JB: This is a special episode about Swedish household finances with Prof. Paolo Sodini from Stockholm School of Economics, welcome.

PS: Thank you

JB: You are also the director of the Swedish House of Finance of National Data Centre as well as the founder for the European Network of Household Finance and I have seen that your research focuses on asset pricing, household finance which was what caught my interest actually and you have published in several economic and finance journals. You have a PhD from MIT and a **Master** Science and Econometrics from London School of Economics and you have literally a CV spanning several pages which I found. So you are very welcome. Do you want to add something to the presentation?

PS: No I think it was very good.

JB: So why did you choose the area of finance or household finance?

PS: Finance came out a little bit by chance when I was studying at MIT. I started actually very interesting, theoretical microeconomics, one of the theories that I was really fascinated by is general equilibrium and then financial markets is one of the most interesting application of general equilibrium theory.

JB: Could you say something about that?

PS: It's the theory that studies like the equilibrium across all markets at the same time. I would say financial markets are a simple example compared to other types of markets that we have in the economy where you can apply general equilibrium theory. So I started to study finance and then I wrote actually a paper for my thesis that study how participation in financial markets would evolve as new financial products are introduced. And this paper was a theoretical paper and we were asked to find some empirical evidence for some of the findings that we had in the theory and that's how I actually kind of found the very unique and interesting data on wealth that you have here in Sweden and that's how I got into household finance. From thereon actually I stopped doing theory and I started to do more empirical work.

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JB: What was the most interesting thing with the household financial wealth.

PS: I think at that time what was very interesting is that we didn't know so many things about household behaviour or individual behaviour in financial markets and one of the issue was actually there wasn't good data about it and instead in Sweden because you used to have the wealth tax, you used to collect data on how people used financial products, mutual fund, stocks, how much do they have in the bank account, how much risk they take in their portfolio and so on and so forth coupled with the information of own people demographics, income, schooling and so on and so forth. So finally we could actually ask you some of the questions on how people behave that you find in theoretical models but we didn’t know whether they corresponded to reality. The Swedish outset was very detailed and it was also very comprehensive, it's a little bit like, I used to say financial economics was almost like to put Hubble telescope in the orbit.

JB: A Swiss word is a perfect example

PS: Yeah, hopefully a representative of the world population because we are learning a lot from that data. That was the most fascinating thing. For me it’s like finally be able to answer some of these questions.

JB: So what did you find with this Hubble telescope?

PS: So many things actually. I think the most surprising fact for me was more like kind of rational theories of human behaviour in financial markets were actually providing good guidance and understanding how people behave, and there was a period where there was a little bit of a revolution in financial economics where behavioural theory was getting a lot of credit and a lot of importance, which I think was very good.

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JB: Is it like that with Daniel Kahneman, Amos Tversky?

PS: Exactly. So for example you could start checking whether prospect theories of those types of preferences they talk about they actually bear some evidence in the data or other types of preferences or behaviours that we see in the micro data. So it was extremely interesting to see actually that more rational theories had more bearings than I thought. It doesn’t mean that people are perfectly rational, far from it, I would say, but they are still I think a good benchmark to think about people behaviour. One finding that came out of all these papers or research that I have been doing in the last 15 - 20 years is that more sophisticated people, more educated people, richer people, people with more experience in financial markets, they tend to behave closer to the optimal behaviour you have rational theories.

JB: I've seen like, I don't know if there are like science-based studies, but you normally say that, for instance engineers like I am or doctors that they are mostly like worst in for instance like stock investing because they have this behavioural biases. You need to be good in your job and be like it certain of things but that doesn't really translate into or the things that are successful in your normal job doesn't translate to success in the stock market.

PS: It depends by what you mean by success. So one that we had observed in one of the first studies we did is it is true that people, and especially more educated people tend to have individual stock holdings direct stoke holdings but you also see that, coupled with another behaviour, which is that typically on the side they have a mutual fund and possibly a good mutual fund and if they don't, it's not they pour money into those two, three stocks that they have. So they represent not a huge fraction of the wealth. When it starts to represent a large fraction of their wealth the money pour into mutual funds, which I think is a good idea, of course we can talk about a lot about which mutual funds, or in many stocks. So the richest people in in in Sweden, those that kind of hold almost 80% of the stock market and they represent only a third of the households that hold the Swedish Stock Market they have on average 10 stocks. So it's only people that actually put little money directly in the stock market, they hold one, two or three stocks and then if you don't have that much money into it is not such a bad idea if this give you some pleasure or happiness or whatever as long as it is really not going to ruin if those stocks are not going to do badly.

So that was one of the things, so there is this kind of relationship between how much risk you take and how good is the portfolio where you put your money when you take risk that we didn't explore or we didn't expect before.

So basically what we find is that people that tend to choose good portfolio put a lot of money into it. The moment a portfolio is not good and that's typically actually for male investors because they tend to pick a few stocks in the stock market, but they understand is not such a great idea so they actually don't put that much money into it, which means that from well perspective they are not going to be large hits because mostly they do it for fun.

This doesn't mean that it's a good idea in the sense that perhaps if they would choose funds or they would be aware that funds are so much such a better instrument to take financial risk they would put much more money in the stock market, which in generally is probably a good strategy especially early in life. So in that sense, if you want, they not taking as much risk as they could if they only would have invested in better financial assets.

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JB: Were there any other findings that surprised you?

PS: First of all there was this general theory, general idea that indeed people that are more sophisticated in terms of education and things like that, they indeed have better portfolios and when they don't they don't take that much risk. That was one of the things which actually meant that the losses, this regarding how much risk you should take which is king of difficult to assess since you can't observe the people attitude towards risks. This finding was the first surprising thing that kind of changed, before we just thought what you thought that people had just one or two stocks so they don't understand anything. Actually, they have one or two stocks but they understand what's going on. Of course there are some people that lose a lot of money, but they tend to be minority I would say.

JB So in general we do good things?

PS: I think you have a way to limit your losses. You could do better. Maybe people take too much risk compared to how much they could take if they were choosing not two or three stocks but a good mutual fund.

So that is one issue. The second thing that was interesting is how much people rebalance their portfolio. As you know, one of the big mistakes that people make is trying to outguess whether the market is high or low. That's extremely difficult to do, I don't know anyone who is successful in doing it and I talk to a lot of smart people around the world. So you try to outsmart the rest of the market in deciding that right now it's time to sell or time to buy is typically a bad thing. So the best strategy is once you have decided how much risk you want to take, so you want to have a portfolio of 60 stocks or in equity and 40% in safer assets one of the best thing you can do is to just rebalance your portfolio towards the 60 - 40 proportions or portfolio shares. In this way, when the market is low automatically you are going to buy and bring back your 60 - 40 when the market is high you are going to sell so you going to in a way cash in your gains and bring back that but you do it automatically without trying to outsmart the market. People don't do that, people try to not rebalance. So this will be the rebalancing behaviour.

The question that we didn't know is how much people do it and what we found is that on average in Sweden people rebalance about half or how much they should which is not too bad, because we might think that when the market goes down people simply sell and escape and when the market is high people stay in and know actually there is some rebalancing and then again this rebalance is more pronounced for people that have better education and they are more sophisticated. Which brings us to the idea that when people do not behave optimally perhaps it's a mistake and we could actually convince them to behave better if they only had more education or could sit with a financial advisor.

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JB: If somebody just listening to this, you talk about like a sophisticated investor, how do you define a sophisticated investor?

PS: It's in terms of the data that we can access. So for me as a sophisticated investor when I look at data it's someone who has higher education, someone who has experience in financial markets, someone, for example that is saving in private pension so he kind of understands what's going on. Someone that has some debt so the idea being that is in touch with the financial system through other ways. Someone who perhaps is wealthier or has high income. So all these characteristics that tend to kind of seek more knowledge or more experience and kind of for more information.

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JB: And even touch the subject as well, like good mutual fund, because I love mutual funds. I started investing in stocks like and 96 and then I lost everything in 98, like in the IT bubble and so I kind of like after 20 years I went back to the mutual fund so I am a big fan of mutual funds, but how would you define a good mutual fund?

PS: So there is a basic factor that we need to understand, which is the other kind of big mistake people tend to do. People tend to outsmart the market in trying to understand whether it's time to sell or not overall but also they try to outsmart the market in trying to pick the right stocks. Now, remember that every time you buy or sell something there someone else on the other side, that is actually accepting the trade and remember that there are a lot of smart money out there that are poured into people with a lot of knowledge and very sophisticated set very sophisticated tools to analyse financial markets plus a lot of information about what is happening in financial markets. So when I think about how to trade, I always think twice about who's on the other side and 90% of the time I decide that probably the other person knows more than me.

JB: So you did your PhD and MIT, you went to London School of Economics and you are a professor at **……….0:15:39.5** in Stockholm, that says something I would say.

PS: It's very difficult to pick the stocks, so that's true not only for the for the average investor but also for mutual fund managers. On average, we have a lot of evidence that the average mutual fund manager is not going to be able to basically provide its clients with more performance after fees. So then the then once you to think, I personally, I think in the following way, if I have to invest in mutual funds I have already taken a lot of risk by investing in financial markets, why should I add the risk of getting a bad manager? And who am I in understanding who is a good manager, who is a bad manager? Unfortunately, it is extremely difficult to value performance. Fifteen years of good performance are actually unfortunately telling us very little about someone is truly skilled. We can talk about that if you want. So that this mean that I like index funds, very well diversified index funds. This means that I want to pay as little fees as possible. So I have two reasons not to choose active fund management. One is that I don't want take the risk of a bad manager and two is that I don’t want to pay the fee for it, especially if there is this risk. For me a good mutual fund is a very well diversified global index funds that is very cheap.

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JB: You said that there even 15 years of historical performance doesn't say very much.

PS: How much would you expect to earn on the stock market compared to bond markets?

JB: On average? I would say maybe 3% annually.

PS: That's on the lower side. Some people save more 6%, some people say it's more 4½%.

JB: Because if my default, like I even got like a nervous, like why you did you ask me because I would say like bonds 3½% annually and stocks 7, 8% annually

PS: On top of bonds, that is the question.

JB: Yes, on top of bonds 4%.

PS: 4% or 5%. You know how many years of data I need to have to kind of be 90% confident that this 4% is within 3½ and 4½

JB: No

PS: 3000 years

JB: 3000 years?

PS: Yes. So there is so much volatility in the stock market it is extremely difficult to pin down what is this average. A hundred years of data gives us a confidence interval like span over which we have kind of an idea what this number is. There is about 2½% below and 2½% above. So that you will know what it is for it's 4, it's 5 or it's 6 and that's why I don't know it either. That's unfortunately I say the truth, when you invest in financial markets even with more than 100 years I think we have 130 years of data or something like that

JB: I think from 1870.

PS Exactly, from the US right

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JB Yeah and Sweden as well.

PS So we have a lot of uncertainty of what's the range of this famous equity premium which is how much stocks run on top of bonds and the range is anything between 4 and 8%, which of course makes a huge difference when you invest pension. So 20 years or 15 years of performance of a manager, how much do they tell me whether this person is really good or not. Then I am going be between -3% and +10% he could be or she could be everywhere in between. And that's a little bit like one of the fallacies, if you want, I would say it is a fault of both us and the banking industry, obviously we will do wrong to want returns when we invest. And then when we go a the bank we want to be promised that those returns are good. So suppose that I am a new bank and you come see, you come to me and you say so Paulo, can you tell me please what I should really expect him stock market? And I say, well actually have no clue, it can be anything between 4 and 8% would you give me money? But that's the truth. It is true that you earn more than bonds and it's a sizable amount and over a long period of time, thanks to compounding interest rates, then you will be able to actually accumulate wealth for your pension.

JB: Regarding the fund managers, I read the study, I think it was ………**0:20:45.3** in 2010 they made like a 30 year study, I think 2000 American mutual funds and I think that they found that 74% had the same result as the index and 24%, I think, had poor performance and I think it was like 0.6% that had better performance than index but then they wrote in the conclusion, 'but even for this 0.6% we cannot exclude randomness or luck.

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PS: If you want to have a more academic kind of sources there is a beautiful paper in the Journal of Finance by Fama and French …….**0:21:29.9** recently that actually does exactly that. They try to understand which instant is luck and which instant is skill and they are basically undistinguishable. So there are two problems, first of all, in every single year, as you say, the vast majority of active mutual fund managers do not beat the index after fees which in a way is what you would expect in equilibrium because if somehow they would beat the index by a large amount and for sure what would this person do? Increase how much you pay for him or her until you are indifferent. So anyway, we should expect something like that. That's a beautiful paper about this by Richard Green.

That is one point, the second kind of puzzling issue is that it's extremely difficult from one year to the other predict which out of the managers next year are ……….**0:22:43.6**. And that's how we can have evidence it is more luck other rather than skill.

JB: I saw paper from Vanguard and which showed they had made a study on the five star rating at Morning Star and they said there was no correlation at all, like if a fund has five stars. It actually tends to go towards three stars in the next years. They were like no correlation at all.

PS: I am not surprised. At the same time, unfortunately, is a bit our fault, we feel safer when there is a manager behind our money and the concept of index fund is a difficult concept, what is an index? What do you mean that you just follow an index? It took a lot of research and it takes quite a bit of sophistication to understand that in financial markets precisely because they are so efficient, because precise because the prices are set so well, it's difficult to spot something that is overvalued or undervalued, it’s good news which means that mutual fund managers actually don't add much. But, go and convince people that they should not use a manager or an expert when they invest that money.

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JB: I usually say that one of my biggest insight is that that the faster you realize that you are average, the more money you're going to make.

PS I completely agree.

JB: Which is quite correct and I thought of one more thing about the index funds, I talked to a friend of mine who works in the financial markets and he said that when Jack Bogle introduced index funds in the 70s or 80s in the US, the other fund managers put up there and whole paper ads in the New York Times which said “it's unAmerican to be average or it's unAmerican to save in index funds”. It's like it's difficult to start because like you said we want to have the best, we want to have the manager, but the evidence says we cannot find that

PS: Efficient in financial markets actually allow us not, we don’t need that, let’s put it this way. Now, of course if there will be no active fund managers, then the prices would not be well set. So there has to be a good balance.

JB: Could say something about the balance because I think back at that passive are kind of 20 - 25%. I think have seen numbers of the total

PS It's very difficult to assess what would be a good fractional of active versus passive. My feeling is that there is a lot of money out there waiting to be invested in a smart way. The moment there is too much passive, I think active would show itself very quickly and then immediately money would pull in and the prices will set right and then the passive is going to be good again. I personally believe that we are very far from it. Just you give an idea, I don't know if this is the latest statistics, but I remember once reading on the OECD website that there are 50,000 listed stocks in the world. You know how many equity funds we have? 25,000

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JB: But I saw numbers as well that the number of indexes has also like shot up, that we have almost more indices than we have stocks today.

PS: That's in the other problem, why would you why would you choose different indexes mean I would simply start as you are buying the world index very cheaply from a reputable company that has very efficient way of trading around the world because execution is crucial. When it comes to index fund there is another set of skills that you need. So you think that is there is no manager but there is actually a manager who is executing this trade and making sure that the tracks the index very well. That's for large indexes and the large funds. That's not an easy skill to get, so you need you need a reputable company behind it. I think personally buying a world index or a set of regional indexes that you combine together just to reduce the fix because sometimes regional indexes are less expensive than the whole world index if you put them together. I am always surprised by how many products we have out there and I think it's a strange equilibrium between demand and supply that we have in retail banking.

JB Sorry what is it?

PS The CAPM is the foundation of many models, but I think it's the first one where we try to explain the cross-sectional of expected returns, so in other words why certain stocks earn higher returns than others. The insight of the CAPM is that some stocks earn more returns than others because they can move more with the market. In other words, they bear higher what we call systematic risk. One of the deepest concept of Sharpe's theory is the distinction between systematic and idiosyncratic. Systematic risk is a risk that you can't get rid of which are the fluctuation in our economy, we are exposed to that we have to live with it, there's nothing we can do about it. You can't diversify it away. idiosyncratic risk is the risk that is specific to an individual stock by buying many stocks you can diversify idiosyncratic risk away

JB Is that that you normally talk about you need to own 10 or 12 stocks

PS One way to think about it is like a suppose that you think oil company is very good and then you buy some stocks of oil companies. Now, the oil price goes down and this oil company starts having problem. So you're exposed to the idiosyncratic risk of oil price shocks by buying companies. However, at the same time you could buy airline companies when the price of oil goes down airline companies do very well because it is very cheap to fly their planes. So they behave in the opposite way of oil companies. So each individually, the oil companies and the airline companies they have their role in idiosyncratic risk it just happens this idiosyncratic risk move in the opposite direction. If you combine them together you get rid of the idiosyncratic risk and you maintain the same return. So you reduce the risk by maintaining the same expected return or similar one.

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JB That is a brilliant explanation.

PS so that's like the idea of diversification, you combine different stocks together to get a rid of this idiosyncrasies that are all over financial markets and then you're exposed to systematically. So the CAPM said is that when you buy only oil stocks or only airline stocks you're not going to be compensated for the additional idiosyncratic risk, you're only going to be compensated by how much they move together with the market, hence you should simply buy the market, hence index funds are good. When he wrote down this theory obviously, he was shooting the guys because he just said mutual fund managers are a big stock so they just add idiosyncratic risk to your portfolio, they tilt away from the market. Whenever you tilt away from the market from the index you take some idea idiosyncratic risk because you have to get out of me be more exposed to certain type of stocks rather than others.

He said for that idiosyncratic you are not going to be compensated you're not going to get an extra return. This means that obviously he got a lot of the outcry and that's when the University of Chicago started to collect the data on stock prices systematically and the data is called CRISP, which is one of the most widely used datasets to understand financial markets and then they showed that the CAPM works. By and large it was very surprising how well it worked. Then we discovered that it doesn't work very well but because there is not only the market index, the prices is stocks but also other factors and that's where you have the Fama, French factors, Momentum to all these other strategies, hence right now you hear about smart beta. Smart beta is nothing more than investing in factors that tend to explain the cross-section of stock returns, how much expected returns earn beyond the market and that is how the CAPM has been a little bit kind of revised.

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JB Does that work like with the factor investing because I've read a lot about it but the conclusions are kind of diverse like dimensional for instances like a fund company that has run that for years.

PS Fama and French are in the in the board yeah. There are a bunch out there. We have a very solid evidence that factors earn an extra to return beyond the index. There is a very long history of evidence where we find they a higher expected returns. Now, it could be that suddenly we have too much money invested in the strategies so they start working less. I personally don't believe we are there, value in the last year has been tried quite heavily and it lost quite a bit of money but it happened before that we had such a drawdown so it could be just one of those episodes.

The big question is why Smart Beta works. That's what we don’t know, I think by and large it works, the question is why it works. And there actually there is a lot of debate. Some people think that for example, value or momentum or other factors quality for example, and things like that they provide higher returns because they also entail more risk, which is that from time to time you actually are going to lose a lot of money but that's part of the overall concept. You can't have higher return if you don't take more systematic risk. The other view is that instead this extra returns are coming from market imperfections or market frictions by markets not being efficient and then you have to ask yourself why markets keep being inefficient? Why is this not corrected? So in that sense when too much money is going to pour into the strategies then these kind of inefficiencies are going to be washed away. So we don’t know that but I think it's too early to say that the strategies are not working. We have a lot of evidence they do even though we don't have a very deep understanding or conclusive understanding of why they work. They are two different theories, two different point of views, they both could be right at the moment. There are to camps, I am more on the rational, I have some evidence more on the rational one, i.e. that they are composition for risks rather than the behaviour but the dice is out.

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JB The factors you normally talk about is I think a growth, value

PS So you invest in value, value stocks they earn a higher return than growth stocks and in fact, you can separate then between the profitability, stocks with high profitability and stocks with low investment. Then you have momentum, that is another big one. Some people talk about quality, which I would say it’s a combination of the others with some refinements. What is interesting is that what we are finding nowadays is that these strategies do not seem to add additional systematic return or additional return on the stock market they actually tend to have this kind of features in other markets such as commodity or bonds and things like that. So it looks like the tip of the iceberg of something underwater that is actually the pervasing across different markets but we don't understand what it is yet. It's a little bit. going beyond the CAPM, the CAPM the only factor was the market. We are finding there are others, we don’t understand exactly where they're coming from, but it seems that there across a lot of markets and I think that one exciting area research is trying to see what's really under the water.

JB Interesting. It's also nice to hear that they even like 2019 that we’re not done there are still things to research.

PS Many

JB A question about momentum, could explain momentum?

PS There is a lot of evidence that stocks that have been doing well recently. They tend to do well in the medium room. I am not an expert on this but like I think you take all stocks in the market, you take those that have been doing well in the last year and then you hold them for something like about six months or something like that and then you sell them and you buy the new stocks that have been doing well and so forth. There are various windows you can do this, it is something like six months one year or something. If you go too long you don't earn anymore, if you go too short you don’t earn anymore, something like that. And then if you take this strategy you tend to do well. Now, this strategy entails a lot of buying and selling. So after trading costs it’s not an easy strategy to implement and so you need a lot of expertise and a very good kind of trading platform to implement this strategy as well. So I would say, personally, if there is one issue about Smart Beta is that the implementation risk that you take by buying Smart Beta funds is very large. What a good firms adds to Smart Beta strategy is a very good execution, a very good execution.

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JB	I read a book by Jeremy Siegel and he wrote to like about this, moving average and stuff and he said like you can show that you get an additional premium that you make money but when you factor in trading costs like there's almost no over performance.

PS	That is a big issue. Definitely I would not advise anyone to do it at home because the trading cost that individual investors have are staggering compared to what a large hedge fund or a large financial institution can access to.

JB	Brilliant. Is there anything we want to take more here in this field?

PS	No, it is up to you.

JB	If we were just to take just a quick recap, rebalancing. what would be your advice?

PS	Decide how much risk you want take, so which fraction of the portfolio you want to put in stocks versus safer asset, your bank account or bonds and then over time, once per year, maybe twice but I think once per year is enough, when you see deviations from this proportion 60 40 or whatever you have decided then rebalance your portfolio towards that. In this way automatically you're going to buy when the market is cheap and you going to sell when the market is expensive. So you're going to cash in on your gains and over time this is the best way to earn the risk premium, so the returns the market that can actually provide.

One question is like how to choose the 60 40? So then I think there are two issues here. First of all each one of us is different. Some people want to take more risk, some people want to take less risk and that's individually. You have to decide that a little bit for yourself what you're comfortable with. One good way to think about it is like how much liquidity needs I have, so unexpected expense like car breaks, my child does something and I have to pay for it, things like that or like problem with the house, things like that.

So unexpected expenses, so I want to make sure I am safe on that or another one is standard of living, I have this amount of consumption every month and I don’t want to go below that, I have these many trips, I have like a boat to maintain and so on and so forth, I want to go to the restaurants. So do those calculations, feel what is the standard of living and the level of consumption that you would like to maintain and then beyond that to think how to invest your money and how much risk you want to take.

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JB What would you say like a rule of thumb?

PS Just one second. So that's the first step. You then ask how much risk and individually you have to decide yourself on the rest of the money how much you want to take risk or not. Then there are other things that are very important, if you are at the beginning of your working life, you have a lot of money, you're going to cash in as you work until you retire, and by and large especially for very good education that money is relatively safe. That depends in the sector where you are, let’s say you are a public employee, then I think those streams of money that you are going to earn by working are relatively safe. In other sectors they are lesser safe. As you progress in your career you will understand what your skills are and how safe you are on the labour income you are going to receive. Early in life this labour income is a big asset you're sitting on, if you think about it because effectively this is money that is going to come into your bank account that you're going to be able to consume and save over time. So then early in life, you can allow yourself to take a lot risk on the little money that you have accumulated so far because that’s little compared to how much you can earn by working the rest of your life. As you get older then you have accumulated a lot of more liquid wealth but you have less to earn in the future so you should be more careful how much risk you take on the wealth that you have accumulated, on the money that you have saved. So beyond your risk attitudes I would say think a lot about how safe your job is and whether your early or late in your career. Early, allows yourself to take a lot of risk in your saving because anywhere there little compared to how much you are going to earn in the future. Later on, your saving are going to be a lot, you have that much more pour in so be more careful where you put your money.

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JB I must say I love that reasoning because like it's the first time you have had somebody to take in like the, I think you call it human capital in your in your papers because most people just isolate like okay how much money should have in the bank account or should I invest and we don't consider like the human capital.

PS Human capital is probably one of the biggest assets we have early in our working career. So we have estimated for Sweden and I think that someone that has finished college around 25 years old is sitting on about 9 to 11 million kroner in human capital. That's the present value, the value at 25 of how much he or she will earn throughout his or her working life, including you know how much you get from pension which is effectively saved out of labour income. So human capital is one of the most important assets, people forget about it. We take it for granted we don't think about how risky it is. It's actually it's one of the main drivers of how we should invest on the rest of the money which is the liquid wealth, which is the part that we think about. The reason why we don't think about human capital as being an asset is because it is intangible, because you cannot trade since we don't have slavery, thank God, you can’t sell it, you cannot ensure it because otherwise people would stop working, even though there is unemployment issue in Sweden and other countries there is a way to kind of the pull to floor on the human capital you will have no matter who you are. So it's actually a lot of institution in our society are circling around this concept free education, how much should you invest in your skills, unemployment insurance, all sorts of sickness insurances we can buy and so on and so forth and it's one of the biggest driver of how you should invest your money over the lifecycle over your working life.

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JB Like if you would say something more about like you say this is the biggest driver, how would you like to elaborate, like the connection?

PS The connection is that to the extent human capital is safe, so you are a public employee, for example, or you have a very good skill set, so you're bound to earn a stable stream of income over your working life, then if you want your total wealth when you're young is this huge bond very safe asset that is going slowly kind of pay you overtime exactly like a bond you sit on if you earn interest you sit on your human capital you earn your labour income.

JB Like I see myself as a walking bond

PS Yes, if it is safe, which means that in the little financial liquid wealth you have on the side you can allow yourself to take a little risk because you have this very safe asset on the side. But, on the other side in other sectors say construction for example, or even financial industry then human capital can be quite risky and then you have to be more careful. So let me ask you a question, would you be willing to borrow about 4 1/2 million kroner to invest about 6 million kroner in the stock market?

JB so that I have 1.5 and I borrow 4.5, no the answer is no. I don’t even think I would be allowed by the banks to do that.

PS Why do we do that when we buy a house?

BJ That's a great mystery.

PS I would say that there are two issues here. First of all, the reason why society allows us to do that is precisely because the bank is counting on, typically we do that when we're young, you buy your house when you are 30 or even earlier around 35 or something like that. So the reason why we can do that and the world is not exploding is because we have all this human capital is going to pay and the bank knows it very well hence they know that we would be able to repay our debt and pay the interest on it. Now, the investment in real estate is an interesting one, because on the one side is an asset that eventually you can set and is a risky asset because prices change over time, they can have long periods they go up, they can go down, the volatility is definitely not small. We have been in Sweden experiencing an incredible run

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JB For 25 years and exactly

PS We don't know how long it’s going to last. Unfortunately, we don't know how stable is that and mostly because we don't have good data anymore, but at the same time it is an asset on the average and takes quite a bit of risk. At the same time you leave in it and you need to live somewhere so it is a great hedge, if you think about it once you buy an apartment or a home and you plan not to move you don't care what the prices are going to go, you still going to be there. There are very few assets that give you this hedging opportunity. So it's for people that don't move or they move to areas that have similar prices correlated prices, this is a great investment. It’s one of the few things you can borrow against which makes lot of sense early in your working life precisely because you're sitting on this huge bond that you have already.

JB That's cool I've been doing this for 10 years and I haven't thought of it in this way, so for me it's like it's cool because it's basically what the bank does, it takes like the security is this bond like you like you and your career. You were also just saying that we don't know because we don't have the data.

PS So as I told you before, I wrote a lot of research using Swedish data which means that the good thing is that I know quite a bit what is happening this country when it comes to how people invest and things like and it was an amazing experience to be able to study it. At the same time unfortunately, in 2007 the data was stopped being collected. So the government abolished the wealth tax, which we can talk forever whether it’s a good idea or not, and I don’t want to take any stand on that but at the same time I decided also to stop collecting the data. This is not true, for example in other countries, for example in Denmark they stopped at the wealth tax but they kept collecting the data. Their result is that back in 2007 you could have a very good idea of where we had a lot of financial fragility in household sector. So who was over leverage? So who was borrowing too much? We didn't have enough in the sense that you don’t have either enough human capital earnings or enough of liquid assets to back or even real assets to back the amount of leverage they had. But, after that and right now we don't have the data anymore, so we actually don't know. So are we on the brink of a collapse and the Swedish real estate market is completely overvalued and people are overleveraged and any moment there could be a bang or are we in a relatively safe situation where things are under control where a lot of leverage is in the right pockets of society? I don't think we know and I think it's a huge problem especially when we are recognizing both at the level of academics and the level of practitioner, at the level policymakers and around the world that the heavy micro data, so information at a very detailed level of the amount of individuals is crucial to regulate how our economies work. They are not necessarily working wealth without regulation and without data you just guessing which I think is a little bit what's going on.

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JB Is there like a rule of thump how you can think like in different phases of your life about like compare to the human capital and how you should invest?

PS First of all if you buy the other stake at home and you lever against it then you are taking a lot of risk. So you should take that into account and you should be a little bit more concerned that you don’t have on our financial assets. If you don’t have that then you can be quite aggressive in your financial assets provided that you have set aside enough money for contingencies, unexpected expenses or the standard of living you would like to have, so enough liquidity. So early in your life, I mean really just go out there and live it like we do when you but a home and lever it up. In that sense I really like the way the premium pension system is organised decided that you are levered up 130%

JB 125

PS 125 until you are 55 or something

JB Yeah

PS I think it is a great thing.

JB I normally say, like we said earlier, like that is one of the best things we have in Sweden and I think for myself as well, like you start there then you think you can do better and you start doing your own funds and then you go back because you realise that was the best thing from this

PS Yeah if so you are accessible you are a little bit on hedge fund because you lever up and it costs almost nothing, I think it is like 12 base points or something like that, 15.

JB I think it is 11

PS	So it is a fantastic you are very diversified and so forth. In this sense you should think twice early in life to buy **…………0:57:11.7**. So ………. is typically 60-40 thing and in life it is too conservative. You have so many years to go before you arrive to your pension that there is the opposite. So I would say early be aggressive and then you can continue like that I think until easily 45 to 50 and then you start kind of lowering. Then you have accumulated some financial assets that you cannot tolerate that much risk in that portfolio and so you should start reducing it to a target when you retire. That depends on your riskier version really on your attitude it can be 60% stocks, 40% bonds or 50-50 or something like that because remember after you retire you are not going to be investing in one goal, you still have another 25 years to go, so you have time to wait out and keep reducing this proportion and the proportion that is in stocks.

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JB	Like a general rule of thumb that people normally say when they don't know anything is like you should have as much as in safer assets as your years old, like if I am 37 I should have like 30-35% in safer assets. Would you say it's like too moderate or I should be even more aggressive?

PS	I think I like that rule after 50 but you have to factor whether you have a levered position in your real estate. Think about that as well. You are taking risk of being levered out so which means the interest at risk on your mortgage. So you have to take into account and then you have to take into account how likely you are to stay in that particular place. So if you are likely to stay there then it's actually safe investment. The only risk your are taking is really the fact you have to pay back your mortgage. So you have to factor it into the unexpected expenses and here it is important to remember that we are at the level of interest that is historically extremely low. So we should take for granted that that it stays low like that going forward. But, like I said, it would be like a lot of risk all the way to 50-55 and then you go down so that when you're at 65 you are 60-40 or 50-50 or 40-60. It's not going down from 25, you start 80-20 and then you go down, no. You keep it up a long time and then you go down because effectively all the way to 50 you should even be levered if you want and that's what we do when we buy real estate.

JB:	Interesting, I love it. Is there any like mistake you see people generally do, like general mistakes?

PS	As I said they try to outsmart the market either by buying stocks, individual stocks, which I think if you are having fun with please go ahead and just don't put that much money, just to have fun with it. They have to be careful they don't choose index funds. I think that we should remember that paying 1% 1½% for a fund is an enormous amount of money by the time we retire we gave to the bank 30% of our saving compared to 50 basis point, 20 basis point, which is like a one factor, certain times less. So the cost of mutual funds very very important, index funds are important. Rebalancing is important. They are very simple rules in the end but for some reason we don't believe them when we see the market going down with panic we don't buy, we don’t we don't rebalance we get out. That is one of the biggest mistake you can do, that's exactly when you going to earn there is premium. Then make sure that the proportion invested in stocks and bonds have a good rationale behind think about your overall standard of living. Remember at the end of the day that the only thing you want is to have a good consumption, good standard of living over your life. That's the goa, not which fund to pick and which manager and so on so forth. Just invest index funds cheaply, rebalance your portfolio, take risk thinking about your profession and where you are in terms of your human capital and how much wealth you have accumulated. Think about whether you are going to move or not if you if you have real estate. Think about whether you have a lot of mortgage and interest rate risk you have and that's it I would say.

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JB Is there like ways like you can invest in your human capital?

PS I think this is the biggest and most important investment we do, financially also. I think it’s very very important and as a professor I think me and my colleagues we have lot of responsibility of providing a good education system. The fact that even later in life you can retrain yourself and do that cheaply without having to pay a lot of money. I think we are entering the society where we will constantly have to be trained because the skills that are needed to change a lot over time. There are all these technological revolutions that have wiped out a lot of professions. We should take that into account and be ready to recycle, if you want, or retrain ourselves over time. So a cheap good education system provided by our society was probably one of the most important asset a country can offer its own citizens.

JB So you have to be us living in Sweden really. I feel when I talk to people is that they like, I have my house here and then I have my investments here and then I have my career here but what you really did for me today is like see they are not three separate parts but you need to see them all together and one affects the others and you can take a lot of more risk because I find that a lot of people are too defensive because we use this 37%.

PS I think you should do that and then you go down. It should be like this if you are able to lever. When you to lever then it is to go 300 and then you go down like that, but we can't unless we buy a home then you are there and you go down. Otherwise, since you can, you go 100% it’s not enough. You should have some simulation because it is so difficult to beat that once you consider human capital that you should not be 100% as we do PPM all the way to 50.

JB	Are there any sound advice about structuring your mortage?

PS	There are a few things. First of all variable rates are the best hedge against inflation because you don't want to be stuck on a fixed rate and then inflation goes down and then you keep paying 6%. It happened, in the 90s people were borrowing at 9% and then inflation went on to 2 and they were stuck with interest at 10%. If you have a variable rate you are going to follow inflation, your salary is going follow inflation. So you are fully hedged against inflation in a way you pick all these always in real time it is the same times it is the same. But, you face these fluctuations, which means that if you suddenly lose your job, then it's very risky, whereas a fixed rate you have kind it. You know how much it's going to be.

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JB	I see that kind of as an insurance, when you fix the rates

PS	Yes but insurance we expect **…… 1:08:59.2** not we expect inflation. Insurance will respect your unemployment but the valuable rate is a good insurance. So it is a trade-off. So you have to ask yourself, so the way I do it is like do I have enough money to pay off my mortgage with the rates go to 7-8% and still arrive at the end of the month. That's the way I think about if I'm not, then I should think about at least partially fix it until I feel comfortable. On the other side go and guess it, who knew that Japan has been with low interest rate for 25 years. So we might go on like this for another 30 years, we don't know. Personally I also think that since I think that there is a lot of leverage in the household sector even though we don't have data and this is not true only in Sweden but it's true I think are around Europe then I also think that the central banks will need to take that into account, which, I might be wrong of course, but which might mean that they might let inflation going to be higher than these 2% because effectively that's going to eat up. The requirements of paying off 2% and now you have **…….1:10:34.0** of 75% I think

JB	above 70

PS	Above 70 you have to pay off 2% per year, you get it for free with 2% inflation. Once you consider the amount of money it's a lot of money per month. So if you let inflation go to 3% I think in this way you keep interest rate not too high, you achieve both goals. So there is also something that perhaps you are going to see low interest rate, higher inflation because central banks cannot do differently otherwise it's going to be too big a shock but still as I told you we don't have data to know whether it is going to be a big shock so it's everyone guessing.

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JB One of the last questions which I always ask, what's your favourite finance quote?

PS I like a lot actually

JB You can choose several rates, it's okay.

PS I think I like a lot the one from Warren Buffett, actually. So he says "*the only value of stock forecasters is to make fortune-tellers look good*" which is kind of really what it is, it is extremely difficult to outsmart financial markets, but you should invest as he does with it profiting from the fact that our societies and our economies do create growth and wealth. Investing in the stock market should not be seen as a way to win the lottery because it doesn't work, you could be lucky, of course, but it's just luck. It should be seen as a way to share or tribute and be part of the growth that our economies are able to produce.

Financial markets, you asked me why I got interested in it and I like general equilibrium theory. Financial markets is one of the institutions that our society has devised to distribute and share risk in the most efficient way. So remember when you are investing in financial markets, of course you can be rewarded but mostly you're going to be rewarded because your contributing in sharing risk that other people are bearing and they're willing to give you as part this risk, you're willing to take part of this risk, they are selling it to you and of course you know the truth that they will need to compensate you and that's why you earn a higher return. That's how we should think about financial market, it's a risk sharing not gambling.

JB Amazing. This is going to be one of my favourite episodes. If people ask me what episode should I listen to I will be like this one. So I just want to say big thank you Paulo for sharing all your knowledge and I think it's like a good thing because I learned something. So thank you very much and I hope that you will join us for another episode in the future. Thank you very much. Thank you