7.0%	1.6%	1.0%
consumables and supplies prices	7.1%	7.5%	9.4%	6.4%

	1–9 employees	10–49 employees	50–99 employees	100+ employees
adding wide-format equipment/services	6.1%	6.8%	3.1%	4.3%
profitably handling shorter runs	3.9%	9.3%	14.1%	13.0%
deciding whether to keep or discard our offset equipment	3.9%	11.0%	4.7%	1.0%
getting web-to-print to work on smartphones and other mobile devices	6.1%	4.4%	1.6%	1.0%
need for employee training	1.0%	14.5%	10.9%	21.7%
retirement of key production personnel	3.9%	6.1%	4.7%	9.8%
financing costs or finding capital	0.0%	8.4%	3.1%	2.1%
job tracking	0.0%	6.3%	3.1%	1.0%
transitioning jobs from offset to high-speed production inkjet equipment	0.0%	4.0%	0.0%	5.4%
other (please specify)	0.0%	0.0%	0.0%	0.0%
capabilities of sales personnel	25.4%	41.0%	31.3%	41.2%

Top Planned Investments

Finishing and software: the two great tastes that taste great together.

"Finishing/bindery equipment for digital production" is far and away the hot investment item for print businesses overall; 31% said they planned to invest in finishing equipment in the next 12 months, up from the 22% who said this in our Fall 2016 survey.

In somewhat distant second was "wide-format color printer," selected by 19%.[2]

At number three was "MIS system" selected by 15% of respondents, up from 11% last fall.

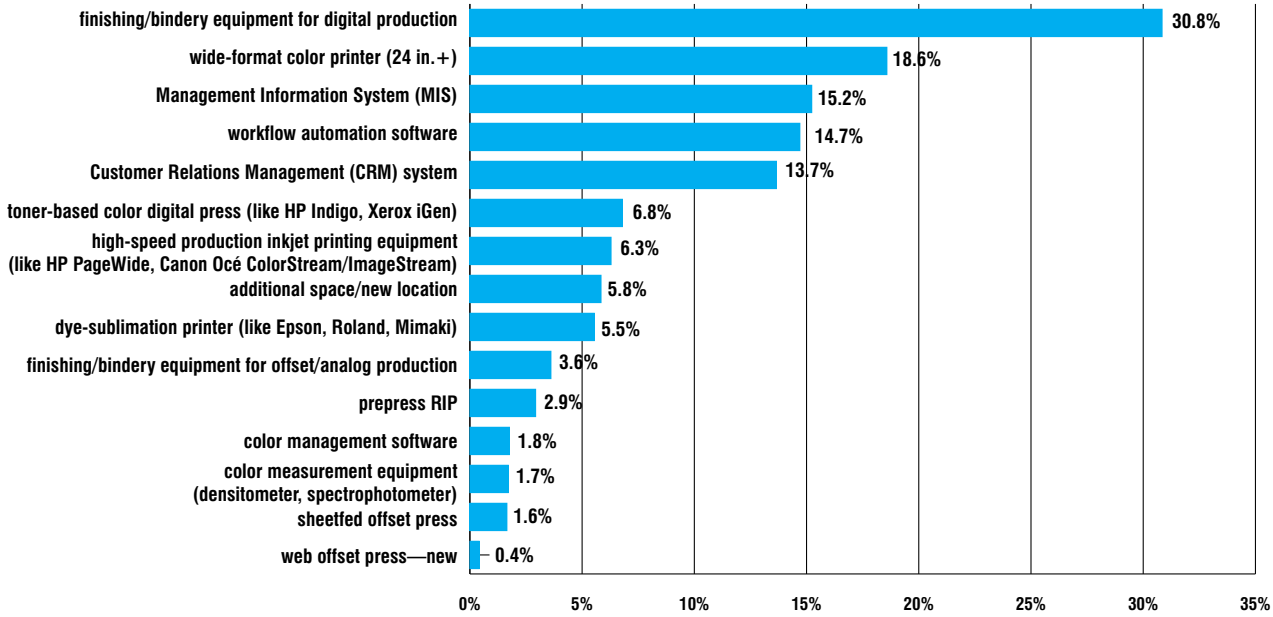
Number four was "workflow automation software," selected by 15% of respondents, unchanged from last fall.

Rounding out the top five was "Customer Relations Management (CRM)," selected by 14% of respondents, up from 9% last fall.

Despite the two hardware items, software appears to be where the action is, although the interest in digitally compatible finishing is also a major trend this year. MIS systems need to be flexible, especially when companies are adding new kinds of print products and applications. Workflow automation is increasingly desired to help combat the "increasing plant productivity" challenge we just commented on, which in turn is an issue because the number of jobs is increasing but they're of such a short-run, low-margin nature that revenue and thus profitability can't keep up. Finishing is an important added service, especially when it comes to adding special effects. Digital foil stamping, UV spot coating, adding textures, and other "digital embellishments" are a way for printers to charge more for products. Anecdotal evidence suggests that customers are actually willing to pay a premium for these kinds of finishing effects—and the good news is that the costs of adding them are coming down. But shhh...don't tell the customers, because printers can keep charging the same premium price and make a little more margin for a change.

2 In our Fall 2016 survey, we had asked more detailed questions about wide-format equipment, such as size and ink technology, rather than a catchall "wide-format printer" item.

Figure 8. Which of the following investment items have you budgeted for and plan to acquire in the next 12 months?
All respondents, June 2017 (multiple responses permitted)



The top investments don't vary too much by establishment size, although there are some variations on a theme:

Very Small Printers—The top three investments for the smallest shops are:

- "finishing/bindery equipment for digital production"—31%
- "wide-format color printer (24 in.+)"—19%
- "Management Information System (MIS)"—15%

Obviously, the finishing equipment isn't the production-inkjet-compatible machines that larger shops are buying. The trend in finishing today is toward more all-in-one machines—folder/slitter/creaser/perforators—that perform multiple processes in one pass. It's a growing component of plant productivity which, as we have commented throughout this report, is the big challenge for all shops great and small.

Small Printers—The top three investments for the 10–49-employee shops are:

- "finishing/bindery equipment for digital production"—32%
- "wide-format color printer (24 in.+)"—20%
- "workflow automation software"—20%

Wide-format capabilities—we're likely talking about "small" rollfed wide-format machines, not big UV flatbeds. Adding signage, display graphics, decals, perhaps even floor, window, and wall graphics is a big opportunity for businesses at the lower end of the size spectrum.

Mid-Size Printers—The top three investments for the 50–99-employee shops are:

- "finishing/bindery equipment for digital production"—27%
- "workflow automation software"—22%
- "finishing/bindery equipment for offset/analog production"—20%

The presence of binding/finishing for both analog and digital suggests that not only is doing in-house finishing a good way to help differentiate themselves—by being able to offer the fullest possible array of services—but also to improve turnaround time. Who has time to outsource finishing to a third-party finisher anymore? At the same time, buying the all-in-one units, or even specialty finishing equipment like MGI or Scodix machines, can boost productivity, but also add a variety of high-value special effects.

Oh, and then there's Maude: workflow automation software. As ever.

Large Printers—The top three investments for the 100+-employee plants are:

- "finishing/bindery equipment for offset/analog production"—29%
- "finishing/bindery equipment for digital production"—22%
- "workflow automation software"—21%

The big boys are wrestling with the same challenges of plant productivity as their slightly smaller brethren, and this lineup of planned investments looks intended to at least in part solve that problem.

Table 7. In the next 12 months, which of the following will be your biggest business challenges?
Respondents by employee size, June 2017 (multiple responses permitted)

	1–9 employees	10–49 employees	50–99 employees	100+ employees
finishing/bindery equipment for digital production	31.2%	31.8%	26.6%	21.7%
wide-format color printer (24 in.+)	19.3%	19.7%	10.9%	5.4%
Management Information System (MIS)	15.4%	15.0%	15.6%	13.0%
workflow automation software	12.2%	20.1%	21.9%	20.6%
Customer Relations Management (CRM) system	14.1%	12.6%	10.9%	14.1%
toner-based color digital press (like HP Indigo, Xerox iGen)	3.9%	13.6%	12.5%	14.1%
high-speed production inkjet printing equipment (like HP PageWide, Canon Océ ColorStream/ImageStream)	5.1%	7.9%	7.8%	17.3%
additional space/new location	4.8%	7.7%	9.4%	9.8%
dye-sublimation printer (like Epson, Roland, Mimaki)	7.1%	2.6%	0.0%	1.0%
finishing/bindery equipment for offset/analog production	0.0%	7.9%	20.3%	29.3%
prepress RIP	0.0%	11.2%	4.7%	4.3%
color management software	0.0%	5.8%	3.1%	8.6%

	1–9 employees	10–49 employees	50–99 employees	100+ employees
color measurement equipment (densitometer, spectrophotometer)	0.0%	5.1%	7.8%	6.4%
sheetfed offset press	0.0%	4.2%	6.3%	13.0%
web offset press—new	0.0%	1.2%	0.0%	4.3%
other (please specify)	0.0%	0.0%	0.0%	0.0%

Mapping Investments to Challenges

We said earlier in this report that businesses make certain investments to help conquer major challenges.[3] Thus, we thought it would be instructive to cross-tabulate challenges with a couple of investment categories, specifically digital printing equipment and software.

Digital Print Buyers

Print businesses planning to buy digital printing equipment (of any kind) cited as their top three challenges:

- "managing workflow automation"—46% (compared to 19% overall)
- "capabilities of sales personnel"—42% (compared to 30% overall)
- "increasing plant productivity"—39% (compared to 22% overall)

Digital printing today is not so much about the print engine itself but the entire ecosystem, and that includes software. Most print businesses assume they make money when a press is actually producing something, which is not an unreasonable assumption. However, one printer recently remarked that they didn't think of themselves as a printer, but as a software company that has printing presses. (Indeed, at a PIA event held in New York City in July, representatives of a variety of large and small shops on a printer panel almost unanimously said that their major employment hires of late were software programmers—some even now have more programmers than press operators. This is quickly becoming where the opportunities lie, especially as working with data—for sophisticated variable-data applications, such as those enabled by production inkjet—becomes of greater importance.)

It's all about the infrastructure before and after the actually printing process that is the important part of the workflow. Digital printing lends itself better than analog processes to complete automation, as well as all the value-added qualities like variable data.

As we said earlier, digital printers—or, more specifically, offset printers transitioning to digital—have also been traditionally challenged by the sales process in general; since the dawn of digital 20 years ago, selling digital printing has been a struggle since it has required a different mindset than selling offset. You would think that these challenges would have been alleviated by now, but the changing marketplace for print has also exacerbated the sales challenge. Not only has selling digital print been a challenge, but selling print in general has become a greater challenge, compounding the problem. And new print

[3] They also make investments to take advantage of certain perceived business or sales opportunities, which we did not ask about in this survey.

products and applications—especially wide-format and specialty printing applications—create even more confusion around not only selling these things but pricing them.

Among the small printers (10–49 employees) who planned to buy digital printing equipment, more than one-half cited "adding/updating web-to-print/online storefront" as a major challenge. We comment later in this report on the changing nature of retail (i.e., it is moving more and more online), and there is no reason to think that buying print is any different from buying anything else. In other words, print buyers increasingly don't want to walk into your shop with files for output, nor do they want to talk on the phone with salespeople. They want to go to an ecommerce site and buy what they need online (and, increasingly, via their smartphones) the same way they would buy something from Amazon. Hence the need for web-to-print and online storefronts. This is especially acute in the small to mid-size shop categories, as they are the most likely to be dealing with these kinds of retail customers. The large plants are more likely to have ongoing relationships with dedicated print buyers.

Mid-size printers (50–99 employees) were especially challenged by "competition from other print providers." A decade or more ago, this was a common challenge for shops to cite across the board, and while it seems to have ebbed for printers in general, it's notable that more than one-third of shops in this size category cited it. Differentiating oneself has become a major issue for a lot of print businesses, driving the need to explore new, unique kinds of print products and applications (like various kinds of specialty printing or added effects like digital foil stamping and other new "embellishments"), or even non-print services.

Software Buyers[4]

Software of all kinds has become a major investment category. What specific challenges do they have? The top three are not a big surprise until you look at the percentages:

- "managing workflow automation"—62% (compared to 19% overall)
- "capabilities of sales personnel"—44% (compared to 30% overall)
- "increasing plant productivity"—41% (compared to 22% overall)

It should come as no surprise, given the previous commentary, that the desire to implement or improve workflow automation and therefore increase productivity is the driving force behind planned investment in software. There's no need to dwell further on this trend (we comment enough on it throughout this report). The sales personnel capability issue is an interesting number two; CRM software is a not insignificant planned investment, and the need (as we point out in *The Third Wave* and elsewhere) to implement more of a business development approach to print sales rather than traditional selling may be driving some of this intended investment.

We look at the business development vs. sales issue in Section 4.

[4] It must be noted that there is some overlap in the respondents for digital printing and software purchases; these are not mutually exclusive groups.

3. Production Process Changes

In the June 2017 survey, we asked about production changes, and whether jobs for a given printing technology were increasing, decreasing, or staying about the same. The processes we asked about were:

- Offset jobs
- Color digital jobs
- Black-and-white digital jobs
- Wide-format jobs

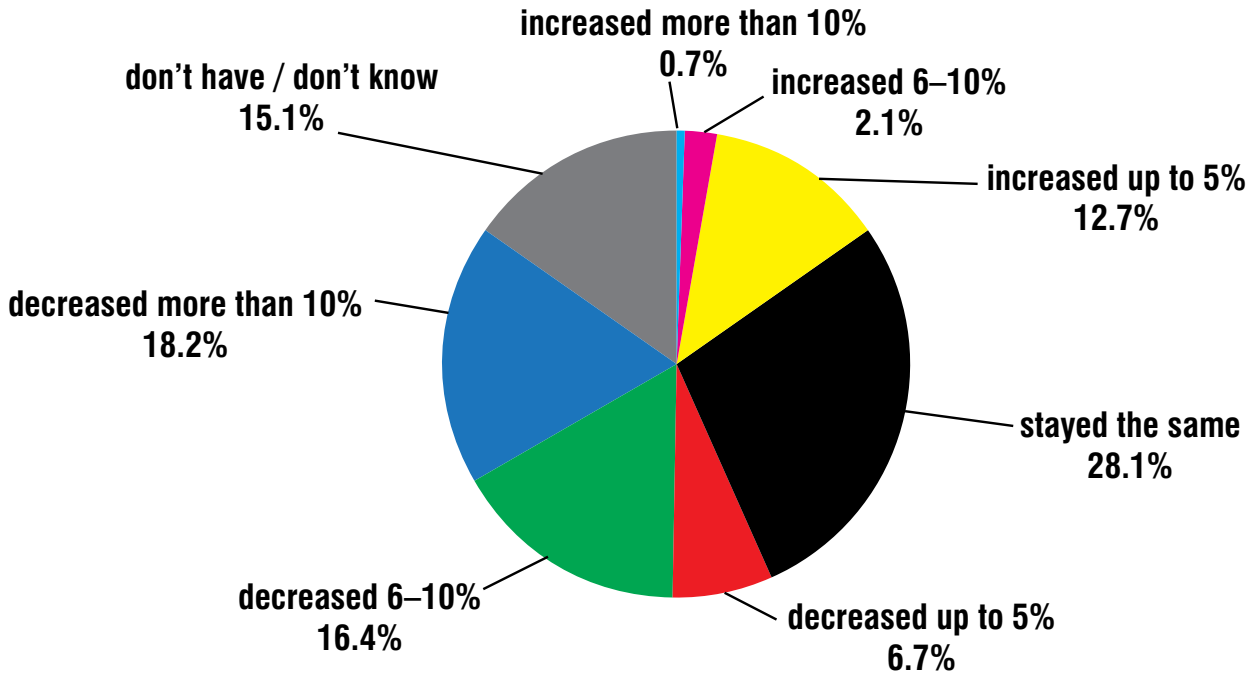
We also asked about

- Non-print marketing services

Offset Jobs

In terms of offset jobs, only 3% of respondents said that offset jobs had increased by six percent or more ("growing") compared to the first half of 2016, while 41% said that offset jobs had declined by six percent or more ("shrinking"). More than one-half (56%) of respondents said that offset jobs were holding steady. Overall, the average change in offset jobs was -3.6%.

Figure 9. Please indicate the extent to which offset jobs have been increasing or decreasing over the past 12 months
All respondents, June 2017
Average change: -3.6%



Growing	3.3%
Holding	55.9%
Shrinking	40.7%

Among the four employee size groups:

Very Small Printers—For the smallest of shops, exactly none reported that offset jobs were growing, while 45% reported that offset jobs were declining, and 55% said that offset jobs were holding steady. One-fifth (19%) said that offset jobs had declined by more than 10 percent. The average change in offset jobs was -4.1%. These shops are likely all- (or mostly-) digital, using black-and-white and some color digital toner equipment. If they have still offset duplicators (the only offset equipment these shops are likely to have), they see very little use these days. Indeed, 16% said "don't have [offset jobs]/don't know."

Small Printers—Some small shops are doing slightly more offset work; but the average change in offset jobs from the first half of 2016 to the first half of 2017 was -3.0%. Ten percent reported that offset jobs were growing, more than one-half (54%) reported that offset jobs were holding steady, and more than one-third (36%) said that offset jobs were shrinking. Eighteen percent said that offset jobs had declined by more than 10 percent. Note that 11% said "don't have/don't know."

Mid-Size Printers—The shops in our mid-size category (50–99 employees) are even less likely to have offset equipment; one-fifth (20%) selected "don't have/don't know." The average change in offset jobs was -0.8%, and almost three-fourths (72%) reported that offset jobs were holding steady. Thirteen percent reported that offset jobs were growing, and 15% said that offset jobs were shrinking.

Large Printers—It's in this size category that we find the most offset equipment; 70% of large printers said that offset jobs were holding steady, while 15% said they were shrinking. The same amount (15%) reported that offset jobs were growing, although only 1% said that offset jobs were growing by more than 10 percent. Remember, it is often the case that the large printer establishment answering is a surviving establishment which has been consolidated into from closed locations in the same organization. These shops can have an increase because there are related locations that no longer exist.

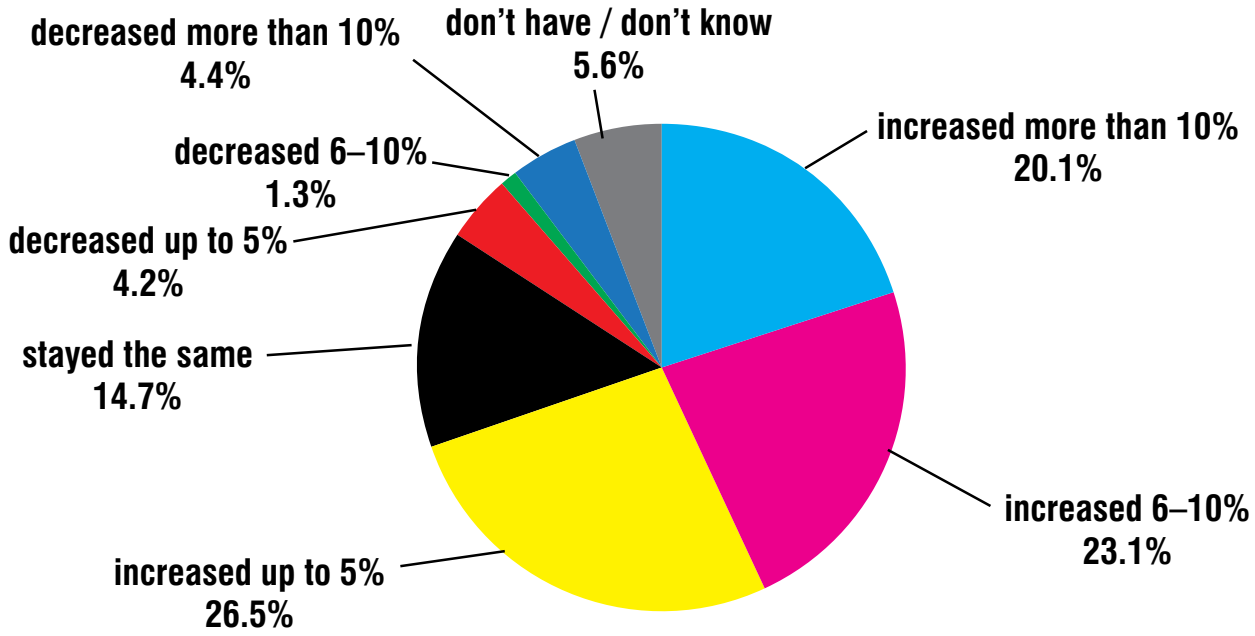
Table 8. Please indicate the extent to which offset jobs have been increasing or decreasing over the past 12 months Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	0.0%	2.7%	1.7%	1.2%
increased 6-10%	0.0%	6.0%	8.5%	12.0%
increased up to 5%	12.1%	15.4%	8.5%	10.7%
stayed the same	31.8%	16.2%	28.8%	30.8%
decreased up to 5%	2.1%	16.4%	20.4%	21.3%
decreased 6-10%	18.3%	13.8%	5.0%	7.9%
decreased more than 10%	19.4%	18.3%	6.8%	5.3%
don't have / don't know	16.3%	11.2%	20.4%	10.7%
growing	0.0%	9.7%	12.7%	14.9%
holding	54.9%	54.1%	72.4%	70.3%
shrinking	45.1%	36.2%	14.8%	14.9%
average	-4.1%	-3.0%	-0.8%	-0.6%

Color Digital Jobs

Now, color digital jobs are a whole different kettle of fish entirely. In terms of color digital jobs, almost one-half (46%) of respondents said that color digital jobs had increased by six percent or more compared to the first half of 2016, while 48% said that color digital jobs had held steady. Only 6% said that color digital jobs were shrinking. Overall, the average change in color digital jobs was +4.7%.

Figure 10. Please indicate the extent to which color digital jobs have been increasing or decreasing over the past 12 months
All respondents, June 2017
Average change: +4.7%



Growing	45.8%
Holding	48.2%
Shrinking	6.0%

Among the four employee size groups:

Very Small Printers—For the smallest of shops, 47% reported that color digital jobs were growing, while 46% reported that color digital jobs were holding steady, and only 7% said that color digital jobs were shrinking. Slightly more than one-fifth (21%) said that color digital jobs had increased by more than 10 percent. The average change in color digital jobs was +4.5%.

Small Printers—The average change in color digital jobs from the first half of 2016 to the first half of 2017 was +5.3%, the largest of the four size categories. Forty-six percent reported that color digital jobs were growing (21% growing more than 10 percent), more

than one-half (51%) reported that color digital jobs were holding steady, and a scant 3% said that color digital jobs were shrinking. Only 1.5% said "don't have/don't know."

Mid-Size Printers—Although the shops in our mid-size category (50–99 employees) are the least likely of the four categories to have color digital equipment (10% said "don't have/don't know"), four out of 10 said that color digital jobs were growing (12% said growing by more than 10 percent) 52% said that color digital jobs were holding steady, and 8% said that color digital jobs were shrinking. The average change in color digital jobs for these folks was +3.5%.

Large Printers—Amongst the largest of printers, only about one-third (35%) said that color digital jobs were growing, while almost two-thirds (62%) said that color digital jobs were holding steady. Only 3% said that color digital jobs were shrinking. The average change in color digital jobs among the largest printers was +3.7%.

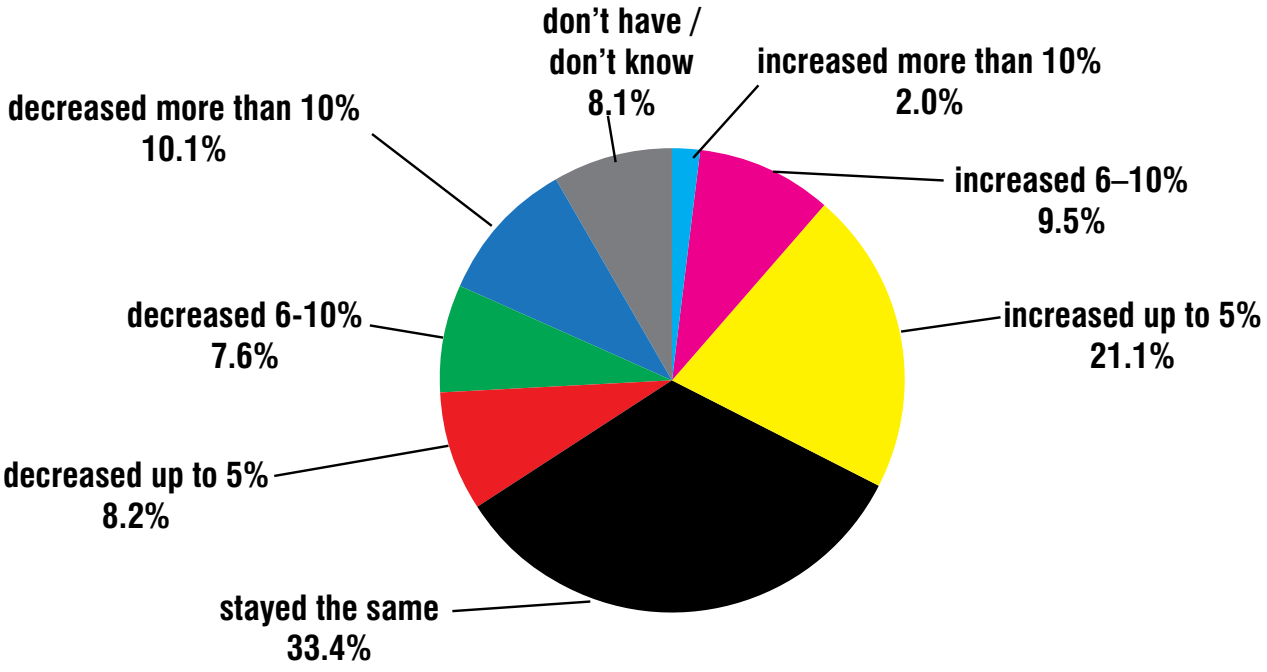
Table 9. Please indicate the extent to which color digital jobs have been increasing or decreasing over the past 12 months Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	20.8%	21.2%	12.0%	9.2%
increased 6-10%	22.8%	23.8%	24.2%	22.4%
increased up to 5%	24.9%	31.0%	26.0%	29.0%
stayed the same	14.2%	15.1%	12.0%	26.4%
decreased up to 5%	4.2%	4.1%	8.6%	1.2%
decreased 6-10%	1.0%	1.3%	5.1%	2.6%
decreased more than 10%	5.5%	2.1%	1.7%	0.0%
don't have / don't know	6.6%	1.5%	10.4%	9.2%
growing	46.7%	45.6%	40.4%	34.8%
holding	46.3%	51.0%	52.0%	62.3%
shrinking	7.0%	3.4%	7.6%	2.9%
average	4.5%	5.3%	3.5%	3.7%

Black-and-White Digital

Color digital equipment gets the bulk of the ink (as it were), but it's still very much a black-and-white world for a lot of print businesses (only 8% said "don't have/don't know"). In terms of black-and-white digital jobs, 13% of respondents said that black-and-white digital jobs were growing, while more than two-thirds (68%) said they were holding steady. Still, 20% said that black-and-white digital jobs were shrinking. The overall average change in black-and-white digital jobs was -0.7%.

Figure 11. Please indicate the extent to which black-and-white digital jobs have been increasing or decreasing over the past 12 months
All respondents, June 2017
Average change: -0.7%



Growing	12.5%
Holding	68.2%
Shrinking	19.3%

Among the four employee size groups:

Very Small Printers—For the smallest of shops, 12% reported that black-and-white digital jobs were growing, while 66% reported that they were holding steady, and almost one-fourth (23%) said that black-and-white digital jobs were shrinking. Twelve percent said that black-and-white digital jobs had decreased by more than 10 percent. The average change in color digital jobs was -1.3%.

Small Printers—The average change in black-and-white digital jobs from the first half of 2016 to the first half of 2017 was +0.5%, with 13% reporting that black-and-white digital jobs

were growing, three-fourths reporting that black-and-white digital jobs were holding steady, 15% reporting that they were shrinking.

Mid-Size Printers—Although the shops in our mid-size category (50–99 employees) are the least likely of the four categories to have black-and-white digital equipment (21% said "don't have/don't know"), 18% said that black-and-white digital jobs were growing, two-thirds said that black-and-white digital jobs were holding steady, and 16% said that they were shrinking. The average change in black-and-white digital jobs for these folks was -0.2%—virtually no overall net change in black-and-white digital jobs.

Large Printers—Amongst the largest of printers, although one-fifth said they "don't have/don't know," the average change in black-and-white digital jobs among the largest printers was +1.4%, the largest increase in black-and-white digital jobs among the four size categories (which isn't saying that much). Fifteen percent said that black-and-white digital jobs were growing, eight out of 10 said that black-and-white digital jobs were holding steady, and 5% said that black-and-white digital jobs were shrinking.

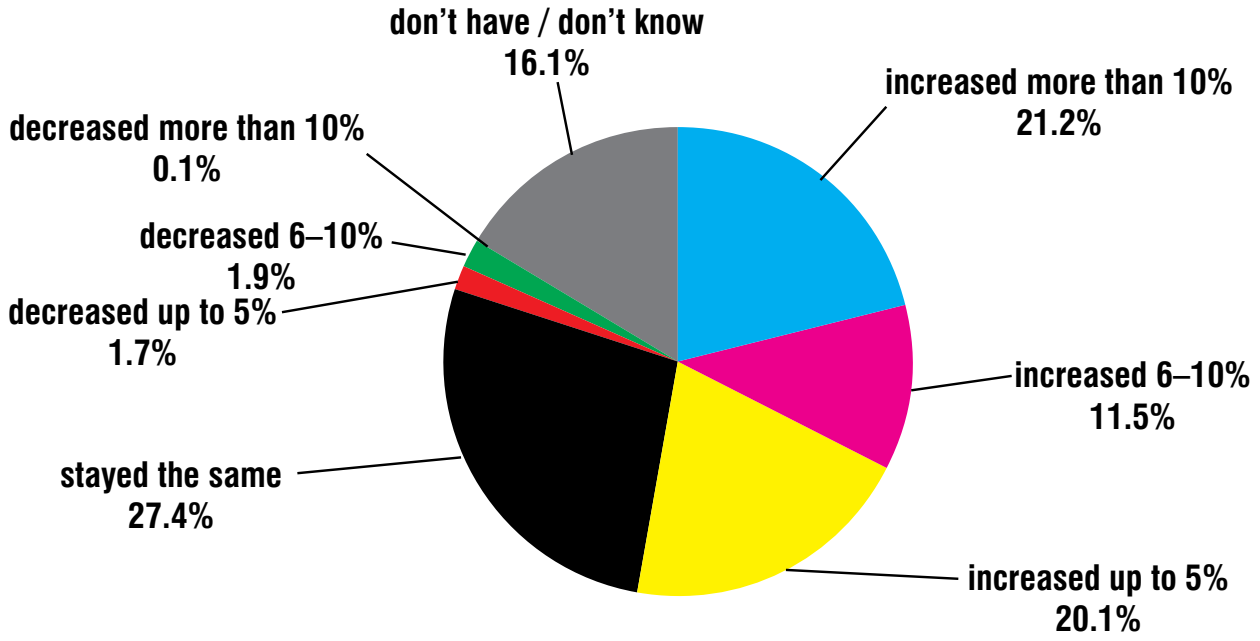
Table 10. Please indicate the extent to which black-and-white digital jobs have been increasing or decreasing over the past 12 months Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	0.0%	7.6%	1.7%	5.3%
increased 6-10%	11.1%	4.6%	12.2%	6.7%
increased up to 5%	20.8%	24.6%	7.0%	20.0%
stayed the same	32.2%	34.8%	40.5%	38.7%
decreased up to 5%	7.6%	11.1%	5.2%	5.3%
decreased 6-10%	8.6%	5.4%	5.2%	4.0%
decreased more than 10%	12.1%	6.1%	7.0%	0.0%
don't have / don't know	7.6%	5.7%	21.1%	20.0%
growing	12.0%	12.9%	17.6%	15.0%
holding	65.6%	74.9%	66.8%	80.1%
shrinking	22.5%	12.2%	15.5%	4.9%
average	-1.3%	0.5%	-0.2%	1.4%

Wide-Format Jobs

Here's where things get interesting. Four out of 10 (39%) of survey respondents said that wide-format jobs were growing 10 percent or more, while six out of 10 (59%) said wide-format jobs were holding steady. Only 2% said that wide-format jobs were shrinking. The overall average change in wide-format jobs was +4.4%. Note, though, that 16% said "don't have [wide-format equipment/jobs]/don't know."

Figure 12. Please indicate the extent to which wide-format jobs have been increasing or decreasing over the past 12 months
All respondents, June 2017
Average change: +4.4%



Growing	39.0%
Holding	58.6%
Shrinking	2.4%

Among the four employee size groups:

Very Small Printers—This size category was the most likely of the four to have wide-format equipment (only 11% said "don't have/don't know"), and the average change in wide-format jobs was +4.8%, the largest of the four. Thirty-eight percent reported that wide-format jobs were growing (24% that they were growing by more than 10 percent), 60% reported that they were holding steady, and only 2% said that wide-format jobs were shrinking.

Small Printers—The average change in wide-format jobs from the first half of 2016 to the first half of 2017 was +3.9%—the second-highest of the four—with 41% reporting that wide-

format jobs were growing, 56% that they were holding steady, and only 1% that they were shrinking. Note, though, that one-fourth said they "don't have/don't know."

Mid-Size Printers—Wide-format equipment ownership declines as the shops get larger; 41% of mid-size printers selected "don't have/don't know." Among those who do have wide-format equipment, 53% said that wide-format jobs were growing (17% said they were growing by more than 10 percent), 41% that they were holding steady, and 6% that they were shrinking. The average change in wide-format jobs for these folks was +3.5%.

Large Printers—Amongst the largest of printers, 41% said they "don't have/don't know." Of those who do, the average change in wide-format jobs was +1.4%, the lowest increase among the four size categories. One-third said that wide-format jobs were growing, 55% said that wide-format jobs were holding steady, and 12% said that wide-format jobs were shrinking.

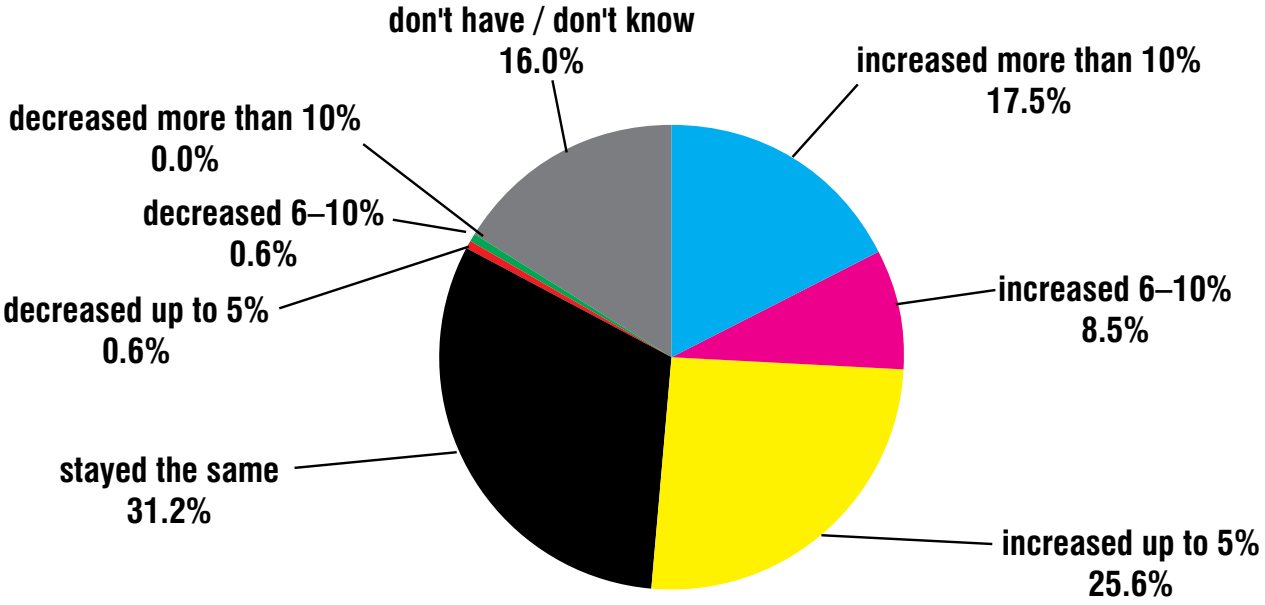
Table 11. Please indicate the extent to which wide-format jobs have been increasing or decreasing over the past 12 months Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	24.2%	15.3%	16.7%	4.2%
increased 6-10%	9.7%	15.9%	14.8%	15.5%
increased up to 5%	21.5%	19.0%	9.2%	12.7%
stayed the same	30.8%	20.9%	14.8%	15.5%
decreased up to 5%	1.0%	3.4%	0.0%	4.2%
decreased 6-10%	2.1%	0.8%	1.8%	5.6%
decreased more than 10%	0.0%	0.0%	1.8%	1.4%
don't have / don't know	10.7%	24.6%	40.9%	40.9%
growing	38.0%	41.4%	53.4%	33.4%
holding	59.7%	57.5%	40.6%	54.8%
shrinking	2.3%	1.1%	6.0%	11.8%
average	4.8%	3.9%	3.5%	1.4%

Non-Print Marketing Services

For fun, we asked about "non-print marketing services," our cynical ploy to cast aspersions on the claim by many shops that they were "marketing services providers" when in reality they were just printers. So we were a bit surprised to find that not only did only 16% select "don't have/don't know," almost one-third (31%) said that non-print marketing services were growing. More than two-thirds (68%) said they were holding steady, and less than 1% (0.7%) said non-print marketing services were shrinking. Indeed, the average change in non-print marketing services was +3.9%.

Figure 13. Please indicate the extent to which non-print marketing services have been increasing or decreasing over the past 12 months
All respondents, June 2017
Average change: +3.9%



Growing	31.0%
Holding	68.3%
Shrinking	0.7%

Among the four employee size groups:

Very Small Printers—Interestingly, this size category is by far the most likely to offer non-print marketing services (only 10% said "don't have/don't know"), and the average change in non-print marketing services was +4.3%, the largest of the four. Thirty percent reported that non-print marketing services were growing (19% that they were growing by more than 10 percent), 70% reported that they were holding steady, and none said that non-print marketing services were shrinking.

Small Printers—The average change in non-print marketing services from the first half of 2016 to the first half of 2017 was +3.3%—the second-highest of the four—with 34% reporting that non-print marketing services were growing, 63% that they were holding steady, and only 3% that they were shrinking. Note, though, that 29% said they "don't have/don't know."

Mid-Size Printers—Non-print marketing services decline as the shops get larger; one-third of mid-size printers selected "don't have/don't know." Among those who do offer non-print marketing services, one-fourth said that they were growing and three-fourths that they were holding steady. None said that non-print marketing services were shrinking. The average change in wide-format jobs for these folks was +1.9%, the lowest of the four size categories.

Large Printers—Amongst the largest of printers, 32% said they "don't have/don't know." Of those who do, the average change in non-print marketing services was +2.8%. Three out of 10 said that non-print marketing services were growing, 68% said that non-print marketing services were holding steady, and 2% said that non-print marketing services were shrinking.

Table 12. Please indicate the extent to which non-print marketing services have been increasing or decreasing over the past 12 months Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
increased more than 10%	18.8%	17.1%	3.7%	10.9%
increased 6-10%	8.8%	6.8%	13.0%	9.5%
increased up to 5%	29.7%	16.5%	13.0%	19.2%
stayed the same	32.9%	25.7%	35.2%	27.4%
decreased up to 5%	0.0%	2.1%	1.8%	0.0%
decreased 6-10%	0.0%	2.4%	0.0%	1.4%
decreased more than 10%	0.0%	0.0%	0.0%	0.0%
don't have / don't know	9.8%	29.4%	33.4%	31.6%
growing	30.5%	33.8%	25.0%	29.9%
holding	69.5%	62.8%	75.0%	68.1%
shrinking	0.0%	3.3%	0.0%	2.0%
average	4.3%	3.3%	1.9%	2.8%

Overall...

The table below sums up the net process changes we found in our survey. In terms of overall average changes, offset and black-and-white digital jobs are down, while color digital and wide-format jobs are up. Non-print marketing services are also up.

We can also get a sense of the extent to which growth in digital jobs is coming at the expense of offset—only 1.7% of respondents report that both offset and digital are growing, while 5.5% report that both offset and digital are declining. We then mapped these data to industry demographics to estimate that 409 plants are seeing both offset and digital increase, while 1,335 plants are seeing both offset and digital decline.

In other words, plants are more likely to be seeing digital growing and offset declining. Well, that is, most *reasonably healthy* plants. If both are increasing, that's great, but rare. If both are declining, that's bad and represents an overall decline in jobs.

Table 13. Summary of process changes
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees	All Respondents
SUMMARY OF CHANGE RATES					
Offset jobs	-4.1%	-3.0%	-0.8%	-0.6%	-3.6%
Color digital	4.5%	5.3%	3.5%	3.7%	4.7%
B&W digital	-1.3%	0.5%	-0.2%	1.4%	-0.7%
Wide format	4.8%	3.9%	3.5%	1.4%	4.4%
Nonprint marketing services	4.3%	3.3%	1.9%	2.8%	3.9%
PERCENT OF RESPONDENTS FOR WHICH…					
Both offset + digital growing	0.0%	5.4%	6.3%	5.4%	1.7%
Both offset + digital declining	7.0%	0.9%	7.8%	3.3%	5.5%
ESTIMATED PLANTS FOR WHICH…					
Both offset + digital growing	0	305	60	44	409
Both offset + digital declining	1,183	51	75	26	1,335

4. A Miscellany

You know the old saying, "numbers don't lie." Well, yes and no. In point of fact, they don't always tell the truth, certainly not the whole truth. What we've learned in more than 20 years of doing these kinds of surveys is that very often you have to read between the lines of what the data are telling you. Or, perhaps even more importantly, really try to figure out just what the heck they are telling you, which may not be the most obvious thing.

The challenge we have as researchers is interpreting data that suggest the opposite of what we know to be true, or at the very least, strongly suspect to not be true. That may sound like a paradox; we ask these questions to find out what print business owners and executives are doing. After all, if we knew the answers, we wouldn't need the survey, right?[5] So, when they tell us, how can we possibly turn around and say, "No, you're wrong"?

Suppose we put a question on a survey that said, "Please indicate the extent to which you agree with the statement 'Our head of sales can flap his arms and fly to the moon.'" If we found that 5% of respondents "strongly agreed," what would we make of that? A few options come to mind:

- They're messing with us.
- They didn't entirely understand the question.
- They think that "flap his arms and fly to the moon" means something other than what we intended.[6]
- The guy really *can* flap his arms and fly to the moon.

That's an extreme example, so the likely interpretation would be the first: they're messing with us. But as we go through the items in this section if the report, we do need to keep those options in mind and not just take the numbers at face value. Knowing the industry, its conventional wisdom, and the people in it as we do, we can throw flags on certain items

Let's dive in.

[5] Sometimes crafting a market research survey is like being a good attorney, one who never asks a question in court to which s/he doesn't already know the answer.

[6] For example, perhaps they thought we meant it metaphorically (i.e., "our head of sales is a miracle worker who can accomplish the seemingly impossible") while we meant it quite literally (i.e., he can actually jump out his window, start flapping, and make it to the moon).

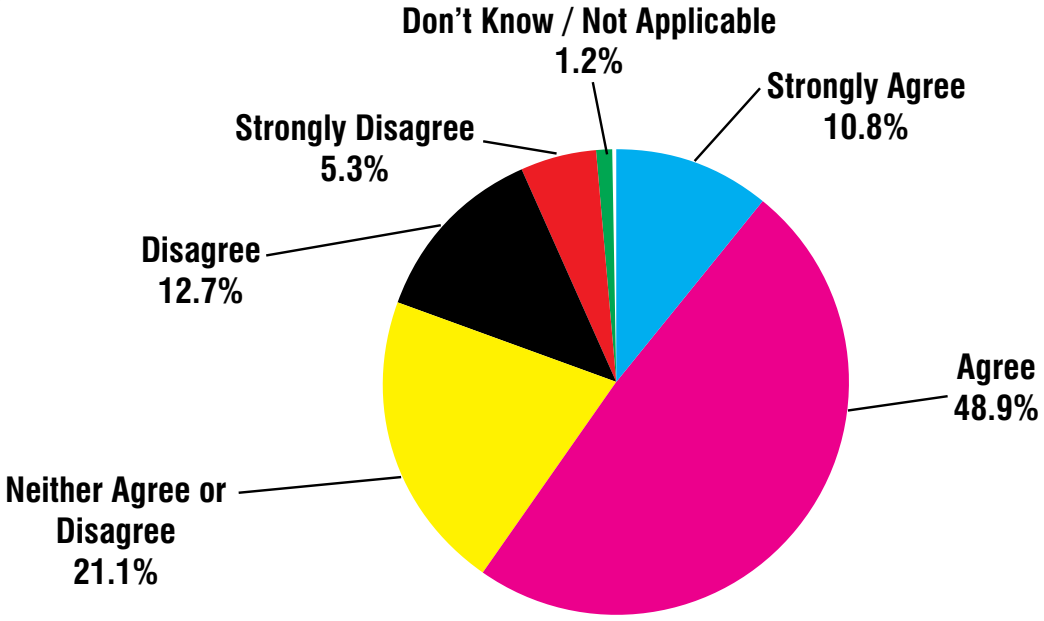
Business Development

By a ratio of 3.3 to 1, respondents agreed with the statement "Our company uses business development strategies rather than traditional sales." That is, six out of 10 agreed (11% strongly) while 18% disagreed. One-fifth (21%) neither agreed or disagreed.

This is one of those cases where we probably should have been more specific in what we meant by "business development" (we can only make questionnaires so long and detailed). What *we* meant by business development was assembling teams of not necessarily print salespeople, but more strategic thinkers, creatives, and perhaps external third-party people like graphic designers to help craft an overall marketing strategy. We were thinking of more consultational, brainstorming sessions like you would find in ad agencies. We doubt that many print businesses do this (certainly not 60% of them), although some do (our guess would be in the "strongly agree" range—11%, if even that many).

We can't fault our respondents for not being on the same page as us, but what we suspect they meant by "business development" was still more or less traditional sales, with an emphasis on combinations of print products and talking about overall marketing plans. This is not to denigrate this kind of relationship, but we should be aware of what sales vs. business development really is.

Figure 14. Please indicate the extent to which you agree with the statement "Our company uses business development strategies rather than traditional sales."
All respondents, June 2017



Agree	59.7%
Disagree	18.0%
Ratio Agree/Disagree	3.3

Very Small Printers—Contrary to what we would expect, the smallest of printers agreed that they use business development rather than traditional sales by a ratio of 4.1 to 1. Almost two-thirds (63%) agreed (although only 9% strongly) and 15% disagreed. One-fifth neither agreed not disagreed.

Small Printers— Among the 10–49-employee shops, the ratio of agree to disagree was only 1.9 to 1, with just over one-half (51%) agreeing and just over one-fourth (27%) disagreeing. Just over one-fifth (21%) neither agreed nor disagreed.

Mid-Size Printers—More 50–99-employee businesses agreed than disagreed by a margin of 3.7 to 1, with 57% agreeing (17% strongly) and 16% disagreeing. Just under one-fourth (24%) neither agreed nor disagreed.

Large Printers—The largest plants agreed with the statement by a margin of 2.9 to 1, with 53% agreeing (19% strongly) and 18% disagreeing.

Table 14. Please indicate the extent to which you agree with the statement "Our company uses business development strategies rather than traditional sales."
Respondents by employee size, June 2017

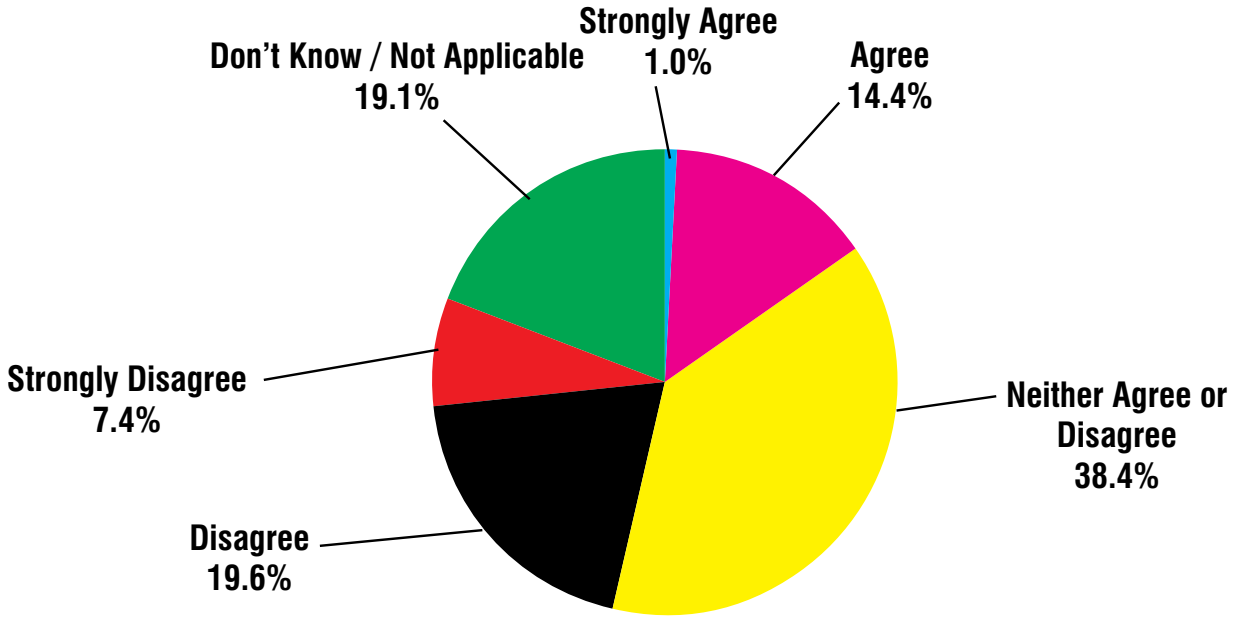
	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	9.2%	13.4%	17.2%	19.4%
Agree	53.8%	37.8%	39.7%	33.3%
Neither Agree or Disagree	20.6%	20.7%	24.1%	29.2%
Disagree	9.2%	22.8%	13.8%	13.9%
Strongly Disagree	6.0%	3.9%	1.7%	4.2%
Don't Know / Not Applicable	1.1%	1.3%	3.4%	0.0%
Agree	63.1%	51.2%	56.9%	52.8%
Disagree	15.2%	26.8%	15.5%	18.1%
Ratio Agree/Disagree	4.1	1.9	3.7	2.9

End-Use Marketing Experience

By a ratio of only 0.6 to 1, respondents agreed with the statement "Our company hires employees based on their end-user marketing experience rather than printing industry expertise." That is, more respondents disagreed than agreed, with 15% agreeing and 27% disagreeing (though only 7% strongly). Four out of 10 (39%) neither agreed or disagreed, and just under one-fifth (19%) selected "don't know/not applicable."

We don't dispute these figures; as we suspected, printers do tend to look for industry experience, certainly when it comes to salespeople, rather than marketing experience. Still, it will depend on what positions they are trying to fill. It turns our that with increased automation—much of it push-button—it's not necessary to hire production people with a great deal of experience or background. Software programming is an increasingly valued skill.

Figure 15. Please indicate the extent to which you agree with the statement "Our company hires employees based on their end-user marketing experience rather than printing industry expertise."
All respondents, June 2017



Agree	15.4%
Disagree	27.0%
Ratio Agree/Disagree	0.6

Very Small Printers—One-fourth selected "don't know/not applicable" which suggests that a fair number of folks in this size category weren't user what we were talking about. It also suggests that these businesses are less likely to be involved in overall marketing services than in just fulfilling print jobs. Only 9% agreed (and none strongly) while 23%

disagreed. A huge chunk of respondents (42%) neither agreed not disagreed. It makes us wonder about these shops' responses to the previous question, since "business development" is more likely to be the kind of thing that involves marketing experience rather than traditional print sales.

Small Printers— Among the 10–49-employee shops, the ratio of agree to disagree was only 0.7 to 1, with 29% agreeing and 39% disagreeing. Just over one-fourth (28%) neither agreed nor disagreed. Interestingly, only 3% said "don't know/not applicable."

Mid-Size Printers—Among the 50–99-employee businesses, The agree and disagree responses were very close, the agree-to-disagree ratio being 1.1 to 1. Thirty-one percent agreed (only 5% strongly) and 29% disagreed. Twenty-nine percent neither agreed nor disagreed, but 10% selected "don't know/not applicable."

Large Printers—The largest plants agreed with the statement by a slim margin of 1.2 to 1, with 32% agreeing (but only 3% strongly) and 28% disagreeing (3% strongly). A full 36% neither agreed nor disagreed.

Table 15. Please indicate the extent to which you agree with the statement "Our company hires employees based on their end-user marketing experience rather than printing industry expertise" Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	0.0%	2.9%	5.2%	2.8%
Agree	9.2%	26.0%	25.9%	29.2%
Neither Agree or Disagree	42.4%	28.4%	29.3%	36.1%
Disagree	15.7%	29.2%	27.6%	25.0%
Strongly Disagree	7.1%	10.2%	1.7%	2.8%
Don't Know / Not Applicable	25.5%	3.4%	10.3%	4.2%
Agree	9.2%	28.9%	31.0%	31.9%
Disagree	22.8%	39.4%	29.3%	27.8%
Ratio Agree/Disagree	0.4	0.7	1.1	1.2

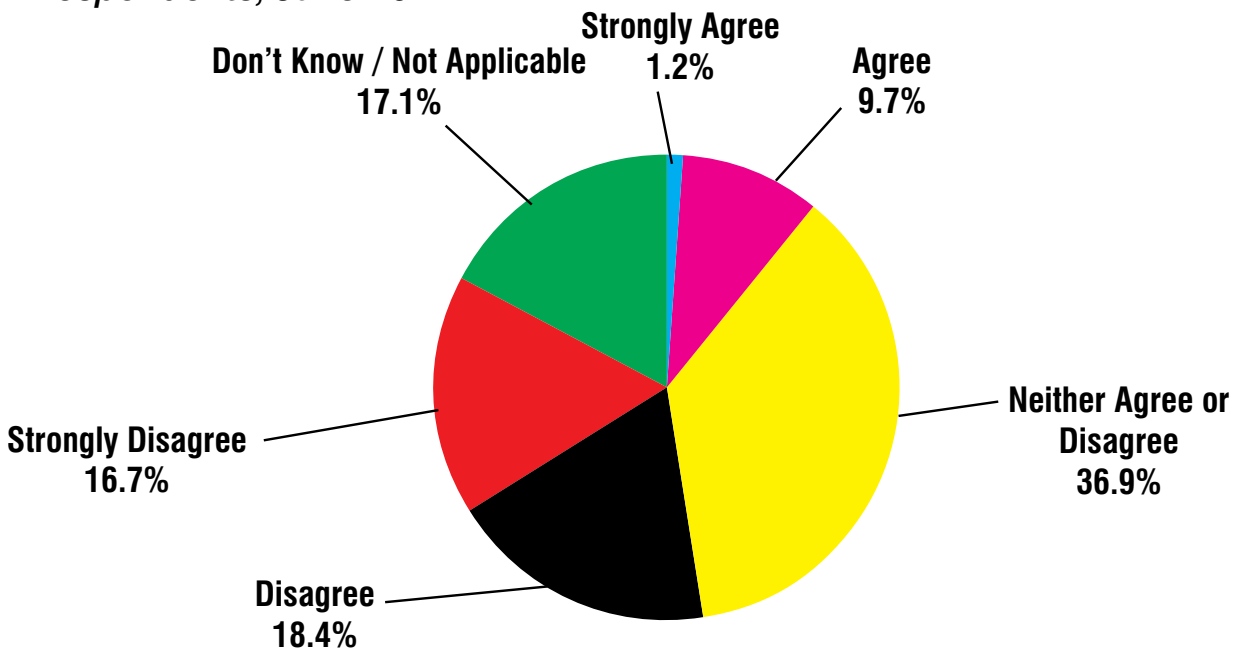
Generation Gap

This is an important issue, and we were more interested in the results of this than any other question.

By a ratio of 3.1 to 1, more respondents *disagreed* than agreed with the statement "The age/generation gap between our sales people and clients is a problem for our company." Only 11% agreed (and only 1% strongly) and 35% disagreed (17% strongly). Seventeen percent neither agreed nor disagreed, but 17% also said "don't know/not applicable."

OK, so few print businesses see any kind of age gap.

Figure 16. Please indicate the extent to which you agree with the statement "The age/generation gap between our sales people and clients is a problem for our company."
All respondents, June 2017



Agree	10.8%
Disagree	35.2%
Ratio Agree/Disagree	0.3

Very Small Printers—The smallest of print businesses don't appear to have a "generation gap" problem, or so they claim. More than one-third (34%) disagreed with the statement (20% strongly) while only 4% agreed (none strongly). Four out of 10 neither agreed nor disagreed, while 22% selected "don't know/not applicable" which suggests that a lot of these folks haven't really thought about it.

Small Printers— Among the 10–49-employee shops, the ratio of agree to disagree was 0.6 to 1, with 23% agreeing and 41% disagreeing. Three out of 10 neither agreed nor disagreed, while only 6% said "don't know/not applicable."

Mid-Size Printers—Among the 50–99-employee businesses, the agree and disagree responses were extremely close, the agree-to-disagree ratio being 0.9 to 1. Thirty-one percent agreed (10% strongly) and 33% disagreed. Twenty-nine percent neither agreed nor disagreed, but 10% selected "don't know/not applicable."

Large Printers—The largest plants agreed with the statement by a slim margin of 1.2 to 1, with 36% agreeing (but only 3% strongly) and 29% disagreeing (3% strongly). One-third neither agreed nor disagreed.

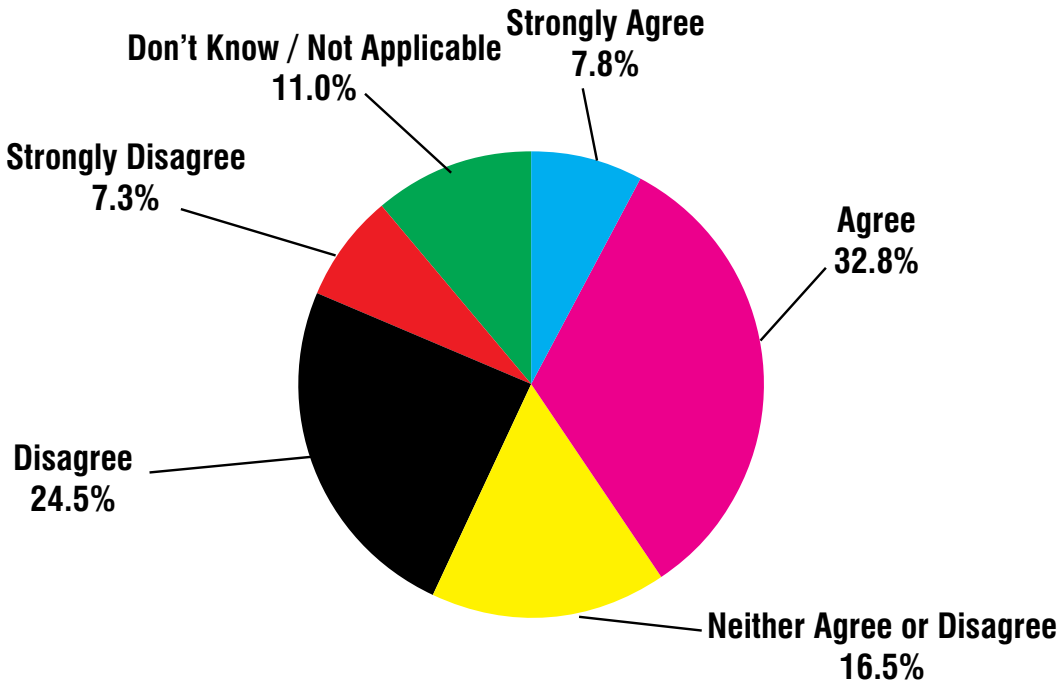
Table 16. Please indicate the extent to which you agree with the statement "The age/generation gap between our sales people and clients is a problem for our company"
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	0.0%	2.9%	10.3%	2.8%
Agree	4.3%	20.5%	20.7%	33.3%
Neither Agree or Disagree	39.7%	29.7%	32.8%	33.3%
Disagree	13.5%	30.7%	25.9%	26.4%
Strongly Disagree	20.1%	10.2%	6.9%	2.8%
Don't Know / Not Applicable	22.3%	6.0%	3.4%	1.4%
Agree	4.3%	23.3%	31.0%	36.1%
Disagree	33.7%	41.0%	32.8%	29.2%
Ratio Agree/Disagree	0.1	0.6	0.9	1.2

ROI and Analytics

Here's where the ref is going to throw a flag. By a ratio of 1.3 to 1, more respondents agreed than disagreed with the statement "Our company makes an effort to track ROI and provide other analytics for client jobs." Forty percent agreed (8% strongly) and 32% disagreed. Seventeen percent neither agreed or disagreed, and 11% said "don't know/not applicable."

Figure 17. Please indicate the extent to which you agree with the statement "Our company makes an effort to track ROI and provide other analytics for client jobs"
All respondents, June 2017



Agree	40.6%
Disagree	31.8%
Ratio Agree/Disagree	1.3

Very Small Printers—Thirty-seven percent of the smallest print businesses say they track ROI and provide analytics for client jobs—or so they claim. Still, one-third disagreed with the statement (7% strongly) while 17% neither agreed nor disagreed, and 13% selected "don't know/not applicable."

Small Printers—For these folks, the ratio of agree to disagree was 1.4 to 1, with 46% (!) agreeing (6% strongly) and 24% disagreeing. Fifteen percent neither agreed nor disagreed, and 7% said "don't know/not applicable."

Mid-Size Printers—Among the 50–99-employee businesses, the agree-to-disagree ratio was 2.5 to 1. More than one-half (55%) agreed (10% strongly) and 22% disagreed. Fifteen percent neither agreed nor disagreed, and 7% selected "don't know/not applicable."

Large Printers—The largest plants agreed with the statement by a margin of 2.6 to 1, with a full 62% agreeing (14% strongly) and 24% disagreeing. Only 11% neither agreed nor disagreed, and very few (3%) selected "don't know/not applicable."

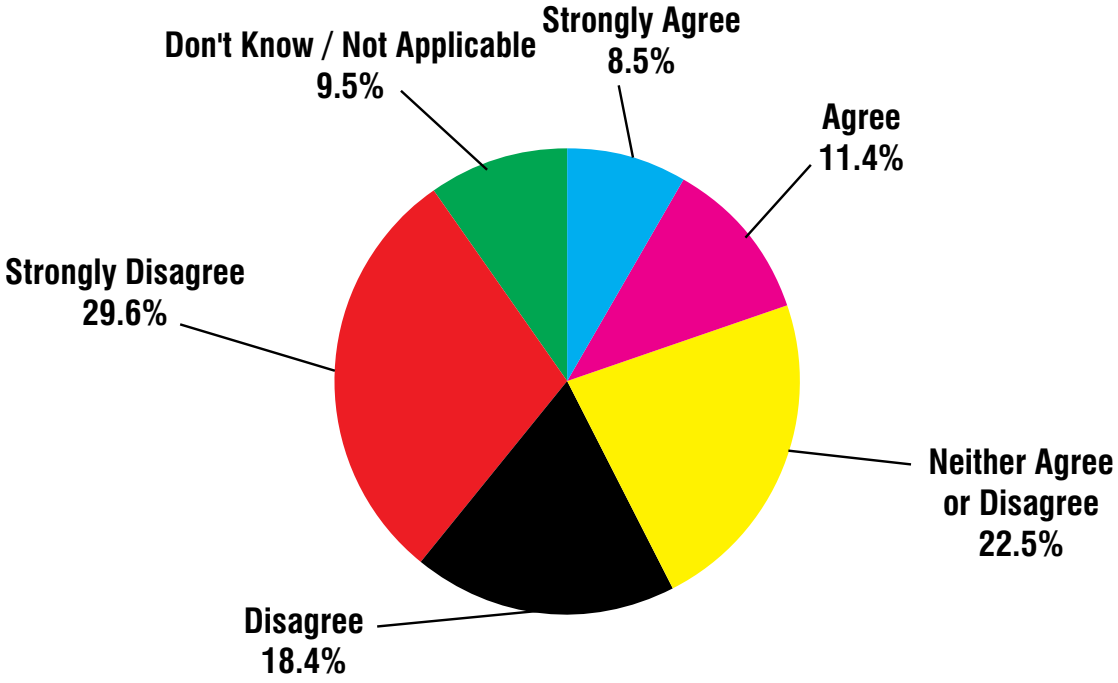
Table 17. Please indicate the extent to which you agree with the statement "Our company makes an effort to track ROI and provide other analytics for client jobs"
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	8.2%	5.5%	10.3%	13.9%
Agree	28.8%	40.4%	44.8%	48.6%
Neither Agree or Disagree	17.4%	15.0%	15.5%	11.1%
Disagree	25.5%	22.6%	20.7%	20.8%
Strongly Disagree	7.1%	9.7%	1.7%	2.8%
Don't Know / Not Applicable	13.1%	6.8%	6.9%	2.8%
Agree	36.9%	46.0%	55.2%	62.5%
Disagree	32.6%	32.3%	22.4%	23.6%
Ratio Agree/Disagree	1.1	1.4	2.5	2.6

Provide Data for Marketing Automation

Here things become a bit more believable. More respondents disagreed than agreed with the statement "Our company provides clients with data about their jobs that facilitates integration with marketing automation systems." Almost one-half (48%) disagreed (30% strongly) while 29% agreed. Just under one-fourth (23%) neither agreed or disagreed, and 9% said "don't know/not applicable."

Figure 18. Please indicate the extent to which you agree with the statement "Our company provides clients with data about their jobs that facilitates integration with marketing automation systems"
All respondents, June 2017



Agree	19.9%
Disagree	47.9%
Ratio Agree/Disagree	0.4

Very Small Printers—Forty-eight percent of the smallest print businesses say they do not provide clients with data for marketing automation integration, while 18% agreed with the statement (7% strongly). One-fourth neither agreed nor disagreed, and 9% selected "don't know/not applicable."

Small Printers—For these folks, 21% agreed with the statement (only 4% strongly) and one-half disagreed. Fifteen percent neither agreed nor disagreed, and 10% said "don't know/not applicable."

Mid-Size Printers—Among the 50–99-employee businesses, 31% agreed (10% strongly) and 38% disagreed (7% strongly). Nineteen percent neither agreed nor disagreed, and 12% selected "don't know/not applicable"—the highest of the four size categories.

Large Printers—The largest plants were the only ones who generally agreed with the statement, and by a margin of 1.4 to 1, with 47% agreeing (18% strongly), and 35% disagreeing (7% strongly). Thirteen neither agreed nor disagreed, and 6% selected "don't know/not applicable."

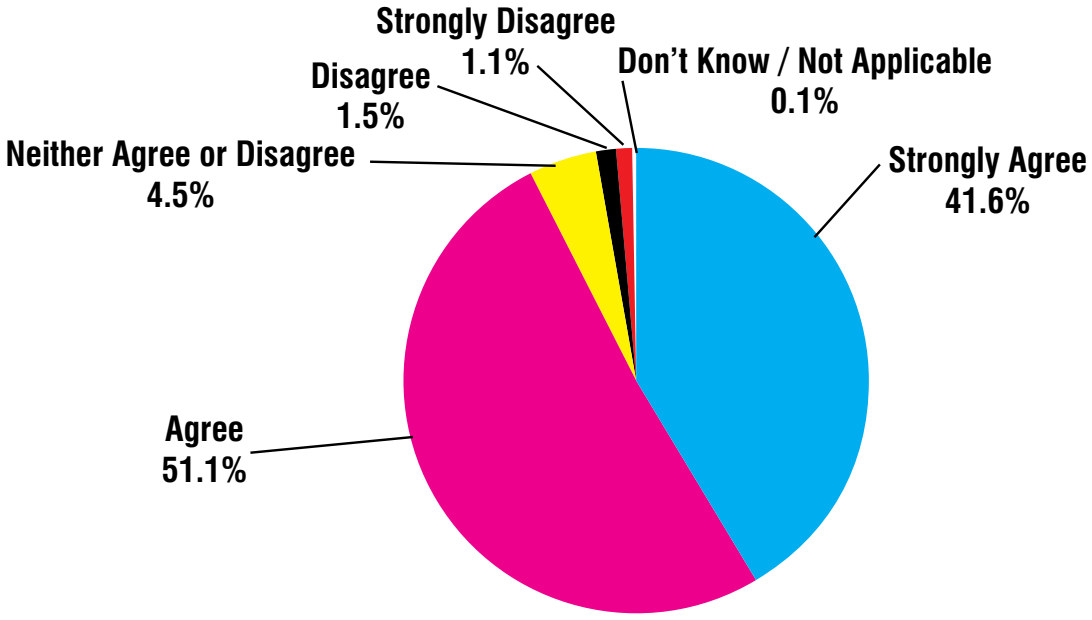
Table 18. Please indicate the extent to which you agree with the statement "Our company provides clients with data about their jobs that facilitates integration with marketing automation systems"
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	9.4%	4.4%	10.3%	18.1%
Agree	8.2%	16.8%	20.7%	29.2%
Neither Agree or Disagree	24.7%	18.1%	19.0%	12.5%
Disagree	11.6%	35.2%	31.0%	27.8%
Strongly Disagree	36.7%	15.2%	6.9%	6.9%
Don't Know / Not Applicable	9.4%	10.2%	12.1%	5.6%
Agree	17.6%	21.2%	31.0%	47.2%
Disagree	48.3%	50.4%	37.9%	34.7%
Ratio Agree/Disagree	0.4	0.4	0.8	1.4

Alliances for Print Applications

Sometimes, the data speak loud and clear. Alliances are alive and well, and, in fact, the way of the print world. Overwhelmingly, respondents agreed with the statement "Our company allies with other businesses to offer print services/products we don't produce in-house"—93% agreed with the statement (42% strongly). Only 3% disagreed, 5% neither agreed nor disagreed, and no one said "don't know/not applicable."

Figure 19. Please indicate the extent to which you agree with the statement "Our company allies with other businesses to offer print services/products we don't produce in-house"
All respondents, June 2017



Agree	92.7%
Disagree	2.6%
Ratio Agree/Disagree	35.8

Very Small Printers—Virtually all (98%) of the smallest print businesses say they form alliances with other print businesses to whom to outsource work they don't do in-house (49% strongly agreed). Only 2% neither agreed nor disagreed, and no one selected "don't know/not applicable."

Small Printers—These shops are only slightly less likely to form alliances with other print businesses—84% agreed with the statement (26% strongly) and 7% disagreed. Nine percent neither agreed nor disagreed, and none said "don't know/not applicable."

Mid-Size Printers—The tendency to form alliances, at least for print products, decidedly declines as the establishments get bigger. Among the mid-size shops, 72% agreed that

they formed alliances (18% strongly) and 18% disagreed. Nine percent neither agreed nor disagreed, and 2% selected "don't know/not applicable."

Large Printers—The largest plants were more likely to form alliances for outsourced print products than the mid-size shops—75% agreed with the statement (18% strongly), and only 8% disagreed. Fifteen percent neither agreed nor disagreed, and 1% selected "don't know/not applicable."

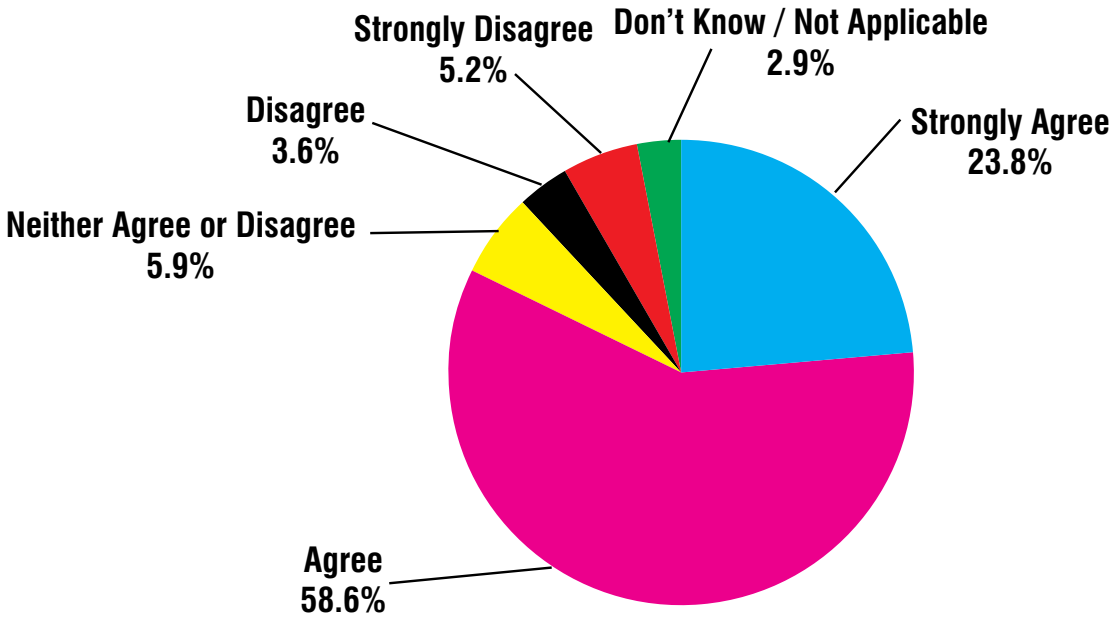
Table 19. Please indicate the extent to which you agree with the statement "Our company allies with other businesses to offer print services/products we don't produce in-house"
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	49.4%	25.7%	17.5%	18.1%
Agree	48.3%	58.0%	54.4%	56.9%
Neither Agree or Disagree	2.2%	9.2%	8.8%	15.3%
Disagree	0.0%	2.9%	15.8%	6.9%
Strongly Disagree	0.0%	4.2%	1.8%	1.4%
Don't Know / Not Applicable	0.0%	0.0%	1.8%	1.4%
Agree	97.8%	83.8%	71.9%	75.0%
Disagree	0.0%	7.1%	17.5%	8.3%
Ratio Agree/Disagree	-	11.9	4.1	9.0

Alliances for Non-Print Applications

Even in the area of non-print products, print businesses are generally predisposed to forming alliances, although not as readily as for print products. The majority of respondents agreed with the statement "Our company allies with other businesses to offer non-print services/products we don't produce in-house"—83% agreed with the statement (24% strongly). Only 9% disagreed, 6% neither agreed nor disagreed, and 3% said "don't know/not applicable."

Figure 20. Please indicate the extent to which you agree with the statement "Our company allies with other businesses to offer non-print services/products we don't produce in-house"
All respondents, June 2017



Agree	82.3%
Disagree	8.8%
Ratio Agree/Disagree	9.4

Very Small Printers—The smallest print businesses are the most likely of the four size categories to form alliances with other print businesses to outsource non-print services: 90% agreed (26% strongly), and only 7% disagreed. Two percent neither agreed nor disagreed, and only 1% selected "don't know/not applicable."

Small Printers—As with print services, these shops are less likely to form alliances with other print businesses—68% agreed with the statement (22% strongly) and 12% disagreed. Thirteen percent neither agreed nor disagreed, and 7% said "don't know/not applicable."

Mid-Size Printers—The tendency to form alliances for non-print products drops a bit at this shop size. Among the mid-size shops, 52% agreed that they formed alliances (14%

strongly) while 17% disagreed. Twenty-one percent neither agreed nor disagreed, and 13% selected "don't know/not applicable."

Large Printers—The largest plants were more likely to form alliances for outsourced non-print services than the mid-size shops—64% agreed with the statement (14% strongly), and 17% disagreed. Seventeen percent neither agreed nor disagreed, and 3% selected "don't know/not applicable."

Table 20. Please indicate the extent to which you agree with the statement "Our company allies with other businesses to offer non-print services/ products we don't produce in-house"
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
Strongly Agree	25.5%	21.5%	14.3%	13.9%
Agree	64.2%	46.8%	37.5%	50.0%
Neither Agree or Disagree	2.2%	13.1%	21.4%	16.7%
Disagree	1.1%	8.9%	10.7%	11.1%
Strongly Disagree	6.0%	2.9%	3.6%	5.6%
Don't Know / Not Applicable	1.1%	6.8%	12.5%	2.8%
Agree	89.7%	68.3%	51.8%	63.9%
Disagree	7.1%	11.8%	14.3%	16.7%
Ratio Agree/Disagree	12.7	5.8	3.6	3.8

The Takeaway

What we gleaned from the responses to these questions is that different companies and individuals can define things in different ways. Take "business development." This can mean one thing to one company—perhaps even being directly synonymous with "sales"—to a far more complicated process. Likewise "ROI." If you asked 100 people to define ROI, you'd likely get 100 different responses. Not wildly different responses,[7] but different enough that it's measurement wouldn't be the same across the board.

So what this means is that we need to be explicit about what we mean when we develop questionnaires (without making them read like...well, like this report), but what it also means is that when industry executives read about or hear advice to do certain things—like take a more business development-like approach to getting customers, or track ROI for customers—they may actually think they're already doing these things.

At the end of the day, it doesn't matter what *we* think they mean. It really comes down to what their potential customers think they mean. Marketers/CMOs and printers often speak different languages.

Printers tend to speak to customers in a job-centric way. "How many of _____ do you need?" "Four-color or black-and-white?" "What kind of paper?"

[7] For example, no one would be likely to say "it's a kind of fish."

But marketers and CMOs talk to their customers, and their vendors, in an engagement-centric way.[8] "How can I increase customer engagement?" "What is the best lead- or prospect-nurturing process?" "How can I get a prospect into the sales funnel and convert them into a customer?"

For the marketer, print (or any medium) is a means to an end. For the printer, print is the end itself. So when printer and potential customer get together, it's a kind of Tower of Babel, where no one is speaking the same language.

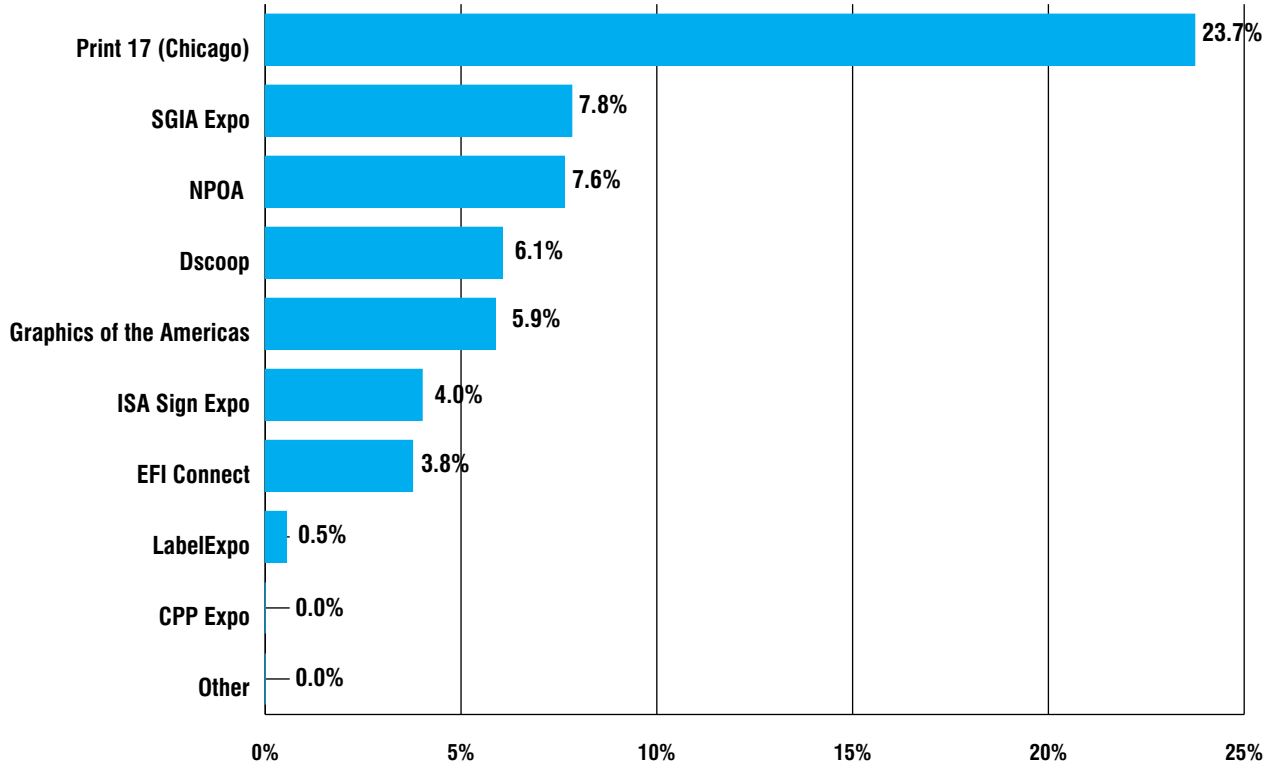
This is the kind of impression we get from the some of the responses to these questions.

[8] No, they're not always talking about wedding plans.

5. Trade Show Attendance

We revisited our "trade show plans" question in this survey, which we had asked in Fall 2016. Fewer respondents seem to have plans to attend shows. The top response, selected by just under one-fourth of respondents, is PRINT 17. The number two response, way down at 8%, is the SGIA Expo, closely followed by NPOA (National Print Owners Association), which had been a write-in last survey which we added to this questionnaire. Dscoop was selected by 6%, Graphics of the Americas by 6%, ISA Sign Expo by 4%, and EFI Connect by 4%. We won't see too many in the industry racking up those frequent flier miles.

Figure 21. Have you attended or are you planning to attend any of these events in 2017?
All respondents, June 2017



Not surprisingly, larger shops and plants are more likely to attend a show, and PRINT 17 looks like it will attract a fair number of folks from the larger establishments. (Remember that about 70% of industry capital expenditures are by companies with 50 or more employees.)

Table 21. Have you attended or are you planning to attend any of these events in 2017?
Respondents by employee size, June 2017

	1–9 employees	10–49 employees	50–99 employees	100+ employees
EFI Connect	0.0%	9.9%	18.8%	21.7%
Dscoop	2.3%	11.7%	23.4%	23.9%
Graphics of the Americas	7.0%	3.6%	0.0%	5.4%
ISA Sign Expo	2.3%	9.0%	4.7%	3.3%
SGIA Expo	4.7%	16.2%	10.9%	12.0%
Print 17 (Chicago)	14.0%	46.8%	39.1%	48.9%
LabelExpo	0.0%	0.9%	4.7%	4.3%
CPP Expo	0.0%	0.0%	0.0%	0.0%
NPOA	9.3%	4.5%	3.1%	0.0%
Other (please specify)	0.0%	0.0%	0.0%	0.0%

6. The Economy at Large—and Small

The big economic news—well, sort of—is about revisions.

At the end of July 2017, the Bureau of Economic Analysis issued multi-year revisions to Gross Domestic Product data. The bottom line, 2016, the Presidential election year, was weaker than originally reported, which may have been part of the confusion the experts had in their election analysis, justifying the change in administration party in a stronger way for those on the wrong side of that GDP trend.

The years 2014 and 2015 were increased, and 2016 was revised down.

We prefer to look at the GDP data on a year-to-year basis for each quarter rather than on a quarter-to-quarter basis. This smooths the trend and takes out the volatility in the data; some of that volatility might be caused by the seasonal adjustments that the BEA makes in each report. GDP is always an annual number, so the seasonal adjustment made to have an individual quarter represent the equivalent of a full year is important to understand. There's been a concern that their methods consistently underreport true activity in the first quarter of every year. We'd rather let the econometricians figure that out, and deal with annual comparisons; the first quarter data for the past years were revised up and down, so perhaps they are finally getting it right. The biggest change was Q1-2015, the only quarter in the revision period that broke the post-World War II average. Q2-2015 was at that average, and then it was all downhill from there.

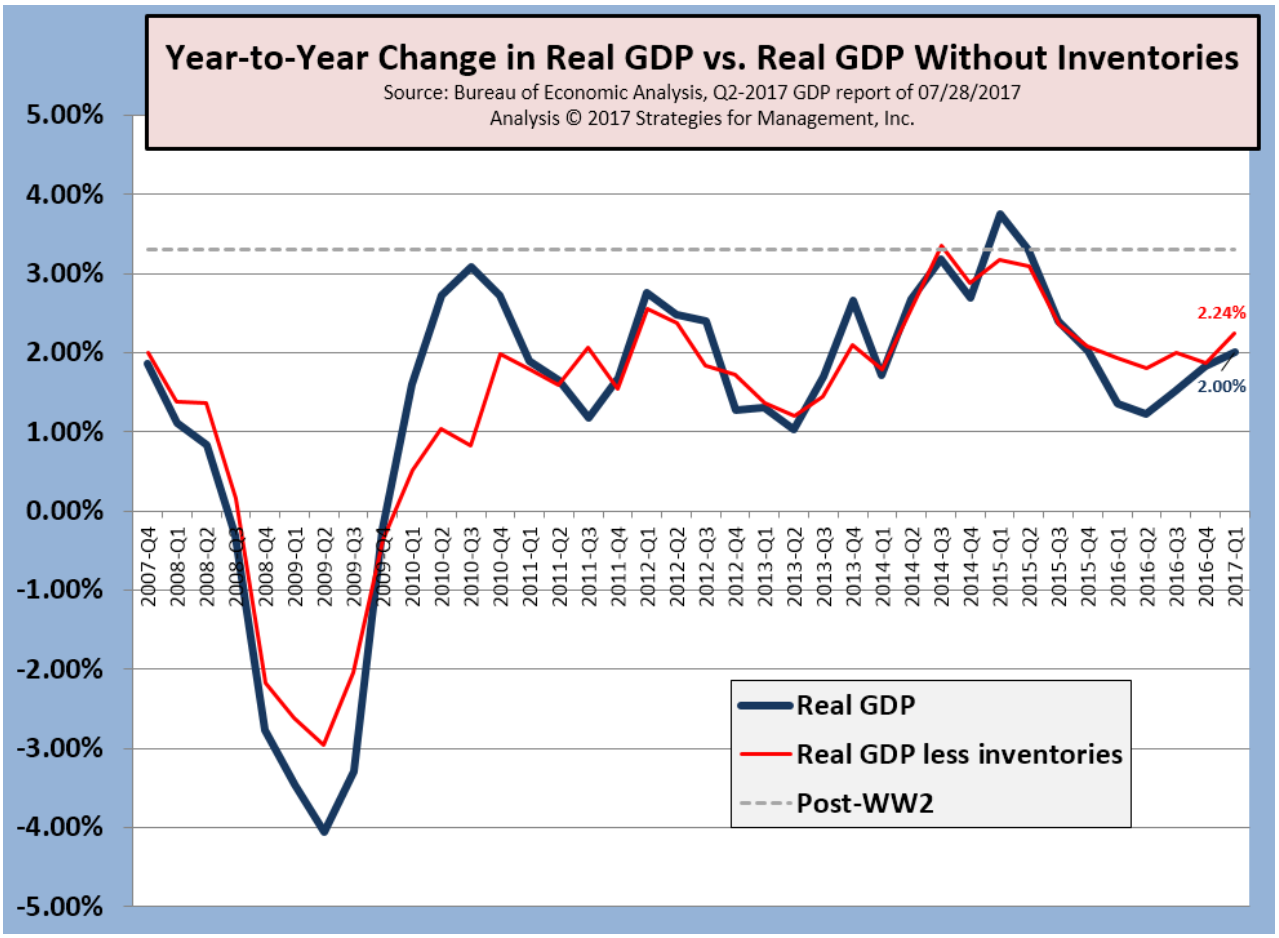
Table 22. Year-Over-Year GDP Revisions

	REVISED	PRIOR	CHANGE
2014q1	1.72%	1.65%	0.07%
2014q2	2.67%	2.44%	0.23%
2014q3	3.19%	2.90%	0.29%
2014q4	2.70%	2.49%	0.21%
2015q1	3.76%	3.31%	0.44%
2015q2	3.30%	2.98%	0.32%
2015q3	2.40%	2.24%	0.17%
2015q4	2.02%	1.88%	0.14%
2016q1	1.36%	1.57%	-0.22%
2016q2	1.23%	1.28%	-0.04%
2016q3	1.52%	1.65%	-0.14%
2016q4	1.84%	1.96%	-0.12%
2017q1	2.00%	2.10%	-0.10%

Overall, the revisions were +0.10 percentage points on average, comprised of +0.23 percentage points in 2014 and 2015, but -0.13 percentage points for 2016 and 2017-Q1.

The chart below shows another of our preferences: to remove the effect of inventories from the data. Theoretically, the net inventories should be zero, as the economy balances supply and demand with great precision. But that's not possible, because there's always executive miscalculation, time disparities due to manufacturing and distribution times, and stockpiles for seasonal purchase patterns. Recently, the red line, the non-inventory line, was more consistent, took a slight rise up. There was an inventory correction at the beginning of 2017. The average net inventory for all four quarters of 2016 was $33.75 billion, with the fourth quarter an outsized $63 billion. The average net inventory for the first two quarters of 2017 was less than $1 billion. This typically means that net inventory will be slightly higher these next quarters, giving a small boost to headline GDP.

Figure 22. Year-to-Year Change in Real GDP vs. Real GDP Without Inventories



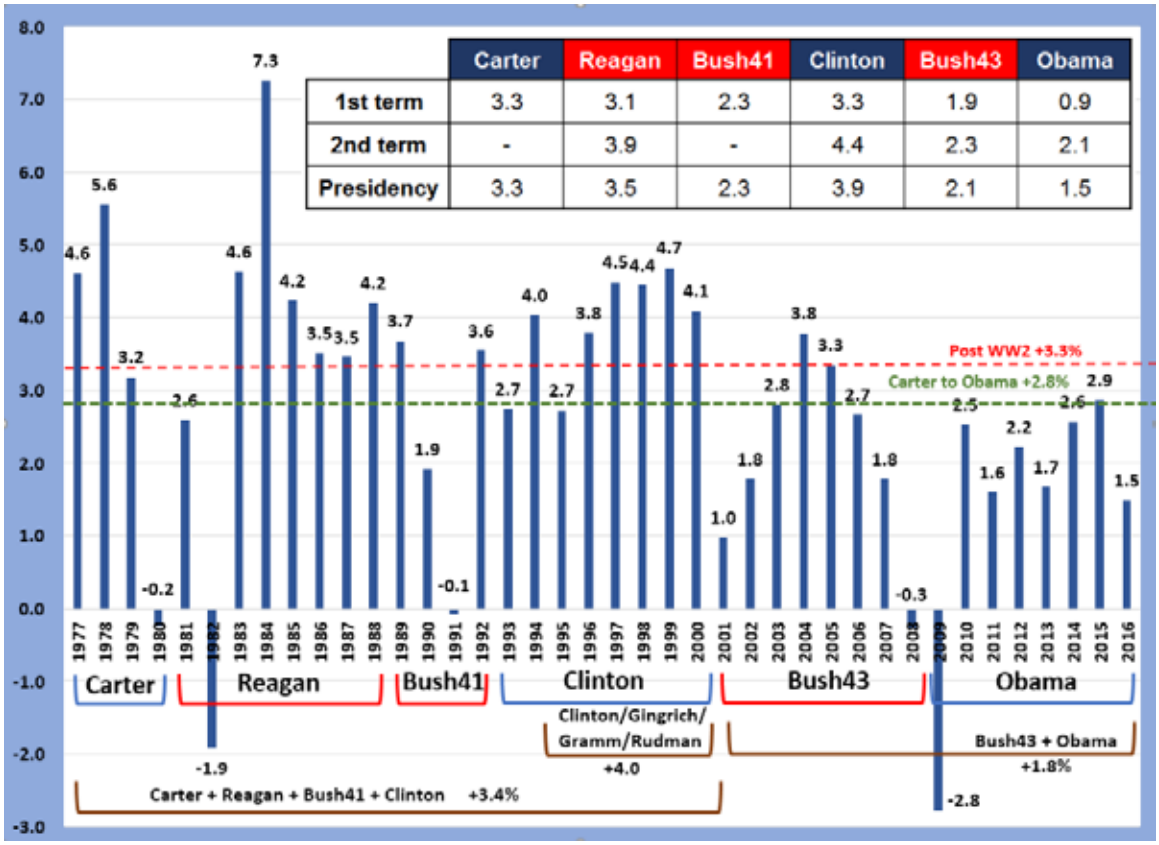
In terms of the overall forecast for the US economy, the international Organization for Economic Co-operation and Development (OECD) lowered its US forecast to +2.1% for 2017 and +2.4% for 2018. We believe that they are pessimistic, but not by a big margin.

We're looking for +2.25% to +2.50% for as far as the eye can see in a U.S. without tax reform. At that level, you're always too close for comfort in terms of a recession, but it's

more likely that slower will be the case than the outright contraction of a recession. The momentum for tax reform has been lost, and even if it does pass, it may be so minor as to be ineffective, almost like taking two steps up Mt. Everest and declaring the climb complete.

That brings us to the Presidential GDP chart. It does not include the current administration, by definition. Only four-year periods are part of the chart. The recent GDP revision changed some of the GDP rates for individual years but did virtually nothing to the averages by Presidential term. The Clinton second term stands out: having lost Congress in the 1994 elections, this was a period of strong economic growth that should be easy to duplicate. Capital gains taxes were cut, the social safety net was re-designed to encourage employment, and government spending was in tight control. Those basics were undone after 2000 and much of that agenda is considered unpalatable today by a large share of Bill Clinton's own party, and was not favored by the same party's recent candidate, and except for a small group of Republicans now called obstructionists, the President Clinton formula is not even favored by their own Republican party.

Figure 23. GDP by Administration, 1977–2016



What might be playing out is the same pattern seen in the early and chaotic first months of Bill Clinton's own administration. At that time, consummate Washington insider David Gergen crossed party lines and joined the administration to help things get on track. At a similar time in this current administration, a new Chief of Staff, a general, has been put in the position to hopefully bring much needed discipline to everyone at 1600 Pennsylvania Avenue.

Perhaps some of that discipline could go a long way in getting Congress to move decisively instead of playing "let's not and say we did" when it comes to health care legislation and tax reform.

At the same time, we can't ignore external factors. There is only so much control an administration or even Congress can have on the economy. The late 1990s was an economic growth boom because there was a lot of investment in Internet infrastructure that was undertaken by companies (and individuals) throughout the economy. In the 1980s and early 1990s, the personal computer had hit the market, and the software industry was basically invented. As everyone started "digitizing" themselves, that drove a not insubstantial amount of economic activity.

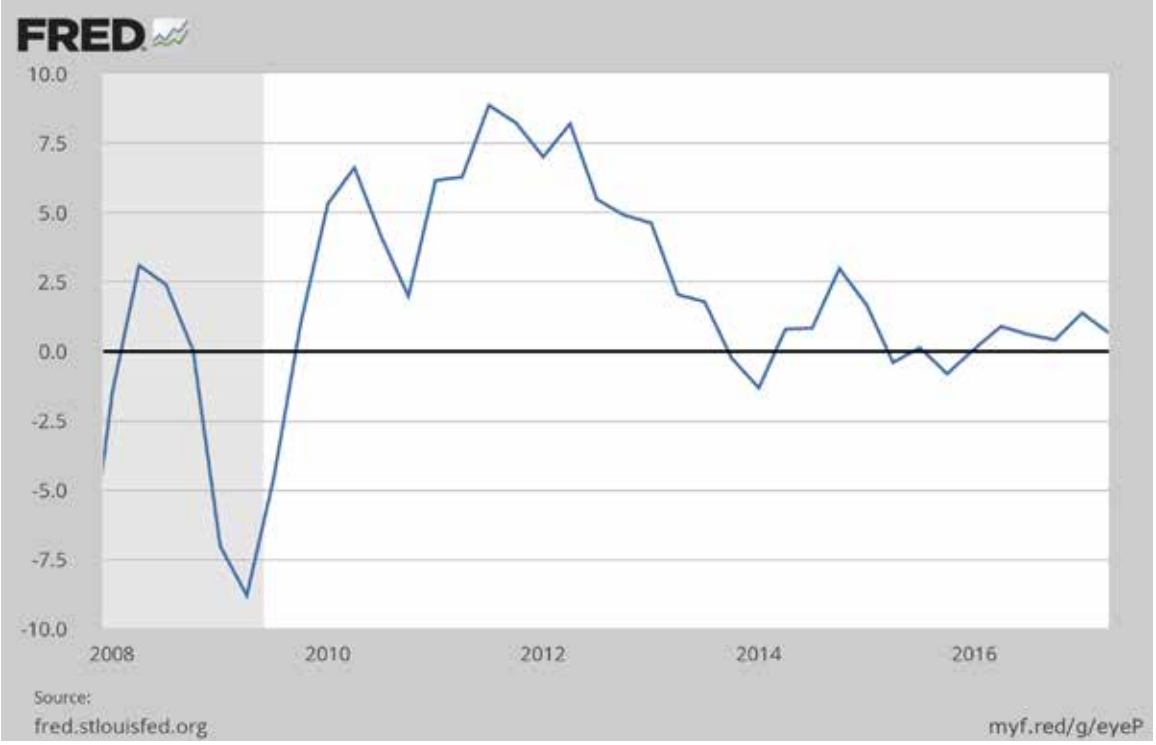
It's possible that some of the sluggishness we have been experiencing is that there has not been anything big that companies have had to invest in. The most recent technological waves—mobile and social media—haven't required any major investment (except buying a phone), and even the newest trend in software—the cloud—is largely free. Without something concrete to spur spending, there is only so much the economy can grow.

It's likely that some combination of all these factors have been in play.

Proprietors Income

Proprietors' income is generally an indicator of small business. It fell during the recession because a lot of construction firms and real estate businesses are tracked here, and they were hit hardest after the housing bubble burst. They came back pretty strongly, but since 2014 has been flat.

Figure 24. Change in Proprietors' Income, 2007–2017



The revisions to this data series are worth looking at. Personal income was revised up $8.5 billion, or 0.1 percent, in 2014; $94.5 billion, or 0.6 percent, in 2015; and revised down $58.0 billion, or -0.4 percent, in 2016. For 2014, revisions to personal income and its components were generally small, and primarily reflected a $21.6 billion downward revision to nonfarm proprietors' income that was partly offset by a $15.8 billion upward revision to personal dividend income.

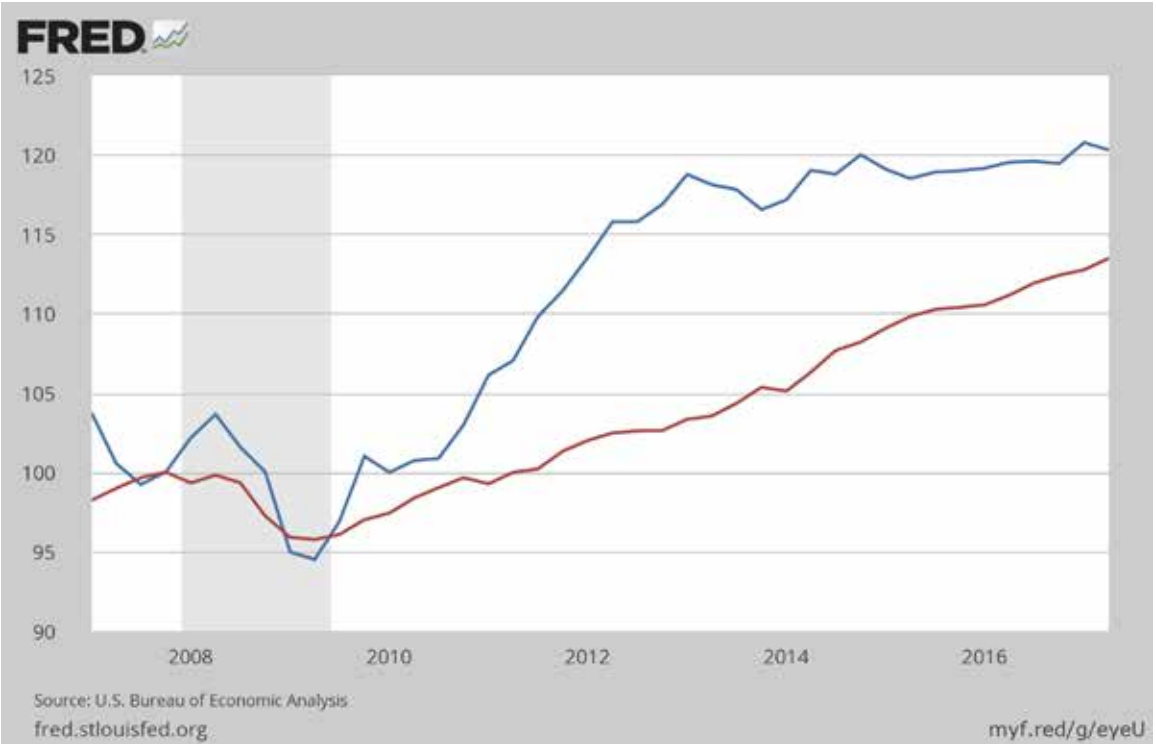
For 2015, the revision to personal income primarily reflected upward revisions of $68.7 billion to personal dividend income and $64.5 billion to personal interest income that were partially offset by a downward revision of $71.7 billion to nonfarm proprietors' income.

For 2016, the revision to personal income primarily reflected an upward revision of $100.8 billion to personal interest income that was more than offset by downward revisions of $94.3 billion to compensation of employees and $91.0 billion to nonfarm proprietors' income.

The size of these revisions was something of a shock. Essentially, these are not tweaks but rather years of outright misses. Small businesses were hurting worse than anyone realized, and since small business never gets press attention, animus festers until it gets relieved at the ballot box.

The chart below shows change in proprietors income (blue) compared to real GDP (red). Despite some recent increases, everything is moving kind of sideways.

Figure 25. Change in Proprietors Income vs. Real GDP, 2007–2017

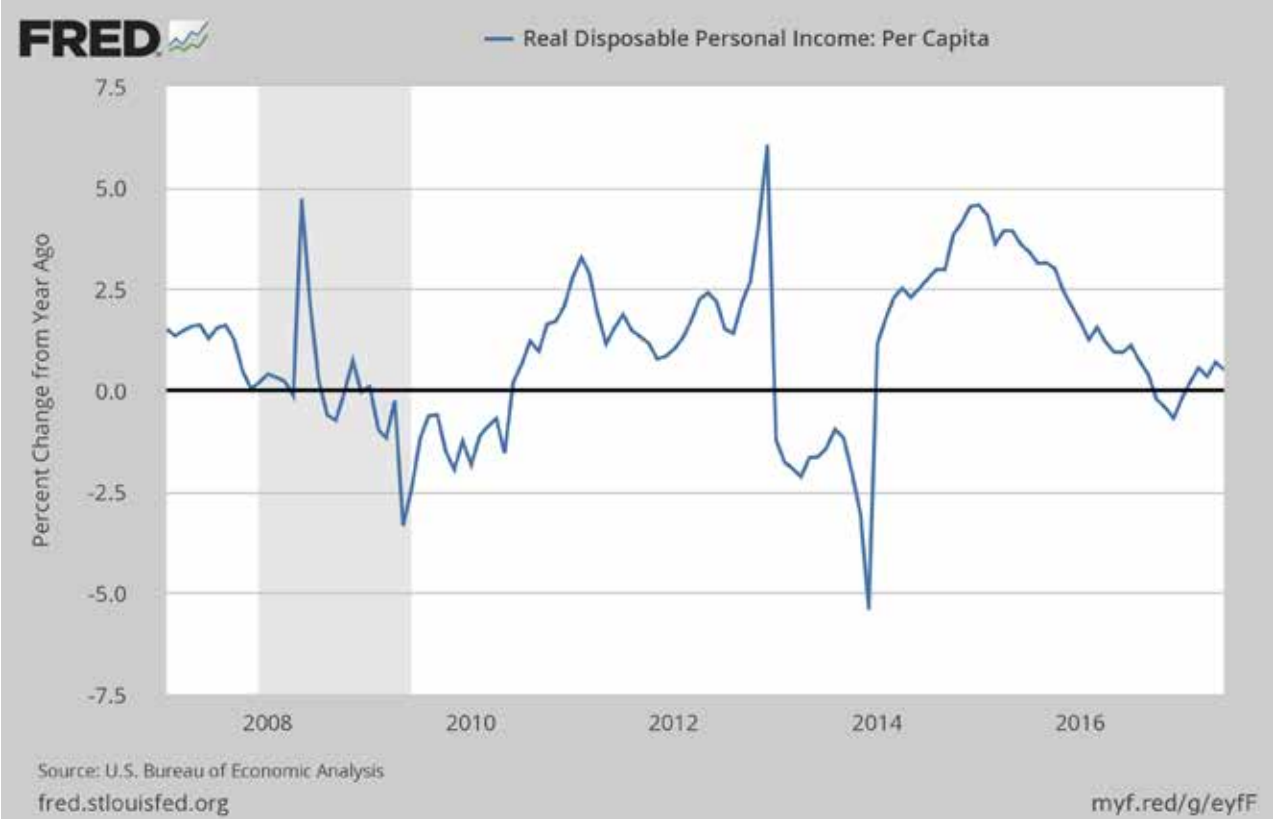


Real Disposable Personal Income

Disposable income is real personal income after taxes. Between 2013 and 2014, you see an adjustment for the implementation of the Affordable Care Act as small businesses and others changed the time of their recognition of income so that there was less tax on it. Real disposable income has been declining since the end of 2014 through 2016 and is still slow, but slowly creeping upward.

After the ACA adjustment, things got stronger, but RDPI has been slowing down ever since. RDPI contracted toward the end of 2016, and has only rebounded slightly.

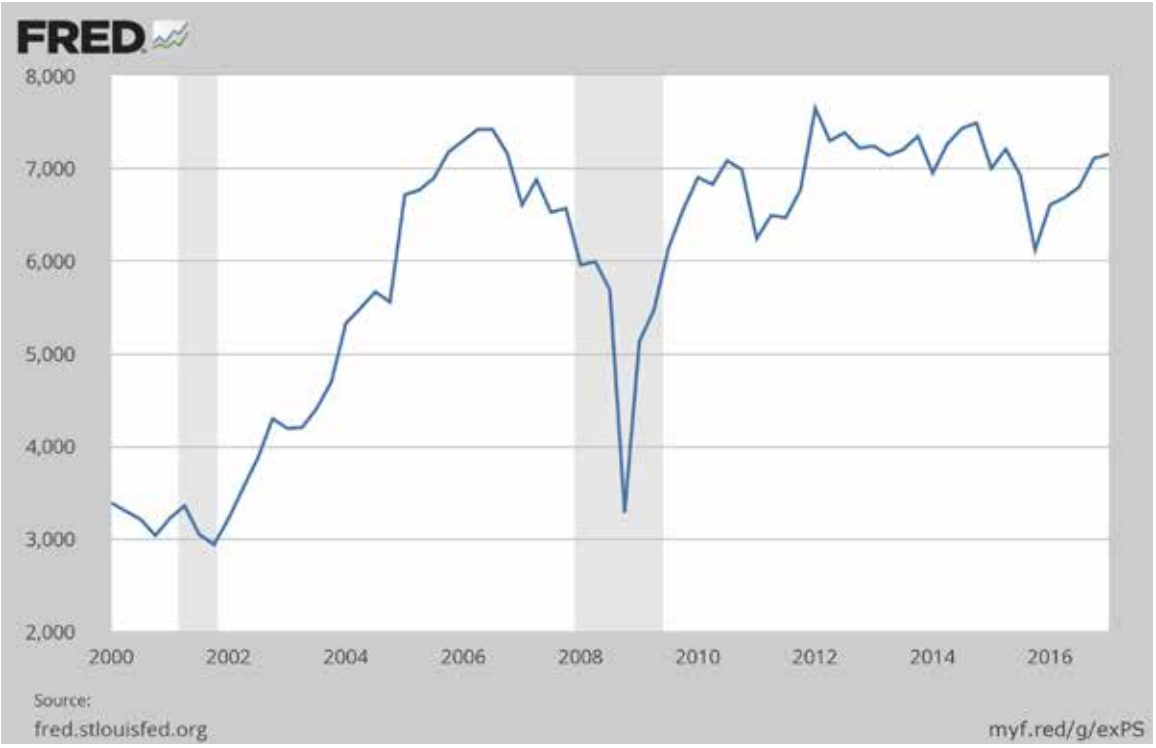
Figure 26. Percent change in Real Disposable Personal Income, 2007–2017



Corporate Profits

Corporate profits have been in the news, and when profits are portrayed as a result of greedy corporate behavior, the headlines stir a lot of feelings. On one hand, savers look at their 401(k) statements and are happy and then look at something else and worry that the profits are at the expense of something else. Adjusting the data gives a different look: this is not new, we've been here before. Inflation- and population-adjusted corporate profits were better five years ago.

Figure 27. Corporate Profits, 2000–2016



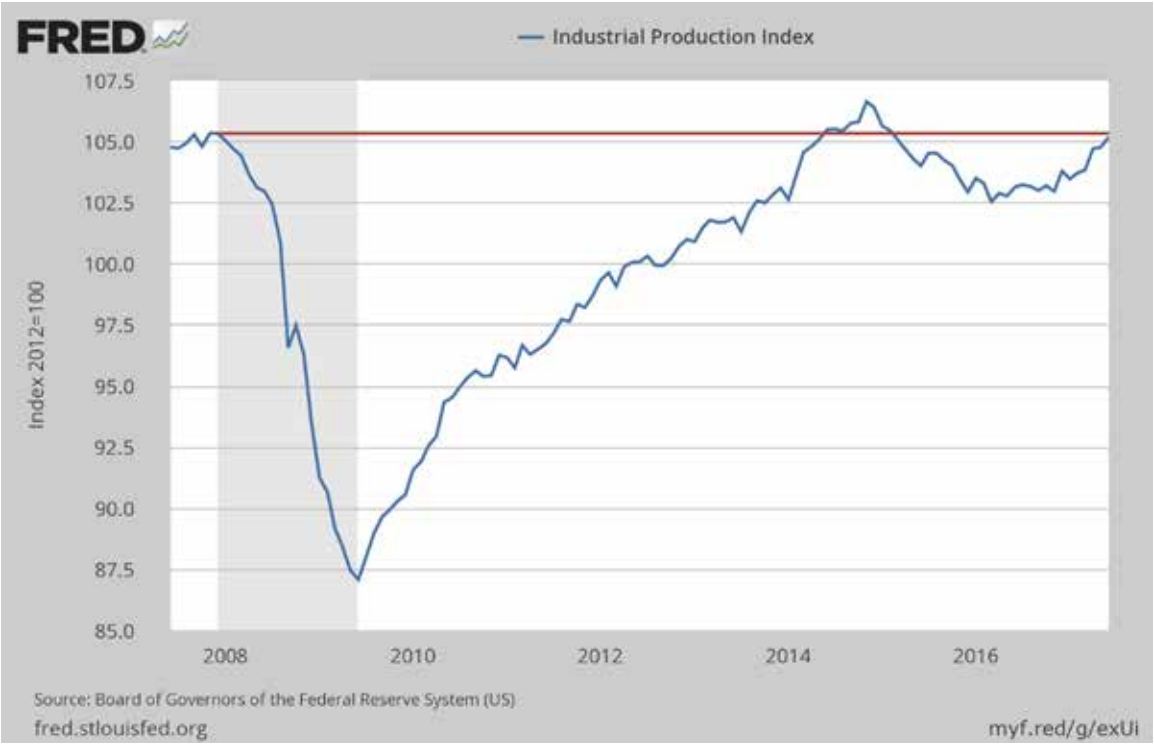
Industrial Production

The economic policies of the Trump administration should be judged on their ability to get poorly performing segments back above their recession levels and for the economy to get back to its historical performance levels, and then to make up lost ground. That can only be done with new investment that brings new productivity and innovation that raises household incomes and savings, and increases national wealth.

Making up lost ground is very important because there are plans for deficit spending for the Trump infrastructure package, which will only add to the debt already created. The only way to counter that is to have an economic growth rate that outpaces the new debt. Another factor: interest rates are likely to be headed up; for every percentage point rise in Treasury borrowing, there is a rise in interest costs of almost $200 billion.

That borrowing is very important. Boomers continue to retire and draw Social Security benefits and other mandated transfer payments. The true obligations of the Federal government are not the approximate $20 trillion in debt, but the more than $105 trillion in obligations for future payments that are already known on an actuarial basis. A +2% economy can't catch up with these factors.

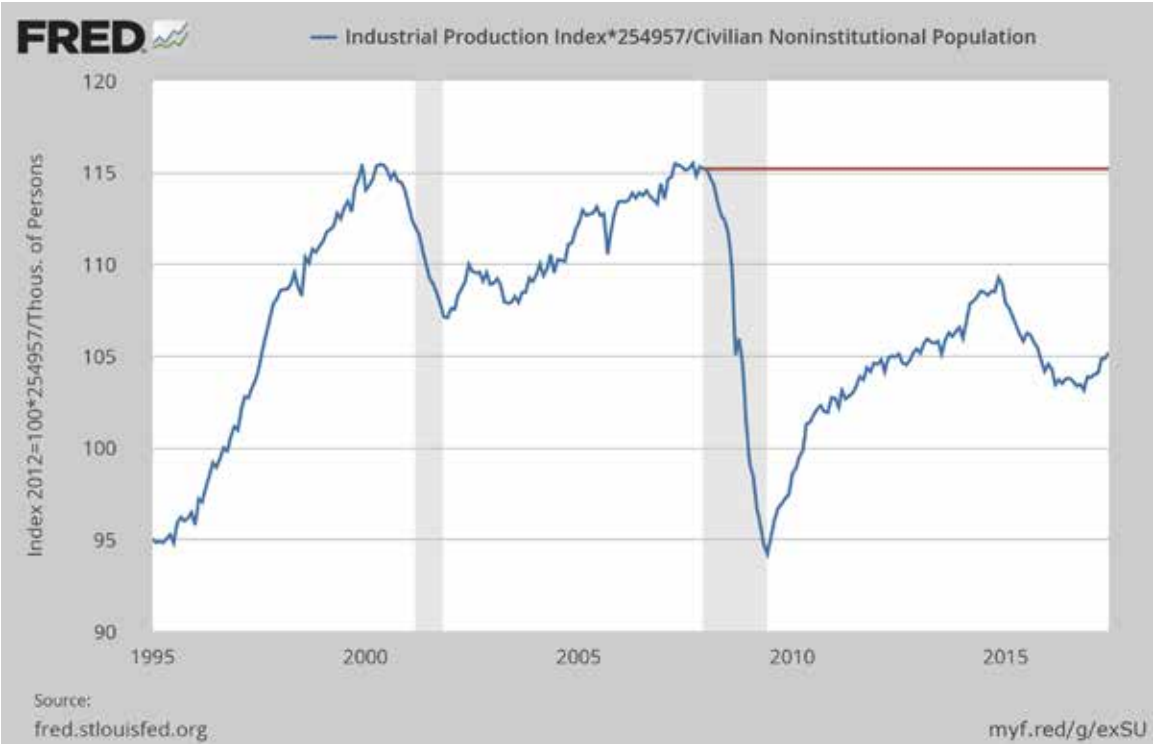
Figure 28. Industrial Production Index, 2008–2016



These were the items from the column that were noted that had to improve for the Trump economy to be judged as successful. Too many people look at the unemployment rate (rigged by people leaving the workforce), the stock market (Fed ZIRP [zero interest rate policy] and balance sheet actions) and Real GDP (overestimated by using depressed inflation rates and a bookkeeping formula that considers trade deficits as negative without noting the corresponding foreign direct investment that counters it).

Industrial production has improved to be very close to the level it was at the recession start. It's peaked already, then fell, and back on the way up. It's not strong, but it has to break through that recession level for the economy to feel better to a greater proportion of the population. The recession was so long ago that data should be adjusted for population. Manufacturing has to move up by 10% more to reach the adjusted level from December 2007.

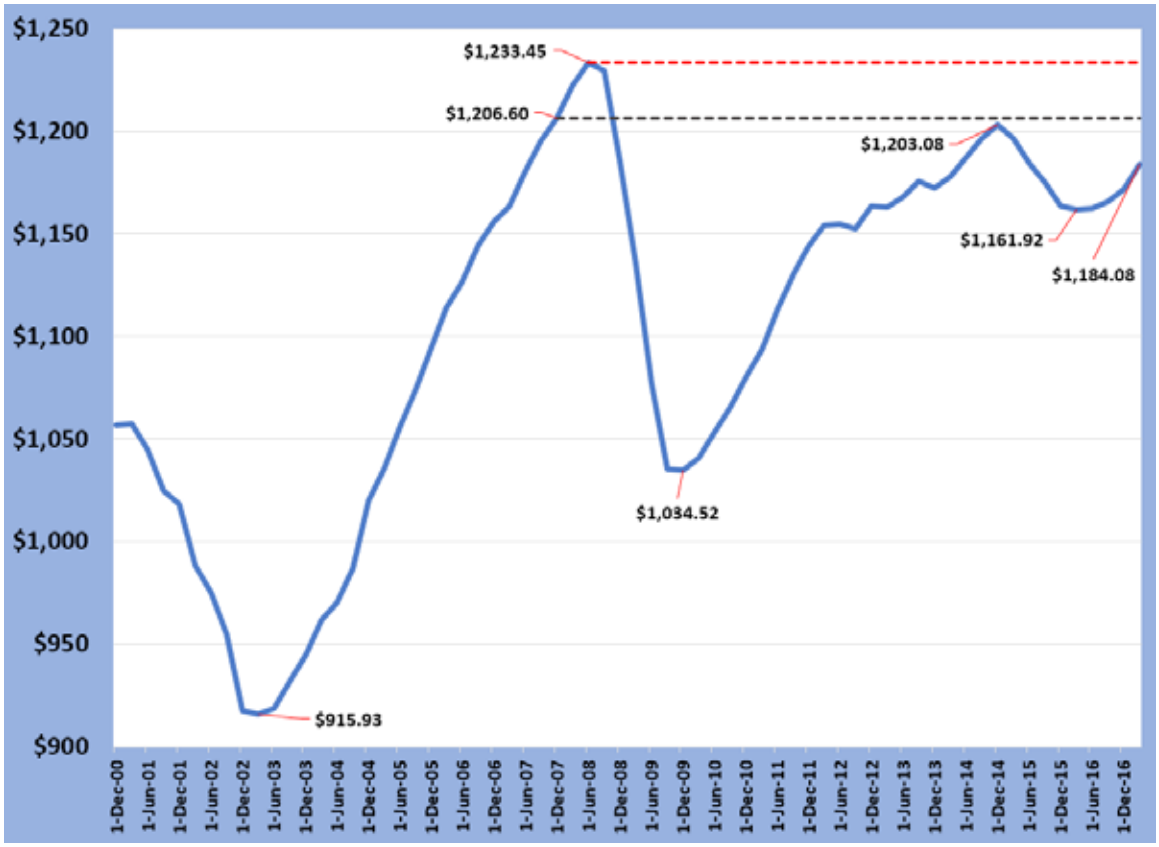
Figure 29. Inflation-Adjusted Industrial Production Index, 1995–2016



S&P 500

A sign of how stagnant the economy is indicated by the real (inflation-adjusted) sales per share of companies in the S&P 500.

Figure 30. S&P 500 Sales Per Share, 2000–2016



At the beginning of the recession nearly 10 years ago, it was $1206 per share. At the end of the first quarter of 2017, it was $1184. That's almost 2% lower. In December 2007, the inflation-adjusted S&P 500 was 1725. On July 27, 2017, the S&P finished at 2472. That's a 43% increase. How is that possible. It's TINA's fault: There Is No Alternative. The Federal Reserve's suppression of interest rates meant that bonds and other debt instruments became less attractive in comparison to common stocks.

It also mean that borrowing by major corporations became cheaper, with many of them refinancing their debt, buying back stock, and operating in the same austere manner they did when the recession started.

The chart below shows the Fed's balance sheet and the S&P on an indexed basis. The S&P broke through the trendline at the Presidential election, which may be of concern in terms of stock valuations itself. The expectations of regulatory relief, tax reform, and the ACA rollback have not played out as expected at that time. Regulatory relief is in process, almost daily, but is subject to "regime change" so businesses view them as temporary because a different administration can re-regulate and un-relieve just as easily. Tax reform and changes in the ACA will have bigger effects. De-regulation can make economic activity better, but

it can't create a boom because they are often too industry-specific. Tax law changes can cause a general reallocation of resources and the infusion of savings and investment that the economy so desperately needs.

Figure 31. S&P 500 and St Louis Fed-Adjusted Monetary Base, 2008–2016

If tax reform passes, the stock market indexes may actually decline as money shifts to investment and productive purposes rather than sitting in stocks. Balancing that is the reduction in corporate tax rates that may allow for increasing dividends and their own incentives for investment.

The Fed may be happier about tax reform than anyone else. They have often complained that their quantitative easing has run its course, and that they want to raise rates so they can have room to lower them if circumstances require it. Getting the economy booming again will allow interest rates to rise because the demand for money in loans and for savings will increase.

The Printing Industry

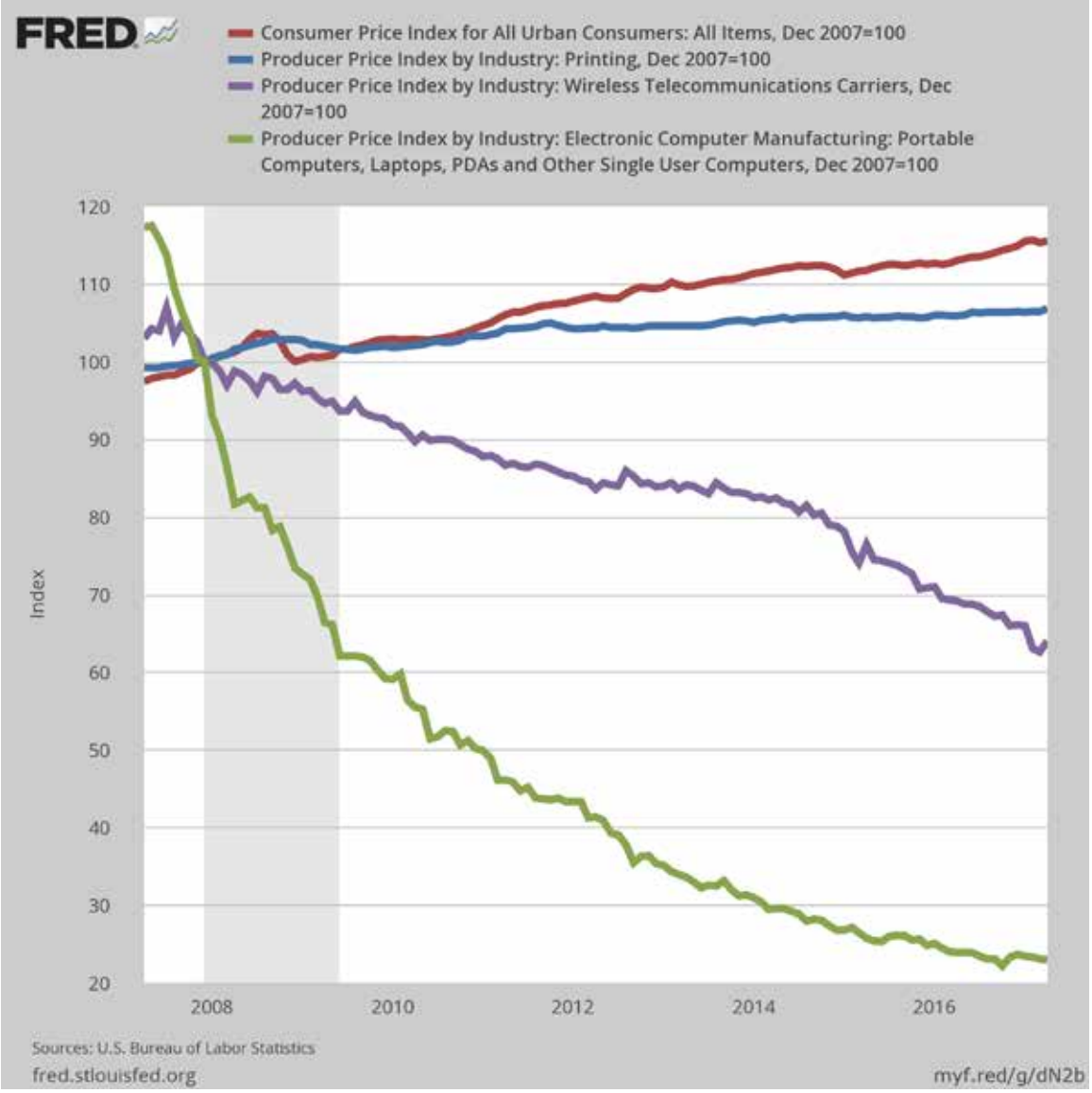
Let's turn our attention now to the printing industry. We'll return to compare various industry indicators with overall economic indicators.

Printing is Getting Cheaper Every Day… Or is It?

Commercial printing has been a tough marketplace. Prices for printing have been rising but are lagging the overall inflation rate. That's hard to manage when the costs inside a printing plant rise at or above the general inflation rate. The costs of postage for distributing print are rising faster than inflation. So if someone has a print budget of 100, and postage was 25, but is now 35, what's left? At a time when communications budgets are not expanding, what's left is squeezed out of print jobs either in terms of price or by changing size, quantity, and/or frequency. Print may be getting cheaper, but only in the sense that prices are lagging inflation. It's the cost of the total pie that matters…and that pie has competitors, too.

The chart below uses the start of the recession in December 2007 as the common base, and shows the Consumer Price Index (red line), the Producer Price Index for printing (blue), the PPI for wireless telecommunications (purple), and the cost of portable computers (green). Note the big difference. If these were directly comparable products, print being up 8% compared to wireless being down by 37% suggests that print is actually 45% too high.

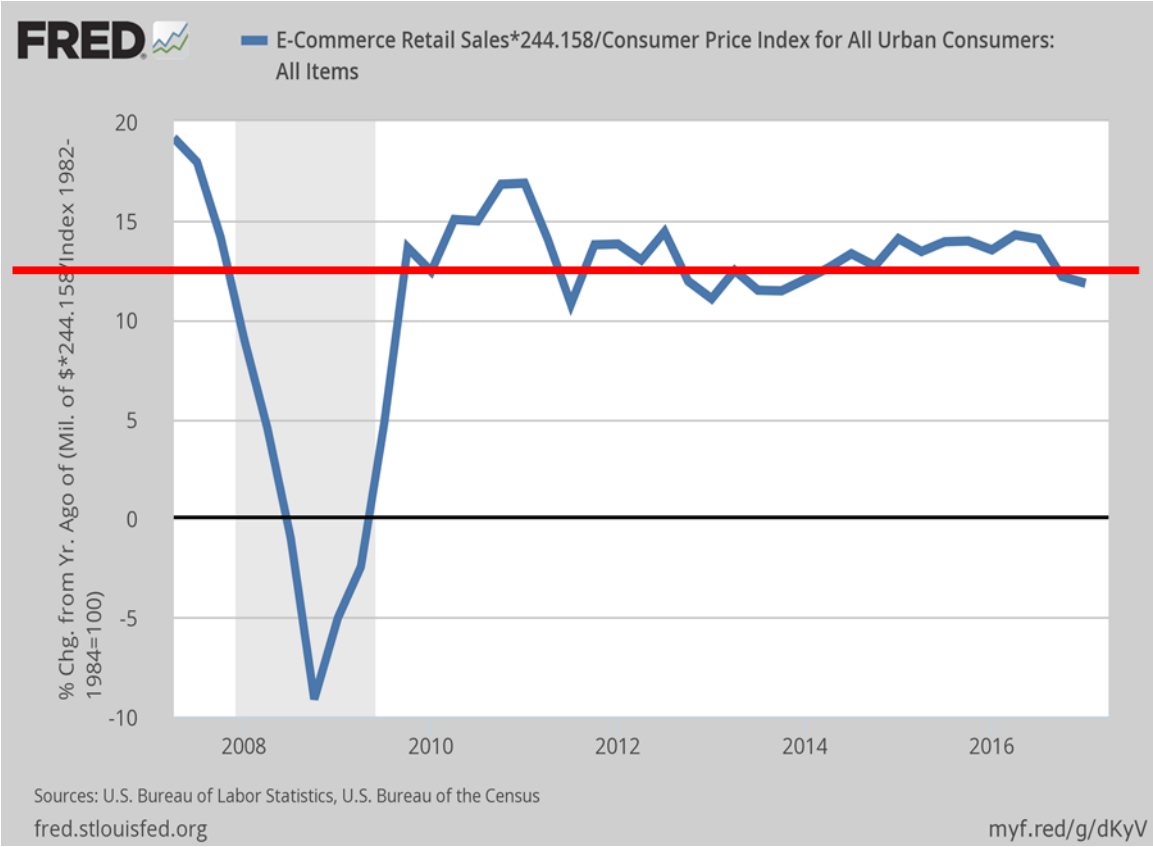
Figure 32. CPI vs. PPI for Select Items, 2007–2016



That kind of calculation is good for shock value; but what do you really do with it?

Perhaps the next chart explains why it's important. It's the CPI-adjusted year-to-year growth rate of e-commerce retail sales. When the economy is growing at barely 2%, this sector is growing at six times that rate. It was supposed to slow by now because of the law of large numbers (you know, like when you move from 10 to 15 it's an absolute change of five even though the percentage—50%—makes it seem huge; when it goes up another five, from 15 to 20, that's the same on an absolute basis, but it's a 33% increase, so the growth rate is slowing). E-commerce retail may have slight ups and downs, but that 12% growth trend can probably keep going for a while.

Figure 33. E-Commerce-Based Sales, 2007–2017



What are two of the driving factors in the growth of e-commerce? The constant decline in the costs of wireless and computer equipment. That has affected all communications, of course, and the way that communicators allocate their resources.

These marketplace factors affect the demand for print and the prices that buyers are willing to pay for it. It's a reminder to stop selling print, start selling ways printed materials and goods can help communicators realize even better resource allocation by making their digital media effectiveness all the better. The need to reach and engage audiences will never change. The tools that are selected and used are very dynamic now, but we know that they are being tracked and they are declining in cost. Helping your clients realize those lower costs on a long term basis is a way of becoming a trusted supplier and partner. You need to know what client goals are, the nature of their decisions, and the way they evaluate their effectiveness, and how you can be part of that process.

The Damage of ZIRP (Zero Interest Rate Policies)

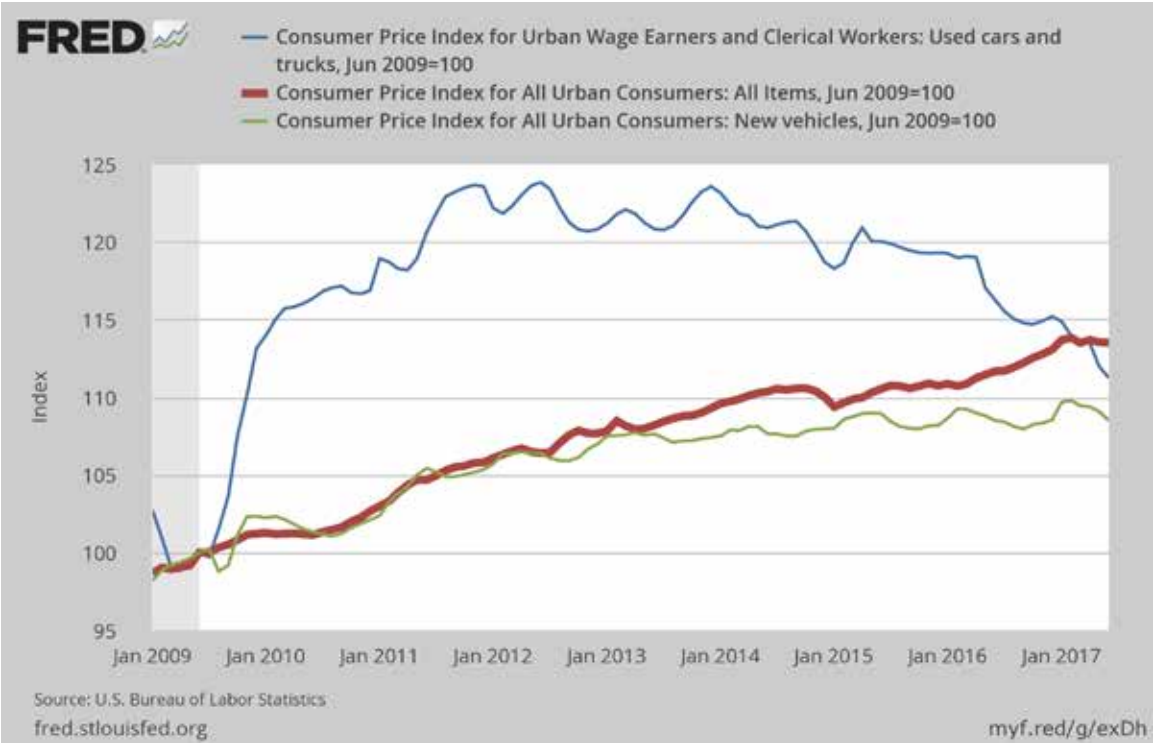
Near-zero interest rates have caused damage to true savings and the compounding effect of reinvested interest. The "rule of 72" has been an easy way to estimate how long it will take for a sum of money at a specific annual return to double. Today, a three-year bank certificate of deposit is paying 1.6%. That means it will take 45 years, or an entire full-time work life, to double. For many years, CD rates were about 6%, which meant the sum would double in 12 years. Over a lifetime, a modest saver could overcome inflation and other detriments to financial independence with safety. That is no longer the case. Economists mistake the current savings rate as reflecting investment, when it is actually many workers trying to defend their nest eggs by holding aside more savings to replace interest income. Low interest rates have only benefited wealthier savers who had gains in their "diversified" portfolios as Fed actions made bonds rise with little regard to underlying safety of principal and stocks rise because of TINA effects and financial engineering.

Low interest rates and their meager compounding make it difficult to save, which promotes longer loan duration, pushing some prices higher or at least preventing prices from falling to more affordable levels.

Edmunds reports that the average duration of used car loans is now 66.9 months. New car loans are 69.3 months, just 2.4 months longer.[9] Default rates in 2017 are higher than last year, but the banks are still able to raise money to fund subprime loans in the bond markets because the rates on high quality loans are so low.

The chart shows that prices of cars have slowed compared to inflation since the recovery; in the long term they tend to track general inflation.

Figure 34. CPI vs. CPI for New and Used Vehicles, 2009–2017



[9] https://www.edmunds.com/about/press/auto-loan-lengths-reach-all-time-high-according-to-new-edmunds-analysis.html

Used car prices surged at the beginning of the recovery, and have fallen since, and have only recently fallen below the general inflation trend as measured by the CPI. Prices would fall more sharply without long term loans. The Fed lowered interest rates to stop asset prices from falling. That is, had market rates prevailed, more housing-bubble mortgages would have defaulted or gone "underwater" (where the loan amount due is greater than the principal or underlying asset). Autos are not assets that can hold value, like homes can. They are mechanical equipment that deteriorate over time, meaning that it is easier for loans to go underwater faster than homes did. Homes can increase just because of inflation, but an individual auto cannot hold onto that as its value erodes by use.

Without a booming economy to help it, the Fed is in a situation where raising rates will pull support from the asset prices it attempted to save. Low rates are making higher risk investments appear less risky than they truly are. This means the economy has more credit risk than generally acknowledged. A strong economy can assist the Fed in a return to more normal operations, legitimizing the value of stocks, and allowing modest savers a chance to be more financially secure, but that is not likely any time soon, not even in five years.

Retail Sales

In Dr. Joe's monthly economics webinars, he has been commenting on some negative trends affecting retail sales, which is category that should be adjusted for population. It's still not at the December 2007 level after making that adjustment.

Figure 35. Population-Adjusted Retail Sales, 2007–2017

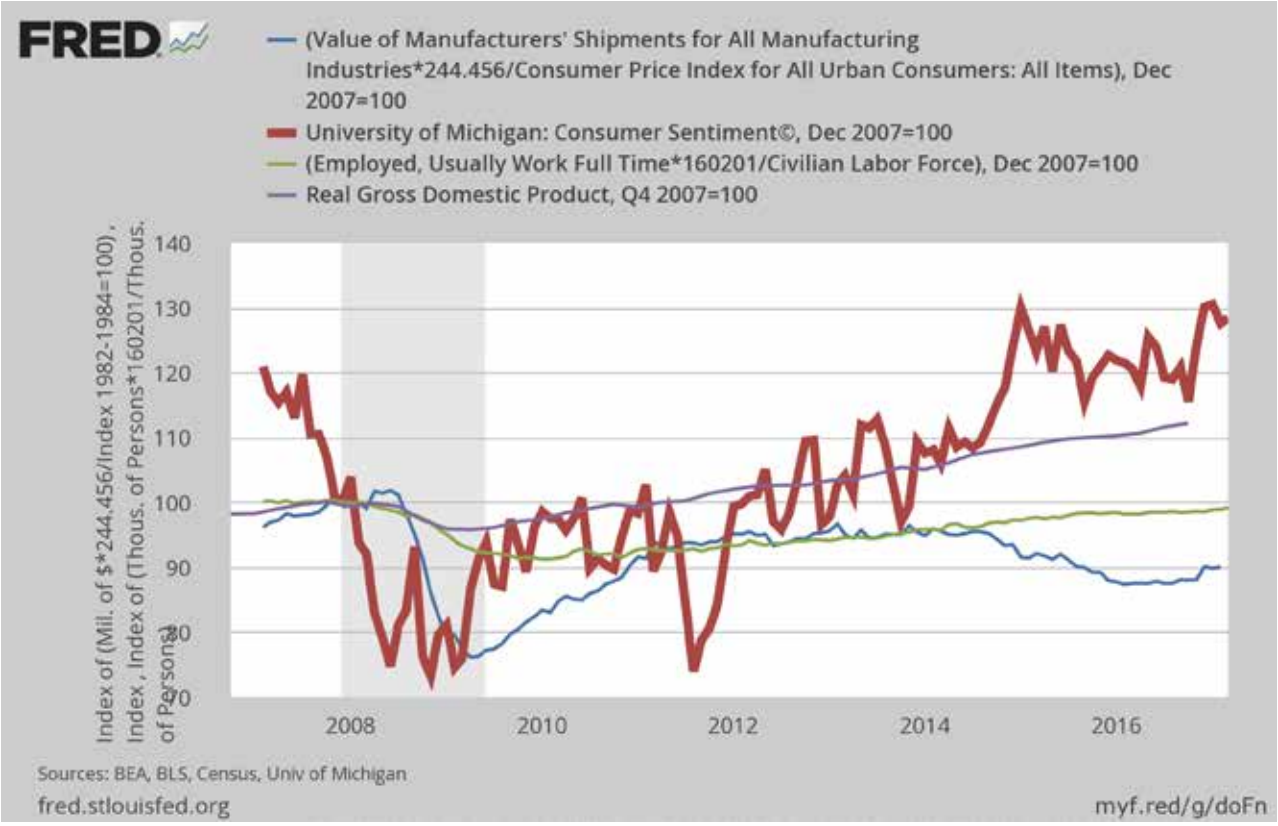
This measure started breaking down well before the recession began. It peaked in January 2006 and then kept falling. The housing and mortgage bubble burst and there was nothing to catch it until the third quarter of 2009. This measure hasn't even hit the level of the late 1990s.

Figure 36. Population-Adjusted Retail Sales, 1999–2016

Much needs to be done to get the economy back to booming again. Fewer and fewer participants in labor force worked during a time of strong economic growth, so that leads them to be disgruntled about the nature of the economy and also more accepting that current conditions are the way things always were. That acceptance of "the new normal" affects many of the assessments of confidence and business conditions outlooks that are represented in surveys.

The chart below shows the University of Michigan Consumer Sentiment measure. Note how it was in the mix with other key measures and then breaks out on its own above the trends of those hard data measures. Sentiment is a soft measurement, but the other measures on the chart are real data from real transactions. It is likely that the generational shift in the marketplace, as older workers who had experience with booms leave the workforce and new workers in the "new normal" frame of mind become more dominant in the marketplace.

Figure 37. Consumer Sentiment vs. Other Indicators, 2007–2017



Printing Shipments

We love numbers, especially when they go in a direction we like. Accuracy of the information we use in decision-making should not be a matter of liking numbers, the numbers are what the numbers are. What happens when one set of numbers you relied on are revised on the basis of new and better information and describe a different scenario than before? Dr. Joe helps sort it out…we think.

The annual revisions to the Commerce Department's manufacturing shipments were disappointing for the US commercial printing industry. Every five years, there is an *Economic Census* of business establishments, and in intervening years there is a survey of business, the *Annual Survey of Manufactures (ASM)*, which captures shipments and other data. Businesses (and governments) need market data more often. For that the Commerce Department conducts *Manufacturers' Shipments, Inventories, and Orders (M3) Survey* orders, inventories, and shipments, which are watched carefully by the financial markets. The best known report from this survey is the durable goods orders report released near the end of each month.

Think of it this way: in a government data Olympics, the *Economic Census* would be the gold, *ASM* would be silver, and the *M3 Survey* would be bronze. The latter two are surveys, and as such they are subject to forms of survey bias. The first is a census; while it does involve surveys, the methodology is more complex and the number of participants is much higher. The *M3 Survey* is the smaller of the two surveys, so the effect of statistical bias issues are larger. Those problems involve the "representativeness" of the respondents and the number of respondents. The government has a way to deal with that, and that comes from the tax system, especially data reported about payroll employment and the tax system. The official statement with the data revisions was "Correcting monthly data for late receipts, reclassifications of reported data, and revisions to previously reported data." All of these sources contribute to the revisions of GDP that are published annually at the end of July.

The corrections and refinements of the *M3 Survey* take time to be done. While the survey data may be monthly, it can take years to settle what the final numbers are through tax and other data.

Down the Revisions Go

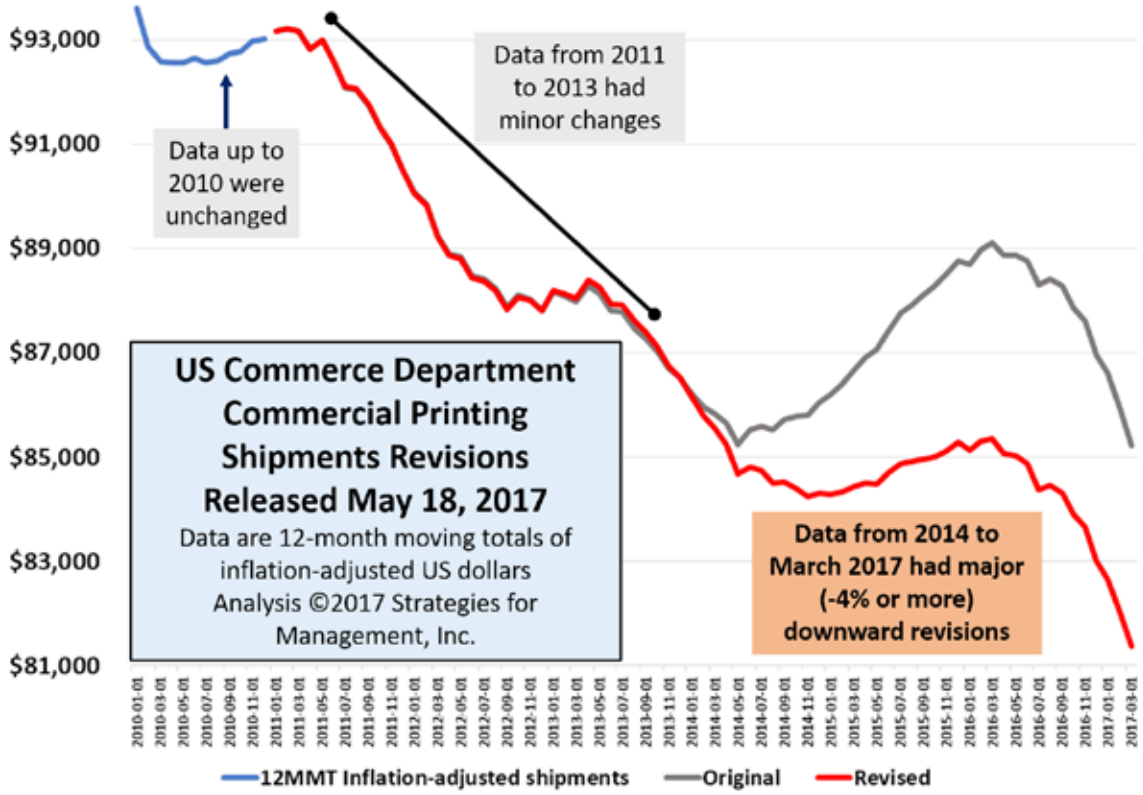
The refining of the originally reported *M3 Survey* data resulted in these changes:

- 2014: down -$1.69 billion (approximately -2.0%)
- 2015: down -$3.38 billion (approximately -4.0%)
- 2016: down -$3.88 billion (approximately -4.5%)
- Q1-2017: down -$900 million (approximately -4.6%)

These are very large changes, and they are not random, they are in one direction: down. Some data, like 2014, have been reported once and revised each of the following three years. It had one upward revision in 2015, and revisions since then were down in 2016 and 2017.

The chart below shows the extent of the revisions to the inflation-adjusted 12-month moving totals. The blue line shows the last data that were not changed (2010). The grey line is the prior data and the red line is the new, revised data. The two lines overlap from 2011 to 2013. Those years had only minor changes, mainly from monthly seasonal pattern adjustments.

Figure 38. US Commerce Department Commercial Printing Shipments Revisions, 2010–2017



Because the data are 12-month moving totals, each point along the line represents a year's worth of shipments. Note the wide distance between the grey and red lines around the end of 2015 and beginning of 2016. That's about a $4 billion miss by the original Commerce Department data. Also note the upward slope of the grey line from mid-2014 to early 2016 that is now very muted in the red line.

June Bugs

And it bugs us quite a bit. As this report was going to press (as it were), June printing shipments were released. We got good news and we got bad news.

The good news is that the Commerce Department revised May shipments up by $10 million, which is minor, but we'll take what we can get. Even at that, May was $6.556 billion—not a good month, as it was down 6.8% from the previous year.

Now, June...June had the biggest percentage decline compared to the prior year since February. February had been down 7.5%, and June was down 7.9%.

Here's the thing. Since this data series began in 1992, there have been 306 monthly shipment reports. On a *current dollar* basis, June's shipments scored 301st out of 306—the sixth lowest monthly shipments since the earliest of the millennials were born. On an inflation-adjusted basis, February 2017 wins the prize for worst month ever, coming in at 306 out of 306. June 2017 is close—305th out of 306. For those playing along at home, January was 304, and April was 303. February 2014 was 302 and February 2015 was 301.

February is traditionally a slow month, because corporate budgets start in January and it takes some time to ramp up spending on things like print, which is why March usually was a relatively big month that persisted until the dog days of summer. Things picked up in the fall as the holidays loomed. However, evidence suggests that Mar ch may very well be the best we get. In 2017, March was only $6.7 billion; last year, March was $7.3 billion. That's a big difference.

We look with hope to October. Last year, October's shipments was $7.1 billion. Can we get at least close? Or are we looking at an entire year where we don't break $7 billion?

Even if things do take a welcome upward turn in the second half of the year, this will still be an extraordinarily weak year. On a 12-month moving total basis, the last 12 months have seen a 4.8% decrease compared to last year. Projecting ahead, we may be looking at a a $79.5 billion year—the lowest printing year since 1992. (For the record, the highest we got was $150.996 billion in November 1998.)

Anyway, you can look at the next two charts—if you dare. But you should dare, because as depressing and discouraging as these data are, they should serve as a wake-up call, to remind everyone in the industry that this is not the time to hunker down, because we're not in a recession, so the only things adversely impacting the industry are the changes in media allocation and the growing reliance on new technologies. These things are not going to go away. There is no potentially rising tide to lift everyone back up—even if the economy kicks into overdrive. (Technically, we are in the ninth year of an economic expansion—such as it has been—and look how much we've benefitted from it.)

The Third Wave effects (see Section 8) will have more of an impact than any economic changes, good or bad.

Figure 39. Monthly Printing Shipments, 2015–2017

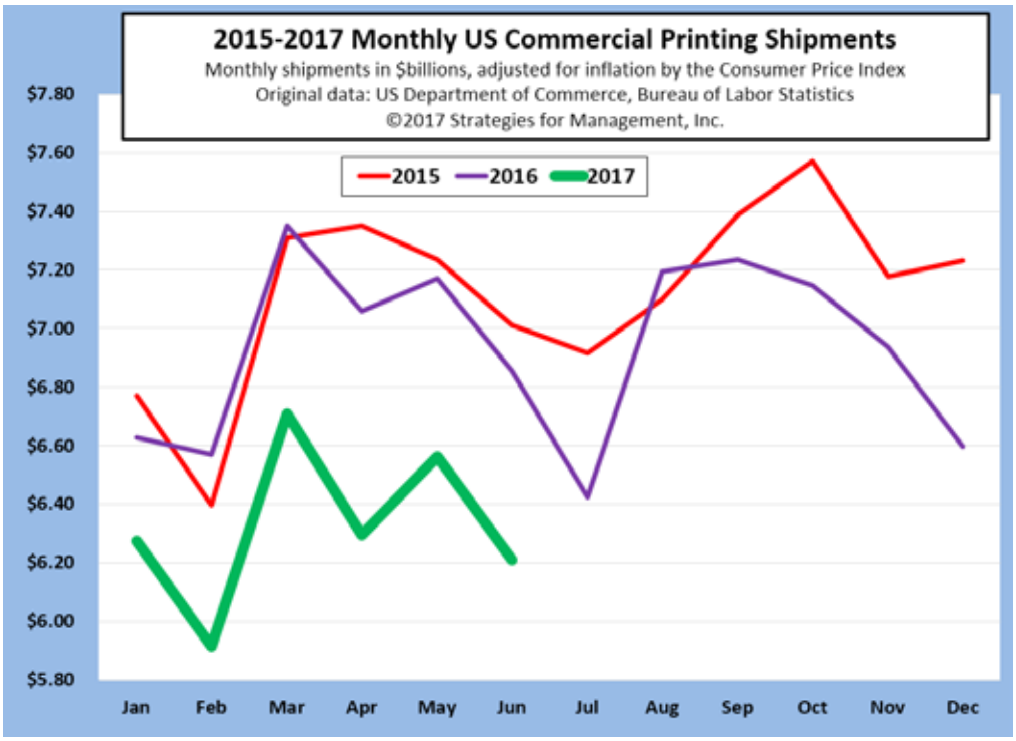
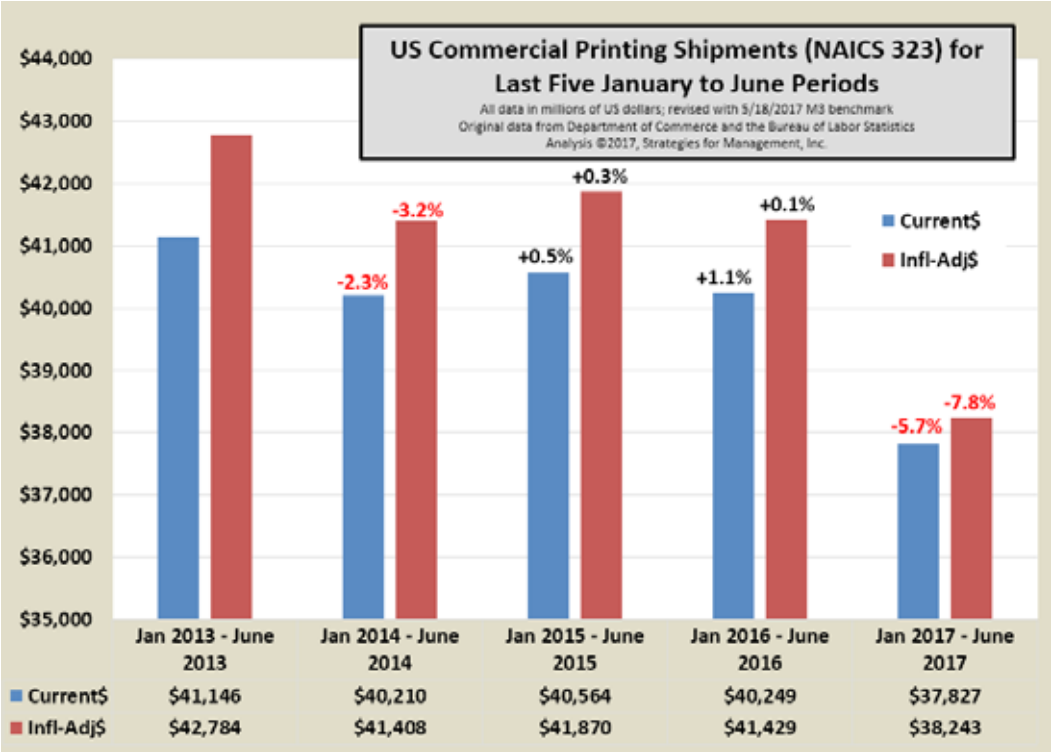


Figure 40. US Commercial Printing Shipments for Last Five Jan–Jun Periods, 2012–2017



GDP and Print

The relationship of commercial printing and GDP has always been assumed to be almost in lockstep in a positive direction. The relationship has been the opposite since the late 1990s, but old habits die hard. The revised current dollar printing shipments data from the Commerce Department in May have been compared with the current dollar GDP data revised at the end of July using regression analysis. The printing data series starts with 1992, so it is 25 years of data.

Using the data since 1992, the r-squared, a measure of statistical reliability is only about 12%. That means that 88% (100-12) of the variation in printing shipments is explained by GDP. Something else unspecified accounts for the rest. Also, the slope or direction of the relationship is negative. Using the calculation, every time current dollar GDP goes up by $1 billion, US commercial printing shipments go down by -$775,000. $1 billion is nothing in a $15 trillion economy. When GDP goes up 2%, that means the economy grew by $300 billion. So that would mean that, according to the statistics over the long run, commercial printing would contract by 300 x -$775,000, or about $230 million in annual shipments. (Keep that example in mind we explain the others).

Table 23. Correlating GDP with Commercial Printing Shipments

Time Period	Statistic		For every $1 billion increase in current US$ GDP, current US$ commercial printing shipments…	
Since 1992	r^2	11.8%	decrease by	-$775,000
	slope	-19.4%		
Up to 2000	r^2	**92.2%**	increase by	$6,532,000
	slope	163.3%		
From 1995-2000	r^2	**91.1%**	increase by	$4,213,000
	slope	105.3%		
Since 2001 and after	r^2	50.4%	decrease by	-$2,393,000
	slope	-59.8%		
Since 2007 and after	r^2	32.2%	decrease by	-$2,821,000
	slope	-70.5%		
Since 2010 and after	r^2	31.9%	decrease by	-$561,000
	slope	-14.0%		

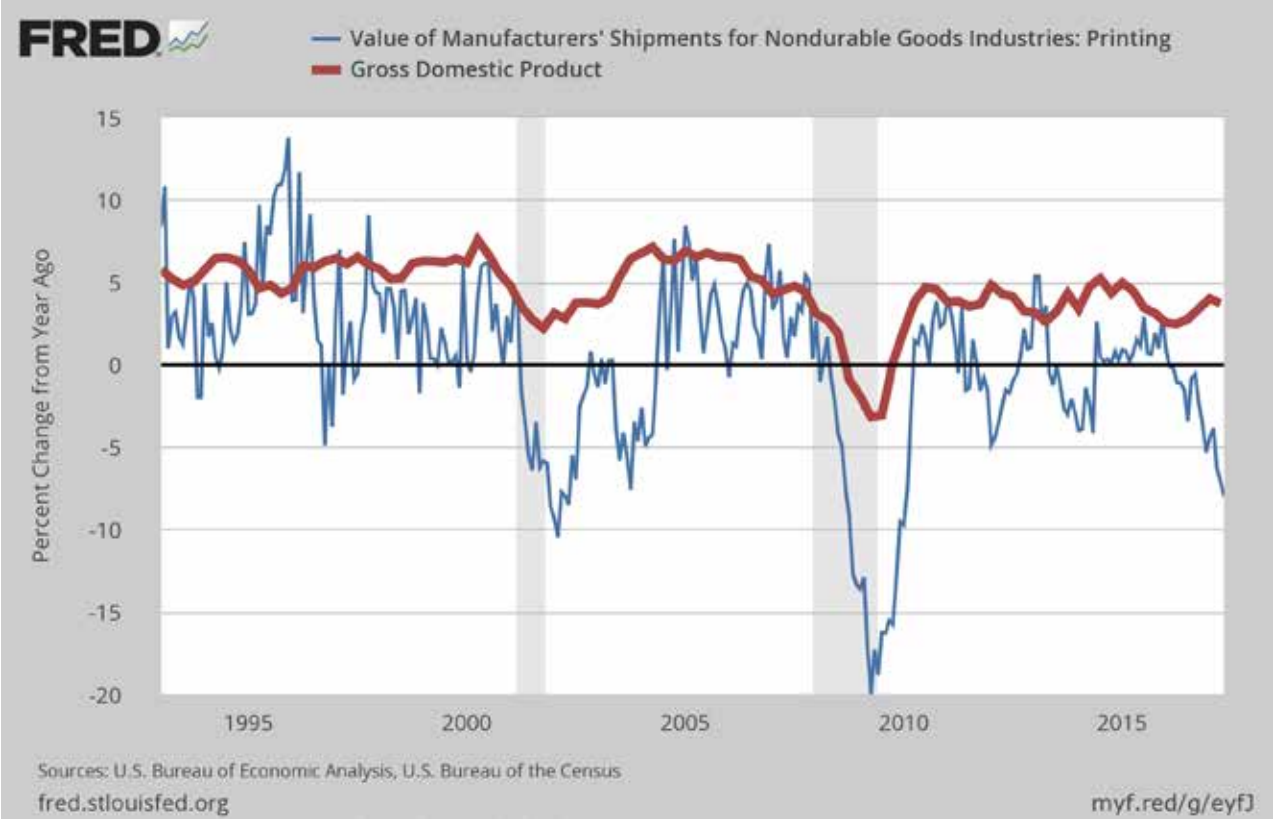
If we just look at the data up to 2000, the statistical relationship is quite different. Why? Because digital media and communications had not had a big effect on the market yet. It's easy to see why so many forecasters and executives missed what was happening in the business. The r-squared was a powerful 92%—anything over 80% is considered very good for business forecasting—and the slope was positive. A billion increase in GDP and printing

would get $6.5 million of it. That's incredible. That 2% rise in GDP would be a $2 billion increase in printing shipments.

The relationship weakened a little from the 1995–2000 period, but it was still very positive. After 2000, the relationship ended, badly. R-squared statistics are bad, and the slopes of the line are even worse. Since 2007, it's -70.5%, but when we use the data only for 2010 to current times, the slope is -14%. That's not good, but it is less bad.

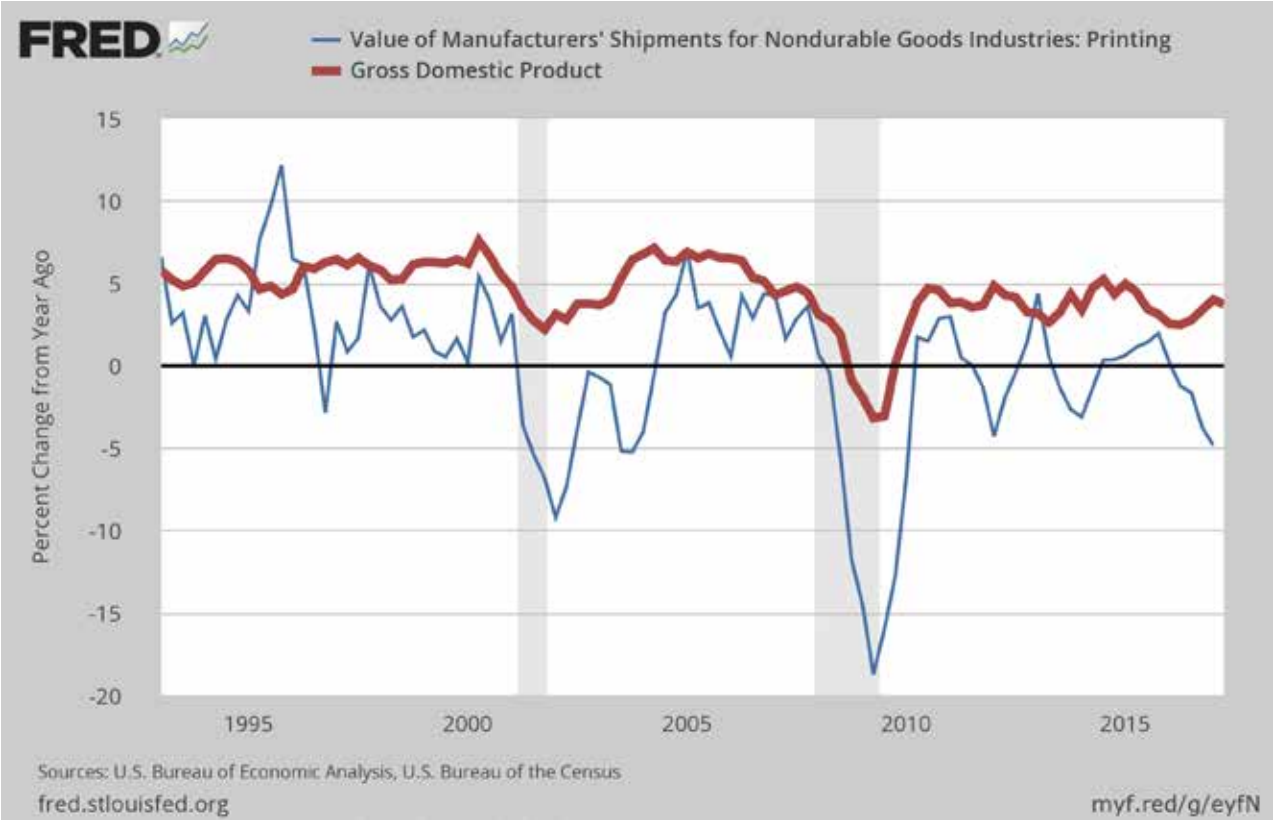
These charts are not inflation-adjusted.

Figure 41. GDP and Monthly Printing Shipments, Year-Over-Year Change, 1993–2016



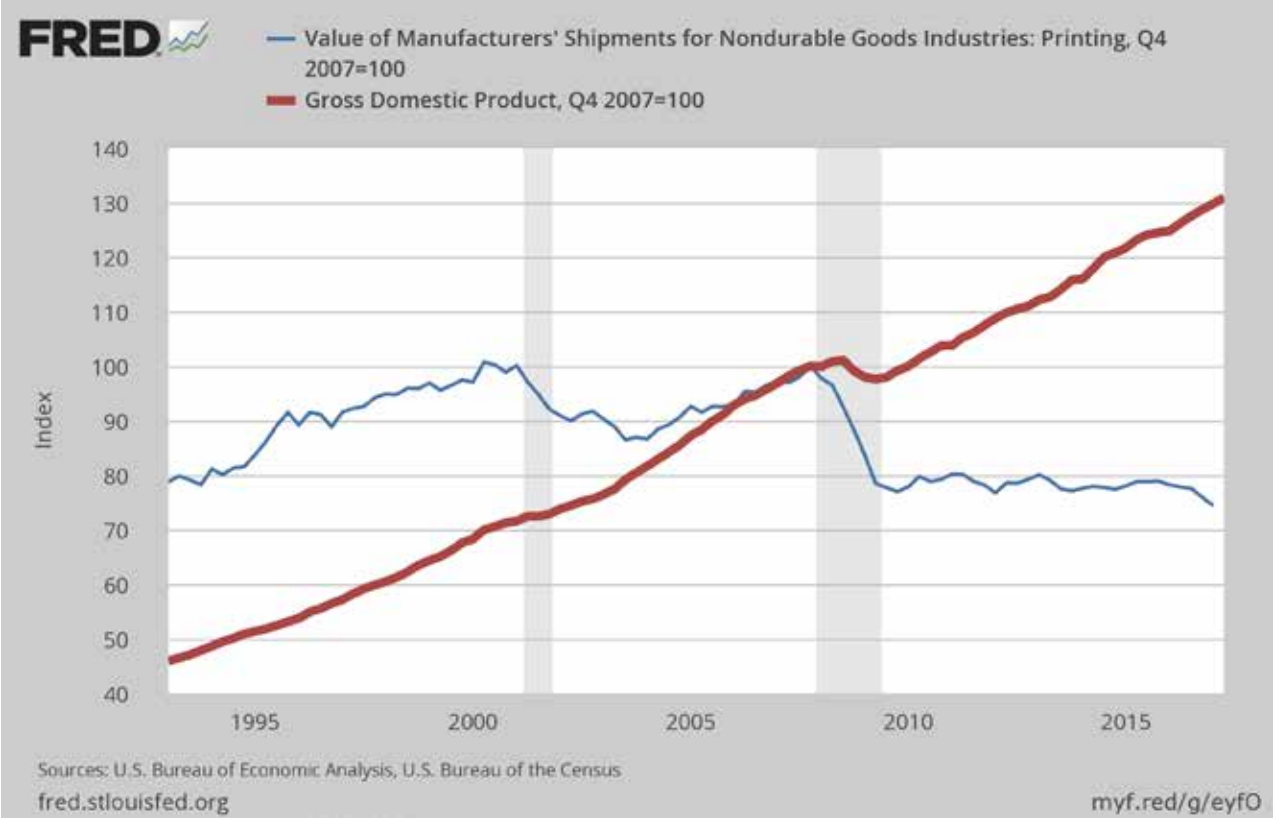
Using quarterly instead of monthly data cuts out a lot of the noise and make it easier to see changes in shipments. At no time since 1995/1996 has there been any significant rise in printing industry growth. Back then, paper was cheap and it was the onset of the dot-com deluge and all the printed promotional material they needed—at first. But even during the Internet bubble we never exceeded GDP growth. The scary part of this chart is on the far right where you see the growth rate plunging to -5%.

Figure 42. GDP and Quarterly Printing Shipments, Year-Over-Year Change, 1993–2016



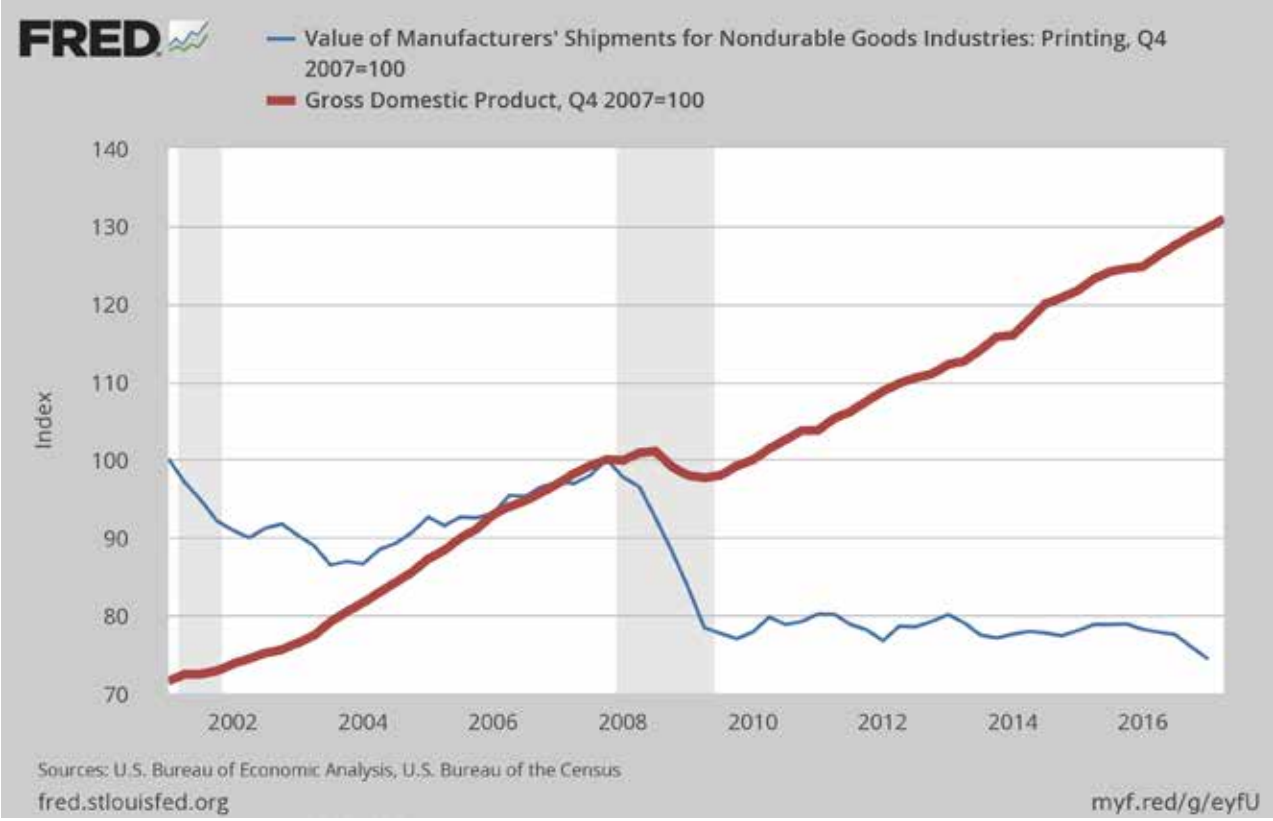
If we re-base printing shipments vs. GDP on the start of the recession in 2007, we can get a clearer picture of what lingering effects the recession has had on the printing industry. There was a long period where print was growing faster than GDP (up to about 2004/2005), but after recession it fell off the cliff and bounced around a bit. Shipments fell because of the recession, but it never came back, because if there is one thing that recessions do, it's they produce reallocations of media spending. Marketers find cheaper alternatives to print to cut costs, they get sued to the new media they started using, and never reallocate money back to print.

Figure 43. GDP and Printing Shipment Year-Over-Year Change Indexed to 2007, 1993–2016



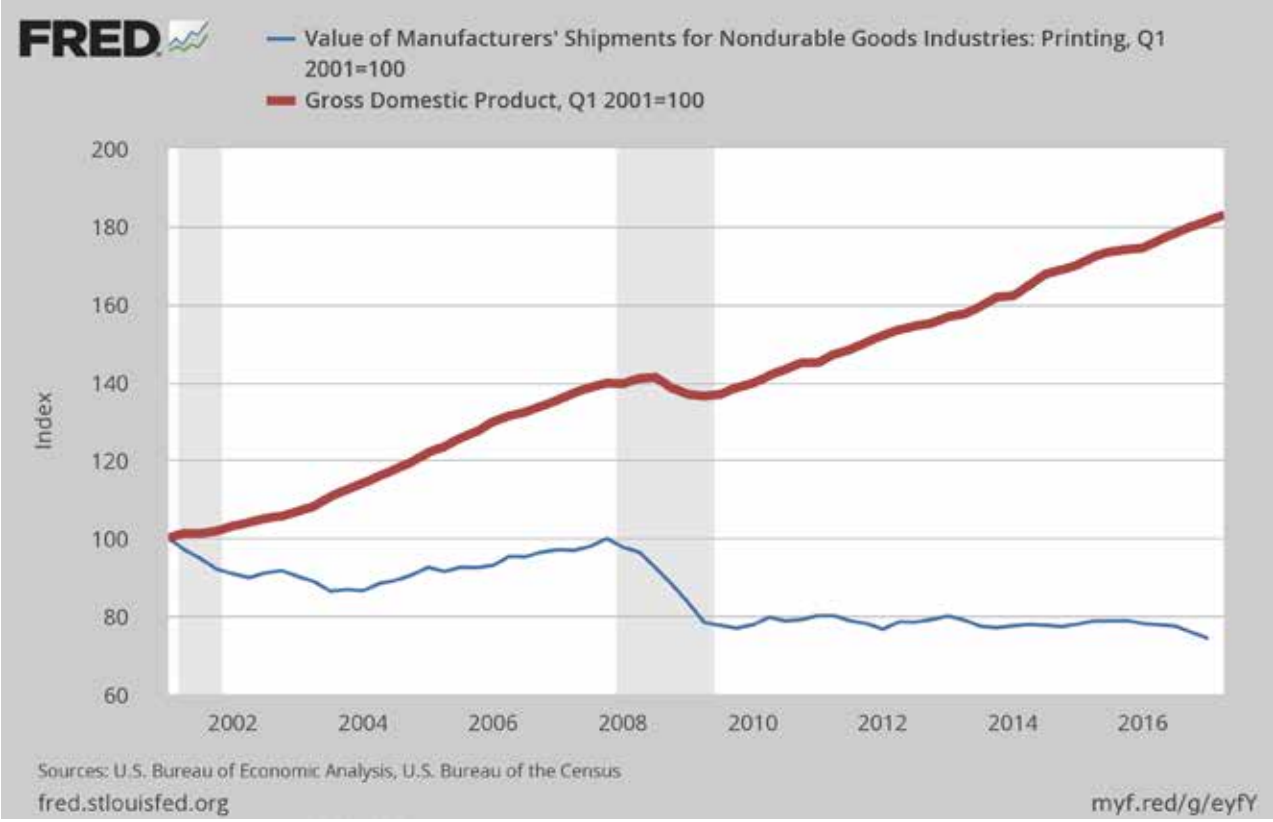
We can zoom into this data series by limiting the time frame and only looking at shipments vs. GDP since 2004 (again indexed to 2007).

Figure 44. GDP and Printing Shipment Year-Over-Year Change Indexed to 2007, 2000–2016



Here's some more Fun-time FREDdie. If we re-base printing shipments vs. GDP to 2001, we get a more fascinating picture. Right after 2001 (the post-dot-com bubble recession-ette) shipments declined, then started to come back...then—bam!—we get knocked back down again, even as the GDP line kept going.

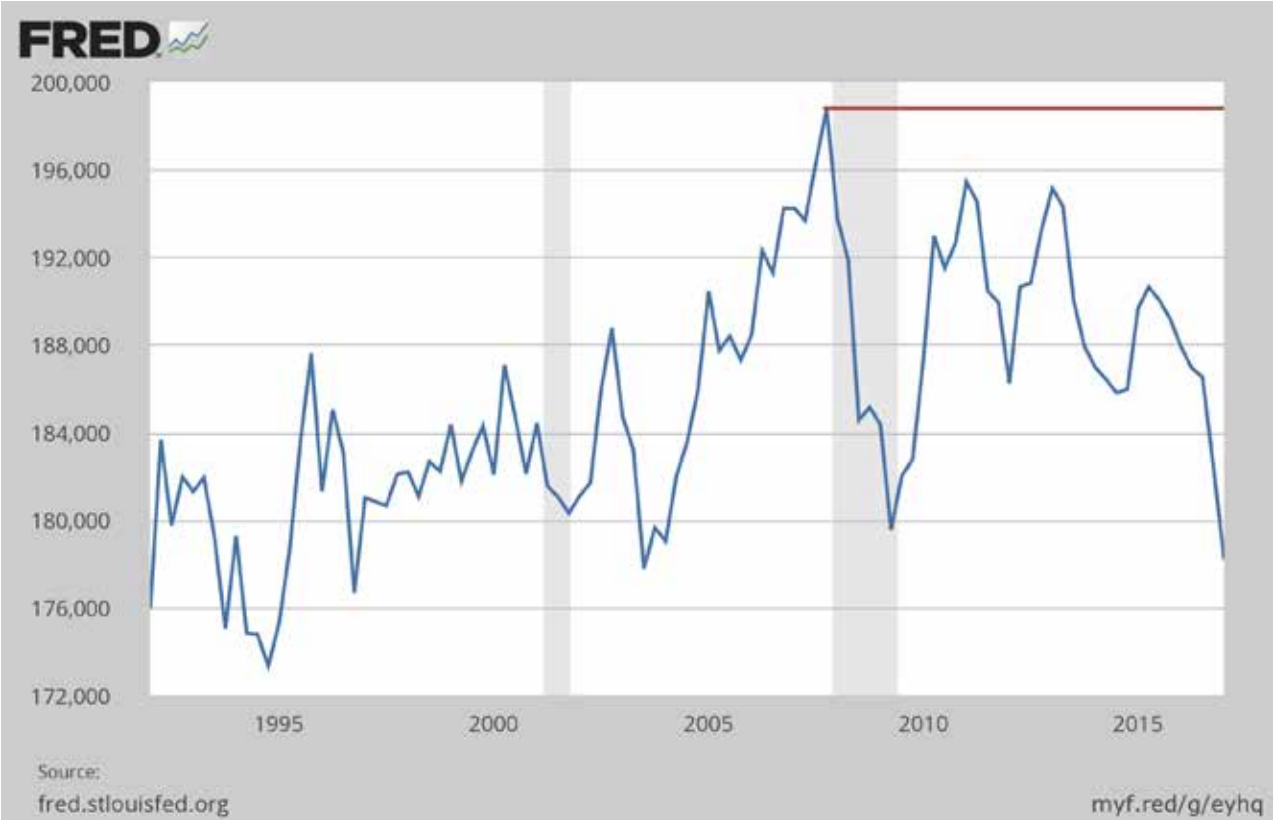
Figure 45. GDP and Printing Shipment Year-Over-Year Change Indexed to 2001, 2001–2016



Printing Shipments per Employee

Looking at shipments another way—per employee—shows that shipments have been choppy for the better part of the past 20 years. The most recent data show a plummet to below what they shipments per employee were in the last recession. The weakest companies are the ones that pull down the average revenue, and when those weaker companies exit the market, shipments per employee tend to rise as those exited businesses' volume is absorbed by the survivors (remember the parable about survivor bias in the Introduction?). The low shipments per employee figure suggests a surfeit of weaker businesses which, since this data series ended, likely have made their exit. This only portends more contraction of establishments and employees, and not an increase in productivity.

Figure 46. Inflation-Adjusted Printing Shipments per Employee, 1995–2016

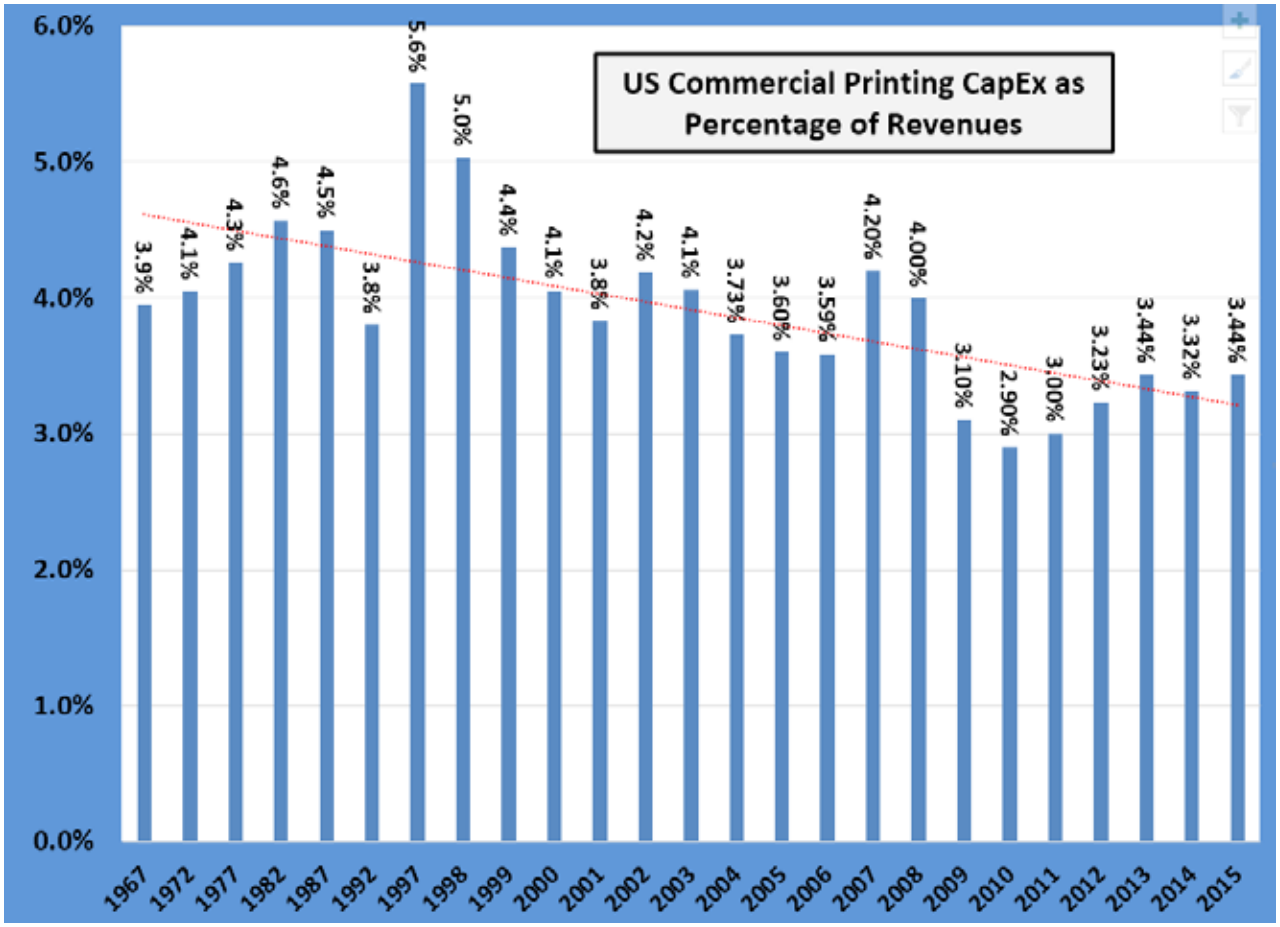


Capital Expenditures

The latest economic data for capital investment is from the Census Department's *Annual Capital Expenditures Survey*, and now includes 2015 for commercial printing. For that year, capex was 3.4% of shipments, down from the long run historical pace, but up from the recession low, 2010's 2.9%. New capital investments were the highest proportion of spending since 2010.

This chart shows the 50-year history of industry capex. Note the rise in the 1980s, mainly from investments in digital prepress and new presses. The industry was growing as was its rate of investment. In 1992, investments were hurt by a recession and the initial effects of desktop publishing. Then there was the Internet Bubble surge in 1997, which then wound down in the early 2000s as digital printing displaced offset investment, and the need to invest in prepress technologies was no longer required. After the 2007 recession, where many printers closed up because of dysfunctional financing and the quick uptake of social media, smartphones, tablets, and other factors, capex rates fell and then stabilized to today's levels. Because large printing enterprises were always the biggest factors in the capex markets, their exit due to the loss of demand for their output led to equipment consolidation among remaining plants, reducing their need for new investment, and shrinking the capex market further.

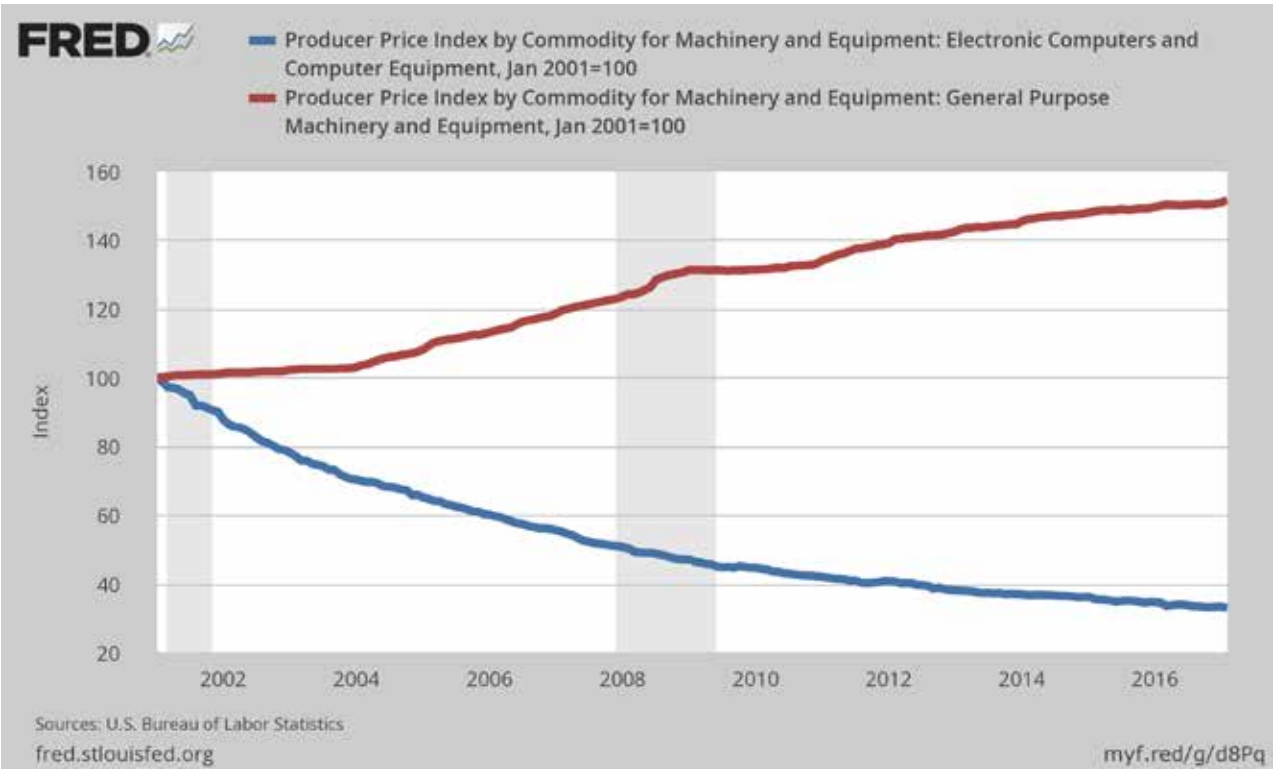
Figure 47. US Commercial Printing CapEx as a Percentage of Revenues, 1967–2015



The changing costs of technology and the disruptive role of innovation play a big role in capex. There are fewer investment categories needed to run a print business operation than there used to be. Digital prepress investments of years ago gave way to the digital photography and desktop publishing revolutions, with the bulk of that investment outside of the printing industry. Those investments became the domain of publishers, designers, agencies, and photographers, with much of the trade skill replaced by mathematical algorithms and procedures in the software they use.

The changing nature of capex is economy-wide. The difference can be seen in these two general economic measures, the Producer Price Index for computers compared to machinery and equipment. Since the beginning of this century, the prices for computers are down -67% while machinery and equipment is up 51%. That's a 118 basis point disparity!

Figure 48. PPI for Equipment vs. PPI for Computers, 2001–2016



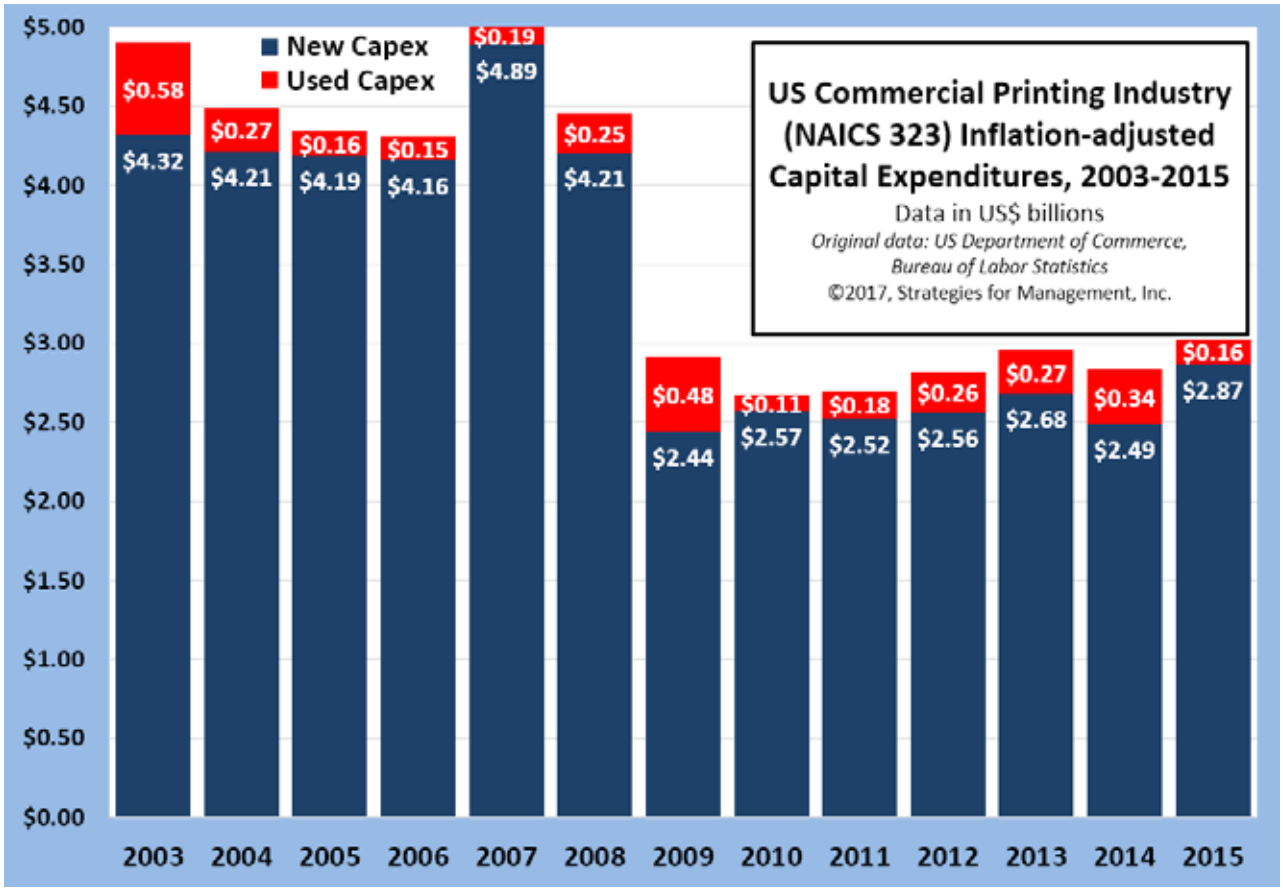
It is this technological shift that means that big ticket press investments are few and far between, and industry-wide new capex tends to be in favor of digital printing, workflow, and similar categories.

It's not just large printers that consolidate equipment in their own organizations. General consolidation plays a big role, where two firms merge and management assesses their newly combined equipment base. They seek to eliminate duplication and cherry-pick the best and most appropriate equipment for the new business. The principle is that the operation improves with better equipment with better production processes. The used equipment market gets the orphaned equipment if others have use for it. The natural replacement of equipment is disrupted, as it should be, by changes in market demand for the goods produced by that equipment.

The also means that the prices for used equipment go down. It has been common to hear from printers that used equipment is "younger" than it used to be, and a bigger bargain than ever, if you have profitable use for it. Printers have always, perhaps for centuries, always checked used equipment markets prior to making a purchase. From a training and management perspective, matching equipment from the used market to what you already have on the shop floor has a big advantage in process integration.

This chart shows the capex markets in inflation-adjusted terms. Note the swelling of used equipment purchases in times of recession.

Figure 49. US Commercial Printing Inflation-Adjusted Capital Expenditures, 2003–2015



The table below shows in in greater detail as percentages of industry shipments. Highs and lows of each category are marked in red. In 2015 there were slightly more purchases of new equipment but the average investment rate was at the ten-year mean.

Table 24. New and Used Capital Expenditures as a Percentage of Shipments, 1998–2015

Capital Equipment Expenditures '98-'15	Capex as % of Shipments	New Capex	Used Capex
1998	*4.9%*	91.5%	8.5%
1999	4.3%	94.6%	5.4%
2000	4.0%	95.7%	4.3%
2001	3.6%	92.6%	7.4%
2002	4.1%	*80.1%*	*19.9%*
2003	4.0%	88.1%	11.9%
2004	3.7%	94.0%	6.0%
2005	3.6%	96.4%	3.6%
2006	3.6%	*96.5%*	*3.5%*
2007	4.2%	96.2%	3.8%
2008	4.0%	94.4%	5.6%
2009	3.1%	83.7%	16.3%
2010	*2.9%*	95.9%	4.1%
2011	3.0%	93.5%	6.5%
2012	3.2%	90.9%	9.1%
2013	3.4%	90.8%	9.2%
2014	3.3%	87.9%	12.1%
2015	3.4%	94.8%	5.2%
Mean 1998-2015	***3.7%***	***92.1%***	***7.9%***
Mean 1998-2004	**4.1%**	**90.9%**	**9.1%**
Mean 2005-2015	**3.4%**	**92.8%**	**7.2%**
Recessions (2002, 2009)	**3.6%**	**81.9%**	**18.1%**
Recovery (2010-2015)	**3.3%**	**91.6%**	**8.4%**
Non-recessions	**3.8%**	**93.2%**	**6.8%**

Based on US Dept of Commerce Annual Survey of Capital Expenditures, NAICS 323; analysis © 2017 Strategies for Management, Inc.

The table shows the shakeout that occurs to the industry's capital base during recessions. While recessions have less of an effect on print demand than technological change does, recessions have significant effect on who prints. The financial condition of print businesses going into the last recession was very weak. The mild recession of 2002 shot used equipment up to nearly 20% of capex. In the significantly deeper recession of

2008-2009, it was 16%. The year 2014 was not recessionary, but it was a year of continuing media reallocation.

The increase in 2002's used share was an unwinding of the Internet bubble. The last humongous commercial printing trade show was PRINT 97. There was a belief that "dot-com" spending was so strong because it was a new market, and because they had inflated promotion budgets that it would last forever. One vendor claimed to have a low nine-figure level of press orders at that show. Many of those presses were returned in 2002 and 2003, and of those that were not returned, a portion had lease writedowns for lack of new buyers. The 2009 displacement of equipment was after the housing bust. This hit the industry pretty hard as some print businesses had their financial structure collapse with the intertwining of the owner's personal finance with that of their business. Some owners had financed their businesses with personal second (and possibly third) mortgages which could be found for less cost than business loans. Borrowing against the equity from their homes, they re-loaned the money to their businesses, gaining income from the loan interest. Others had big mortgages on their buildings; it was common for owners to own their buildings and lease it to their printing business. Some likely did both and found themselves "underwater" with their loans…twice.

What does this mean for the current market for capex? As our survey data earier in this report show, there is great interest in software-based products for shop operations, finishing and bindery for greater automation and product variety, as well as the continuing shift to digital printing as the core print process. It's not dominant in terms of output, but it's growing in terms of numbers of jobs in an important way, as it has for years.

The recent decline in shipment levels can only mean that total capex will have a decline. It is likely that the proportion of used equipment will show increases in 2016 and 2017 as establishments close and equipment is displaced by consolidations, as has been the case in the past.

A technological factor that can change the scenario is if high production ink jet is able to live up to its technological promise. Even then, suppliers of that equipment may have to take on significant financial risk in bringing the product to market. The survey for this report and the profits data from the Commerce Department show that large print businesses have not done as well as mid-size printers. But individual mid-size printers may not have the financial mass necessary to structure purchases in the best manner. This has always been the case with digital printing, but at the time, those adopters often had healthy offset businesses that could absorb the purchase. This is not the case for most of the printing industry and manufacturers need to be keenly aware of the situation, and the old term, "creative financing," which should make everyone shudder, may have its time again.

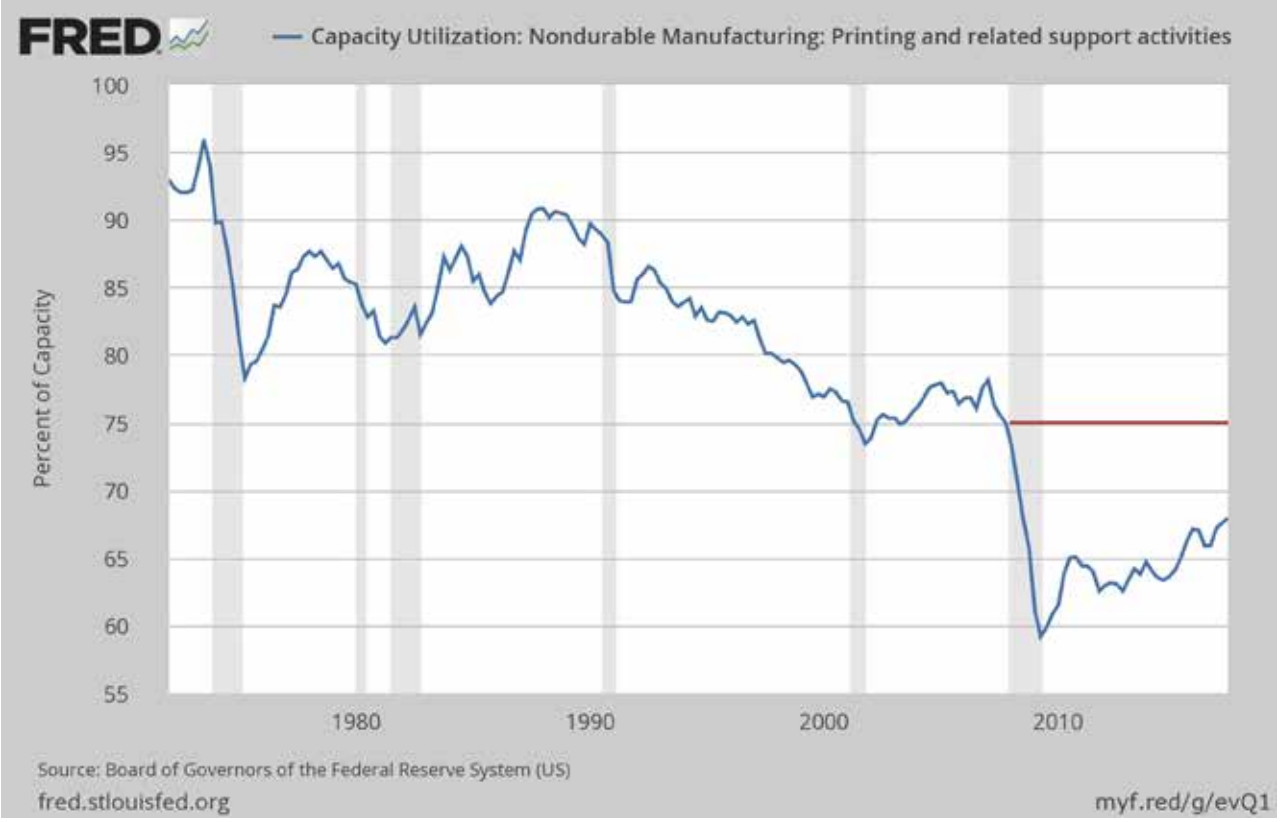
Capacity Utilization

As we point out every time we present these data, capacity utilization is a traditional, yet increasingly anachronistic economic indicator for the industry. It's a more important figure for individual companies, but the overall figure doesn't really tell us much. (And even at the individual level, it's a flawed metric.) We include it because people still like to refer to it, and it's not *completely* unimportant, although people can attach too much significance to it.

The biggest drop in utilization was in the 1980s, when the value of printed goods rose because of cost reductions from digital prepress and the growth of process color printing, which had greater ROI than black and white. So profits were good even though utilization was going down. Utilization hit rock bottom in 2010, and has been slowly climbing ever since.

The calculation of breakeven for individual equipment, departments, and the entire business are much more important than that of capacity utilization. What's even more important? Making your clients more productive and profitable because of what your company does for them.

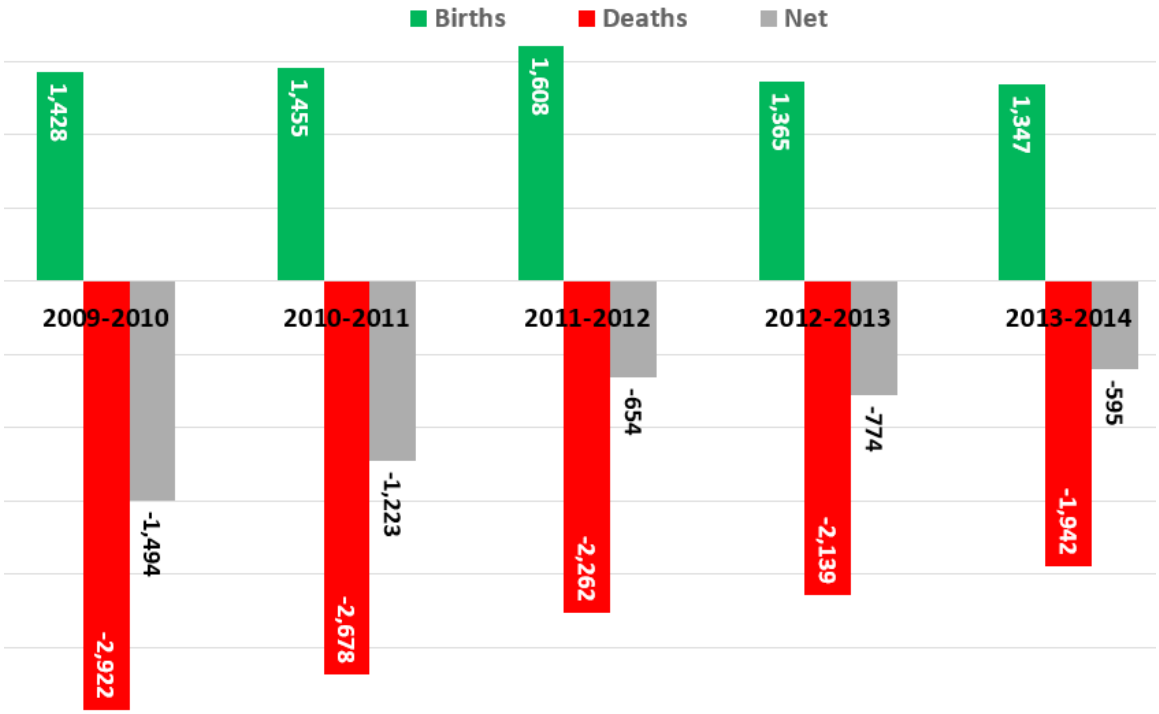
Figure 50. Capacity Utilization, 1970–2016



Births and Deaths

Finally, let's round out this section with a look at the birth and death rate of print businesses for the past eight years. The Commerce Department tracks the number of business establishments by industry, and among he more interesting reports is the calculation of new and closed businesses. The data take a while to be released, and these new data about 2014 were recently made available. There's a word of caution here. If someone was a corporation and decides to become a partnership or a proprietorship, that counts as one business closed and one business opened. And then there's "poor man's mergers" where two business owners decide to close their two businesses and open one new one. Same people, same equipment, no real change except to the tax authorities and government statisticians. The most important number is the net change of births less deaths. In the worst of the recession, the net number was 6% of establishments. For 2014, that had fallen to a little more than 2%.

Figure 51. Industry Births and Deaths, 2009–2014



Recovery Indicators

Since we began these recovery indicators back at the end of the last decade, getting them to move in lockstep—which we use as the litmus test to determine how much we have recovered from the last recession—has been like trying to get cats to walk in a straight line.

Manufacturing new orders are still in growth territory—just slower growth. Manufacturing was overstated last month, so this month is a bit of a correction. Imports doing well. Non-manufacturing new orders are down 8.6% since last year, which isn't awful. Imports down 2.8%, which is also not bad.

Compared to last year, the NASDAQ is up almost 24%. That's still not a new record territory—it would have to be about 6600 on an inflation-adjusted basis for that to happen. The NASAQG is currently being driven by "FANG" (Facebook, Amazon, Netflix, Google—although sometimes Apple is added to make it "FANGA").

We commented on the revisions to proprietors' income earlier in this report; the latest revisions from the Commerce Department indicated that proprietors' income was down a lot more than what was reported at the time. Basically, proprietors' income was indicated as running 10% higher than what it actually was. As the data series presented earlier indicates, Proprietors' income—small business, essentially—has been flat for the past few years.

Table 25. Recovery Indicators, 08/03/2017

Dr. Joe's Key Recovery Indicators as of 08/03/2017	NASDAQ Composite	ISM Non-Mfg New Orders	ISM Non-Mfg Imports	ISM Mfg New Orders	ISM Mfg Imports	Proprietors' income ($billions)
Recession Start 12/2007	2661.0	52.3	50.5	47.4	48.0	$985.5
Prior Reading	6089.5	60.5	51.0	63.5	54.0	$1,380.2
Latest Data	6362.7	55.1	51.5	60.4	56.0	$1,373.8
Change Since Prior Reading	4.5%	-8.9%	1.0%	-4.9%	3.7%	-0.5%
Change Since Recession Start	139.1%	5.4%	2.0%	27.4%	16.7%	39.4%
Data release used	8/2	8/3	8/3	8/1	8/1	Q2 advance

NOTE: NASDAQ and Proprietors' Income in the table are not inflation-adjusted.
To be at December 2007 equivalents in today's dollars, the NASDAQ
must be approximately 3103.9; it is now +105% above that level.
The Proprietors Income CPI-adjusted level at the start of the recession was approximately $1149.5,
and is now +19.5% above its Q4-2007 level.

7. Industry Trends for 2017

Here's what we see as some of the hot—and not so hot—trends for 2017.

Hot Items

The Third Wave

> I go out to the producers building in downtown Los Angeles, and I walk into this elevator, and there are no people in the elevator, no buttons on the wall or anything. I hear a voice say "Kindly call out your floors, please." And I look around, and I'm alone. And I panic, and I read on the wall, that this is a new elevator and it works on a sonic principle and all I have to do is say what floor I want to go to, and it takes me there. So I say "Three, please," and the doors close and the elevator starts going up to three. And on the way up I began to feel very self-conscious, because I talk, I think, with a...slight New York accent, and the elevator spoke quite well. I get out, and I'm walking down the hall, and I look back, and I thought I heard the elevator make a remark.
>
> —Woody Allen, *Standup Comic*, 1968

While *The Third Wave* is the title of our latest book, which will be published at PRINT 17, the titular "Third Wave" is the next big technology-driven disruption that will impact not only society in general, but the printing industry in particular.

For those playing along at home, the First Wave (1998) was the coming of the Internet and the online migration of society. 1998 would come to mark the end of the "good old days" for print, and the last year for which the value of printing shipments increased over previous years. If you look at Figure 52 below, which tracks commercial printing on a per-capita basis, you can see that 1998 was the start of the First Wave.

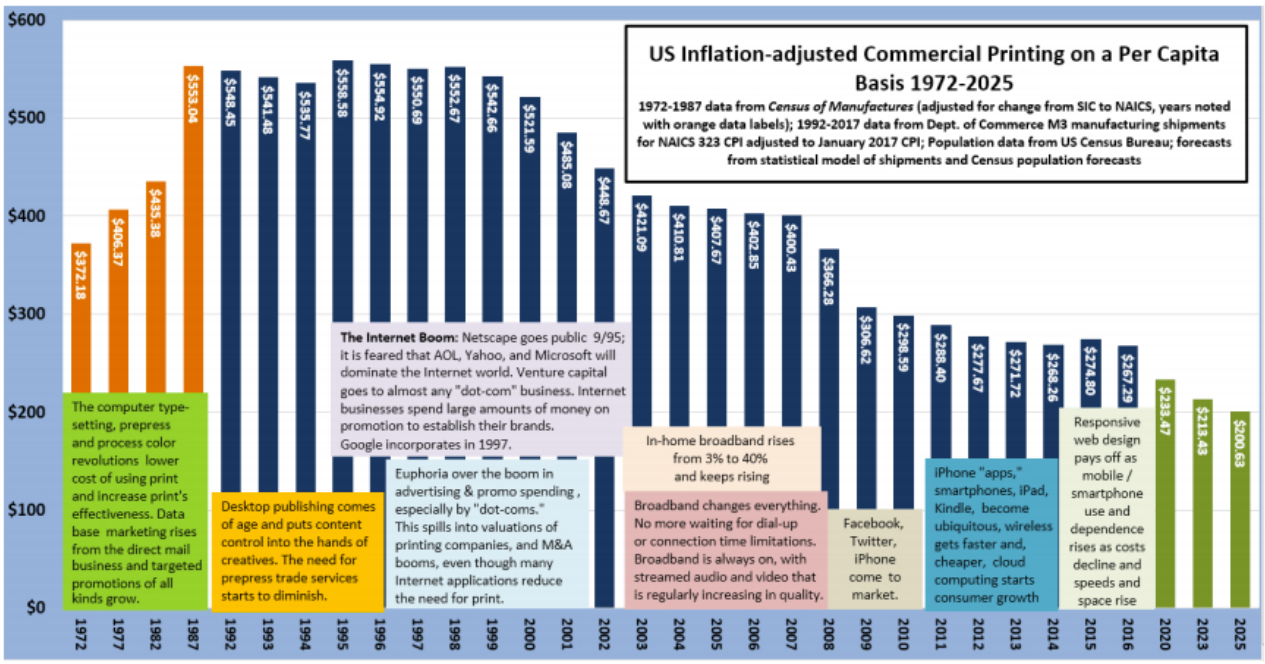
A decade later (2008), the Second Wave brought social media and mobile devices (and the combination of the two) and the migration of society to handheld devices and social networks. And if you look at Figure 52, 2008 preceded another big drop in the use of print.

The Third Wave (2018?) will bring with it smarter mobile phones and social media, as well as Artificial Intelligence and the "Internet of Things," making us more interconnected with our devices than ever before—whether we want to be or not. We are now able to use voice commands on a greater and greater number of devices—there are virtual assistants like Siri and Alexa, and now entire cable TV systems that are voice-controlled. The future could be like the Woody Allen standup routine quoted at the beginning of this section; it's possible our mechanical devices will start complaining about our poor diction or speaking skills. Toastmasters International may need to add a "Communicating with Electronic Appliances" educational program.

Anyway, that Third Wave, if you look at the figure, presages what we have forecast to be another big drop in per-capita print. Printers ultimately weathered the first two waves, but not without changing how they operate their business. The Third Wave will require even more drastic changes. Contending with the Third Wave effects will involve changes in a

print business' approach to capital, to investment, to employment, to management and ownership, to products and services offered. These changes will allow these printers to be better able to serve the changing marketplace of the not-too-distant future.

Figure 52. The Wanting Comes In Waves: Inflation-Adjusted Per Capita Commercial Printing, 1972–2025



Software

In last winter's Forecast 23017, we listed "automation" as a hot trend, and that's still the case, but we're broadening it to include software of all kinds, based not only on what our survey results have told us, but also what we're getting the sense of talking to folks in advance of PRINT 17. We saw in our survey that boosting productivity and improving automation were top challenges that drove their top investments, and hardware has been supplanted by software as the way to accomplish those things. Print engines have become faster, finishing has become optimized, and now many shops find the production bottleneck to be back at the beginning of the production process: preflighting, fixing files, prepping them, processing them, and getting approval on a timely basis, imposing/nesting/ganging them—all of this accomplished more or automatically. So they're turning to software to solve all or some of these problems. As Enfocus Software customers might say, "Got 99 problems, but Switch ain't one."[10]

Binding/Finishing

We hate to repeat trends from report to report, but a) it's only been six months and things don't change *that* fast (yet), and b) this is still a very big trend. Finishing equipment, especially all-in-one-units that do folding, creasing, slitting, and/or perforating in fell pass,

[10] Apologies to both Jay Z and "Weird Al" Yankovic.

and also units compatible with digital printing equipment, are ways of both boosting productivity, but also offering a wider range of services to customers. The ability to do "variable-data" perforation—where the placement or even shape of the perf varies from sheet to sheet—short-run diecutting, foil stamping, or spot coating allows shops to offer higher-value product than dime-a-dozen commodity jobs.

At the same time, printers are buying their on finishing equipment simply because there is no time to send jobs out to a trade bindery anymore. As customers demand faster and faster turnaround, even taking a day to send a job out for finishing can be too long.

Digital Embellishments

So-called digital embellishments are a kind of finishing, but it's worth pulling them out and identifying them separately. What we're talking about are special effects such as those produced by machines from the likes of Scodix and MGI—special textures, digital foil stamping, and other elaborate techniques. Print customers are increasingly looking for ways for what they produce to stand out, so, we are seeing an increased emphasis on specialty finishing, as well s the more traditional processes mentioned above. Various types of UV inks and coatings are also making printed materials stand out. And it turns out that print buyers do see the advantage of these types of applications—and are willing to pay for them. The good news is that as the costs of adding these effects comes down, they can charge the same (premium) price for them.

Items That Are Warming

Specialty Printing

We are quickly reaching the point where mainstream commercial printing may not be quite so mainstream anymore. When we think of specialty printing, it is usually three-dimensional objects lie pens, golf balls, smartphone cases, keychains, and the like that immediately come to mind, but "specialty printing" today can involve a very large array of items:

- Posters
- Banners
- Interior signage
- Exterior signage
- Flags
- "Feather" flags
- Trade show graphics
- Retail/POP/POS displays
- Window graphics/clings
- Backlit graphics
- Wall graphics
- Wallpaper
- Interior décor
- Floor graphics
- Vehicle wraps/fleet graphics

- T-shirts/hoodies/yoga pants
- Caps
- Tote bags
- Apparel
- Sportswear/spiritwear
- Upholstery
- Pens
- Smartphone/tablet cases
- Golf balls
- Hockey pucks
- Water bottles/YETI cups
- Coffee mugs/cups
- Beer/soda cans
- Awards

...virtually any 3D object

Digital equipment makes it easier than ever to offer virtually unlimited personalized and printed products, for very little cost, whether it be UV, dye-sub, latex, or solvent equipment, wide- or small-format. Textiles and signage (and the combination, soft signage) are some of the hottest new product markets, and so little of these new areas are as yet digital, so there us tremendous room for growth.

Items That Are Tepid

Packaging

Everyone and their uncle cites packaging as a potentially lucrative growth market, and while there are certainly opportunities for mainstream commercial printers in packaging, we suspect it will be more on the label side of things. The problem with expanding into packaging is that there are substantial barriers to entry that have nothing to do with printing technology. They have more to do with breaking into a very insulated industry, where packaging printers and converters have a much different relationship with consumer products companies than do traditional printers with their customers. In packaging, it's a much more tightly knit relationship, usually shrouded in secrecy and proprietary processes, that makes it hard for outsiders to get a foot in the door. Then there are issues of understanding what is more of a manufacturing process than a printing process, navigating EPA and/or FDA regulations (if food, cosmetics, or pharmaceuticals are involved), and basically establishing credibility with brandowners.

We're not going to say that these are insurmountable problems, or that there is no chance of any commercial printer expanding into packaging, but we caution those thinking about it that it's not a case of buying a piece of equipment and getting on with it—unlike the types of specialty printing we discussed earlier, which are far easier to get into.

Items That May Be Warming

QR and AR

If you do a Google search for "QR code usage statistics," the top three hits are articles titled "Are QR Codes Still Relevant? (Were They Ever?)," "The Death of QR Codes Is Greatly Exaggerated," and "5 Reasons Why QR Codes Are Worse Than Useless." Still, there are other articles that are a bit more bullish on the concept. (A couple of years ago, the *doyenne* of data-driven printing, Heidi Tolliver-Walker, published a report that found 30% of mobile users did actually scan QR codes. Not a *huge* number, but a number.

It's safe to say that QR codes have never quite lived up to their potential, at least in the US. (In Asia, they are extremely popular, and have even been adopted in China for mobile payments. In restaurants and cafés, waitresses have QR codes on their shirts and satisfied customers scan the codes to tip them.)

We are adding QR to the "May Be Warming" list for no other reason than the fact that Apple is building a QR code reader into the iPhone Camera app in iOS 11, which is now in beta and slated for release this fall. (It's still in beta, so who knows if they'll keep it in the final release.) Building a QR reader into a smartphone could go a long way toward stimulating the use of the codes.

Likewise Augmented Reality (AR), which is often lumped together with QR. AR has been used to describe many different things, but for our purposes here, it is essentially a way of doing the same thing as QR only without needing to use big, ugly codes. (Most current AR development platforms, like Layar, create an "image map" of an AR-able image, which it then stores in a database. When the AR reader scans a printed version of that image, it compares that image to the database, and if it finds a match, launches whatever trigger has been programmed into it, such as going to a website, playing a video, etc.)

The Pokémon Go phenomenon of a few years ago notwithstanding, AR, like QR, has never quite lived up to its potential either. But again, that may be changing. In 2015, Apple bought Metaio, which was one of the most popular (such as it was) AR development platforms. Things were quiet for a while, but the forthcoming iOS 11 also includes a new ARKit AR development platform. Again, no idea what the final form will look like (if it even makes into the final release), but the biggest impediment to AR proliferation has been a) the expense and complexity of creating AR-enabled content (although for basic things like launching a website, Layar's development program is easy to use and not that expensive), and b) the lack of a standard platform and reader that works with all AR content. Apple's embrace of AR may solve at least some of the problems of AR. But we'll see.

(By the way, we should give a shout out to HP's Link technology, which is also a way of adding invisible triggers to printed materials as a way to "make print interactive." In fact, our book *The Third Wave* was written and developed from the start as being AR-enabled using Link.)

Why should we care about things like QR and AR? Because, yes, they are great ways to "make print interactive," but even better, they make print *measurable*. One big reason that marketers prefer electronic media to print is that electronic media are more trackable. They can determine how a potential customer got to a website—did they come from an email message? A search engine? Another site? A blogpost? On the other hand, no one knows if a printed brochure, or a sign, or a poster drove any traffic anywhere at all. But, if you print

a QR code or add AR to a direct mail piece, or a brochure, or a sign, or a magazine ad, if someone scans it and goes to a site, the marketer then knows that it was the printed piece that sent them there. Suddenly, the ROI of using print can be accurately determined. *That's* the real reason we should be excited about QR and AR, although the rich media stuff is pretty cool, too.

8. Dr. Joe's Industry Forecast

Our usual caution to approaching forecasts is that the best that any forecasting model can do is predict the past. That's what extrapolation is. You're taking data about what has already happened and assuming the same thing will happen again, albeit with some alterations based on other assumptions you plug into the model. Then, you make a judgment about how to forecast from there. There are too many forecasters that just rely on statistical models alone.

We offered detailed set of forecasts in our *Forecast 2017* report, and will go into more detail about 2018 in our *Forecast 2018* report in December, so for this mid-year report, we'll keep things simple.

All our statistical models have turned very pessimistic as of late, some more so than others, because the recent past has been as bad as it has been. If a program is extrapolating based on declining trends, unless there is a serious bug in the program it will not suddenly spit out a wildly optimistic forecast.

On the other hand. It's remotely possible that in the next several months the Internet could completely crash[11] and print will return to being the *de facto* way people communicate. But de facto the matter is that we should not expect that to happen, and certainly not base business decisions on it.

We are in a kind of an unsettled period, and forecasting is very difficult in these kinds of situations. Macroeconomically, we don't know how things are going to work out; politically, every day is a grand new adventure in who the heck knows what; and the Third Wave effects are starting to appear. So forecasting is best used as scenario planning, rather than definitively "this will happen as written." As we also always say, none of this is destiny, and really the only thing that will affect the results of an individual company is the strategies and decisions made by the owners and executives of those companies. Our forecasting models can't take into account your company specifics. It would be great—and a little creepy—if they could, but they can't. As they say, "your mileage will vary."

[11] Man, are there days that we wish that would happen.

Table 26. Forecast Models and WTT Forecast[12]

2016 = $82.7B (Q1-17 $US)	Exponential Smoothing	Curve	Box Jenkins	Average of Methods	SFM/ WTT Forecast	
2017	$75.7	$65.4	$76.7	$72.6	***$78.0***	-5.7%
2018	$68.5	$59.2	$72.6	$66.8	***$75.0***	-3.8%
2019	$61.2	$52.8	$69.1	$61.0	***$72.0***	-4.0%
2020	$54.0	$46.2	$65.5	$55.2	***$68.0***	-5.6%
2021	$46.7	$39.4	$62.0	$49.4	***$64.0***	-5.9%

The Last Word

2017 is a weird year,[13] certainly for the printing industry. Despite the discouraging shipments data, consolidation, and other negative trends, there still remains a lot of enthusiasm in the industry. There are companies who are doing very well, some because of luck, but some because they made good decisions and have been able to adapt to the changing times, and others just avoided bad decisions. We talk to these folks at shows, conferences, meet-and-greets, or interviews for articles, and they are really jazzed about what it is they do, and the new areas they have pursued, or the new equipment they have acquired, really gets them excited. That's good to see, because we remember the 2000s.

As long as they keep paying attention to new technologies, new products, new applications, new ways of communicating—new opportunities—and understanding and being able to convey the value proposition if print, they will continue to do well.

In the meantime, as always, WhatTheyThink looks forward to continuing to provide cutting-edge research, analysis, and commentary on these dynamic markets.

See you—or at least 24% of you—at PRINT.

[12] "Average of Methods" is not a forecast but an average of the others just for comparison purposes.

[13] And isn't that the understatement of the millennium.

Appendix. Methodology and Questionnaire

The number of usable responses to the Summer 2017 survey was 310 WhatTheyThink printing executives. Approximately 8800 survey invitations were sent, and also supported by general links in business social media. The 370 excluded respondents were from other industries and countries that were not the survey target of US commercial printers. There were no non-response follow-ups, but non-response bias was judged by comparisons to other surveys and especially government statistical data.

Respondents were gathered from WhatTheyThink's commercial printing subscribers, recruited through social media (Twitter, LinkedIn), and special appeals to the WTT Economics and Research newsletter readers. The results were weighted to 2015 County Business Patterns NAICS 323 (general commercial printers).

A couple of caveats when using these data. Since our respondent base was drawn solely from the WhatTheyThink subscriber base—and remember that WhatTheyThink is an online-only publication—the respondents were likely (and we say this not to sound self-aggrandizing) more technologically proficient than other printing company owners or managers who have less of an affinity for the Internet, and their business activity tends to be slightly healthier than the industry at large.

By the way, if you know the typical size of printing company by their revenues and not by their number of employees, this table of very rough revenue ranges might be useful:

Number of employees	Rough estimate range of annual revenues
1-9	<$1 million
10-19	$1.25 to $2.5 million
20-49	$2.5 to $6 million
50-99	$7.5 to $15 million
100-249	$15 to $40 million
250+	$50 million and more

Questionnaire

Subject line: Your Professional Opinion Is Requested

WhatTheyThink is conducting a survey of printing and communications executives, like you, about their business outlook and the industry's print and service offerings.

We need your help. We are contacting selected key executives to assist us in this project, so every response is important.

Your responses will be kept confidential. We will not release your name or answers to anyone; your responses will be combined with all of the others in survey totals. This is strictly a research project. Responses will *not* be used to create sales leads for advertisers or dealers.

To thank you for your assistance, we will send you an executive summary of this project. At the end of the questions, you will have a choice to either download the book *This Point Forward* by Dr. Joe Webb and Richard Romano or their new special report *Cloud Production: Path to Profitability*.

If you want to receive the summary report, please enter your email address in the last question of the survey.

Thank you again for your consideration and your help.

Kindest regards,

Eric Vessels

President, WhatTheyThink

1) What is the primary business at this location? (Choose only the one that is the highest portion of 2016 sales.) Select only the best single answer.

- o Quick printing (mainly b&w digital printing and copying, offset duplicators)
- o Mainly book printing
- o Mainly commercial multicolor sheetfed or web offset
- o Mainly digital color (high-volume, high-production, like iGen or HP Indigo)
- o Mainly digital black & white (high-volume, like Docutech)
- o Commercial printing—offset and digital (at this location)
- o Commercial printing—offset only (at this location)
- o Non-offset commercial (gravure, letterpress, flexo, etc.)
- o Specialty printing and promotional items (envelopes, business cards, stationery, greeting cards, novelties, etc.)
- o Wide-format/signage/display specialist
- o Prepress services
- o Binding and finishing services
- o Inplant printing department, corporate, government, education, or non-profit
- o Newspaper publisher/printer, daily and non-daily newspapers
- o Business forms/systems dealer
- o Business forms printing
- o Folding carton and other packaging (like labels/wrappers, flexible packaging, corrugated, etc.)
- o Print management company (like InnerWorkings)
- o Independent print broker
- o Graphic design, advertising agency, publishing

- Paper merchant/dealer, industry manufacturer/vendor/dealer/VAR
- Industry journalist, analyst, consultant
- Other, please specify

2) Where is this business located?

- USA
- Canada
- Mexico or Central or South America
- Europe
- Asia
- Africa
- Australia/Oceania

3) How many employees are at this specific location?

- 1-4
- 5-9
- 10-19
- 20-49
- 50-99
- 100-249
- 250-499
- 500+

4) In terms of your 2017 revenues so far this year at this location only, how do they compare to the first half of 2016?

- increased more than 10%
- increased between 6% and 10%
- increased between 1% and 5%
- stayed about the same
- decreased between 1% and 5%
- decreased between 6% and 10%
- decreased more than 10%

5) In terms of your 2017 jobs/orders so far this year at this location only, how do they compare to the first half of 2016?

- increased more than 10%
- increased between 6% and 10%
- increased between 1% and 5%
- stayed about the same
- decreased between 1% and 5%
- decreased between 6% and 10%
- decreased more than 10%

6) In terms of your 2017 profitability so far this year at this location only, how does it compare to the first half of 2016?

- increased more than 10%
- increased between 6% and 10%

- increased between 1% and 5%
- stayed about the same
- decreased between 1% and 5%
- decreased between 6% and 10%
- decreased more than 10%

7) In the next 12 months, which of the following will be your biggest business challenges? (click all that apply)

- increasing plant productivity
- managing workflow automation
- competition from other print providers
- capabilities of sales personnel
- capabilities of production personnel
- consumables and supplies prices
- economic conditions
- financing costs or finding capital
- need for employee training
- finding qualified sales personnel
- finding qualified production personnel
- increasing employee benefit costs
- profitably handling shorter runs
- deciding whether to keep or discard our offset equipment
- loss of print business to digital media
- pricing
- job tracking
- keeping up with technological changes
- owner/management retirement
- retirement of key production personnel
- attracting younger employees to the business
- selling our business
- adding/updating web-to-print/online storefront
- getting web-to-print to work on smartphones and other mobile devices
- adding wide-format equipment/services
- transitioning jobs from offset to high-speed production inkjet equipment
- adding non-print media capabilities (web design, app development, social media management, etc.)
- other, please specify _____

8) Which of the following investment items have you budgeted for and plan to acquire in the next 12 months? (click all that apply)

- additional space/new location
- color measurement equipment (densitometer, spectrophotometer)
- color management software
- finishing/bindery equipment for offset/analog production
- finishing/bindery equipment for digital production
- toner-based color digital press (like HP Indigo, Xerox iGen)

- high-speed production inkjet printing equipment (like HP PageWide, Canon Océ ColorStream/ImageStream)
- sheetfed offset press
- web offset press—new
- wide-format color printer (24 in.+)
- dye-sublimation printer (like Epson, Roland, Mimaki)
- prepress RIP
- Management Information System (MIS)
- Customer Relations Management (CRM) system
- workflow automation software
- other, please specify _____

9) Have you attended or are you planning to attend any of these events in 2017? (click all that apply)

- EFI Connect
- Dscoop
- Graphics of the Americas
- ISA Sign Expo
- SGIA Expo
- Print 17 (Chicago)
- LabelExpo
- CPP Expo
- NPOA (National Print Owners Association)
- Other, please specify _____

10) For each of the following, please indicate the extent to which it has been increasing or decreasing over the past 12 months:

	increased more than 10%	increased between 6% and 10%	increased between 1% and 5%	stayed about the same	decreased between 1% and 5%	decreased between 6% and 10%	decreased more than 10%	don't have/ don't know
offset jobs								
color digital printing jobs								
black-and-white digital printing jobs								
wide-format jobs								
non-print marketing services								

11) Please indicate the extent to which you agree with the following statements:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	don't know/not applicable
Our company uses business development strategies rather than traditional sales						
Our company hires employees based on their end-user marketing experience rather than printing industry expertise						
The age/generation gap between our sales people and clients is a problem for our company						
Our company makes an effort to track ROI and provide other analytics for client jobs						
Our company provides clients with data about their jobs that facilitates integration with marketing automation systems						
Our company allies with other businesses to offer print services/products we don't produce in-house						
Our company allies with other businesses to offer non-print services/products we don't produce in-house						

12) As our thanks for completing this survey, which free gift would you prefer:

- o a free copy of *This Point Forward* by Dr. Joe Webb and Richard Romano
- o the special report *Cloud Production: Path to Profitability*

13) To receive your free gift, please enter your e-mail address below:

Thank you very much!