



Anchoring Heuristics: Reformation of New Mechanism in Decision Choice of Labour Market

Wu Chen^(✉)

Monash Business School, Monash University, Caulfield Campus, Caulfield East, VIC 3145,
Australia

wche0147@student.monash.edu

Abstract. Against this background of an extremely competitive labor market, this study aims to investigate the contribution of anchoring heuristics in modification of framework in labor market supply and demand at the scope of individual decision making. Theoretical insights from anchoring theory, Michael Porter competition theory, work-leisure decision model are synthesised in the context of dynamic labour market. Past literature of anchoring theory and pricing strategy are modified in the context of the labor market to derive new mechanisms and research scope for the selection process of the labour force and employer. In conclusion, anchoring heuristic generates salient impact in decision making of supply of labor force on both intensive and extensive margin, deviating the gap between potential willingness to pay and actual willingness to pay of employer. With the findings, we also modify the mechanism of substitution effect of labor switching from leisure to work. This contributes to the extension of factors influencing elasticity of labor supply. It provides a scope for suppliers and consumers of the labor market to optimise their decision-making process and potential surplus. Therefore, being one of the pioneer studies on the combination of anchoring theory and labor market, the unique value of this research lies in extension of the current framework of labour market supply theory.

Keywords: Anchoring heuristics · labor economics · elasticity of supply · theatre effects

1 Introduction

“Involution” is a new term invented recently, rooted up from the Chinese generation born after 1995 with more prominent impact amongst students with overseas study background. A precise definition of this term is input of effort/labour force is severely disproportionate to output and return. This term has a sharp difference with overwhelming competition, it is a very classic indicator that the macroeconomic environment is approaching the stage of marginal diminishing return. According to the statistical figures released by the Ministry of Education of China, in 2022, a predicted figure of graduates will be reaching the astounding number of 10.76 million with 4.75 million people holding postgraduate degrees or above. An immensely salient disequilibrium resulted from

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surplus labour forces striking almost all the sectors, especially fast growing markets in the past ten years such as: finance, IT/Big Data, real estate FMCG, SOE, civil government system. Decision making of individuals participating in the labour force becomes a very crucial microeconomic angle to evaluate and predict the overall macroeconomic trend of the labor market. Presence of heuristic such as anchoring effect and framing effect plays non-negligible influence on the final outcome of individual decision making.

The idea of the anchoring bias originated in a 1974 paper by Amos Tversky and Daniel Kahneman called Judgment under Uncertainty: Heuristics and Biases (Tversky & Kahneman, 1974). Humans made decisions with the highest dependence on the first piece of information, this piece of information became a reference point for the subsequent judgement.

In 1974, Kahneman and Tversky deduce the existence of anchoring effects through experiment: Estimation of seat ratio of African countries in United Nations [10]. The result of the experiment demonstrates that the estimation of the ratio will be significantly influenced by the number that appears on the rotation wheel before the experimenter conducts the estimation. This is named as anchoring effect, a simile of sinking an anchor into the seafloor to remain the ship at the same position. First piece of information is the anchor, the ship will be a subsequent decision and judgement followed by. Dan Ariely, George Loewenstein and Drazen Prelec published an academic paper in 2003 [1] to make the first attempt to formally include anchoring effects into the research framework of behavioral economics.

Previous research materials around anchoring heuristics have approached a relatively very mature stage in the field of pricing strategy. Clear and in-depth research framework has been constructed to join the psychological mechanism of anchoring effect with the design of marketing strategy and optimizations of business revenue. Labour market is a new perspective where an insufficient amount of research studies can be seen to implement a mechanism of anchoring heuristics to evaluate decision making in the labour market from both the perspective of demand and supply side at a microscopic level. This motivates further research to join the gap of anchoring mechanism and behavioral economics decision choices.

This research paper will cut through the lens of how presence of heuristic impacts graduate/labor's decision making in their willingness to participate into the labour force/searching for a job/accepting offer (extensive margin of labour supply). As the labour forces remain in the employment position, their willingness to generate high quality output (marginal productivity) will be an intensive margin of labour supply. On the aspects of demand, influence of anchoring heuristics on evaluation of the variable: willing to pay to the labour will be the focal point of investigation.

This paper constructs a new framework based on the previous matured psychological mechanism of anchoring heuristics. It will not be an isolated framework present along itself but with joint impact along with framing effect and theatre effect. In the final outcome, this new framework develops meaningful prediction in decision making, choice of supplying of labour along two margins, likelihood of applicant receiving job offer. Furthermore, it extends scope of evaluation of elasticity of supply of labour forces by reevaluating substitution effect and income effect under the presence of anchoring.

2 Theoretical Framework Mechanism

Investigation about the labor force market will be focused on the individual decision making instead of macroeconomic equilibrium of the labor market. Several critical assumptions will be made to formulate the premise of discussion. Firstly, model assumes homogeneity of industrial sector. In addition, one individual representing average of industry. There are negligible amount of collusive decision making between individuals. In the end, it assumes that anchoring heuristics dominate over other types of heuristics under this non-laboratory environment.

2.1 Anchoring Effect: Extensive Margin of Labour Forces Supply

As to the perspective regarding margin of supply of labor force, The Non-Equivalence of Labor Market Taxes: A Real-Effort Experiment Matthias Weber, 2015 claimed that labor supply at extensive margin is lower due to the joint influence from gross wage illusion effect and tax aversion effect. In the treatment of rising income tax, gross wage illusion effect enhances performance of labor while tax loss aversion generates impact in the opposite direction. These research outcomes are derived outside the laboratory environment. Anchoring heuristics become a non-negligible factor for an individual's decision choice. Further research opportunities are provided to study the how anchoring heuristics joint influences with gross wage illusion and tax loss aversion.

Presence of anchoring heuristic is not negligible in our investigation regarding the phenomenon: Inner-convolution. As a result of immense competition and presence of immense asymmetric information, many illegal agencies are offering internship referral positions at a ridiculously higher price than normal market price. Beside the classic microeconomic explanation of the immense surplus gap of potential labour force generating an opportunity of black market activities, investigation through the lens of behavioral economic aspects about this phenomenon are insufficient from previous research literature.

As a representative graduate from school, he/she will be facing an unseen hierarchy when entering the selection pathway of many private firms or higher class education. This unseen hierarchy is primarily subject to the title of school of candidates. For instance, a typical hierarchy for entrance of brokerage/Private Equity/venture capitals in the financial sectors will be four Tier 1 Universities (Peking Universities, Tsinghua Universities, Fudan Universities and ShanghaiJiaotong Universities) > 985 Category > 211 Category > other universities. According to the statistical figures released by Ivory Consulting Report on [Employment Data of 2021 Graduate China], the financial sector is undertaking 39% of graduates in the 2021 resume dropping rate. However the final passing rate for positions in top brokerage is less than 8% in 2021, this implies among 10 candidates applied for brokerage, less than 1 candidate will be receiving the final offer. A proposed transmission mechanism for a representative young graduate in her decision choice for submitting application will be: Expected anchor is generated from the previous candidate admission bar. Formation of the first anchor benchmark: a deviation gap between an individual's background and background with very high admission rate. Formation of second anchor benchmark: Agency claimed a very compelling future target

relative to individual's current position. Two margins thus generate an expectation gap, an expectation gap generates demand or willingness to pay for the high-fee internship.

A final outcome will be two anchoring margins generating differences in expectation. This leads to the formation of the demand for internship projects even if the internship is supposed to be not charged against students under normality. Demand of a product is willingness and ability to pay by a consumer. Anchoring effects generate a difference between willingness and ability in consumption. By manipulating the anchoring heuristics, this generates artificial cognitive bias for students hence becoming an information barrier applied by many agents to generate illegal profit.

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Porter Competition Model in Presence of Anchoring Heuristic

In the classic Porter Competition Model, competitive strength of a firm is analysed through 5 aspects. Threat of new entrants, Bargaining Power of Buyers, Threat of Substitute Products, Bargaining Power of Suppliers, Internal Competition from Current Industry. This model was proposed by Michael Porter in 1980, firstly found in his piece Competition Strategy. It is a new scope to analyze the relative competition power of an enterprise before entering an industry. Contextualise this into the labour market, every labour force is treated as a mini-enterprise. Industry is assumed to be a stage of perfect competition with almost zero monopolistic power.

By converting firm/industry into the context of individual employee seeking for job, labour become the product inside our analysis framework. Threat of new entrants will be competitiveness of incoming candidates aiming for this position, buyer is the firm, bargaining power of buyer is corresponding to the ability of the firm bargaining the wage with labour. Supplier is labour itself, here will be a slight modification to the definition in the previous definition: bargaining power of supplier will be a joint list of variables that influences the potential abilities a employee can receive from his future employer. These variables include academic background/working experience/personality types/communication skills. Substitute products refers to availability of resources which can substitute the skill this labour contributes to the firm.

Presence of anchoring heuristics will modify the estimation of competitiveness made by an employee himself/herself by applying the tool: Porter Competition Model. Modification to the estimation will impact decision making in supplying labour force or leisure. An employee will anchor the new entrant's competitiveness level to a category higher than his/her current level as well as their actual level. As to the bargaining power of buyer and threat of substitute, this component will be overestimated. A reason for this outcome will be the initial information: employee's school title is below a class less competitive than target school list of the firm. This generates a reference point: he/she

doesn't belong to the target school list implies his/her overall ability is below the expectation benchmark of this firm. This employee will apply this reference point to compare five different aspects and make an estimation with significant deviation from the actual outcome. An estimated competitiveness strength below actual requirements reduces the likelihood of submitting resume/make applications. This reduces the supply of labour along the intensive margin.

2.2 Anchoring Effect: Intensive Margin of Labour Force Supply

Intensive Margin of Labour Force Supply is defined as willingness to input effort and productivity in production of output. In our context, we will apply an indicator: completion of KPI (Key Performance Indicator will be used to refer to this component throughout the entire paper) assigned to each employee by the enterprise.

Previous studies proposed a theory known as theatre effect: As the first row of people is standing up to watch a movie, the second row will have to stand up in order to see the screen, and so by the rows afterward. Applying this psychological theory to entrepreneurial management, the first row of people represents employees completing KPI to a certain level of requirement. Second row of people represents employees completing KPI to a level of requirement that surpasses the first level. Third row will surpass the second level and so on. An important property to be notified is that the production of output reaches a state of marginal diminishing return for each additional unit of labour input.

Presence of anchoring heuristics will generate difference in the outcome of theatre effect. From one aspect, the mechanism of theatre effect involves a series of continuous anchors activities. Below is a transmission mechanism proposed by this paper. During this transmission mechanism, as the first group completed a certain level of KPI, an anchoring signal is generated to the second group of people to apply group 1's achievement as a benchmark or minimum requirement of their predicted level of prediction. This is owing to a managerial system prevailing in China these days known as: last one out. Employees who achieved the minimum KPI relative to other competitors will receive punishment such as expulsion or wage deduction. Group 3 will generate their anchor on group 2 conditional group 2 have surpassed group 1. Categories of groups are not assigned by the managerial system, but formed as a result of completion progress of KPI. On other-hand, Anchoring heuristic may generate impact on the direction conflicting with the hypothesis: theatre effect. This is conditional on the observed difference between KPI completed by group 1 and current progress by group 2. If the difference has surpassed an optimal stage, group 2 will anchor group 1's progress as maximum ceiling instead of minimum floor of KPI. Under this context, group 2 will reduce their willingness to supply an extra hour in completing additional KPI instead of using this unit of hour for recreational purposes outside the margin of labor force. Combining two effects together, the final outcome on the extensive margin of labour forces supply will be ambiguous. A detrimental factor impacting the final outcome will be the prediction made by the individual regarding the difference between him/herself with other individuals. For simplicity of model construction, we are assuming collusive behaviors are negligible in decision making and choice of individual.

2.3 Modification to the Previous Framework

In this framework, an individual's time constraint is divided into two components: work or leisure. This framework provides a more rigorous analysis on the extensive margin of labour force supply. Utility function of this representative individual is assumed to be convex with marginal diminishing rate of substitution for each additional unit of leisure.

In addition, utility function reached following assumptions:

1. More is preferred than less
2. The consumer likes diversity in his/her consumption bundles
3. Consumptions and leisures are normal goods.

Substitution effect is one unit of leisure hour sacrificed for consumption, by sacrificing this unit of hour, labour will supply for work to gain an additional one hour of income. Income effect is increased in both leisure hour and consumption units as a result of disposable income increase, this will lead to outward shift of utility curve faced by this representative individual. Rise in real wages promote this individual to a higher indifference curve. Overall effect on the change in leisure remains ambiguous depending on the size of substitution effect and income effect, as they are generating change in the opposite direction. As anchoring heuristics is present in this system, change to the substitution effect can be analysed from two cases.

On the one hand, Individual is anchored on another individual's KPI as a minimum benchmark. This will increase the size of the substitution effect in comparison to the case without the presence of anchoring. As substitution effect is larger than income effect, leisure falls and is replaced by supply of additional labour hour time. Eventually this generates results collinear with the hypothesis: supply curve of labour force is upward sloping.

On the other hand, Individual is anchored on another individual's KPI as a maximum benchmark. This will decrease the size of the substitution effect in comparison to the case without the presence of anchoring. Individual regards supplying one unit of labour time generate less return (utility) than consume this unit of hour for leisure. A final outcome will have a higher likelihood of labour time reduced as wage increases. This produces a contradictory hypothesis to the previous context: supply curve of labour force is downward sloping.

2.4 Demand Side of Labour Market: Willingness to Pay

The weight of the item's subjective value relative to the weight of perceived market value often differs between selling and purchase decisions. As argued below, such differences are expected to moderate the susceptibility of selling and purchase prices to anchoring effects.

Buyers of the labour market (employer) have multiple options from which to choose (e.g., more than one applicant for a position released), the subjective value of this labour is expected to be a key determinant of their willingness to pay the wage. We formulate our conceptual framework based on research findings from previous studies in anchoring heuristics and willingness to pay.

The assessment value consists of two components of value: acquisition value and sacrifice value. Acquisition value is based on the ratio of the product's perceived benefits to the perceived sacrifice (Thaler 1985) [8], transaction value is perceived gains/losses relative to reference prices (Tversky and Kahneman 1991).

Seminal contributions have been made by studies from Anchoring Effects on Consumer's Willingness-to-Pay and Willing-to-Accept, Itamar Simonson, Aimee Drolet 2004 [1]. This paper examines susceptibility of consumer's willingness to pay (WTP) and willingness to accept (WTA) judgments influenced by arbitrary anchors. By the means of four studies, a pronounced conclusion can be drawn: although circumstantial differences between buying and selling decisions can lead to systematic differences in susceptibility to anchoring effects, principles governing impact of anchoring on WTP and WTA judgments are essentially the same. Robust anchoring effects are observed when the anchors are related to a focal source of uncertainty. Under the uncertainty, WTP and WTA judgements are most susceptible to anchoring (endowment) effect. This is a first attempt where anchoring heuristics is joined up with decision choice of individuals in the transaction. We develop this research into the application of the labor market [3]. Literature Review Paper by Chaohong Shen 2016 [7], different anchoring points generate significant differences on the consumer surplus for consumers. Under the premise of a high anchoring point, large consumer surplus is generated which motivates the willingness to complete the transaction. Initial anchor point will be replaced by a new anchoring point. Research paper by A. Furham, H.C. Boo [4] discovered a meaningful outcome by conducting a statistical experiment on wage distribution of managerial staff from listed companies in research journal 2011. Listed companies will use the salary level from competitors as their anchor reference point for the salary benchmark for incoming applicants at their managerial position. Replacement of anchoring points develop the mechanism of expectation updating when the employer is making a decision to assign wage rate to the labour.

One application we imposed under this heading is the wage offered by an employer to an applicant. By applying framework from previous research, Perceived benefits are impacted by the variables including: previous working experience, education background, communication skill, relevance of personality type to the desired position etc. Perceived sacrifice consisting of two components. The first component is the wage (direct cost of consuming this unit of labour force). The second component is the matching rate between labor's future expectation and firm's future expectation in both personal achievement and entrepreneur ceiling of development. Anchoring heuristic will generate significant influence on the valuation of willingness to pay an employee, subsequently deviating the final outcome of admission.

In the context of an employer reading an applicant's resume template, two margins will be generated from two information components. The first component will be an aggregation of his overall background with variables: working experience and education background to be particularly salient. The second component will be the applicant's expected wage (decomposed into base salary and commission) written on his resume template. The first margin will generate an anchor referencing point for this employer: expected wage salary corresponds to this applicant. Most specifically, the title of previous working place and school will generate a baseline margin for the expected salary in the

industry. Subsequently, this employer will match the result of this first margin to the second margin (actual expected salary).

In the case 1: the first margin is significantly higher than the second margin

Employer will anchor to the first margin, subsequently draw a conjecture: an applicant demands a salary level much less than his potential, this application is not treated as an optimal choice. He will have a very high chance to deviate from this offer, as soon as he is receiving a new offer. Furthermore, a new conjecture will be drawn: if he is accepting this offer, he will demand a raise in salary very soon in order to match up with his actual expectation matching the first margin. A final outcome will be: this applicant will not receive a final offer due to perceived risk and cost associated with over-qualification.

Anchoring heuristics contract the margin of willingness to pay constrained by an employer on an employee.

In the case 2: second margin is significantly higher than the first margin

Employers in this context will use the second margin as the reference point and anchor to the expected salary correspond to the first margin. Deviation difference between these two margins will impact the probability of two choices made by the employer. Employer will claim a salary margin below the salary margin claimed on this applicant's resume. This will generate another anchor reference point to this applicant and eventually formulate a final salary margin in between first claim of employer and first claim of applicant after a continuous process of selection. This strategy is adapted by many employers to minimise the cost of labour.

Application 2: Order of Resume Template

Price on the menu list appears descending order is a pricing strategic tool used by many dining restaurants to promote consumption quantity of their product (Jiwei Zheng 2014). The mechanism behind is anchoring heuristic where consumers anchor to the product with the highest price on the top and use this as a reference point to judge the price of other products down the bottom. (Zhujigao 1996). Applying this mechanism to the design of the resume template, this paper switched the perspective from cost into the return. From this angle, there will be an internal order for the layout of different components. Design a context where this applicant has 4 different periods of internship. Competitiveness and relevance of these 4 internships are at different levels related to the current application of the job. By designing this according to the clockwise timeline, this design will very likely appear in an order: from most irrelevant to most relevant. Employer will be anchored to the first internship experience and apply this as a reference point to evaluate the other three internship experiences while scanning the resume. The evaluation outcome of the other three internship experiences will be influenced by the first internship experience. In contrast, if this applicant put the most relevant/competitive internship experience on the top or the most salient position of resume. This will be the reference point generated for this employer and additional relevance value will be generated to other three components during the evaluation process. Eventually, anchoring heuristic generates deviation between expected margin and actual margin in willingness to pay an employer.

3 Further Research Scope

A potential future research direction will be a construction of quantitative analysis: difference in wage margins (claimed wage and expected wage) against admission rate of applicant. Difference in Difference statistical model will be constructed to formulate the final regression equation. In addition, discussion of framing effect can be accompanied by anchoring effect since formation of anchoring reference points are conditional on certain types of formation of information. Research method relating to the framing effect will be designing two categories. Experimenters will be attributed to these two categories, each category will be a different way of framing the same outcome.

Previous investigations didn't cover sufficient research on the influence of anchoring heuristics on the supply side of the labor force. There is previous literature working on evaluation of factors that impact elasticity of the supply of a labor force. Michael Keane and Richard Rogerson [6] reviewed the evidence on labor supply elasticity in the working paper Reconciling Micro- and Macro Labor Supply Elasticities: A Structural Perspective "NEBR working paper 17430. Microeconomic evidence on labor supply typically focuses on the labor hours supplied by individuals and how this responds to wages. This is the so-called intensive margin—how intensively an individual works. Decision choice at an intensive margin is influenced by the decision making on the extensive margin: supply hour or leisure in both dimensions of short period and long period time frame. This paper didn't extend its discussion dimension to the perspective of quality of hours supply and developed this into an investigation scope to draw further evaluation on factors that influence elasticity of supply at dimension of individual decision making.

In addition to the elasticity of supply, further empirical study can be promoted to derive variation on the gradient of supply curve (supply of labour force in response to the change in wage) in presence of anchoring heuristics. This paper limited research at the scope of direction of slope only owing to without sufficient data to support empirical analysis.

4 Conclusion

Presence of anchoring heuristic generates non-negligible difference in formation of final equilibrium in the labour market. Joint impact of supply and demand eventually will impact likelihood of resume submission (intensive margin of labour supply), choice in between supply one unit of labour hour and leisure (extensive margin of labour supply), deviating a gap between potential willingness to pay and actual willingness to pay for a consumer. Furthermore, the framework extends the discussion scope for assessing substitution effect and income effect associated with decision making of supplying one unit of labor hour or leisure. This generates additional reference for the prediction of direction of change: supply of labor hour against rise in wage. By developing an in depth mechanism join up research outcome of anchoring heuristic and labour force economics, a dynamic framework is drawn to investigate the debatable topic of "involution" at a new perspective. Involution derived from macroeconomic disequilibrium of supply and demand of labor force. Anchoring heuristic generate further information uncertainties in the selection process of employers and labor forces.

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