The testosterone-endowed are at an advantage when risk-taking brings success. According to current research in both psychology and economics, physical attributes that correlate to higher levels of the hormone may suggest how likely someone is to be powerful. Economics correspondent Paul Solman explores what that means for the workplace and society.

JUDY WOODRUFF: There are still very few companies run by women these days. And, clearly, there are many reasons for that, including what many see as the role of both unconscious bias and outright sexism.

Tonight, our economics correspondent, Paul Solman, explores another potential connection: whether there’s a link between risk-taking in leadership, testosterone and the perceptions around gender.

It’s part of his ongoing weekly series, Making Sense, which airs every Thursday.

MAN: Welcome, everybody, to this CNBC discussion on the future of banking at the World Economic Forum.

PAUL SOLMAN: Financial CEOs at Davos this year.

ANDREW LIVERIS, CEO, Dow Chemical: Good morning. Mr. President. Andrew Liveris, Dow Chemical.

PAUL SOLMAN: Manufacturing CEOs at the White House.

MARK FIELDS, CEO, Ford Motor Company: CEO of Ford.

DOUGLAS OBERHELMAN, CEO, Caterpillar: Chairman of Caterpillar.
PRESIDENT DONALD TRUMP: Some of the great people in the world of business.

PAUL SOLMAN: CEOs now being mentioned as the next president. But, in 2017, the vast majority of CEOs, 96 percent of the Fortune 500, are still men.

JENNIFER LERNER, Harvard University: I think that this is socially constructed. The differences between males and females on a wide variety of things are smaller than the differences within males and within females.

PAUL SOLMAN: Psychologist Jennifer Lerner studies gender and leadership at Harvard. We will hear more from her in a bit.

But, first, let’s check in with economist Andy Kim, who has made a career out of studying CEOs in intriguingly quirky ways.

ANDY KIM, SungKyunKwan University: So, you’re gripping this horse, right?

PAUL SOLMAN: Oh, the reins.

Now, a few of you might remember Andy Kim teaching me two years ago the equestrian dance move in the hyper-viral video sensation “Gangnam Style,” part of his offbeat research showing that CEOs who become visible, for whatever reason, can see their stock price rise irrationally.

Well, he presented his brand-new research, not yet published, at this year’s annual Economics Convention. His latest hypothesis is as offbeat as ever.

ANDY KIM: There is a strong linkage between your facial masculinity and your risk-taking behavior.

PAUL SOLMAN: Kim is now exploring a possible link between CEO risk-taking and the hormone testosterone, which, starting with mid-19th century experiments on roosters, has been linked to male dominance and aggression throughout the animal kingdom.

But how do you measure testosterone in CEOs with little time and probably even less inclination to give Korean assistant finance professors blood or saliva samples?

One possible way, thought Kim, would be to study their facial bone structure.
ANDY KIM: So, this is Mike Tyson’s face, obviously a high-testosterone guy.

PAUL SOLMAN: And not just because he was a notoriously aggressive heavyweight champion, claims Kim, but because of the ratio of his facial width.

ANDY KIM: Measure the distance between your cheekbones, where your ears are attached to your skull.

PAUL SOLMAN: To his facial height.

ANDY KIM: From the point where your skull is linked to your teeth to the point between your eyebrows.

PAUL SOLMAN: That’s the ridge here?

ANDY KIM: It goes together with your eye hole in your skull, right.

PAUL SOLMAN: Now, the science here is far from settled, but facial width-to-height ratio, a skull measurement technique developed by archaeologists, has been proposed as a proxy for masculinity, on the theory that it’s influenced by exposure to testosterone.

ANDY KIM: The idea is, more masculine, wider face.

PAUL SOLMAN: The typical ratio in men, Kim has found, 1.8. And mine?

ANDY KIM: Yours was 1.83, which is …

PAUL SOLMAN: Just average, and exactly the same as Justin Bieber’s, by the way.

Muy macho Mike Tyson, 2.28. Not far behind, at 2.17, Jack Ma.

According to Kim …

ANDY KIM: Very high-testosterone CEO.

PAUL SOLMAN: And a very successful one, as founder of Alibaba, the Chinese e-commerce firm bigger than Amazon and eBay combined.
Kim thinks a man’s facial width-to-height ratio does correlate with testosterone, but, even if it doesn’t, he has a provocative finding: that the average score for 1,162 CEOs, measured by neutral third parties, was a significantly higher-than-average 2.0.

Even more striking, the wider the face, the higher the correlation with risk-taking.

Your hypothesis was, the more masculine, as revealed by facial width-to-height ratio, the more testosterone and, therefore, the CEO is going to take more risks how?

**ANDY KIM:** Borrowing more.

**PAUL SOLMAN:** Borrowing more money.

**ANDY KIM:** Another part of it is mergers and acquisitions. You want to have higher social status. You want to take over your competitor and become a bigger guy.

**PAUL SOLMAN:** And this turns out to be true?

**ANDY KIM:** Yes, that’s what we find in our paper. Not only does the guy more frequently merge, but he spends more money on acquisition every year.

**PAUL SOLMAN:** And then there’s testosterone’s well-established connection to vocal pitch, at any given age, the lower the pitch, the higher the testosterone, a relationship Andy Kim has also begun to study.

**ANDY KIM:** We look at vocal masculinity.

**PAUL SOLMAN:** Vocal?

**ANDY KIM:** Yes.

**PAUL SOLMAN:** This is a low voice, as opposed to a high voice?

**ANDY KIM:** Exactly. The more masculine guys, they tend to be borrowing more. All consistent.

**JENNIFER LERNER:** There’s a systematic relationship there. And it’s all explained through testosterone as a kind of social dominance hormone.
PAUL SOLMAN: Jennifer Lerner doesn’t study facial width or vocal pitch. Instead, she measures testosterone levels directly of leaders enrolled in advanced programs at the Kennedy School of Government.

JENNIFER LERNER: We do it through saliva, and we have them drool, which can be a little bit amusing, because we have, you know, three-star admirals and…

PAUL SOLMAN: Drooling three-star admirals.

(LAUGHTER)

JENNIFER LERNER: It turns out that highly successful people love to be studied.

PAUL SOLMAN: And one study of 78 men published last year seems to support the first part of Andy Kim’s hypothesis, that male leaders have higher-than-average testosterone.

When you take their testosterone, does it correlate with their rank?

JENNIFER LERNER: Yes, it does, the more testosterone, the more subordinates you have.

PAUL SOLMAN: Now, this could just be because power begets testosterone, rather than the other way round. But it fits with the current view that testosterone encourages status-seeking in men. How? Mainly by decreasing fear and triggering anger, says Lerner, both of which increase risk-taking.

JENNIFER LERNER: Fear and anger have opposite effects when it comes to risk. We know that men are more likely to experience anger and to take more risks as a result of that anger.

PAUL SOLMAN: So, angry investment managers, angry CEOs do better?

JENNIFER LERNER: We human beings are risk-averse and just kind of, on average, leave some money on the table in investment situations.

PAUL SOLMAN: Right.

JENNIFER LERNER: So, to the extent that risk-taking is going to lead to benefits …
PAUL SOLMAN: The testosterone-enriched are at an advantage.

JENNIFER LERNER: The male who is angry is going to really thrive in that environment.

PAUL SOLMAN: So, if testosterone can help explain which men rise to the top, does it also explain why it’s so often men, instead of women? No, says Lerner.

JENNIFER LERNER: It’s certainly not inevitable, because there are places where you can see progress in society, but it is extremely rare. And part of that is the gender stereotypes of what we hold in our minds. An angry woman is called a bitch. An angry man is called powerful.

PAUL SOLMAN: So, it does sound as if the deck is stacked against women ascending to the top of organizations, no?

JENNIFER LERNER: It depends, I think, on what the patterns of ascension are going to be. To the extent that leadership can arise through building networks, through building coalitions, there’s a path to the top.

PAUL SOLMAN: And maybe, in a corporate age of network- and coalition-building, the so-called advantages of being seen as masculine will eventually fade.

After all, the chickens came home to roost after the financial crisis of ’08. If and when there’s another, you have to wonder if risk-happy fellows will still rule the roost.

For the PBS NewsHour, economics correspondent Paul Solman reporting.