MarketStance Version 11.2 Technical Release Notes

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Who to contact for more information

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Summary

MarketStance Commercial Insight Version 11.2 (CI 11.2) improves our commercial lines premium and exposure estimates in several areas.

Our development team restated and updated our TIV (total insurable value)[1] estimates on a replacement cost basis. We deepened and expanded the statistical sources processed for estimating TIV, drawing upon the detailed rental payment data collected in the American Community Survey (ACS), the fixed asset estimates of the Bureau of Economic Analysis (BEA), and scrutinizing the revenue concepts underpinning series such as the Nonemployer Statistics, published annually by the US Census Bureau.

The forecast team updated our exposure growth estimates – see the forecast release notes for details.

The most consequential improvements captured in version CI 11.2 stem directly from the TIV revisions. See **Table I** on page 3 for the impacts on property premium estimates by 1-digit SIC.

TIV revisions:

- **Our TIV estimates are now developed from replacement cost value estimates published annually by the BEA and Census Bureau**, rather than exclusively from actual cash values reported every 5 years in the Economic Census. Actual cash value estimates are also available on request.
- Resulting from the TIV revisions, **we shifted about $2.8 billion of property direct written premium** (about 6 percent of the property market) to self-employed (0 EE) single-family and multifamily lessors (SICs 6514/13), respectively, developing the ACS as a key data source for these classes of business.
- **Oil and gas extraction TIV estimates** are updated and more complete, adding nearly $1 Trillion in Oil and Gas extraction structures – oil drilling platforms and the like – to TIV.
- **We added retail sector inventory value estimates using** the Census Service Annual Survey as a key supplement of the Economic Census.
- **Equipment and machinery values exclude** the value of commercial vehicles, making property premiums more accurate in all industries.
- **Farm inventories now include the estimated** value of crops in the ground, providing a more complete estimate of these exposures.
- **Farm structure values** no longer include the estimated value of land, again thanks to supplementary data provided by the BEA.

BOP revisions:

- **Our continuous review of the BOP marketplace** trimmed **our estimate from $25 to $22 billion**
- The BOP revision resulted from applying explicit square footage caps on lessors of multifamily properties.
- We also deleted full-service restaurants, mobile home lessors, religious organizations, and banks from our list of BOP-eligible classes.

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[1] Our estimate includes total structures, equipment, and inventory valued at replacement cost, but does not include income exposed to business interruption, any form of financial asset, or the estimated value of intangibles such as patents, copyrights or other forms of intellectual property.

Table I. Summary of TIV and Property Premiums* Estimation Changes in Commercial Insight 11.2 by 1-digit SIC			
1-digit industry	**1-digit SIC industry**	**Change in estimate, TIV**	**Change in estimate, property premiums**
0	**Agriculture, Forestry, Fishing**	-74%	-85%
We made large downward revisions to our TIV estimates, using new source data to remove the value of land from our structure estimates. The impacts on property premiums stemmed primarily from equipment value revisions concentrated in Veterinary (0740) and Landscaping (0782) services.			
1	**Mining**	61%	4%
We substantially increased our estimated value of crude oil and gas extraction facilities. The premium impact of this was almost completely offset by a reduced estimate of equipment used in oil & gas services, due to the higher personal property rates for these industries in our estimation procedures.			
2	**Construction**	-7%	-8%
A substantial increase in SIC 1799 was more than offset in the majority of construction classes, where we removed the value of vehicles from our equipment estimates, using improved sources of data.			
3	**Manufacturing**	-5%	18%
Though we reduced our overall TIV estimates, our structures estimate rose by $466 billion (15% of TIV), led by Pharmaceuticals (2834) and Plastics (2821), among other classes. Since rates tend to be higher for structures than for personal property in these SICs, the large net increase in structure values drove premium estimates higher. We reduced our inventory estimate by 9%.			
4	**Transportation, Communications, and Utilities**	-36%	-34%
Electrical Services (4911) drove the reduction in premiums. We removed the value of vehicles from personal property, using improved data sources.			
5	**Retail Trade**	88%	10%
The premium change is much greater (+27%) excluding restaurants (5812), driven by large increases in building value estimates. We reduced our restaurant equipment estimates by $60 billion, or about 1/3rd of restaurant TIV, and added over $400 billion in retail inventories, using newly processed Census source data.			
5W	**Wholesale Trade**	18%	16%
Both structure and equipment values were revised in Computer and Peripheral Equipment (5045), Drugs (5122) and Medical (5047), partially off-set by reductions in estimated equipment values in Petroleum Bulk Stations (5171), Sporting Goods (5091) and Scrap (5093).			
6	**Finance, Insurance, and Real Estate**	16%	14%
Extensive processing of new residential data sources such as the American Community Survey led to large increases in TIV and premiums. We now estimate the replacement cost of leased single- and multi-family residential structures (6514 & 6513) to be $3.3 Trillion, $1.7 Trillion above previous estimates. This yielded a hefty $2.6 billion increase in property premiums. Users should note that this increase is highly concentrated in the self-employed (0 employee) size segment, where the biggest gap in our estimation procedures had existed (see below for details). For the broader 1-digit industry, the revisions in residential TIV and premiums were modestly offset by reduced estimates of TIV and premiums in many banking SICs, insurance, and non-residential lessors (6512).			

Table I continued. Summary of TIV and Property Premiums* Estimation Changes in Commercial Insight 11.2 by 1-digit SIC			
1-digit industry	1-digit SIC industry	**Change in estimate, TIV**	**Change in estimate, property premiums**
7	**Services**	19%	16%
Our revisions were driven by Temp Help Services (7363), Religious Organizations (8661), Offices and Clinics (8011), Colleges & Universities (8221), and Elementary & Secondary Schools (8211) where structure value estimates rose by a combined $500 billion, about 15% of TIV. This was partially offset by SICs such as Nursing and Personal Services (8053) and Equipment Rental (7359 & 7513) where we reduced our structure and equipment value estimates by $238 billion.			
9	**Government**	-34%	-20%
Large increases in school districts were more than off-set by reductions in general government property values.			
	Totals	**-7%**	**-1%**
*Direct written premiums plus alternative market premium equivalents, v11.1 & 11.2 (operating location) data.			

Residential Real Estate—How MarketStance Invests in Accuracy

As Table I (above) summarizes, Commercial Insight 11.2 improves upon prior estimates of TIV. MarketStance's investments in more accurate estimation techniques and in finding the most applicable sources of data for the insurance industry drove the TIV improvement, as it has so many others in the past.

MarketStance adds value to government and other information sources by making the often- conflicting, incomplete, widely available yet less than relevant government and private statistics "come alive" for use by the commercial insurance community.

Residential real estate provides an excellent example of how and why we make such investments. In replacement value terms, at an estimated $17 trillion, residential real estate makes up over half of the private property and 13 percent of the commercial property in the United States. By virtue of its size and economic centrality, improving these estimates likely pays huge dividends for our clients, as they seek to market, underwrite, analyze, plan, and develop products for this key sector.

Yet, as in so many other cases, nuances of statistical reporting and insurance industry practice bedevil estimates of the exposures and premiums in the residential real estate sector. Specifically, we had to invest our time and expertise to resolve a key disparity in the statistics between rental revenues and counts of establishments reported in the *business* statistics and, in contrast, rental expenditures tracked in the *household* statistics.

US Census *business* statistics programs – County Business Patterns, Nonemployer Statistics & Economic Census – report *business revenues*. On the other hand, the US Census *household* statistics programs such as the American Community Survey (ACS), report the *rents paid* by households. You might expect the sum of the business revenues accruing to those renting residential property, the lessors, would equal the sum of rents paid by households, i.e. the lessees, and in an ideal world, they would be equal.

Unfortunately, though a seeming truism of economic accounting, this is not even close to being the case as reported in the two basic types of statistical series.

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In fact, while the ACS reports over $382 billion of rents paid by households (2010), the government business statistics programs capture but a small fraction of that – about $110 billion – as revenue of businesses. In other words, much less than one-third of total rent paid to landlords – and by extension, the TIV and premium that can be estimated, in part, from the rent – is actually reported in business statistics programs, most importantly here, the Census Bureau's Nonemployer Statistics.

If we simply "plugged-in" the *business revenues* to our TIV estimation procedures, neglecting the narrow definitional scope of the Nonemployer Statistics and other series, the replacement value of residential property, and by extension the premiums we estimate in the market would each be far less than one-third of their true sizes.[2]

The apparent statistical discrepancy is fairly simple, once you understand a key source of the *business revenue* data for the Nonemployer Statistics – IRS administrative records, i.e. individual, corporate, and partnership tax returns that report *taxable business income*.

Because individuals, partners, and firms organized as real estate investment trusts own most of the leased residential real estate, the gross rents count as *personal income*. Most rental proceeds are not contained in revenues reported in business statistics series derived from IRS administrative records, but rather are captured as personal income on Form 1040, Schedule E, and elsewhere.

For this reason, the rents and property values derivable from them can only be accurately estimated from the household spending data tracked by a source such as the Census ACS, supplemented by several other sources, such as the IRS Statistics of Income and BEA fixed asset series.

For all types of property, both commercial and residential, accounting for the holdings of non-profits (which are also excluded from the Nonemployer Statistics) and the substantial underreporting of cash rents by landlords to the IRS, we currently estimate the gross rents paid for property of all types (residential, commercial, land, and equipment) to be in the $900 billion to $1 Trillion range.

So how did we rectify these disparate pieces of information?

- First, we convinced ourselves that we had substantially under-reported the exposures and premiums in the past, based on the newly available 2006-2010 ACS statistics – which we validated against the Bureau of Economic Analysis's published (2010) estimates of the value of tenant occupied property by type of property (single and multi-family);
- Second, we also knew from experience and talking with our clients over the years that getting the *relative magnitudes* of exposures and premiums right was the most critical issue for the industry. For example, reporting an accurate relative magnitude of TIV and premiums in the residential real estate sectors in Los Angeles County, San Bernardino Counties, California, and Cook County, Illinois, was more important than hitting some absolute number for the US market where relative relationships are secondary, as in a "top-down" type of approach. The ACS

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[2] In Commercial Insight versions 7.0-11.1 release between 2006 and 2011 we made modest adjustments to the exposures and premiums in residential real estate in SICs 651380 (multi-family) and 651480 (single-family). These adjustments were made to account for property leased by financial institutions and others not classified as lessors by government statistics. Due to the magnitude of the adjustment in CI 11.2 we retained a similar practice, publishing our much larger adjustment to the standardly sourced estimates in these "-80" SIC sectors, rather than folding those adjustments into SICs 651310 & 651410.

provided an excellent resource here, because it provided an estimate of the rents tenants paid for very specific types of property, at a very detailed level of geography called a Public Use Microdata Area (PUMA), which we readily converted to a county estimate;

- Third, we knew that the business receipts reported to the government business statistics programs likely bore a direct relationship to the gross rents, even if they did not report what we truly needed for our estimation procedures. We also knew that the number of operations, their location and employment size in the business statistics was on the whole very accurate—it was just the rents that were not fully reflected in these series;

- Fourth, on the premiums side of the question, we knew that a given property owned by a landlord is not supposed to be insured on a personal line (e.g. HO-3), unless the landlord lives in the dwelling and has the appropriate policy endorsement(s). Survey data published in the Census Bureau's American Housing Survey suggest that landlords live in dwellings they own about 20 percent of the time. If landlords all played by this "residency rule", most of the premiums written would find their way to the commercial lines of business in statutory filings that we use as our market benchmarks. Unfortunately, this is not quite the case;

- Lastly, informal discussions with brokers suggested that landlords (and, to some extent, dedicated personal lines agents) bend this residency rule with surprising frequency. Rather than purchase commercial dwelling coverage, especially on 1-4 unit properties, a modest percentage of landlords buy homeowner policies, while residing elsewhere. Given the large number of so-called "accidental landlords" in the soft 2010 residential housing market, this factor weighed significantly in our revised market estimates.

These five components provided a much more stable basis than had been developed in the past for estimating the TIV and premiums in each county and SIC in the residential real estate sector.

In continually making this type of investment in accuracy, we not only recognized a shortcoming of the government business statistics that had biased our earlier estimates, but rectified several different and in some cases conflicting pieces of information to produce more accurate estimates of the commercial exposures and premiums.

Estimating BOP—Potential versus Actual Markets

As stated above, Commercial Insight 11.2 also substantially reduces our BOP market estimate, from $25 billion to $22 billion. This reduction stemmed from changing our account eligibility criteria in three ways. (See Appendix A for our revised BOP eligibility criteria).

- First, we excluded 5+ unit residential rental properties in excess of 35,000 square feet per building;

- Second, we excluded from BOP any company with average revenue per operating location in excess of $3,000,000 or TIV in excess of $12,000,000.

- Third, we excluded full-service restaurants (SIC 581212), Religious Organizations (SIC 866100), Lessors of manufactured (mobile) home sites (SIC 651500), and all banking SICs from BOP, after reviewing the relevant manuals published before 2010 by ISO and AAIS, and asking our underwriter to re-examine the class eligibility list.

The primary innovation driving these revisions was to use the ACS to build out a model estimate of the square footage occupied per rental property.

However, apart from any statistical innovations, **the major issue that confronts any BOP estimate – ours or anyone else's – is that BOP is largely in the eye of the beholder**; It is more than any other line we report a creature of informed underwriting judgments made at the risk level. Two underwriters might look at apparently "identical risks" – small enough to be eligible by revenue, square footage, and within a BOP-eligible classification – and reach entirely different (and for that underwriter, valid) judgments.

Perhaps one risk is located in a high-crime area or an area subject to wild-fire or other catastrophe losses? Perhaps one risk is co-located in the same building as a contractor with a large machine shop, etc. In other words, true underwriting filters applied at the risk level typically cannot be estimated at the level of a statistical aggregate

In the case of BOP estimates, the absence of a true underwriting filter allows far more businesses to pass into the "BOP-eligible" market. What we report can be thought of as somewhere in-between a measure of the *potential* BOP market and the *actual* BOP market.

Our BOP market estimate, like any other, will likely always overshoot, in the sense that it applies only those statistical filters that can be created above the level of individual risks, where the true risk-level underwriting occurs.

Any BOP estimate has to resolve the tension between the "actual" and "potential" markets. Our BOP estimates seek a middle-ground, where we exclude risks that stand little chance of being eligible under most BOP definitions – while knowingly including more exposures and premiums as "BOP eligible," simply because the underwriting filters or "secret sauce" actually applied in the marketplace cannot be tabulated statistically.

Who to contact for more information

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APPENDIX A – BOP ELIGIBILITY CRITERIA

For contractors

- Payroll per operating location < $500 thousand <u>and</u>
- Sales per operating location < $3 million <u>and</u>
- Total sales per company < $10 million <u>and</u>
- TIV per operating location < $10 million

For lessors – 1-4 unit dwellings

- Building value per operating location < $12 million

For lessors – 5+ unit dwellings

- Square footage per insured property < 35,000 square feet

All other BOP eligible classifications

- Sales per company < $10 million <u>and</u>
- Sales per operating location < $3 million <u>and</u>
- TIV per operating location < $10 million

APPENDIX B – NEW TIV MEASURE DEFINITIONS

Value of Equipment: The estimated replacement cost of equipment, machinery, and software, excluding ships and boats, railroad equipment, and commercial autos. The estimates are derived from the most recent Economic Census for mining, construction, and manufacturing, from the Bureau of Economic Analysis (BEA) industry fixed assets series, and from the Census of Agriculture. In non-Economic Census years, the estimates for mining, construction, and manufacturing are projected, based upon the BEA industry fixed asset series in the most recent available year.

Value of Structures: The estimated replacement cost of buildings and other structures, excluding highway and conservation and development (e.g. roads, dams, bridges, and tunnels). The estimates are derived from the most recent Economic Census for mining, construction, and manufacturing and from the Bureau of Economic Analysis (BEA) industry fixed assets series. Residential real estate estimates derive from the most recent American Community Survey. In non-Economic Census years, the estimates for mining, construction, and manufacturing are projected, based upon the BEA fixed asset series in the most recent available year.

Value of Inventories: The estimated cost of inventories in agriculture (including crops in the ground), mining, construction, manufacturing, retail, publishing, and wholesale industries. The estimates are derived from the most recent Economic Census for mining, construction, and manufacturing, from the Census Services Annual Survey, and from the Census Annual Retail Trade Report and from the Bureau of Economic Analysis (BEA) industry inventory estimates. In non-Economic Census years the estimates for mining, construction, and manufacturing are projected, based upon the industry inventory-sales ratios estimated by the BEA in the most recent available year.

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