

LLM agents for forecasting public perceptions of central banks

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**The general public
is one of the most challenging
audiences for a Central bank**

**At the same time, it plays a
key role in economic
decision-making and
determines the dynamics of
macroeconomic indicators**

**The higher the trust in the
Central bank, the lower the
inflation expectations and the
better the decisions of
economic agents**

Focus group -
one of the most effective tools
for forecasting public perception
of Central banks (CB)

- Gives access to respondents' subjectivity (e.i. needs, interests, concerns)
- Gives understanding of thoughts process and reasoning
- Allows to see the matter from client's POV
- Gives depth on complex issues
- Extremely useful for subsequent research

Cons:

- Requires skilled moderators
- Imposes logistical challenges
- Costly

Hypothesis

Collaborative Large Language Model (LLM) agents can serve as innovative & accurate alternatives to traditional focus groups for evaluating CB communications

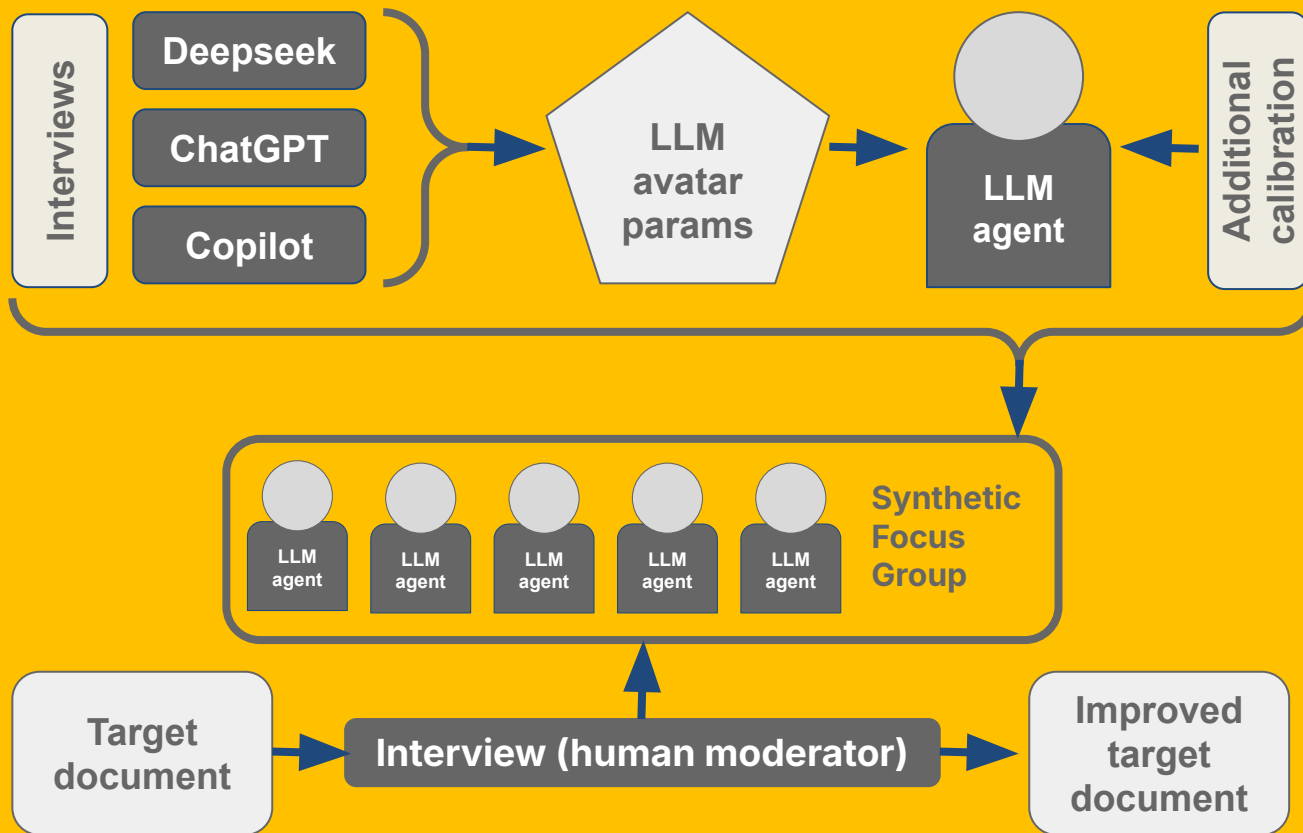


Synthetic focus group -
less costly alternative
to traditional focus group
- was initially suggested by Taiyu
Zhang et al. (2024) *

- LLM-agents as respondents
- Cross-disciplinary expertise
- Useful for various tasks
- Do not cause logistical difficulties
- Costs less

Each LLM-agent imitates
the real human respondent's
persona and simulates
human-like opinion dynamics

Experiment setting



- I. Use top LLMs for retrieving avatar parameters
- II. Create LLM avatars
- III. Build avatar-based LLM agents
- IV. Assert LLM agents' reactions are predictable
- V. Combine LLM agents into SFG
- VI. Conduct an interview
- VII. Improve target document

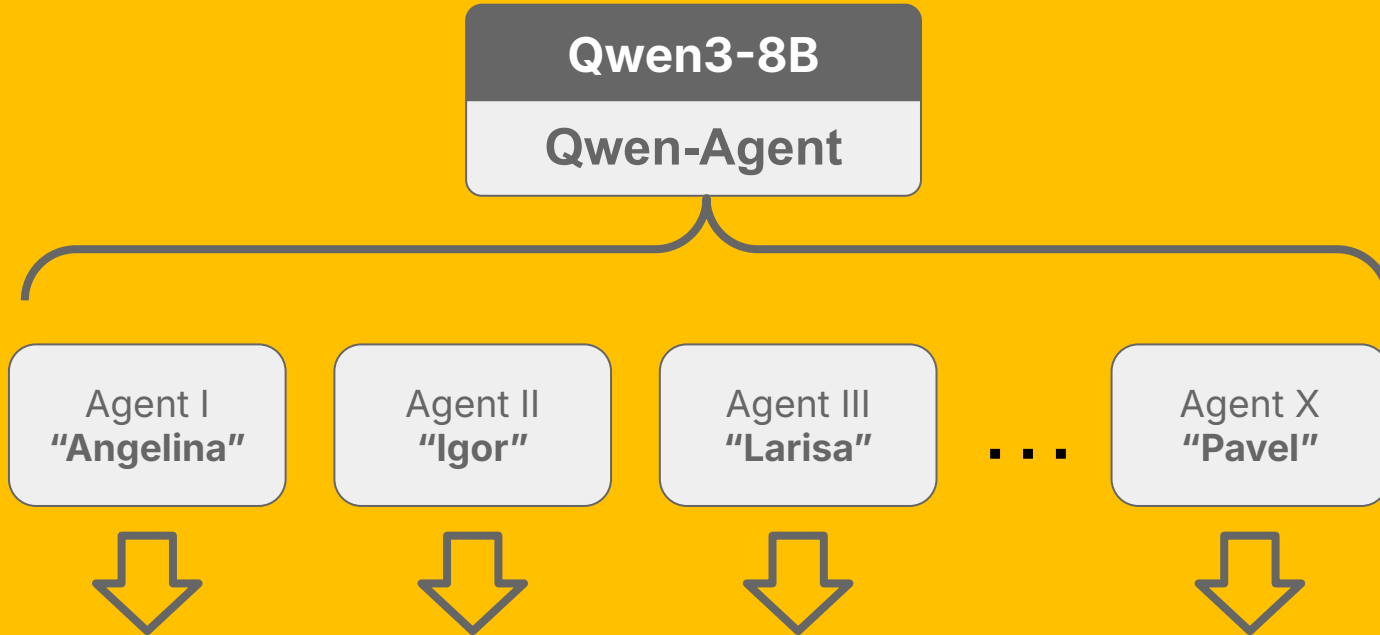
Stages I & II

Use top-tier LLMs for retrieving parameters & create avatars

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{  
  "name": "Angelina",  
  "age": 38,  
  "profession": "Банковский служащий",  
  "sentiment": 0.65,  
  "traits": "Прагматичная, критичная, заботящаяся о семье",  
  "concerns": "Отрыв цен от зарплат, недоступность жилья, рост цен на продукты",  
  "key_phrases": "Остановите рост цен, снизите ставки",  
  "communication_style": "Эмоциональные сравнения, примеры из семейного бюджета",  
  "economic_view": "Фокусируется на покупательной способности семьи",  
  "trust_in_institutions": 0.7,  
  "knowledge_level": "Практический (работа в банковской сфере)",  
  "financial_behavior": "Планирует крупные покупки с учетом сезонных изменений цен",  
  "policy_priority": "Снижение ставок по кредитам, контроль цен на продукты",  
  "cb_functions_understanding": "Установка ставок, регулирование банков, борьба с инфляцией",  
  "cb_perception": "Признает усилия ЦБ в сложных условиях, но ждет более ощутимых результатов",  
  "cb_trust_factors": "Конкретные обещания и их выполнение",  
  "information_sources": "Новостные ленты, интернет-поисковики",  
  "emotional_tone": "Обеспокоенный, критичный с элементами надежды"  
}
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Stages III, IV & V

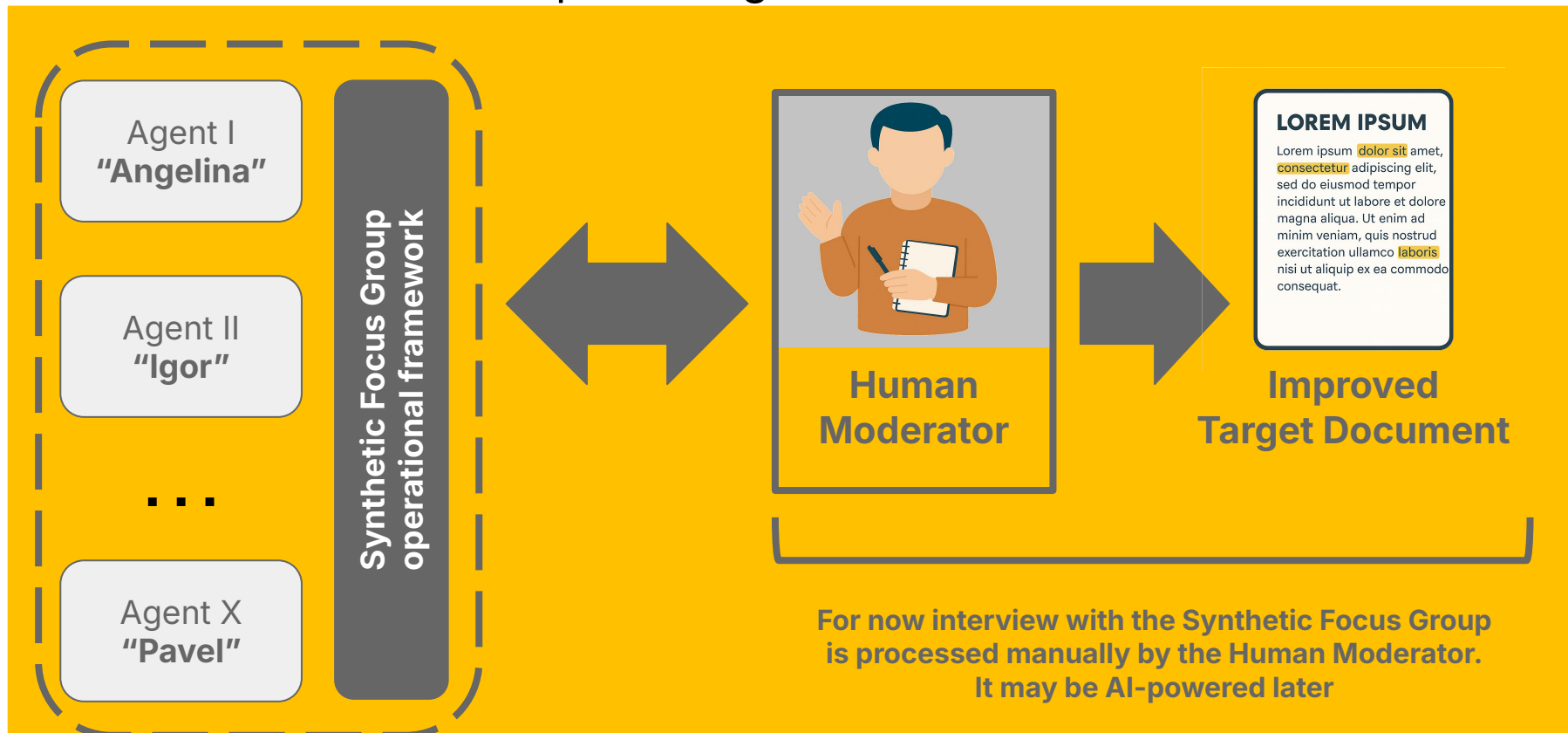
Build & calibrate LLM agents, combine them into SFG



Synthetic Focus Group operational framework

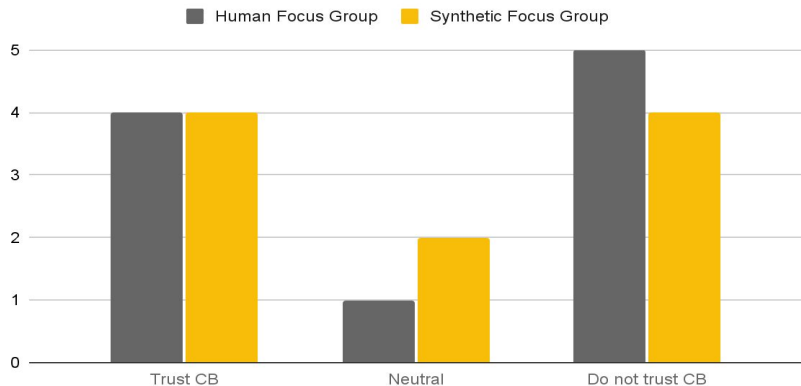
Stages VI & VII

Conduct an interview & improve target document



Key results

Positive / Neutral / Negative Respondents Distribution



Synthetic Focus Group (SFG) gives effective representation of traditional human Focus Group. It shows enough accuracy to be used for insightful interviews in order to forecast public perception of PR messages

With that being said, it should be noted that **SFG tends to be more “neutral” than human FG**. It is hard to tell whether it derives from implemented prompting strategy

Possible enhancements

- “General discussion” imitation within the interview framework (agents are presented with not only questions, but also other agents’ answers and thus can change their opinion during the discussion)
- Implementing custom tuning of the SFG via additional parameters (ability of agents to influence each other, probability of mute answers by all or several agents and so on)
- AI-powered moderator
- AI-powered tool for processing the results
- End-to-end pipeline



Thank you for your attention!

Спасибо за внимание!

感谢观看!

<https://github.com/SmartBerry31415/LLM-agents-for-forecasting-public-perceptions-of-CB>