



Fannie Mae™

Comparative Assessment of Fannie Mae's National Housing Survey®

December 2017





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Executive Summary

- **Study Objective:** to understand how Fannie Mae's National Housing Survey® (NHS) results compare to other major consumer tracking surveys, including the University of Michigan Surveys of Consumers, the Conference Board Survey of Consumer Sentiment and Gallup, on questions about the economy, personal finance and housing sentiments, to test the consistency of the NHS, and to identify where and how much the NHS diverges from the other surveys and explore the reasons.
- **Findings:**
 - We find that during the prior years, the NHS results generally align well with the other consumer surveys. For the 89 months comparison period, seven out of ten questions between the NHS and the other surveys had correlation coefficients of 0.80 or higher. The remaining three questions with low correlations of 0.50 or lower are about unemployment rate, good time to buy and perceived home values. Statistical tests are used to test whether the differences between the NHS and other surveys are statistically significant.
 - We do observe some notable differences between the NHS and other surveys for some questions, both in terms of significantly different absolute levels of responses and low correlations. These differences may be attributable to differences in question designs.
 - Respondents tend to be more optimistic about their own situation than the general economic or market conditions.
 - More choices for questions related to personal situation tend to lead to higher survey scores.
 - More choices for questions about general economic or market conditions tend to lead to more negative survey results.
 - Additional reasons for the result differences could be differences in methodology and respondents' personal interpretation.



Research Methodology

- A selected list of NHS questions¹ from June 2010² to October 2017 (89 months) were compared with similar questions from three major Consumer Surveys:
 - The University of Michigan Surveys of Consumers (Michigan)
 - The Conference Board Consumer Confidence Survey (Conference Board)
 - The Gallup U.S. Daily Survey (Gallup)
- For most of the questions, we computed the Net Positive Percentage³ as the basis for comparison
 - Net Positive Percentage = Percent Positive Responses – Percent Negative Responses
- To assess similarity and differences between responses to similar questions from NHS and other surveys, the following methods are used:
 - Time-series plots for visual comparisons in trends, levels, peaks and troughs, etc.
 - Summary statistics including correlation coefficients, means, standard deviations, etc., to further quantify the similarities and differences between the comparison questions
 - Paired sample t-test to detect any statistically significant differences

1. See Appendix table 2 for complete list of questions compared

2. A few of the NHS questions didn't start until March 2011

3. This is very similar to Net Promoter Score used widely in market research, with the advantage of it being simple (just one number) and easy to interpret (e.g. positive sign means overall positive attitude)



Results

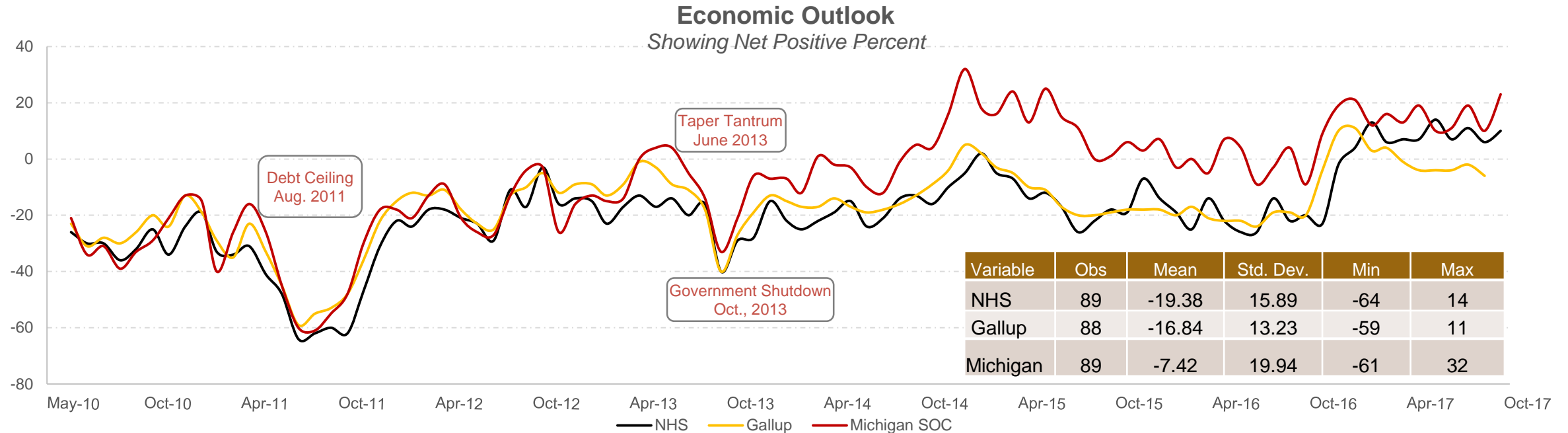


Economic Outlook

NHS: In general do you think our economy is on the right track or is it off on the wrong track?

Gallup: Do you think that economic conditions in the country as a whole are getting better or getting worse?

Michigan: Now turning to business conditions in the country as a whole, do you think that during the next 12 months we'll have good times financially, bad times or what?



- Mostly negative and volatile. NHS and Gallup become positive briefly in Spring 2015 and then turn negative again. Michigan remains positive between September 2014 and February 2016.
- All three remain positive for a long while since the end of 2016. Gallup starts to deviate from NHS and Michigan after March 2017
- Very high correlation: $r(\text{NHS}, \text{Gallup})=0.91$, $r(\text{NHS}, \text{Michigan})=0.84$, $r(\text{Michigan}, \text{Gallup})= 0.85$
- NHS on average is 3 points and 12 points lower than Gallup and Michigan survey respectively. The differences are statistically significant¹ at 1% level.

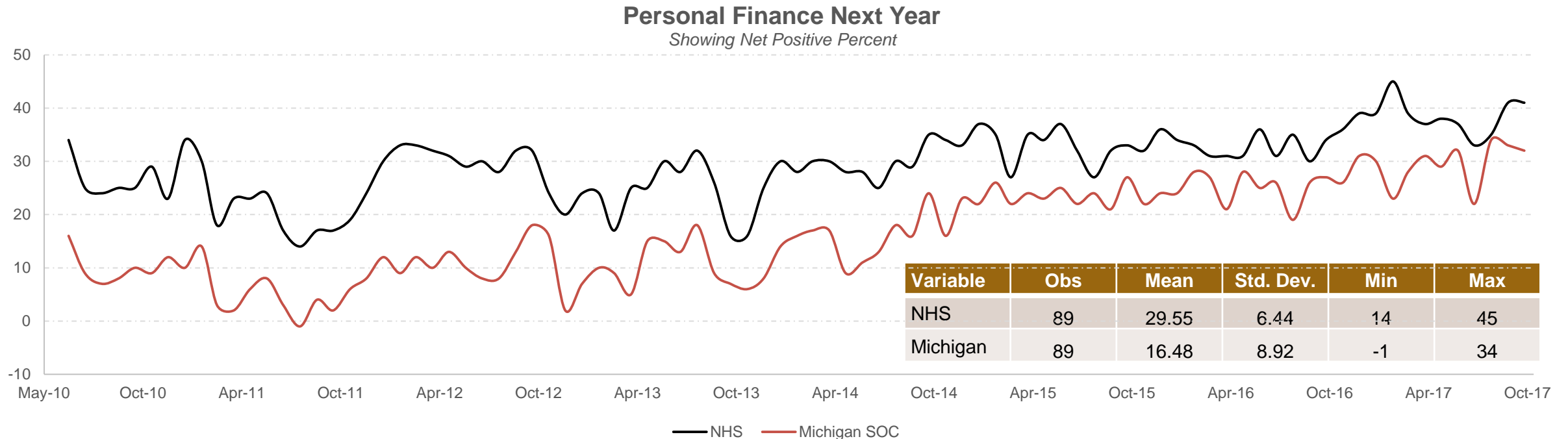
1. Based on two tailed t-test for sample means between monthly indices.



Personal Finance Next Year

NHS: Looking ahead one year, do you expect your personal financial situation to get much better, somewhat better, stay about the same, get somewhat worse, or get much worse?

Michigan: Now looking ahead—do you think that a year from now you (and your family living there) will be better off financially, or worse off, or just about the same as now?



- Both are positive and relatively flat. Both start trending up since July, 2014. The gap between NHS and Michigan gets smaller starting from mid year 2013, as the economy gets more stable and people become more certain about their future financial conditions.
- High correlation ($r=0.81$) between the two time series.
- NHS on average is 13 points higher¹ than Michigan, differences are statistically significant² at 1% significance level.

1. The Michigan survey has more people choose “the same” than the NHS (52.8% vs 40.9%), possibly due to fewer question choices than NHS (5 options for NHS vs 3 options for Michigan). About the same percentage of respondents choose “worse” (13.9% vs 14.0%). Also, the orders of the choice options are different between NHS and Michigan.

2. . Based on two tailed t-test for sample means between monthly indices.



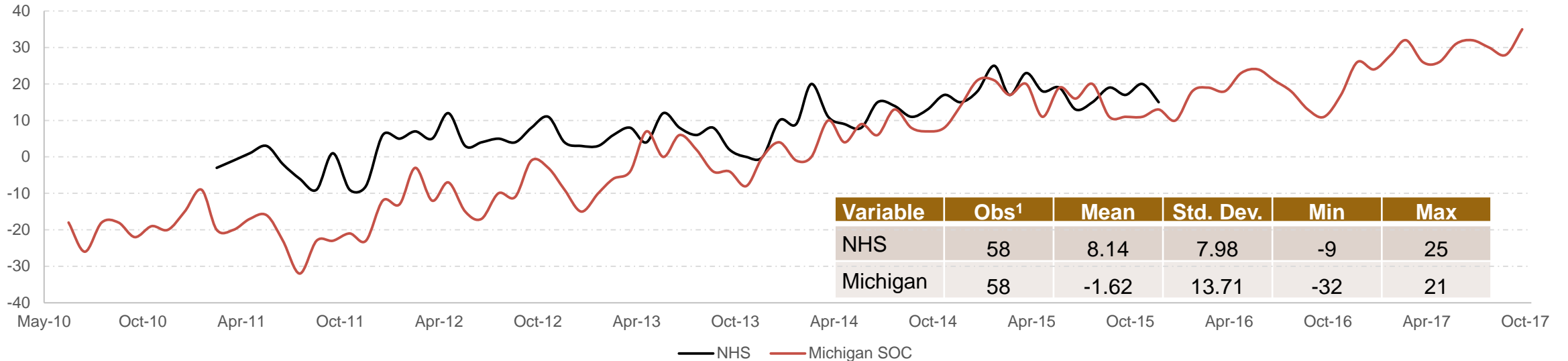
Personal Finance Past Year

NHS¹: Now looking back over the past year, has your personal financial situation gotten much better, somewhat better, stayed about the same, gotten somewhat worse, or gotten much worse?

Michigan: Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?

Personal Finance Past Year

Showing Net Positive Percent



- Both are trending up from negative to positive for the comparison period
- High correlation ($r=0.88$) between the two time series
- NHS on average is 10 points higher² than Michigan, differences are statistically significant³ at 1% significance level.

1. The NHS didn't start this question until March, 2011 and ended on December, 2015, comparisons are based on 58 months data only, we still plot data from June 2010 for consistency
 2. The Michigan survey didn't specify "same" as an option in the question, which may cause fewer people to answer "the same" (30% vs 54% in the question about the personal finance next year). This helps push the two series closer than the previous question about personal finance next year. Also, NHS has more choice options than Michigan (5 vs 2 choice options).
 3. Based on two tailed t-test for sample means between monthly indices.



Unemployment

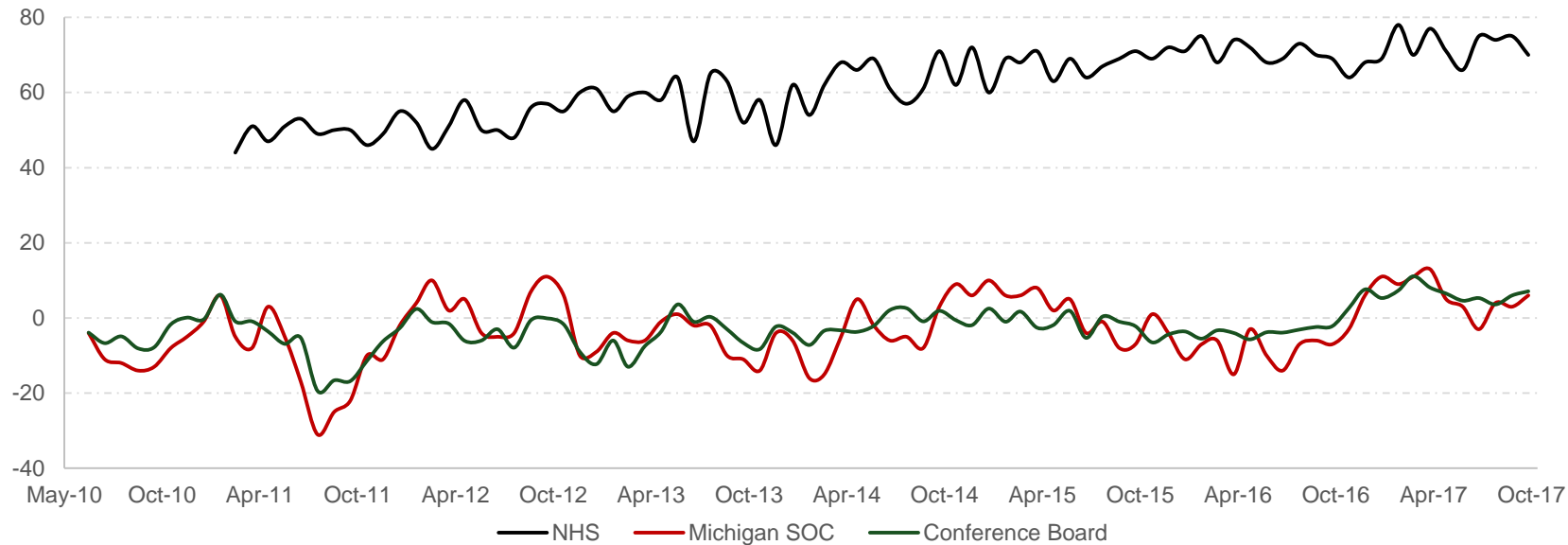
NHS¹: How concerned are you that you will lose your job in the next twelve months? Are you very concerned, somewhat concerned, not very concerned, or not at all concerned that you will lose your job in the next twelve months?

Michigan: How about people out of work during the coming 12 months--do you think that there will be more unemployment than now, about the same, or less?

Conference Board: Six months from now, do you think there will be [more/same/fewer] jobs available in your area?

Unemployment Next Year

Showing Net Positive Percent



Variable	Obs ¹	Mean	Std. Dev.	Min	Max
NHS	80	61.98	9.17	44	78
Michigan	80	-2.83	8.67	-31	13
Conf. Board	80	-2.33	5.63	-19.4	11.1

- NHS is more positive and has stronger upward trend upward than the other two series
- Positive but low correlations between NHS and Michigan ($r = 0.30$), and Conference Board ($r=0.48$)². Correlation between Michigan and Conference Board is 0.73.

1. The NHS didn't start this question until March, 2011, comparisons are based on 79 months data only, we still plot data from June 2010 for consistency
 2. NHS responses are from those employed only and it is not clear whether Michigan and Conference Board responses are filtered the same way. NHS is also specific to the respondents, while Michigan and Conference Board are about the general job market. Conference Board is about the future job market in 6 months instead of 12 months and it focuses on the area of the respondents.



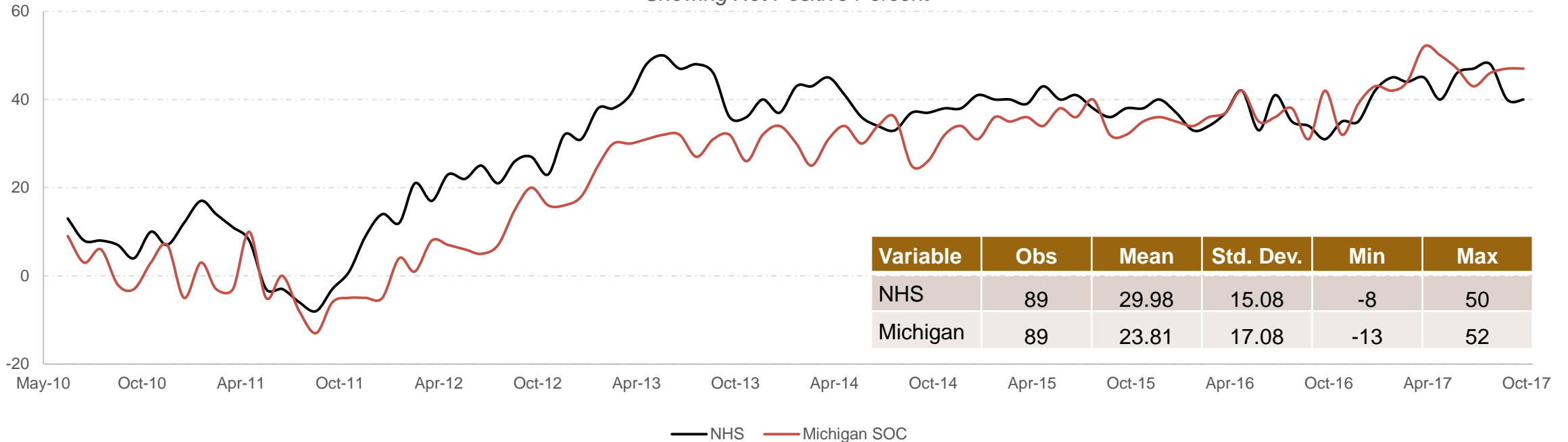
Home Price- Direction

NHS: During the next 12 months, do you think home prices in general will go up, go down, or stay the same, as where they are now?

Michigan: What do you think will happen to the prices of homes (like yours) in your community over the next 12 months? Will they increase at a rapid rate, increase at a moderate rate, remain about the same, decrease at a moderate rate, or decrease at a rapid rate?

Home Price Next Year-Direction

Showing Net Positive Percent



- Both trending up from 2011-2013, then stay flat until the recent increase starting in Oct., 2016
- Very high correlation ($r=0.90$) between the two time series
- NHS on average is 6 points higher¹ than Michigan, differences are statistically significant² at 99% confidence level.

1. The difference might be partially due to the question construction – general vs your community. Also, NHS has fewer choice options than Michigan (3 options vs 5 options).

2. . Based on two tailed t-test for sample means between monthly indices.



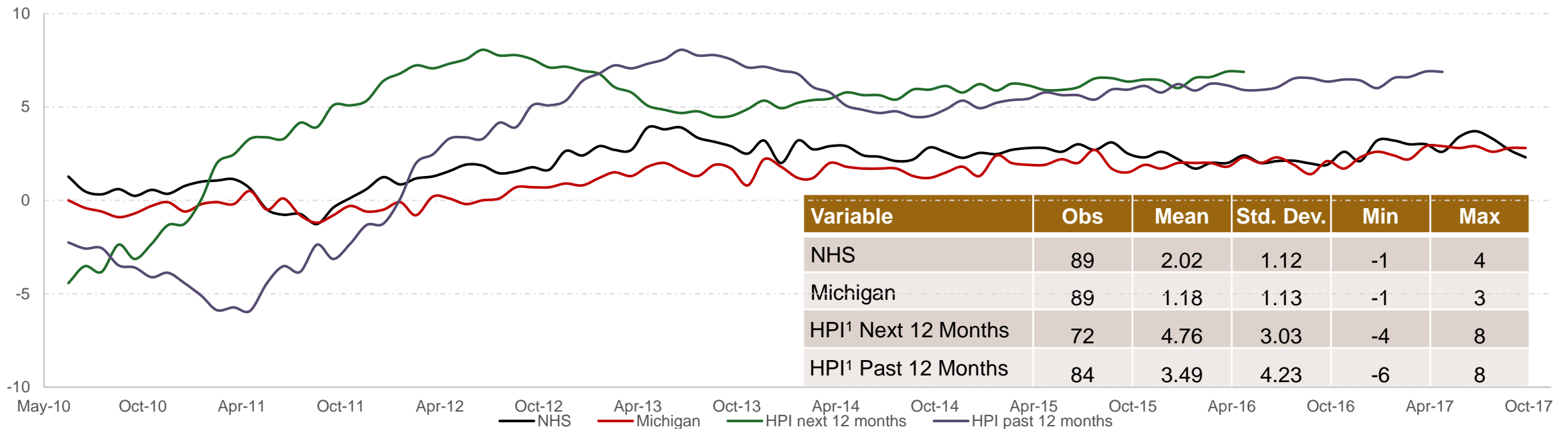
Home Price – Average Percentage Change

NHS: By about what percent do you think home prices in general will go down/up on the average over the next 12 months?

Michigan: By about what percent do you expect prices of homes like yours in your community to go (up/down), on average, over the next 12 months?

Home Price Next Year- Percentage Change

Showing Net Home Price Change



- NHS estimates are higher than Michigan estimates, both are lower than the actual results
- High correlation ($r=0.82$) between the two time series, both are highly correlated with HPI past 12 month ($r > 0.80$) and both have much lower correlations with HPI next 12 months ($r < 0.50$)

1. FHFA House Price Index – Purchase Only; data used here are HPI growth rates for the next 12 months (time series ends in Sept., 2016) and for the past 12 months (time series ends in August, 2017)

2. Michigan is specific to the respondents' community and NHS is about the general housing market.

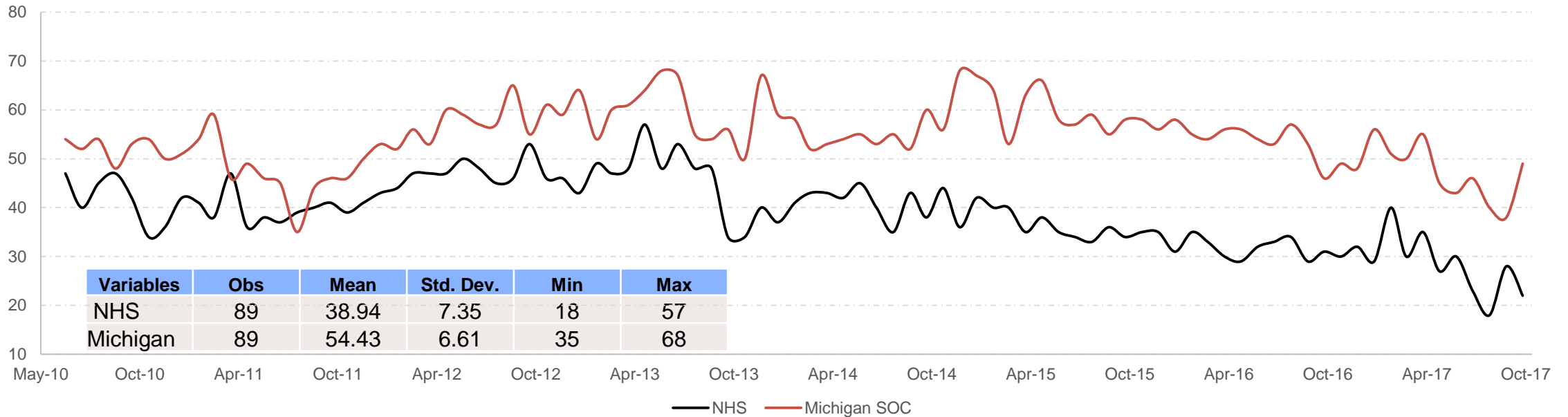


Good Time to Buy (net)

NHS: In general, do you think this is a very good time to buy a house, a somewhat good time, a somewhat bad time, or a very bad time to buy a house?

Michigan: Generally speaking, do you think now is a good time or a bad time to buy a house?

Buy a House
Showing Net Positive Percent



- Both are highly positive for the comparison period. NHS seems to have trended down since 2015 and Michigan remains mainly flat until early 2017.
- Positive yet low correlation¹ (r=0.39) between the two time series
- NHS on average is 15 points Lower² than Michigan, differences are statistically significant³ at 1% significance level.

1. The flat nature of good time to buy, and the period between Jan. 2014 and April 2015 when the two time series move in opposite directions are the possible reasons for low correlation
 2. Despite the high similarity of the question text in the two surveys, we still saw large differences. This may indicate that the differences in question design matters. NHS has four choice options, while Michigan only has two options. Also this is more subject to individual interpretation and therefore have large variations, 10 people may have 10 different reasons when saying "it is a good time to buy".
 3. Based on two tailed t-test for sample means between monthly indices.

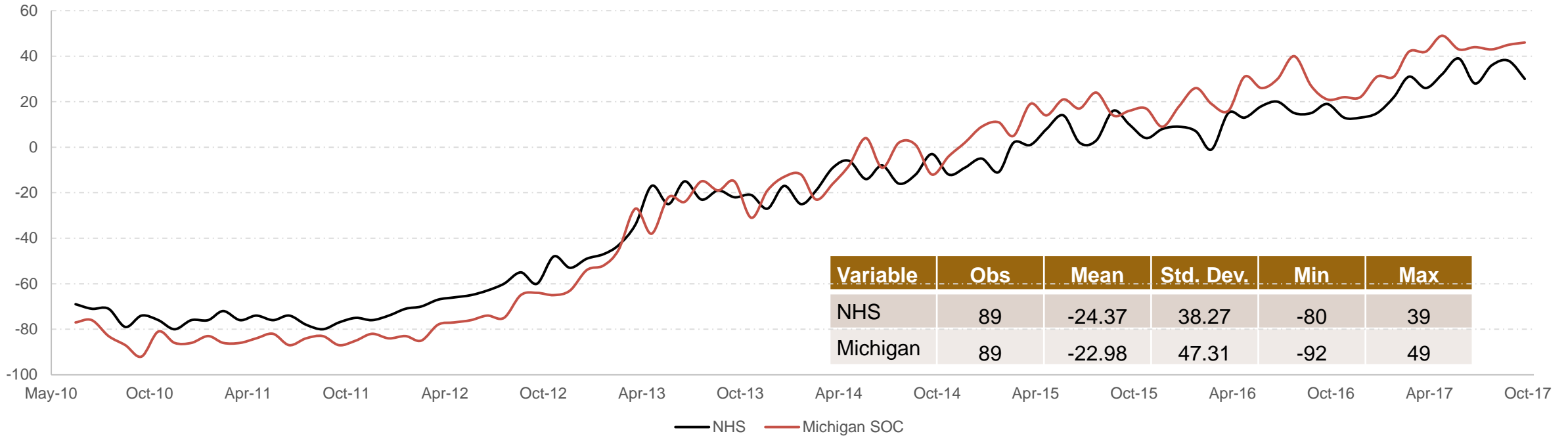


Good Time to Sell (net)

NHS: In general, do you think this is a very good time to sell a house, a somewhat good time, a somewhat bad time, or a very bad time to sell a house?

Michigan: What about selling a house—generally speaking, do you think now is a good time or bad time to sell a house?

Good Time to Sell
Showing Net Positive Percent



- Mostly negative but strong upward trend, turned positive in 2015
- Very high correlation ($r=0.99$) between the two time series
- NHS on average is 1 points lower than Michigan, differences are statistically insignificant¹ at 10% significance level.

1. . Based on two tailed t-test for sample means between monthly indices.



Interest Rate

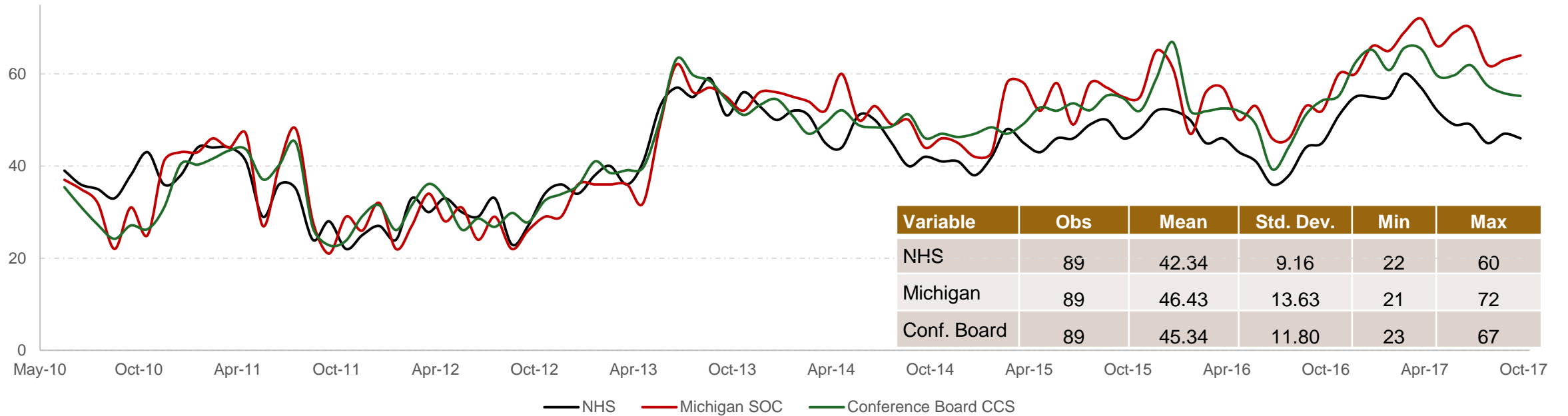
NHS: During the next 12 months, do you think home mortgage interest rates will go up, go down, or stay the same as where they are now?

Michigan: No one can say for sure, but what do you think will happen to interest rates for borrowing money during the next 12 months--will they go up, stay the same, or go down?

Conference Board: What do you think will happen to interest rates [over the next 12 months]? [five-point scale: increase, slightly increase, remain the same, slightly decrease, decrease]

Interest Rate Going Up Next Year

Showing Net Positive Percent



- The three time series trend closely¹: $r(\text{NHS}, \text{Michigan}) = 0.87$, $r(\text{NHS}, \text{Conference Board}) = 0.88$, $r(\text{Michigan}, \text{Conference Board}) = 0.95$
- Differences are statistically significant² at 1% significance level between the NHS and Michigan, and between the NHS and Conference Board

1. NHS is about the home mortgage interest rates, while Michigan and Conference Board refer to interest rate in general. Conference Board has more choice options than the other two. Also, The order of choices in NHS are different from the other two surveys.
 2. Based on two tailed t-test for sample means between monthly indices.

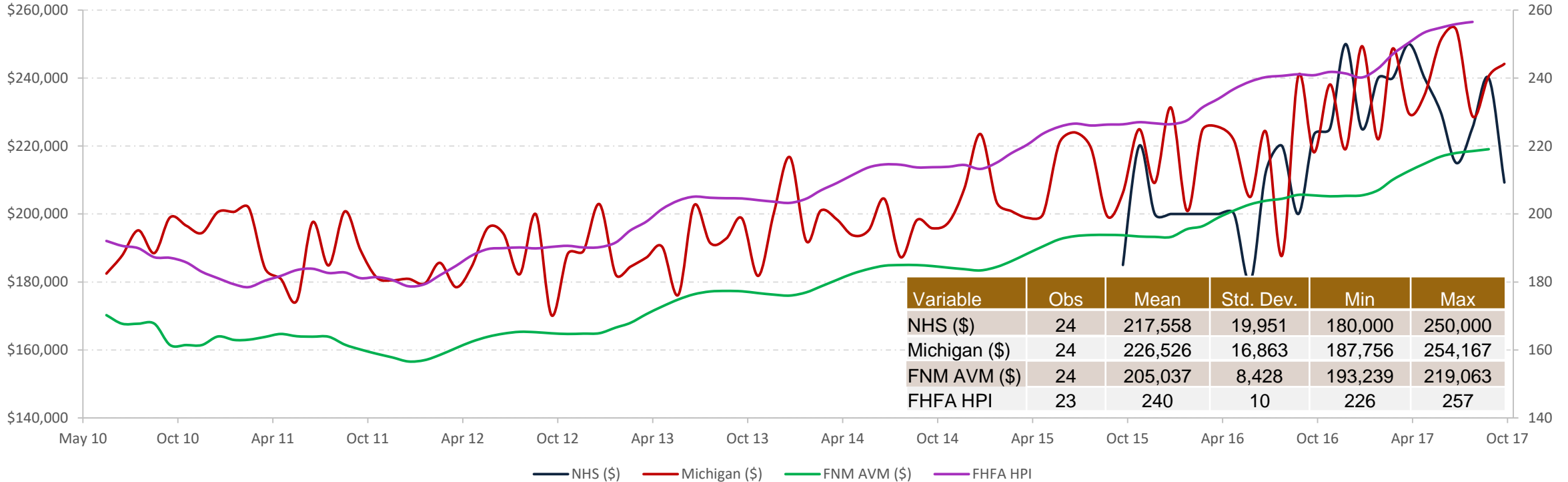


Current Home Value

NHS: If you were selling your home now, what do you think the selling price would be?

Michigan: What is the current market value of your home?

Expected Value of Current Home (median)



- The three time series has all trended up since 2013¹. The Fannie Mae AVM and FHFA HPI have less volatility than the two current market value estimates of primary homes from surveys.
- Positive correlations between the four series: $r(\text{NHS}, \text{Michigan}) = 0.41$, $r(\text{NHS}, \text{HPI}) = 0.63$, $r(\text{Michigan}, \text{HPI}) = 0.57$, $r(\text{NHS}, \text{AVM}) = 0.65$, $r(\text{Michigan}, \text{AVM}) = 0.57$.
- Differences are statistically significant² at 5% significance level between the NHS and Michigan, and at 1% significance level between the NHS/Michigan and the actual non-seasonally adjusted FHFA HPI and Fannie Mae AVM.

1. The NHS data didn't started until October 2015, we still present data for the other time series from June 2010 for consistency
 2. Based on two tailed t-test for sample means between monthly indices



Question Design – Personal vs. General Conditions, the Number of Choices and Correlations

		NHS Questions		Comparative Survey Questions				
NO.	Questions	Neutral Ground	# of Choices	Sources	Neutral Ground	# of Choices	Measure	Correlations
1	Economy Outlook	No	2	Gallup	No	2	NHS is 3 points lower	0.91
				Michigan	No	2	NHS is 12 points lower	0.84
2*	Personal Finance Next Year	Yes	5	Michigan	Yes	3	NHS is 13 points higher	0.81
3*	Personal Finance Past Year	Yes	5	Michigan	Yes	3	NHS is 10 points higher	0.88
4*	Unemployment	No	4	Michigan	Yes	3	NHS is 68 points higher	0.30
				Conf. Board	Yes	3	NHS is 68 points higher	0.48
5^	Home Price -Direction	Yes	3	Michigan	Yes	5	NHS is 7 points higher	0.90
6	Home Price - % change	No	2	Michigan	No	2	NHS is 0.8% higher	0.82
7^	Good Time to Buy	No	4	Michigan	No	2	NHS is 15 points lower	0.39
8^	Good Time to Sell	No	4	Michigan	No	2	NHS is 1 point lower	0.99
9	Interest Rate Increase Next Year	Yes	3	Michigan	Yes	3	NHS is 4 points lower	0.87
				Conf. Board	Yes	5	NHS is 3 points lower	0.88
10	Perceived Home Value			Michigan			NHS is \$8,968 lower	0.41
				FNM AVM			NHS is \$12,521 higher	0.65

- **Respondents tend to be more optimistic about their own situation than about the general economic or market conditions.** For example, in comparison Question 4, the NHS question about personal job security is about 68 percentage points higher than the survey questions about overall job market employment in the Michigan Survey and the Conference Board.
- **More choices for questions related to personal situation (highlighted in orange & marked with *) tend to lead to more positive survey scores.** For example, both the NHS and the Michigan survey asked about personal finance expectations in Question 2 and the past personal finance in Questions 3. The NHS offers five response choices (much better/somewhat better/same/somewhat worse/worse) while the Michigan survey only offers three (better/same/worse). Possibly as a result of fewer response choices, the Michigan survey respondents report a higher percentage of “same” and a lower percentage of “better” than NHS.
- **More choices for questions about general economic or market conditions (highlighted in green and marked with ^) tend to lead to more negative survey scores.** For example, more response choices lead to lower scores in home price directions for Michigan in Question 5, good time to buy for NHS in Question 7 and good time to sell for NHS in Question 8, as well as higher scores for Conference Board in Question 9 on expected interest rate increase.
- **The three lowest correlations between NHS and Michigan/conference Boards (< 0.50) are about unemployment, Good Time to Buy and the perceived home values.**



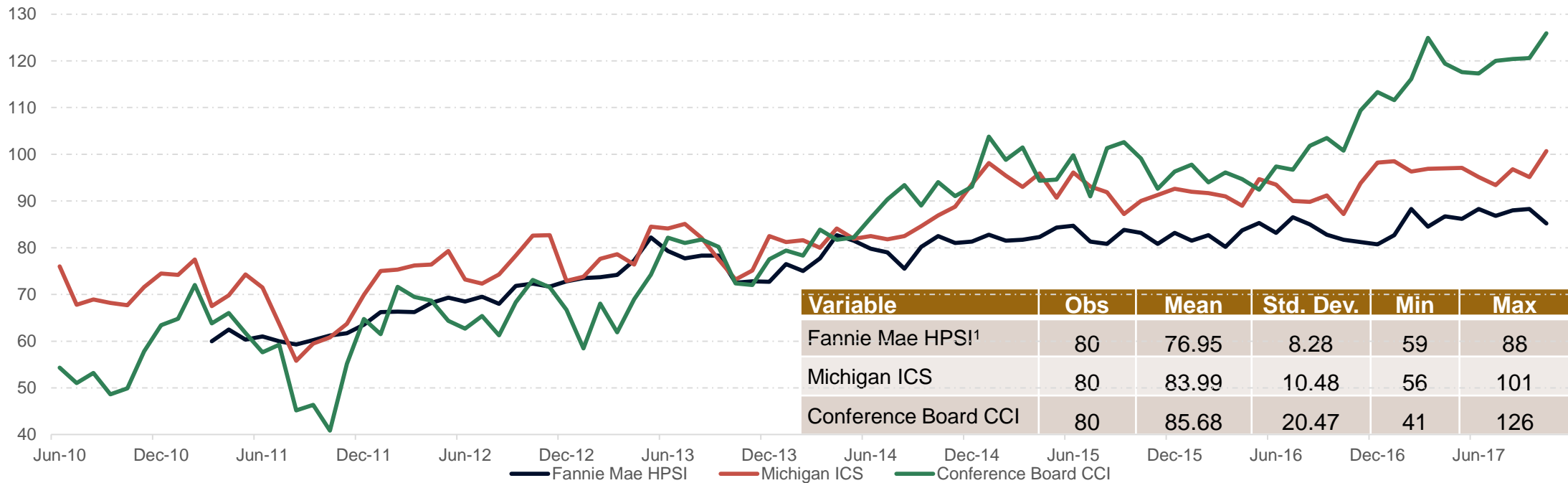
Three Consumer Indices

Fannie Mae Home Purchase Sentiment Index (HPSI): Averaging net positive percentages of six NHS questions on housing and personal finance

Michigan Index of Consumer Sentiment (ICS): Average of net positive percentages five questions on personal finance, business condition, and buying durable goods

Conference Board Consumer Confidence Index (CCI): Average of five questions on business condition, employment, and family income

Three Sentiment Indices



- The three time series all trending upwards for the observation period, HPSI and ICS have less variations than CCI
- High correlations, $r(\text{NHS, Michigan}) = 0.91$, $r(\text{NHS, Conference Board}) = 0.89$, $r(\text{Michigan, Conference Board}) = 0.94$

1. The NHS HPSI didn't start until March 2011, we still present data for the other indices from June 2010 for consistency



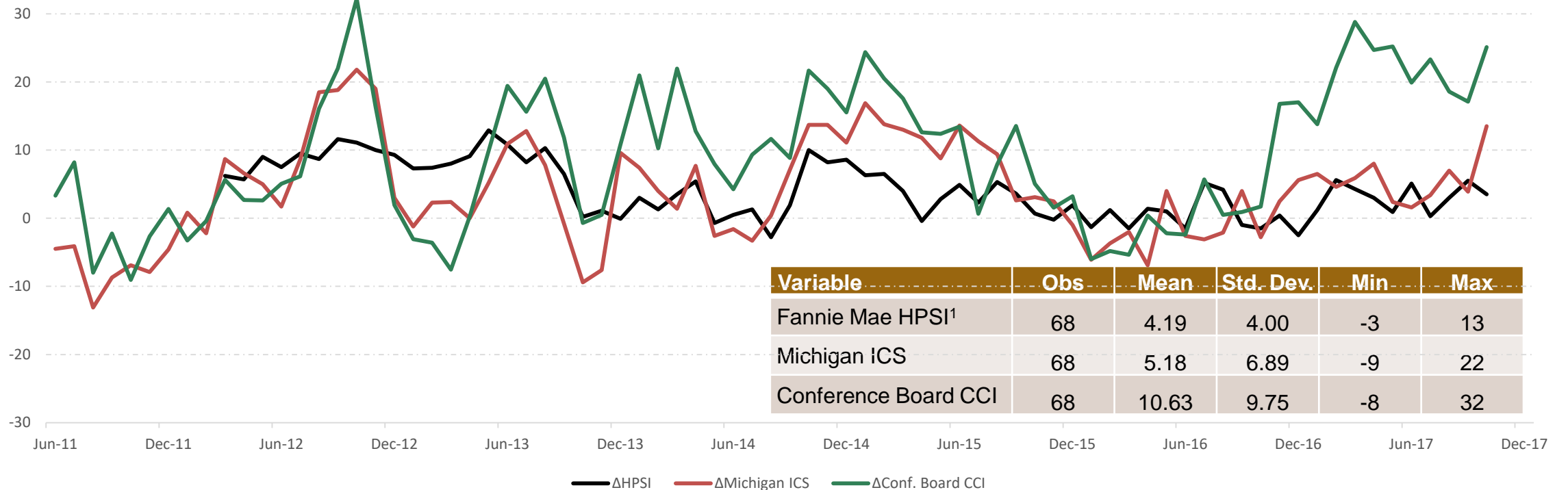
Three Consumer Indices- Annual Changes

Fannie Mae Home Purchase Sentiment Index (HPSI): Averaging net positive percentages of six NHS questions on housing and personal finance

Michigan Index of Consumer Sentiment (ICS): Average of net positive percentages five questions on personal finance, business condition, and buying durable goods

Conference Board Consumer Confidence Index (CCI): Average of five questions on business condition, employment, and family income

Annual Changes in Three Sentiment Indices



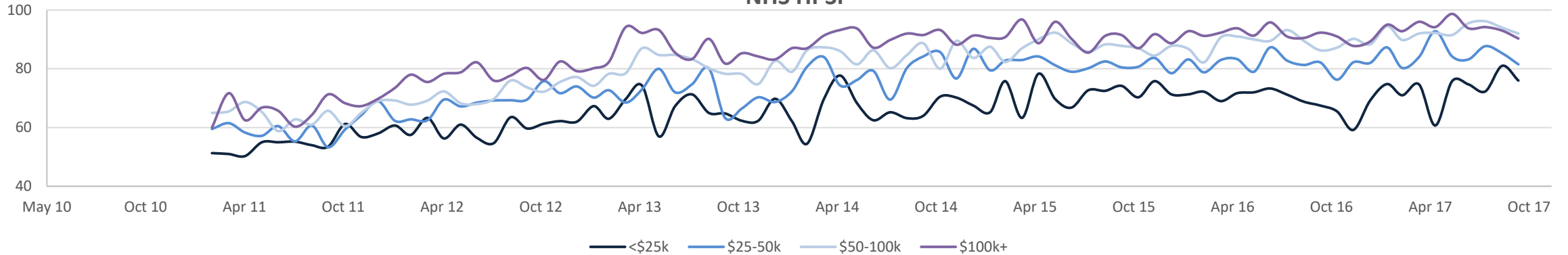
- The three time series all trending upwards for the observation period, HPSI and ICS have less variations than CCI
- Higher correlations with Michigan ICS than with Conference Board CCI: $r(\text{NHS}, \text{Michigan}) = 0.54$, $r(\text{NHS}, \text{Conference Board}) = 0.28$

1. The NHS HPSI didn't start until March 2012, we still present data for the other indices from June 2011 for consistency

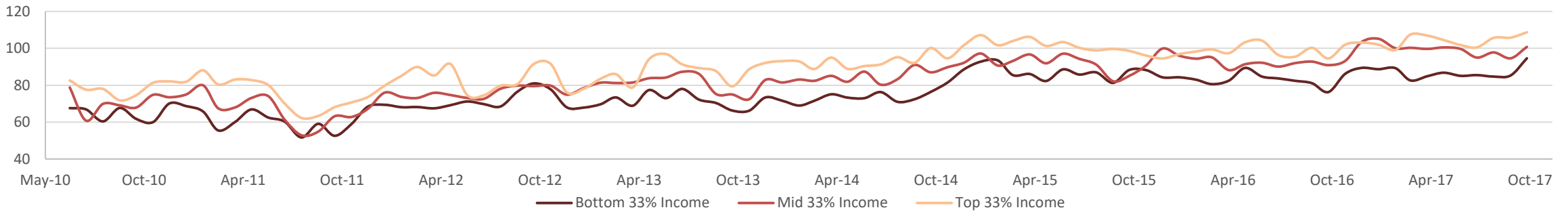


Three Consumer Indices

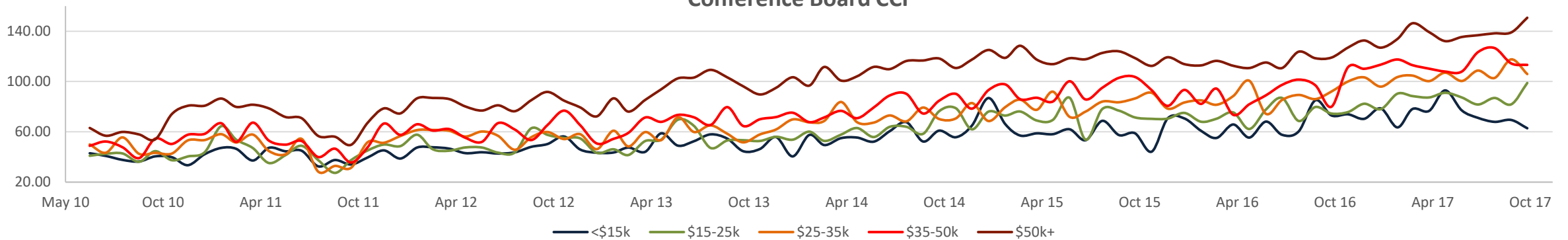
NHS HPSI



Michigan ICS



Conference Board CCI





Appendix



National Housing Survey

Background

- The Fannie Mae National Housing Survey is a monthly attitudinal survey, which polls the adult general population of the United States to assess their attitudes toward owning and renting a home, home purchase and rental prices, homeownership distress, household finances, and overall confidence in the economy.
- Each respondent is asked more than 100 questions, making the Fannie Mae National Housing Survey the most detailed attitudinal survey of its kind. The survey is conducted on a monthly basis to track attitudinal shifts that occur among Homebuyers and renters in the United States.

Survey Methodology

- Each month, beginning in June 2010, approximately 1,000 live (not automated) telephone interviews via landline and cell phone with Americans age 18 and older are conducted by Penn Schoen Berland (PSB), in coordination with Fannie Mae. The margin of error for the total monthly sample is ± 3.1 percent at the 95 percent confidence level and larger for sub-groups. Data collection occurs over the course of the first three weeks of each month although most occurs in the first two weeks of the month.

Monthly and Topic Analyses and Research Briefs

- Monthly reports provide a timely view of trends in consumers' attitudes using twelve key indicators.
<http://www.fanniemae.com/portal/research-insights/surveys/national-housing-survey.html>
- Topic analyses provide deeper insights into one or more issues based on the compilation of three monthly samples. The three monthly studies that make up any given topic analysis are identical in wording and placement of questions. Additionally, research briefs are occasional and rigorous research reports, conducted internally or by external partners such as academics, exploring attitudes and behaviors on key issues.
<http://www.fanniemae.com/portal/research-insights/surveys/special-topics.html>



Table 1 – Consumer Survey Methods: NHS¹, Michigan², and Conference Board³

Survey Method	NHS	Michigan	Conference Board
Mode	40% landline and 60% cell phone dials ⁴	Landline and cellphone (starting in 2013) with unknown cellphone percentage	Mail
Sampling	Random digit dial	Random digital dial Also include a rotating panel with 60% first-timers and 40% re-interviewed 6 months later	Stratified, probability sample design, using USPS master address file as sampling frame
Weighting	Weighted to match the most recent Census 1-year American Community Survey estimates, in age, gender, race ethnicity, income, education, and housing tenure.	Both household weights and adult weights are calculated, to match the Census Current Population Surveys estimates, in age and income	Post stratification weighting structure to cover Census divisions, age, gender, and income
Sample size	1,000 monthly	250-300 for mid-month release 500 for end-of-month revision	About 2,500 for end-of-month release; 3,500 for later revision
Field period	The first three weeks of the month	Around first of the month through a few days before the release	Sent first of the month; Accepts returns through end of month
Fieldwork	Penn Schoen Berland	Michigan Survey Research Center	The Nielsen Company
Release	Generally, the 7 th of the next month	Preliminary figures at mid-month; final figures at end of the month	Prelim. figures, last Tuesday of month; final figures with next month's release
History	Monthly Since June, 2010	Started bimonthly in 1967; went to monthly in 1977	Started annually in 1946; quarterly in 1952 and monthly in 1978

1. Fannie Mae National Housing Survey Technical Notes <http://www.fanniemae.com/resources/file/research/housingsurvey/pdf/nhstechnicalnotes.pdf>
 2. University of Michigan Surveys of Consumers sample design <https://data.sca.isr.umich.edu/fetchdoc.php?docid=57449>
 3. Conference Board Consumer Confidence Survey Technical Note https://www.conference-board.org/pdf_free/press/TechnicalPDF_4134_1298367128.pdf
 4. From October, 2014, NHS increased cell phone dials from 25% to 60%, to obtain a 40% cell-phone-only (CPO) sample that matches the current national CPO household percentages as estimated by CDC <http://www.pewresearch.org/fact-tank/2014/07/08/two-of-every-five-u-s-households-have-only-wireless-phones/>



Table 2 – Consumer Survey Questions Analyzed

NO.	NHS Question	Comparative Survey/Source	Comparable Question/Data
1	Q10 In general do you think our economy is on the right track or is it off on the wrong track?	Gallup ¹	Do you think that economic conditions in the country as a whole are getting better or getting worse?
		Michigan ²	A4 Now turning to business conditions in the country as a whole, do you think that during the next 12 months we'll have good times financially, or bad times or what?
2	Q11 Looking ahead one year, do you expect your personal financial situation to get much better, somewhat better, stay about the same, get somewhat worse, or get much worse?	Michigan	A3 Now looking ahead--do you think that a year from now you (and your family living there) will be better off financially, or worse off, or just about the same as now?
3	Q11b Now looking back over the past year, has your personal financial situation gotten much better, somewhat better, stayed about the same, gotten somewhat worse, or gotten much worse?	Michigan	A2 We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better off or worse off financially than you were a year ago?
4	Q112b How concerned are you that you will lose your job in the next twelve months? Are you very concerned, somewhat concerned, not very concerned, or not at all concerned that you will lose your job in the next twelve months?	Michigan	A10 How about people out of work during the coming 12 months--do you think that there will be more unemployment than now, about the same, or less?
		Conference Board ³	2A Six months from now, do you think there will be [more/same/fewer] jobs available in your area?
5	Q15 During the next 12 months, do you think home prices in general will go up, go down, or stay the same, as where they are now?	Michigan	A24a What do you think will happen to the prices of homes (like yours) in your community over the next 12 months? Will they increase at a rapid rate, increase at a moderate rate, remain about the same, decrease at a moderate rate, or decrease at a rapid rate?

1. Gallup U.S. Daily Survey
2. University of Michigan Survey of Consumers
3. Conference Board Consumer Confidence Survey



Table 2 – Consumer Survey Questions Analyzed (Continued)

NO.	NHS Question	Comparative Survey/Source	Comparable Question/Data
6	Q16/Q17 By about what percent do you think home prices in general will go up/down on the average over the next 12 months?	Michigan	A24b By about what percent do you expect prices of homes like yours in your community to go (up/down), on average over the next 12 months?
7	Q12 In general, do you think this is a very good time to buy a house, a somewhat good time, a somewhat bad time, or a very bad time to buy a house?	Michigan	A16 Generally speaking, do you think now is a good time or a bad time to buy a house?
8	Q13 In general, do you think this is a very good time to sell a house, a somewhat good time, a somewhat bad time, or a very bad time to sell a house?	Michigan	A17 What about selling a house -- generally speaking, do you think now is a good time or bad time to sell a house?
9	Q20b During the next 12 months, do you think home mortgage interest rates will go up, go down, or stay the same as where they are now?	Michigan	A11 No one can say for sure, but what do you think will happen to interest rates for borrowing money during the next 12 months--will they go up, stay the same, or go down?
		Conference Board	5A What do you think will happen to interest rates [over the next 12 months]?
10	Q223 If you were selling your home now, what do you think the selling price would be?	Michigan	A23 What is the current value of your home? (if you sold it today, how much would it bring in?)
11	Home Purchase Sentiment Index	Michigan	Index of Consumer Sentiment



The Fannie Mae Home Purchase Sentiment Index (HPSI): The Average of Six Questions from Fannie Mae's NHS

$$HPSI = \frac{Q12 + Q13 + Q15 + Q20B + Q112B + Q116}{6} + 63.5$$

Number	NHS Question
Q12	Net Good Time to Buy <i>(Very and Somewhat Good Time To Buy - Very and Somewhat Bad Time To Buy)</i>
Q13	Net Good Time to Sell <i>(Very and Somewhat Good Time To Sell - Very and Somewhat Bad Time To Sell)</i>
Q15	Net Home Prices Will Go Up (next 12 months) <i>(Home Prices Will Go Up – Home Prices Will Go Down)</i>
Q20B	Net Mortgage Rates Will Go Down (next 12 months) <i>(Mortgage Rates Will Go Down – Mortgage Rates Will Go Up)</i>
Q112B	Net Confident about Not Losing Job (next 12 months) <i>(Not at All and Not Very Concerned about Losing Job – Very and Somewhat Concerned about Losing Job)</i>
Q116	Net Household Income is Significantly Higher (past 12 months) <i>(Income is Significantly Higher – Income is Significantly Lower)</i>

Notes:

1. Survey responses are expressed as net percent positive, e.g., good minus bad, up minus down.
2. The net percent positives for each question are weighted equally in calculating the HPSI.
3. HPSI set to 60 at March, 2011, the first month that Question 112B was asked in the NHS.