Past, Present and Future:
How Contractors Succeed and Which Trends are Emerging for the Future

Gregg Schoppman

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An uncannily accurate predictor of a recession coming... eventually

Yield Curve
10-2 Year Treasury Yield Spread (January 1998- January 2019)
Source: Department of the Treasury

Predicting the next US recession

Predictive indicators
Source(s): FMI analysis of multiple sources

<table>
<thead>
<tr>
<th>Indicators / Metrics</th>
<th>Recessions Considered</th>
<th>Correct Predictions</th>
<th>False Positives</th>
<th>Prediction Strength*</th>
<th>Flag/Warning Timing</th>
<th>Risk Assessment/Trending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Curve Inversion</td>
<td>5</td>
<td>5</td>
<td>-</td>
<td>High (100%)</td>
<td>~2-3 year</td>
<td>MODERATE</td>
</tr>
<tr>
<td>New Home Sales</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>High (67%)</td>
<td>~1-4 year</td>
<td>LOW/MODERATE</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>6</td>
<td>4</td>
<td>-</td>
<td>High (67%)</td>
<td>~1 year</td>
<td>LOW</td>
</tr>
<tr>
<td>US Trade Balance (BOP % change)</td>
<td>6</td>
<td>8</td>
<td>2</td>
<td>High (67%)</td>
<td>~1 year</td>
<td>LOW</td>
</tr>
<tr>
<td>Money Supply</td>
<td>7</td>
<td>5</td>
<td>1</td>
<td>High (57%)</td>
<td>~1-3 year</td>
<td>MODERATE</td>
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<tr>
<td>Lumber Sales</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>High (50%)</td>
<td>~1-2 year</td>
<td>MODERATE</td>
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<tr>
<td>MBS Held by Banks</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>High (50%)</td>
<td>~1-2 year</td>
<td>MODERATE</td>
</tr>
<tr>
<td>Rental Vacancy Rates</td>
<td>9</td>
<td>4</td>
<td>-</td>
<td>(44%)</td>
<td>~1-4 year</td>
<td>LOW</td>
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<tr>
<td>Residential CPIP</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>(33%)</td>
<td>~1-3 year</td>
<td>LOW</td>
</tr>
<tr>
<td>Stock Market Performance</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>(33%)</td>
<td>&lt;1 year</td>
<td>LOW</td>
</tr>
<tr>
<td>Copper Price (Doctor Copper)</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>(29%)</td>
<td>~2-5 year</td>
<td>MODERATE</td>
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<tr>
<td>Consumer Confidence (OECD)</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>Low (13%)</td>
<td>~1 year</td>
<td>MODERATE</td>
</tr>
<tr>
<td>Heavy Duty Truck Sales</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>Low (0%)</td>
<td>~1-2 year</td>
<td>LOW</td>
</tr>
<tr>
<td>Manufactured Goods, New orders</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>Low (0%)</td>
<td>~1 year</td>
<td>LOW</td>
</tr>
<tr>
<td>US Trade Balance (values)</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>Low (0%)</td>
<td>~1 year</td>
<td>MODERATE</td>
</tr>
<tr>
<td>Unemployment Claims</td>
<td>7</td>
<td>4</td>
<td>5</td>
<td>Low (-14%)</td>
<td>~1 year</td>
<td>LOW</td>
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</tbody>
</table>
Nonbuilding picks up while the pace of growth slows for others

US construction spending put in place
Billions of dollars
Source(s): FMI

<table>
<thead>
<tr>
<th>History</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential buildings</td>
<td></td>
</tr>
<tr>
<td>Nonresidential buildings</td>
<td></td>
</tr>
<tr>
<td>Nonbuilding</td>
<td></td>
</tr>
</tbody>
</table>

Modest industry optimism or cause for concern?

AEC-specific economic indicators
AIA Architecture Billings Index (AIA) and FMI Nonresidential Construction Index (NRCI); October 2007- January 2019
Source: AIA, FMI

FMI Nonresidential Construction Index (NRCI)
52.1
(54.6)

AIA Architecture Billings Index (ABI)
50.4
(52.1)
Horizontal overtakes vertical (and the world falls flat)

Current and forecast construction spending by segment
US; Billions of dollars
Source(s): FMI

Activity concentrates in fewer markets

Total construction spending put in place by metro market (2018)
Forecast by Metropolitan Statistical Area (MSA)
Source: FMI
Important questions to ponder

• If the overall market shifted tomorrow, could you pivot?
• What would you do, if your primary client/sector/market went away, what would be your response?
• What triggers are you using to help provide predictive indices for market health, customer viability and overall firm trajectory?
• In the face of a talent crisis, how would you make the appropriate personnel decisions and what criteria would you use to define who stays and who goes?
• What are you doing now to strategize for the future?
• How much time, energy and money are you investing in opportunities and markets that may be your dominant opportunities and markets five to 10 years from now?

Trends shaping the E&C industry

- Availability of labor at all levels is a major concern
- Megaproject proliferation and the trend toward joint ventures
- Technology and innovation advances too quickly to become table stakes
- The strategic significance of risk management
- Mergers and acquisitions: remaining strong in many sectors
- Alternate distribution channels and the changing face of the customer (competition?)
- Succession issues threaten the continuity of many firms
- Convergence of technology and construction
- Business intelligence is all about knowledge
- Organizational effectiveness is a growing concern
The framework

A strategic framework is required to analyze companies and markets in today's complex business environment. FMI's team of over a dozen economists and researchers with an average tenure exceeding 15 years provides deep industry knowledge and insightful forward thinking for our clients.
FMI has found that successful strategy requires more than strategic planning alone

Strategy requires four fundamental elements

- Foundational capability for strategy development and execution
- Key components: Mental Flexibility, Intellectual Curiosity, Creativity, Intuition, Analysis, Systems Thinking, Information Gathering, Decision Making, and Risk Posture

Strategy Execution

- Success or failure of a strategy rests in its execution
- In today’s business environment, action plans alone are often not enough
- Successful strategy execution is the result of leaders who are comfortable navigating with only a map and a compass instead of turn-by-turn navigation

Developing strategy requires understanding of context

- Analyze the Context
  - Climate: What is the demand outlook for our current and prospective markets and segments? What trends underpin demand?
  - Customers: Who are the leading potential buyers of our services? What are their procurement practices and preferences?
  - Competitors: Who are the competition? How well do they meet the needs of our customers? How is the competitive landscape changing?

- Generate Strategic Options
  - "New customers/other services" or "Same game/better execution"
  - "New game/Change game" or "Existing customers/new services"

- Test & Execute Strategy
  - Major Themes: Emerging from analysis of context (e.g., consistent patterns, key trends, game changing possibilities)
  - Prioritize Ideas: Develop screening criteria for priority ideas (e.g., potential market size, impact on customers, ease of implementation)
  - Hypothesis and Critical Path: How do we think the ideas will build up, and what are the "must answer" questions?

- Verify and Test the Idea: What actions must be undertaken to execute our analysis of the priority ideas?
- Develop Strategy: Identify strategic and tactical considerations necessary to execute priority ideas
- Implement: Develop an implementation or business plan to execute the new idea(s)
Labor challenges persist and intensify
Many roads converge
The Talent Gambit

The Availability of Labor at All Levels

Productivity Stagnancy

Leadership Succession

Talent Development as a Strategic Position

Strategic approach to Talent Development

- **Brand and Image Marketing** – What is the community at large’s image of the employer
- **Recruiting** – Big picture recruiting at all levels THROUGH ALL SOURCES (versus traditional sources)
- **Screening** – Talent selection through new and innovative means (i.e., testing, auditioning, etc.)
- **On-Boarding** – Thorough introduction to firm’s leadership and the creating of Raving Fans within the first hour
- **Core Competencies** – Rather than focus on skills, this represents a shift towards core attributes BY POSITION like “Entrepreneurial Instinct”, “Intellectual Curiosity” and other innate desired characteristics
- **Training and Development** – Curriculum for all levels including but not limited to pre-work interactive learning and post education follow-up to ensure compliance and retention – This would include but not be limited to internal training, external training, coaching, “leadership group” activity, etc. BUT represent a coordinated and interrelated endeavor
- **Retention** – Long-term talent retention and continued development in the form of goal setting, career/life trajectory and other retention tactics for high performers
Brand and image marketing

- Why would a “free agent” come work for you?
- What is your value proposition to a potential candidate in the marketplace, short of providing employment?
- How does your firm rank in terms of local employers?
- Does your firm have a vision, mission and core values OR is that simply the placard hanging in the conference room?

- Many firms have little to offer a potential candidate – they provide the paycheck but fail to evoke PASSION!
- Younger employees want to know that their work has a connection to a greater vision

Retaining the talent

- Retaining talent requires more than “pay increases”
- How often do you do appraisals, performance reviews and most importantly GOAL SETTING?
- What sort of incentive compensation and long-term deferred compensation plans are in place?
- What sort of phantom stock or vesting is in place to retain talent?
- While you may not need a successor – yet – DO NOT FORGET ABOUT KEY POSITIONS WITHIN YOUR FIRM
- Not everyone will be a future leader but there is always the needs for senior managers, estimators and field managers
- Just because someone has been with the firm for several years, do not forget their contribution and their need to be developed and trained accordingly
- LASTLY, is the current talent the GREATEST GROUP of cheerleaders for future talent?
It becomes harder to define the customer

“Our goal is to be the number one health-care provider in the industry. And the more we broaden our assortment, the more we broaden our offering, the more we educate the customer Walmart is a great place to create a one-stop shop.”

Labeed Diab
Senior Vice President and President of Health & Wellness
Walmart
## Aligning solutions with customer needs

<table>
<thead>
<tr>
<th>Development</th>
<th>Engineering/Design</th>
<th>Construction</th>
<th>Delivery/Operations &amp; Maintenance</th>
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</thead>
<tbody>
<tr>
<td>Master/ Capital planning and programming</td>
<td>Preliminary design</td>
<td>Contract administration</td>
<td>Close-out</td>
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<tr>
<td>Feasibility studies/Condition assessments</td>
<td>Design development and management</td>
<td>Construction document management</td>
<td>Start-up and commissioning</td>
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<tr>
<td>Real estate and market analysis</td>
<td>BIM coordination</td>
<td>Construction inspection and status reporting</td>
<td>Software and systems/Technology</td>
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<tr>
<td>Site selection and land development</td>
<td>Sustainability assessment and design</td>
<td>Materials management</td>
<td>Documentation</td>
</tr>
<tr>
<td>Traffic planning/control</td>
<td>Cost estimating</td>
<td>Quality assurance/ control</td>
<td>Training</td>
</tr>
<tr>
<td>Environmental management</td>
<td>Cost and resource scheduling and management</td>
<td>Risk management</td>
<td>Predictive/Preventive maintenance</td>
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<tr>
<td>Geotechnical assessment/engineering</td>
<td>Constructability review/Value engineering</td>
<td>Safety program and performance monitoring</td>
<td>Equipment support</td>
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<tr>
<td>Utilities consulting</td>
<td>Bid support/RFP-RFP development</td>
<td>Budget management</td>
<td>Warranty</td>
</tr>
<tr>
<td>Community/Stakeholder communication</td>
<td>Automation/Controls</td>
<td>Fabrication/Modularization</td>
<td>Janitorial</td>
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<tr>
<td>Energy/Water use auditing</td>
<td>Process design/Layout</td>
<td>Equipment installation</td>
<td>Metering and verification</td>
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<tr>
<td>Financing</td>
<td>Equipment procurement</td>
<td>Payment application processing</td>
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<td>MEP engineering</td>
<td>Change order management</td>
<td></td>
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<tr>
<td></td>
<td>Civil engineering/Structural engineering</td>
<td>Claims and dispute resolution</td>
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</tbody>
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### Activities of increasing importance to project owners
- Potential opportunities for differentiation

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## Innovation and Technology

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Venture capital invests almost $1 billion in construction tech

How much do you spend in Research and Development
Are you with the Giants or with the others
Augmenting a carbon-based workforce with silicon-based

Drones and VR
Construction sites are employing drones more frequently for site surveys, and tracking job progress.
VR has proven to attract next gen talent, develop critical skills, and possibly usher in remote construction.

Autonomous Equipment
Construction equipment is quickly becoming autonomous or semi-autonomous, led by remote sites, delivering greater precision in less time.

Trade Robotics
Similar to autonomous and semi-autonomous construction equipment, robotics have the potential of reducing labor demands and achieving 24 hour construction.

The Mass Migration

- Autonomous equipment and vehicles
- Continued strides in prefabrication and modularization
- Real time data to provide true analytics and decision making capability
- Non-traditional talent development
- Ubiquitous video and data collection to support/enhance firm-wide knowledge hubs
- Robotics and advanced equipment to limit exposure and improve productivity
- Telemetry on wearable devices to improve productivity, efficiency and life safety
Risk Management as a Profit Center

More Converging Roads
Measuring Risk…

Proliferation of Mega-Projects
Monetization of Risk
Macroeconomic Conditions

Risk Management as a Strategic Role

Go-No Go Project Selectivity
Leveraging Bi/Tri/Multi-Level Ventures
Multi-Disciplinary Life Safety Integration
Risk Management as Profit Center
Data Driven Decision Making
Strategic Pricing
The Call to Action
What construction leaders must do to be successful for the next generation

• Stop complaining about labor and do something "strategic" about it

• Be a niche leader, not a niche follower – Whether it is horizontal expansion, vertical expansion, niche growth, geographic growth, etc. be deliberate and have a fact-based strategy

• Do not punt on succession planning (even if you think you have time) – Find opportunities to grow your leaders (see above)

• Revisit the basics of “blocking and tackling” – Growth without discipline in execution is a risky proposition

• Research and development is not limited to the “big dogs” – The exponential rate of innovation is requiring everyone to make it a strategic imperative

• Convert the data to knowledge and make strategic decisions based on the right information

Gregg Schoppman
Principal
FMI Corporation
308 South Boulevard
Tampa, FL 33606
Tel: 813.636.1259
Email: gschoppman@fminet.com
www.fminet.com
**Integrated platform**

FMI has the ability to bring all its resources to bear in order to deliver customized solutions and exceptional results to its clients.

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**Position for Growth**

- Strategy
- Market Research
- Business Development
- M&A - Buyer Representation

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**Optimize Performance**

- Productivity and Operational Efficiency
- Risk Management
- Compensation
- Peer Groups

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**Transition Successfully**

- M&A - Seller Representation
- Valuation
- Ownership Transfer
- Management Succession

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**Build Capacity**

- Leader Development
- Training & Talent Development
- Organizational & Team Development
- Performance Management

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**Industry Focus. Powerful Results.**

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**About FMI**

For over 65 years, FMI has been the leading management consulting and investment banking firm dedicated exclusively to engineering and construction, infrastructure and the built environment.

FMI serves all sectors of the industry as a trusted advisor. More than six decades of context, connections and insights lead to transformational outcomes for clients and the industry.

**Sector Expertise**

- A/E and Environmental
- Building Products
- Construction Materials
- General Contractors/CM
- Energy Service & Equipment
- Energy Solutions & Cleantech
- Heavy Civil
- Industrial
- Owners
- Private Equity
- Specialty Trades
- Utility T&D