

Restaurants Industry

Restaurants Technology Primer:
Automating restaurants

Industry Overview

Foodservice's automation potential is high

Increasing use of automation -- processes with limited or no human intervention -- has characterized the economy for decades, as companies have turned to automation to enhance labor productivity, especially for manual and predictable tasks. The physical and repetitive nature of some restaurant work makes it well-suited to tech that supports -- and sometimes replaces -- human action. With labor costs accounting for ~36% of the average restaurant's costs (~30% of revenue), the impetus to automate is strong.

Digital ordering is widely available

The most common example of automation at scale in restaurants is around order-taking, a task that is critical to restaurant operations but one that is predictable, physical, and requires few specialized skills. Digital ordering systems (apps, desktop/mobile sites, and self-service kiosks) facilitate faster order processing and payment and greater accuracy. They also enhance the restaurant experience for consumers who increasingly prefer full control. While the broader restaurant industry began testing digital ordering a decade ago (pizza chains were earlier), COVID induced a rapid steepening of the adoption curve.

Robotic production is still early stage

While digital ordering is ubiquitous, back-of-house robotics remain on the vanguard of automation. Companies like CMG and SG have invested in collaborative robotics ("co-bots") to automate food prep and assembly. CMG's "Chippy" and "Autocado" robots automate preparation while SG's robotic makeline, the "Infinite Kitchen (IK)," automates assembly (automated makelines are earlier stage at CMG). These technologies are still nascent (CMG began testing Chippy in F22, Autocado in F23, and SG began rolling out IK in F23), but we expect labor savings and throughput benefits materialize as they scale.

More efficient stores, more enjoyable jobs

Restaurants that have invested in co-bots have identified first order benefits from labor savings, in terms of reductions in both labor hours (e.g., fewer team members required to operate an IK versus SG's traditional prototype) and turnover, which mitigates replacement and training costs. We expect second order benefits to manifest in volume and traffic gains, as labor efficiencies improve throughput, order accuracy, and overall experience. We estimate that orders placed digitally (MO&P) generate 10 ppt higher margins versus traditional in-store orders. For SG, we estimate IK restaurants could generate store-level returns 5-10 pts above the current fleet.

CMG, SG, TXRH should benefit from increased automation

We believe increased customer use of digital order/payment should benefit SG and TXRH, both of which have elevated labor costs relative to their industry peers: labor costs as a % of sales are 31% for SG (vs 27% fast casual average) and 35% for TXRH (vs 31% full-service average). We see CMG and SG as beneficiaries of robotic production because of their "assembly line" operating models. For TXRH, we believe rolling out tabletop kiosks (began in F22) could be meaningful given that the concept's labor costs are higher relative to full-service peers despite industry leading sales volumes.

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Stock symbol key:

CMG: Chipotle
SG: Sweetgreen
TXRH: Texas Roadhouse

Glossary of terms:

MO&P: Mobile order & pay
AI: artificial intelligence
AUV: average unit volume
G&A general & administrative expense
RLM: restaurant-level margin

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Exhibit 1: Fast food and counter worker occupations -- with high potential to be AI-affected - have shown the highest change in the number of jobs

Job trends for detailed occupations considered high risk for automation 1999 – 2029, absolute and percent change

| Title | Absolute change (in thousands) | | | | Percent change | | | |
|---|--------------------------------|-----------------|-----------------|--------------|----------------|------------|-------------|-------------|
| | 1999–2009 | 2008–18p | 2008–18 | 2019–29p | 1999–2009 | 2008–18p | 2008–18 | 2019–29p |
| All occupations | 12,378 | 15,274 | 10,028 | 6,038 | 10.5 | 10.1 | 6.6 | 3.7 |
| A. Potential AI-affected occupations | | | | | | | | |
| Personal financial advisors | 69.5 | 62.8 | 63.3 | 11.6 | 86.9 | 30.1 | 30.4 | 4.4 |
| Interpreters and translators | 26.4 | 11.3 | 25.2 | 15.5 | 193.3 | 22.2 | 49.4 | 20 |
| Surgeons, except ophthalmologists | -3.9 | 9.3 | -16.3 | -0.8 | -8 | 17 | -30 | -2 |
| Fast food and counter workers | 827.8 | 443.3 | 957.3 | 460.9 | 35.1 | 13.7 | 29.7 | 11.4 |
| Janitors and cleaners | -0.2 | 104.1 | 29.1 | 105.6 | 0 | 4.4 | 1.2 | 4.4 |
| Maids and housekeeping cleaners | -25.6 | 85.5 | -3.8 | -4.2 | -2.8 | 5.7 | -0.3 | -0.3 |
| Landscaping and groundskeeping workers | 120.5 | 217.1 | -0.6 | 119.9 | 16.3 | 18 | 0 | 10.1 |
| Heavy and tractor-trailer truck drivers | -7.5 | 232.9 | 160.4 | 30.6 | -0.5 | 12.9 | 8.9 | 1.5 |
| Industrial truck and tractor operators | -22.4 | 16.7 | 4.6 | 17.6 | -3.8 | 2.7 | 0.8 | 2.8 |
| Laborers and freight/stock/material moving | 100.2 | -18.7 | 636.5 | 125.7 | 4.9 | -0.8 | 27.5 | 4.2 |
| Subtotal or percent change | 1,084.80 | 1,164.30 | 1,855.70 | 882.4 | 10.4 | 8.7 | 13.9 | 5.8 |
| B. Occupations with pre-AI potential effects | | | | | | | | |
| Loan officers | 98 | 33 | -11.6 | 10.1 | 49 | 10.1 | -3.5 | 3.2 |
| Tax preparers | 3 | 2.8 | -9.3 | -0.5 | 5.2 | 2.9 | -9.7 | -0.6 |
| Computer programmers | -160.7 | -12.3 | -176.4 | -20.1 | -30.4 | -2.9 | -41.3 | -9.4 |
| Lawyers | 92.5 | 98.5 | 64.7 | 32.4 | 19.9 | 13 | 8.5 | 4 |
| Paralegals and legal assistants | 70.9 | 79.3 | 41.4 | 35.3 | 40.3 | 26.3 | 13.7 | 10.4 |
| News analysts, reporters, journalists | -12.6 | -4.4 | -19.6 | -5.8 | -19.6 | -6.3 | -28.3 | -11.2 |
| Public relations specialists | 124.4 | [1] | [1] | 19.7 | 105.2 | [1] | [1] | 7.2 |
| First-line supervisors, retail sales | -74 | 88.4 | -137.2 | -81.1 | -6 | 5.2 | -8.1 | -5.5 |
| Cashiers | 277.3 | 125.5 | 98.5 | -265.4 | 8.8 | 3.5 | 2.8 | -7.4 |
| Counter and rental clerks | 24.4 | 13.7 | -12.1 | 4.5 | 6.2 | 3.1 | -2.7 | 1.1 |
| Retail salespersons | 480.5 | 374.7 | 21.7 | -25.1 | 12.9 | 8.3 | 0.5 | -0.6 |
| Customer service representatives | 406.2 | 399.5 | 720.2 | -59 | 22.7 | 17.7 | 32 | -2 |
| Telemarketers | -177.9 | -37.8 | -174 | -19.4 | -36.6 | -11.1 | -50.9 | -14.2 |
| Stockers and order fillers | 63.6 | 134.4 | 197.8 | 15.5 | 3.5 | 7.2 | 10.6 | 0.7 |
| Reservation/transportation ticket agents | -79.8 | 13.6 | -34.5 | -3.6 | -35.9 | 8.1 | -20.5 | -2.9 |
| Farmworkers and agricultural equipment operators | 23.9 | -18.7 | 72.4 | 9.1 | 8.9 | -2.4 | 9.3 | 1 |
| Welders | -79.4 | -10.5 | -4.1 | 11.1 | -16.6 | -2.3 | -0.9 | 2.3 |
| Subtotal or percent change | 1,075.00 | 1,276.20 | 486.4 | -330 | 7.1 | 7.1 | 2.7 | -1.8 |
| All specific occupations | 2,159.80 | 2,440.50 | 2,342.10 | 552.4 | 8.5 | 7.8 | 7.5 | 1.6 |

Source: Bureau of Labor Statistics

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Digital ordering is widely available

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Exhibit 2: Digital ordering was the exclusive purview of the pizza category until the middle of the last decade

Timeline of restaurants' investments into digital ordering, self-service kiosk technology

| | |
|-------------|--|
| 2007 | Domino's introduces online and mobile ordering app |
| 2009 | Pizza Hut introduces mobile ordering app (online ordering launched in 1994) |
| 2011 | Papa John's launches mobile ordering app |
| 2012 | Burger King launches mobile payments pilot program |
| 2014 | Taco Bell launches mobile ordering and payment app |
| 2014 | Burger King rolls out mobile order and pay |
| 2014 | Wendy's rolls out mobile order and pay |
| 2014 | McDonald's invests in digital enhancements (including self-order kiosks, digital menu boards, digital order & pay) |
| 2014 | Chili's partners with Ziosk to install tabletop payment tablets |
| 2015 | Starbucks Mobile Order & Pay Available to Customers Nationwide |
| 2015 | Popeye's launches first mobile app |
| 2015 | Olive Garden introduces Ziosk (self-service kiosks) tabletop tablets |
| 2015 | Papa John's rolls out digital payment tool to split bills |
| 2016 | Portillo's launches mobile order and pay app |
| 2016 | Chili's partners with Olo to enhance to-go business, online ordering platform |
| 2016 | Outback Steakhouse launches mobile order and pay app |
| 2016 | Wendy's rolls out new mobile app, self-service kiosks |
| 2016 | Shake Shack introduces first-ever mobile ordering app |
| 2016 | Sweetgreen launches new mobile app with mobile ordering, payment, and loyalty integration |
| 2017 | Chipotle announces a new mobile app to enhance mobile and online ordering, enable digital payments |
| 2017 | KFC rolls out Easy Ordering Functionality (digital ordering enhancements) |
| 2017 | Shake Shack begins testing self-service kiosks |
| 2019 | Taco Bell installs self-order kiosks in all stores |
| 2019 | KFC launches online ordering, announces investments in digital menu boards |
| 2019 | Wingstop launches online ordering and mobile app |
| 2019 | Jack in the Box launches mobile order and pay app |
| 2022 | Texas Roadhouse launches pay-at-the-table system (Roadhouse Pay) |
| 2022 | Shake Shack announces plans to retrofit all locations with self-service kiosks by 2023 |
| 2024 | Dutch Bros begins testing mobile orders |

Source: Company filings

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Robotic production is still early stage

While digital ordering is ubiquitous, back-of-house robotics remain on the vanguard of automation. Companies like CMG and SG have invested in collaborative robotics ("co-bots") to automate food prep and assembly. CMG's "Chippy" and "Autocado" robots automate preparation while SG's robotic makeline, the "Infinite Kitchen (IK)," automates assembly (automated makelines are earlier stage at CMG). These technologies are still nascent (CMG began testing Chippy in F22, Autocado in F23, and SG began rolling out IK in F23), but we expect labor savings and throughput benefits materialize as they scale.



Exhibit 3: Companies have talked about leveraging robotics and AI tech to reduce labor intensity and improve customer experience

Restaurant company commentary on robotics and AI

| Company Technology | | Application | Commentary |
|--------------------|---|--|---|
| CMG | Chippy / Miso Robotics | Autonomous kitchen assistant that integrates culinary traditions with artificial intelligence to make tortilla chips | 1Q22 Earnings Call: "Our goal is to drive efficiencies through collaborative robotics that will enable Chipotle's team members to focus on other culinary tasks in the restaurant. We are going to place Chippy in a Southern California restaurant soon, so we can leverage our stage-gate process to listen, test, and learn." 3Q23 Earnings Call: "Through our partnership with Hyphen, we've been testing the Hyphen makeline which fits into our existing digital makeline footprint and automatically makes bowls down below with the ability for our team to build tacos, burritos, kids' meals, and quesadillas on top. There are many reasons why we are excited about automating the digital makeline such as increased capacity and improved speed and accuracy." |
| CMG | Hyphen | Automated digital makeline | 3Q23 Earnings Call: "Autocado is also at our Cultivate Center, and our restaurant teams are providing feedback to be included in the next phase of the prototype. As we mentioned last quarter, Autocado could save time and eliminate a less favorable task but still offer one of the favorite parts of the job." |
| CMG | Autocado / Vebu | "Cobot" that cuts, cores, and scoops avocados | Customers can order food on the app, pull into a curbside pick-up lane, go through the drive-through lane, and order to-go food thru a single kiosk inside. Food is served via conveyor belt in the order-ahead lane. |
| MCD | Fort Worth, TX restaurant | Automated restaurant | |
| SBUX | Siren System | Proprietary system that features a custom ice dispenser, milk-dispensing system and new, faster blenders | "[Siren System] is located within reach of a barista, reducing bending and heavy lifting. It also eliminates the need to move back and forth behind the service bar and eases congestion in a crowded, busy space" (Starbucks Stories 9/23/22) |
| SG | Spyce / Infinite Kitchen | Automated bowl assembly | "sweetgreen Infinite Kitchen technology enables quicker pace, precise portioning and increased accuracy; the technology dispenses greens, dressing bowls and plates, evenly dispersing ingredients and mixing salads; to order, customers can utilize self-service kiosks, place an order through the mobile app, or order directly from the restaurant's host" (SG Press Release 5/10/23) |
| WEN | Wendy's FreshAI / Google Cloud AI-based voice ordering for drive-thru | | AI solution designed to automate drive-thru ordering, including generative AI to have conversations with customers, understand made-to-order requests, and generate responses to frequently asked questions (WEN Press Release 5/9/23) |

Source: Company reports, Bloomberg

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Exhibit 4: Limited and full service restaurant companies are testing robotics and AI technology

Robotics/Automation and AI technology

| Company | Description | Customers Testing the Technology |
|----------------------------|--|---|
| Robotics/Automation | | |
| Miso Robotics | Provides robotics and intelligent automation solutions to the commercial foodservice industry | CMG, JACK, White Castle |
| Botrista | Automated robot barista | The Halal Guys |
| Bear Robotics | Robotic server / busser | EAT (Chili's), DENN |
| Hyphen | Automated makeline | CMG |
| PreciTaste | AI-enabled restaurant solutions (prep, forecasting, vision) | CMG |
| Picnic | Pizza assembly robot | DPZ (Germany) |
| AI Voice/Chat Tech | | |
| Presto | AI & automated solutions for drive-thru and dine-in (voice/AI order taking and pay-at-table tablets) | JACK (Del Taco), CKE Restaurant Holdings, DIN (Applebee's), |
| SoundHound | Automated voice assistant | White Castle |
| Valyant AI | AI platform for drive-thru QSRs | CKE Restaurant Holdings |

Source: Company information

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More efficient stores, more enjoyable jobs

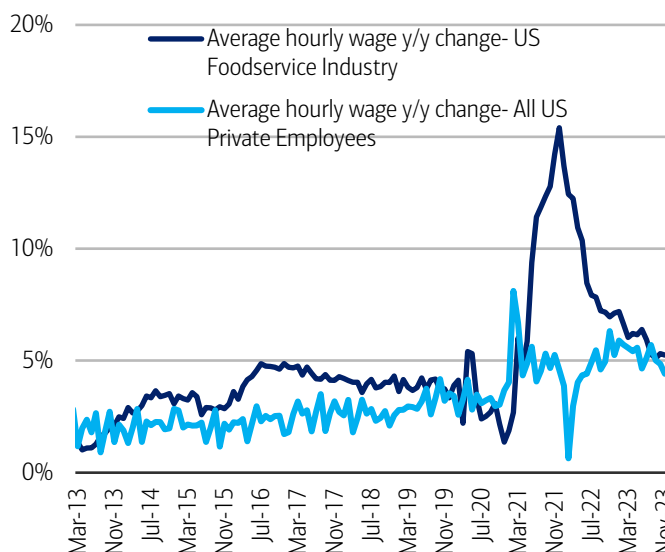
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and traffic gains, as labor efficiencies improve throughput, order accuracy, and overall experience. We estimate that orders placed digitally (MO&P) generate 10 ppt higher margins versus traditional in-store orders. For SG, we estimate IK restaurants could generate store-level returns 5-10 ppts above the current fleet.

Exhibit 5: The y/y rate of hourly wages remains elevated, though it has declined from its post-COVID highs

Average Food Service hourly wage, y/y change

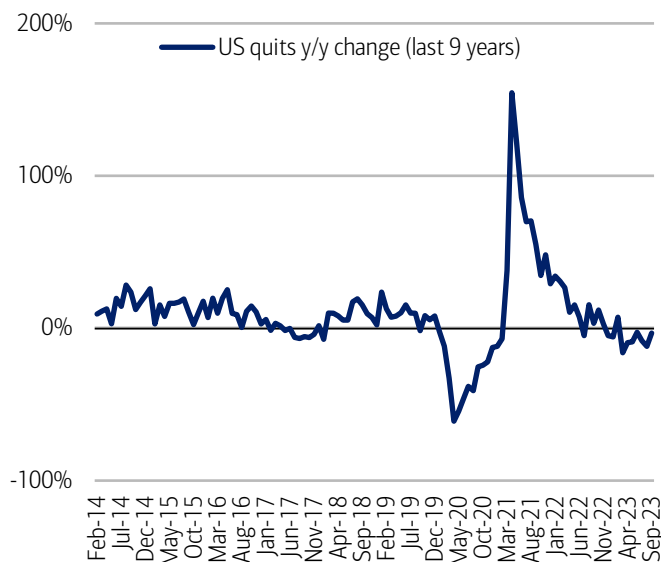


Source: US Bureau of Labor Statistics

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Exhibit 6: Leisure and Hospitality turnover increased during COVID, spurring restaurants' investments into labor management

Leisure and Hospitality quits, y/y change (9-yr)



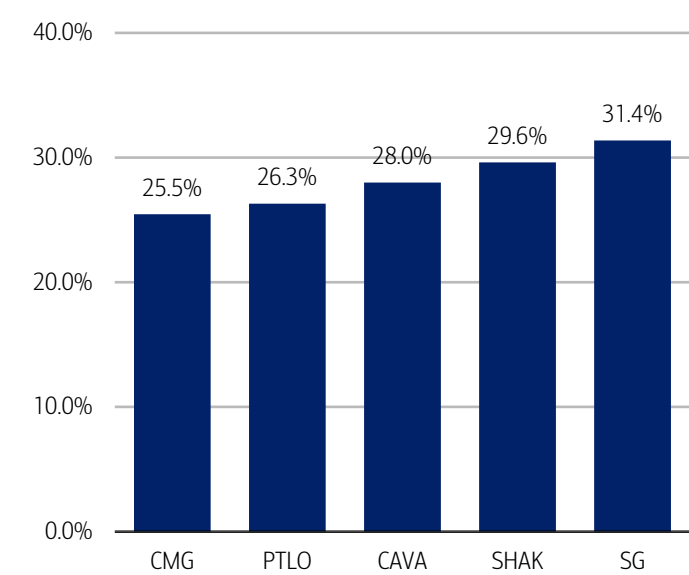
Source: US Bureau of Labor Statistics

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CMG, SG, TXRH should benefit from increased automation

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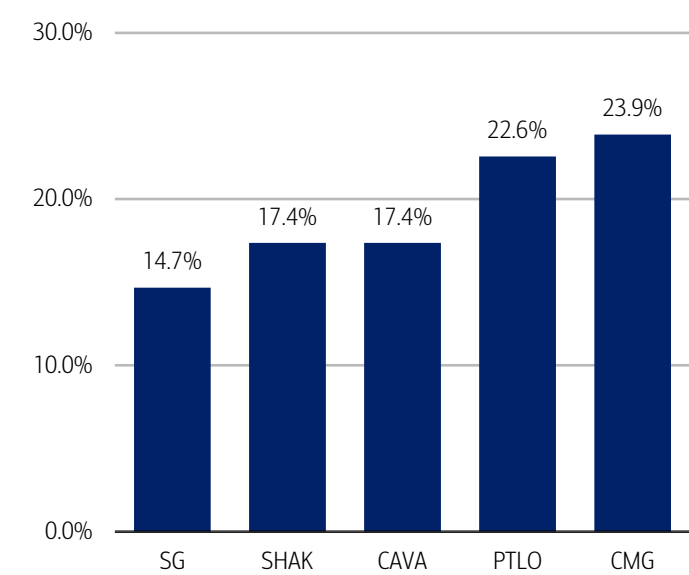
Exhibit 7: SG has fast casual's the highest labor costs...
Labor and other expenses as % of revenues (F22)



Source: Company information, BofA Global Research

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Exhibit 8: ...and the lowest restaurant-level margins
Restaurant-level EBITDA margin (F22)

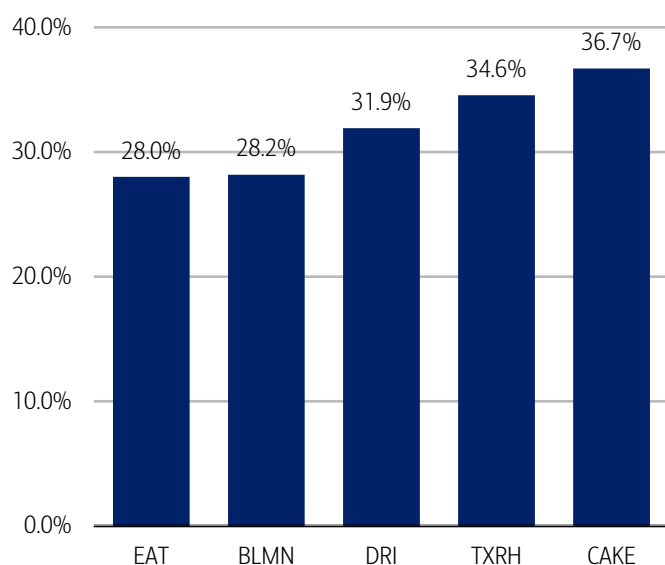


Source: Company information, BofA Global Research

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Exhibit 9: Despite industry leading sales volumes, TXRH's labor costs are in-line with full service rather than lower as sales leverage would suggest

Labor and other expenses as % of revenues (F22)

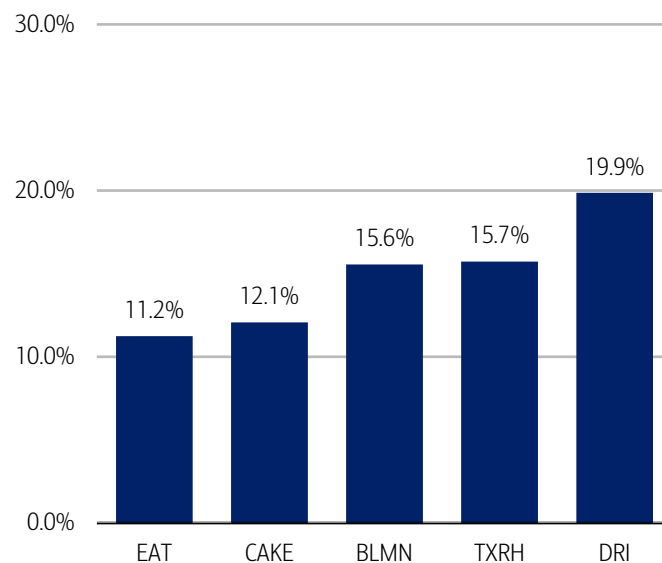


Source: Company filings

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Exhibit 10: DRI and TXRH have the highest restaurant-level margins in among full service peers

Restaurant-level EBITDA margin (F22)



Source: Company filings

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Exhibit 11: For CMG< we estimate orders that are placed digitally and picked up in restaurant (e.g., Mobile Order & Pay) generate margins that are ~10ppts better than traditional in-store orders

Chipotle unit economics (est) by channel

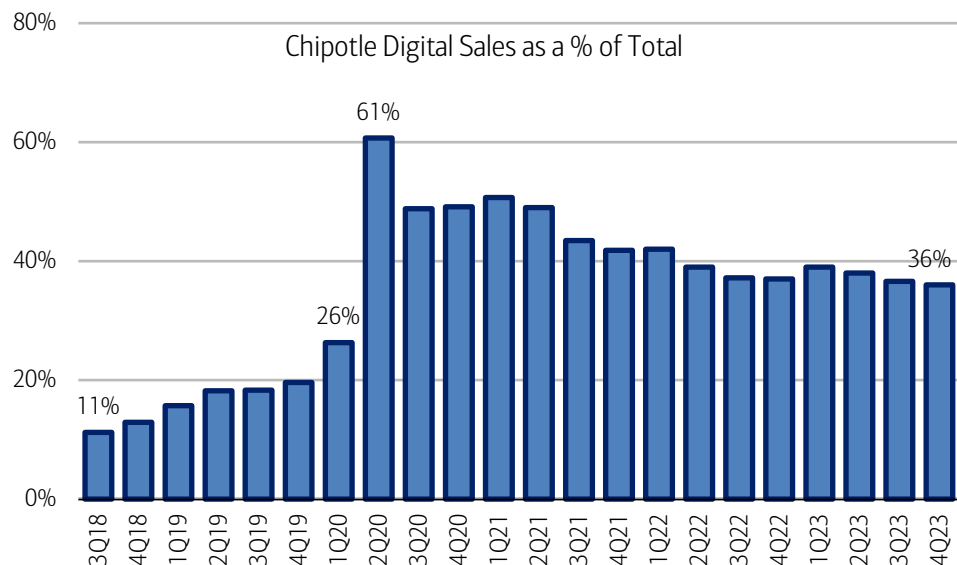
| Average unit count F2023E | Systemwide | | | | | 3,337 |
|-------------------------------|------------|----------|----------|-------|---------|-------|
| | In-store | Catering | Delivery | MO&P | Total | |
| | 63% | 3% | 16% | 18% | 100% | |
| AUV ('000) | \$1,913 | \$91 | \$471 | \$543 | \$3,018 | |
| Food, beverage, and packaging | \$565 | \$27 | \$139 | \$160 | \$890 | |
| Labor | \$547 | \$16 | \$85 | \$98 | \$746 | |
| Occupancy | \$98 | \$5 | \$24 | \$28 | \$154 | |
| Delivery Costs | | | \$100 | | \$100 | |
| Other | \$214 | \$10 | \$53 | \$61 | \$337 | |
| Other Operating Costs | \$214 | \$10 | \$153 | \$61 | \$437 | |
| RLM | | | | | \$354 | |
| Cost Ratios | | | | | | |
| Food, beverage, and packaging | 30% | 30% | 30% | 30% | 30% | |
| Labor | 29% | 18% | 18% | 18% | 25% | |
| Occupancy | 5% | 5% | 5% | 5% | 5% | |
| Delivery Costs | | | 21% | | 3% | |
| Other | 11% | 11% | 11% | 11% | 11% | |
| Other Operating Costs | 11% | 11% | 32% | 11% | 14% | |
| RLM | 26% | 36% | 15% | 36% | 26.2% | |

Source: Company filings, BofA Global Research estimates

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Exhibit 12: CMG's digital sales mix is 10 ppt higher than it was pre-COVID

Chipotle Digital Sales as a % of total

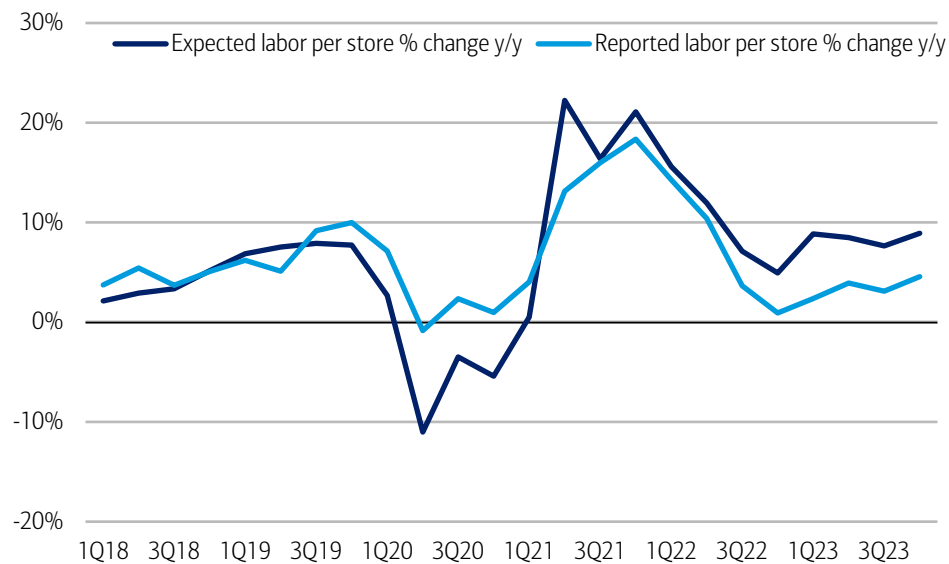


Source: Company filings

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Exhibit 13: After a year of deleverage during COVID, labor per store inflation lagged expected growth in 2021; the gap has widened since then

Reported vs Expected labor per store % change y/y



Source: Bureau of Labor Statistics, Company filings, BofA Global Research

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Exhibit 14: Assuming SG can achieve target AUVs and RLMs, higher ticket, and scale build costs over time we estimate store-level returns of ~46%

Sweetgreen unit economics (est) by store format: traditional vs Infinite Kitchen (with various assumptions)

| | Current Store Fleet (F23) | Infinite Kitchen Format - Scenario 1 (Normal AUVs) | Infinite Kitchen Format - Scenario 2 (10% Higher Ticket) | Infinite Kitchen Format - Scenario 3 (Retrofit, Higher AUVs) | Infinite Kitchen Format - Scenario 4 (LT AUV, RLM Guidance, Higher Ticket, Lower Build Costs) |
|----------------------------------|---------------------------|--|--|--|---|
| | SG | SG | SG | SG | SG |
| Average Store Count | 221 | | | | |
| Average Unit Volume | \$2.87 | \$2.87 | \$3.16 | \$3.16 | \$3.30 |
| Cost of Sales | \$0.79 28% | | | | |
| Labor and other related expenses | \$0.84 29% | | | | |
| Occupancy | \$0.27 9% | | | | |
| Other Operating Costs | \$0.47 16% | | | | |
| Occupancy and other | \$0.73 26% | | | | |
| Company Operated Costs | \$2.37 83% | \$2.17 76% | \$2.39 76% | \$2.39 76% | \$2.41 73% |
| Restaurant level margin (EBITDA) | \$0.50 17% | \$0.70 24% | \$0.77 24% | \$0.77 24% | \$0.89 27% |
| Initial Investment | \$1.50 | \$2.0 | \$2.0 | \$2.2 | \$1.9 |
| Avg Sq Ft | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 |
| Sale/Sq Ft | \$1,148 | \$1,148 | \$1,263 | \$1,263 | \$1,320 |
| ROI | 33% | 35% | 39% | 35% | 46% |

Source: Company filings, BofA Global Research estimates

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Exhibit 15: Sweetgreen and Chipotle have high CA store exposure

California share of stores

| | Stores | | CA share of: | | Global Franchise mix |
|------------------------|------------|----------|--------------|----------------|----------------------|
| | California | Total US | Global | US store count | Global store count |
| Del Taco (JACK) | 362 | 591 | 591 | 61.3% | 61.3% |
| Jack in the Box (JACK) | 946 | 2,191 | 2,191 | 43.2% | 43.2% |
| Dutch Bros (BROS) | 150 | 754 | 754 | 19.9% | 19.9% |
| Starbucks (SBUX) | 3,079 | 16,144 | 37,222 | 19.1% | 8.3% |
| Sweetgreen (SG) | 38 | 205 | 205 | 18.5% | 18.5% |
| Chipotle (CMG) | 461 | 3,216 | 3,268 | 14.3% | 14.1% |
| Taco Bell (YUM) | 871 | 7,825 | 8,320 | 11.1% | 10.5% |
| KFC (YUM) | 432 | 3,966 | 28,500 | 10.9% | 1.5% |
| McDonald's (MCD) | 1,221 | 13,445 | 40,801 | 9.1% | 3.0% |
| Popeye's (QSR) | 260 | 2,934 | 4,269 | 8.9% | 6.1% |
| Domino's (DPZ) | 585 | 6,730 | 20,205 | 8.7% | 2.9% |
| Pizza Hut (YUM) | 539 | 6,535 | 19,242 | 8.2% | 2.8% |
| Burger King (QSR) | 508 | 6,822 | 18,935 | 7.4% | 2.7% |
| Papa John's (PZZA) | 184 | 3,145 | 5,780 | 5.9% | 3.2% |
| Wendy's (WEN) | 292 | 5,998 | 7,104 | 4.9% | 4.1% |
| Tim Hortons (QSR) | - | 628 | 5,662 | 0.0% | 0.0% |
| First Watch (FWRG) | - | 492 | 492 | 0.0% | 0.0% |

Source: Aggdata, Company filings

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Exhibit 16: Stocks mentioned

Prices and ratings for stocks mentioned in this report

| BofA Ticker | Bloomberg ticker | Company name | Price | Rating |
|-------------|------------------|--------------------|--------------|--------|
| CMG | CMG US | Chipotle Mex Grill | US\$ 2686.12 | B-1-9 |
| SG | SG US | Sweetgreen | US\$ 18.76 | C-1-9 |
| TXRH | TXRH US | Texas Roadhouse | US\$ 148.36 | B-1-7 |

Source: BofA Global Research

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Price objective basis & risk

Chipotle Mexican Grill (CMG)

Our \$3,000 price objective is based on earnings power. At the current unit growth rate, we think Chipotle should be able to reach its targeted 8000 store count in roughly 7 years. By then we'd expect AUVs to exceed \$4mm - under the assumption that comps increase in-line with cost inflation - and margins to be in line with prior peaks of 27%. Assuming a G&A of 5%, which is more similar to mature company operated systems, this system would generate \$7.9bb in EBITDA. At a 20x multiple, consistent with current valuation multiples on high growth companies, the implied EV would be \$173bb, or \$77bb discounted back to today. We then add the current net cash and project out 12 months to derive our price objective of \$3,000.

Downside risks are: 1) lower than expected consumer uptake of new product innovations or digital ordering capabilities, 2) higher than expected food or labor costs that Chipotle is unable to offset with increased pricing, and 3) macroeconomic pressures that slow consumer income growth or otherwise dampen consumption.

Sweetgreen (SG)

Our \$21 PO is based on normalized earnings power. Assuming SG is able to reach its long-term target of 1000 stores in ten years, with 18% restaurant-level margin and 8% G&A, we arrive at \$274mm EBITDA. We apply a 22x terminal multiple - consistent with mature growth restaurant peers - after adjusting for SG's domestic, company-operated status - to arrive at EV of \$6.3 bb, discounted back to today at 13%.

Downside risks are i) slower SSSG as a result of lower discretionary spending, ii) inability to gain traction in new markets outside of the urban core, iii) failure to offset food and labor cost inflation through pricing and volume growth, iv) worse than expected development challenges (construction costs, permitting) which could limit unit growth.

Texas Roadhouse (TXRH)

We view TXRH's 5-year average of 1.3x (excluding COVID spike) as the appropriate target multiple given TXRH's best-in-class traffic trends and topline growth and our expectations for further operating leverage. Our PO of \$160 is based on a relative multiple of 1.3x (vs the S&P 500 index, or a 24.4x absolute multiple) on our 12-month forward EPS (F25, \$6.54).

Downside risks are: i) lower-than-expected retail beef prices and as a result, decreased value proposition for steakhouses, ii) traffic growth deceleration in response to menu price increases, iii) greater than expected slowdown in consumer spending / macroeconomic risk pressuring discretionary income, iv) slower than expected unit growth at Texas Roadhouse.

Analyst Certification

We, Sara Senatore and Katherine Griffin, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

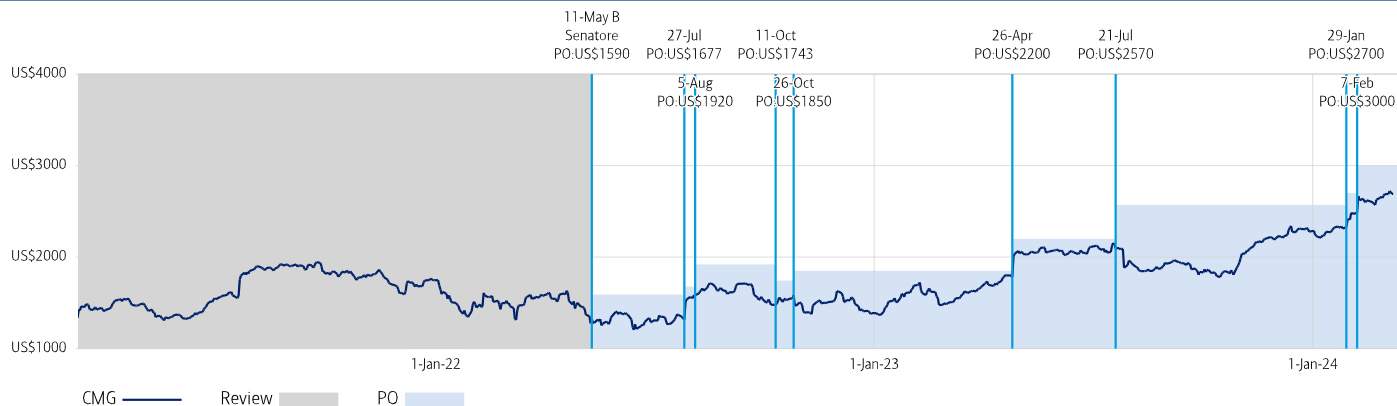
US - Restaurants Coverage Cluster

| Investment rating | Company | BofA Ticker | Bloomberg symbol | Analyst |
|---------------------|--------------------------------------|-------------|------------------|-------------------|
| BUY | | | | |
| | Chipotle Mexican Grill | CMG | CMG US | Sara Senatore |
| | Darden Restaurants | DRI | DRI US | Sara Senatore |
| | Domino's Pizza | DPZ | DPZ US | Sara Senatore |
| | Dutch Bros | BROS | BROS US | Sara Senatore |
| | First Watch | FWRG | FWRG US | Sara Senatore |
| | Jack in the Box | JACK | JACK US | Sara Senatore |
| | Krispy Kreme | DNUT | DNUT US | Sara Senatore |
| | Papa John's International | PZZA | PZZA US | Sara Senatore |
| | Portillo's Inc. | PTLO | PTLO US | Sara Senatore |
| | Starbucks | SBUX | SBUX US | Sara Senatore |
| | Sweetgreen | SG | SG US | Katherine Griffin |
| | Texas Roadhouse | TXRH | TXRH US | Sara Senatore |
| | Wingstop Inc | WING | WING US | Sara Senatore |
| NEUTRAL | | | | |
| | Bloomin Brands | BLMN | BLMN US | Sara Senatore |
| | McDonald's | MCD | MCD US | Sara Senatore |
| | Shake Shack | SHAK | SHAK US | Sara Senatore |
| | The Cheesecake Factory | CAKE | CAKE US | Katherine Griffin |
| | Yum Brands Inc | YUM | YUM US | Sara Senatore |
| UNDERPERFORM | | | | |
| | Brinker International | EAT | EAT US | Katherine Griffin |
| | Cracker Barrel | CBRL | CBRL US | Katherine Griffin |
| | Restaurant Brands International | YQSR | QSR CN | Sara Senatore |
| | Restaurant Brands International Inc. | QSR | QSR US | Sara Senatore |
| | Wendy's Co | WEN | WEN US | Sara Senatore |

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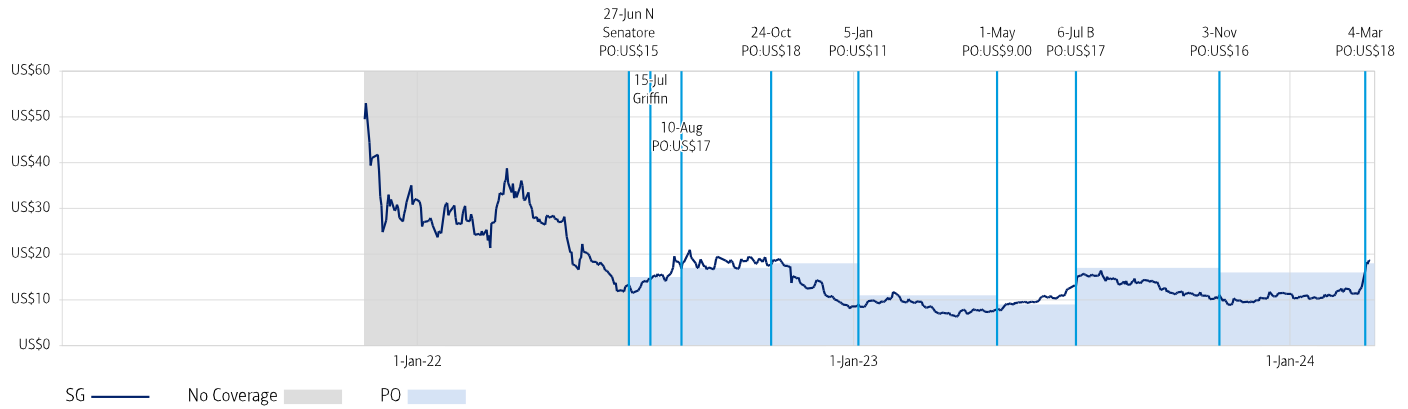
Important Disclosures

Chipotle Mex Grill (CMG) Price Chart

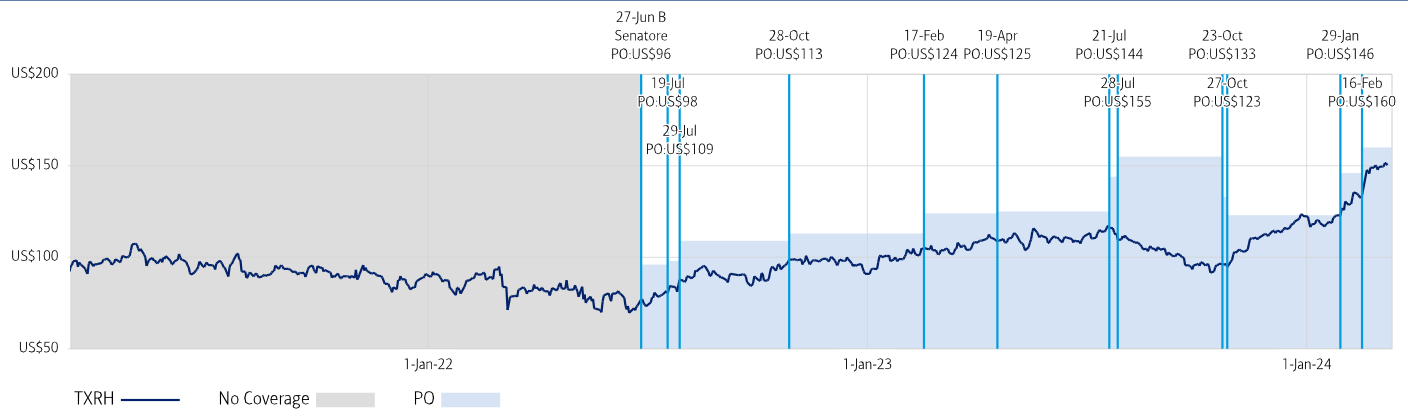


B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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Sweetgreen (SG) Price Chart

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Texas Roadhouse (TXRH) Price Chart

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Equity Investment Rating Distribution: Restaurants Group (as of 31 Dec 2023)

| Coverage Universe | Count | Percent | Inv. Banking Relationships ^{R1} | Count | Percent |
|-------------------|-------|---------|--|-------|---------|
| Buy | 21 | 58.33% | Buy | 10 | 47.62% |
| Hold | 10 | 27.78% | Hold | 3 | 30.00% |
| Sell | 5 | 13.89% | Sell | 4 | 80.00% |

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

| Coverage Universe | Count | Percent | Inv. Banking Relationships ^{R1} | Count | Percent |
|-------------------|-------|---------|--|-------|---------|
| Buy | 1895 | 53.62% | Buy | 1083 | 57.15% |
| Hold | 832 | 23.54% | Hold | 454 | 54.57% |
| Sell | 807 | 22.84% | Sell | 383 | 47.46% |

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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| Investment rating | Total return expectation (within 12-month period of date of initial rating) | Ratings dispersion guidelines for coverage cluster ^{R2} |
|-------------------|---|--|
| Buy | ≥ 10% | ≤ 70% |
| Neutral | ≥ 0% | ≤ 30% |
| Underperform | N/A | ≥ 20% |

^{R2}Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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