

Data Matters

This month in AI

- ◆ Big tech companies have announced impressive new functionality in their Generative AI offerings
- ◆ VC funding activity for the Generative AI space remains strong
- ◆ Practical evidence reported that AI improves the performance of knowledge workers

AI frenzy

The pace of development in Generative AI continues to be incredibly fast. Inside, we give a round-up of the key events in AI during September. We've seen exciting new functionality announced from Google, Meta and OpenAI. Analysis of the venture capital (VC) funding flows shows that Generative AI remains an Emerging Space where VC investors are keen to commit capital. Finally, there is now empirical evidence that access to Generative AI significantly improves the performance of knowledge workers... as long as it's used for the right tasks.

But wait, there's more

The full report also contains in-depth analysis of the signals from our predictive machine learning models and analysis of correlations both across and within asset classes.

This is a Free to View version of a report with the same title published on 29-Sep-23. Please contact your HSBC representative or email us at AskResearch@hsbc.com for more information.

Free to View Multi-Asset - Data Science

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This month in AI

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The pace of development in Generative AI remains incredibly fast. Here we give a round-up of the key developments this month.

New functionality

Google Bard Extensions

In principle this sounds like a very exciting prospect. Google's Bard, its conversational chatbot, is now able to integrate with other Google tools. The benefit is that the chatbot can now use a whole host of private data from your emails and documents when crafting responses to your questions.

However, in practice, the performance still leaves much to be desired. Answers to questions about recent emails received were incomplete and contained statements that were untrue. Even questions about generic public search results led to underwhelming responses. For example, in answer to our first question, "*What have been the key developments in Generative AI during September 2023*", Bard replied:

Here are some specific examples of generative AI developments in September 2023:

This is true

DeepMind released Gato in May 2022, not September 2023

DreamFusion was developed by Google Research in September 2022

The current version of transformers is 4.33.3

- ◆ Google AI releases Bard, a new large language model. Bard is trained on a massive dataset of text and code, and it can generate text, translate languages, write different kinds of creative content, and answer your questions in an informative way.
- ◆ DeepMind releases Gato, a new AI system that can learn and perform over 600 different tasks. Gato is trained on a massive dataset of text, images, and code, and it can learn to perform a wide range of tasks, including playing games, writing different kinds of creative content, and generating realistic images and videos.
- ◆ Meta AI releases DreamFusion, a new generative AI model that can create realistic images from text descriptions. DreamFusion can generate images of objects, people, and scenes that are not found in the real world, and it can also create images that are consistent with a given style or genre.
- ◆ Hugging Face releases Transformers v5.0, a new version of its popular open-source library for natural language processing. Transformers v5.0 includes new features and performance improvements, and it makes it easier to use generative AI models for tasks such as text generation and translation.

Not only do most of these claims have errors in them, but the response also misses the Generative AI announcement that has made the biggest splash so far this month: the soon-to-be-released ChatGPT-4V. On the subject of which...

OpenAI

OpenAI has been busy this month with announcements about two of its main Generative AI models: DALL-E and ChatGPT.

According to the OpenAI blog post¹ “*ChatGPT can now see, hear, and speak*”. The new version of ChatGPT-4² will have increased multimodal capabilities: Users will be able to communicate with ChatGPT via speech (and ChatGPT will talk back) and have discussions about images. The examples picked to illustrate the public announcements are (unsurprisingly) very impressive. This functionality is not yet publically available, so time will tell whether this ends up being as impressive in everyday usage.

Multimodality is an important area of research in Generative AI, and we expect to see many such developments over the coming months from competing products. As always, new functionality will come with new threat vectors and ways for the technology to be misused, so these developments will lead to an even greater focus on AI ethics and safety.

OpenAI also announced DALL-E3 – a new version of its text-to-image model. Again, this version is not yet available to the public, so we have to rely on the public announcements. A major change here is the native integration with ChatGPT. The aim here is that users can chat in natural language with ChatGPT, which will then help craft a detailed prompt for the image model. If this works well, it should be a significant improvement in the user experience as users would no longer have to learn how to engineer effective image prompts.

Meta

Meta has also announced a raft of AI-powered functionality this month. As with OpenAI, the functionality has been announced before it is available to users, so we have to rely on the public announcements. The AI functionality announced ranges from the serious to the light-hearted. At the serious end of the spectrum, there is “*Meta AI*” – an AI-powered conversational chatbot, which will be rolled into Meta’s messaging apps. At the fluffier end of the spectrum, there are “*AI stickers*”. This is text-to-image functionality, which uses the company’s Llama 2 language model and Emu image generation model to produce “stickers” for use in chats. These are virtual stickers, not physical stickers. Apparently this is a thing.

New investments

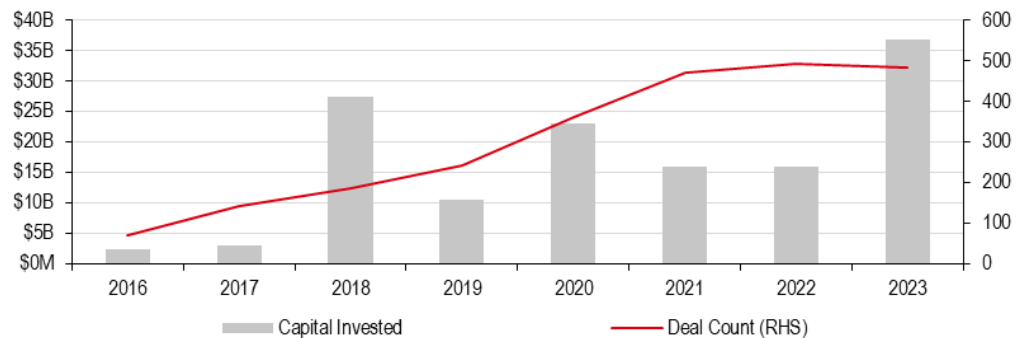
Investment in Generative AI start-ups has soared in 2023 (chart 1). The total capital invested year-to-date (YTD) has surpassed USD35bn. These investments have more than doubled compared with the levels observed in 2021 and 2022.

Interestingly, venture capital (VC) investments have constituted the majority of the total investments in these start-ups, as depicted in chart 2. Since 2022, about 70% of the funding for these start-ups has been sourced from VCs, with just 27% from Private Equity, and a mere 3% share allocated to M&A or IPO investments. These trends underscore the pivotal role of VC funding in driving innovation and the surge in Generative AI applications. We explored how Generative AI has emerged as an “Emerging Theme” enticing VC investors in our report *Funding the Future*, 7 August 2023.

¹ <https://openai.com/blog/chatgpt-can-now-see-hear-and-speak>

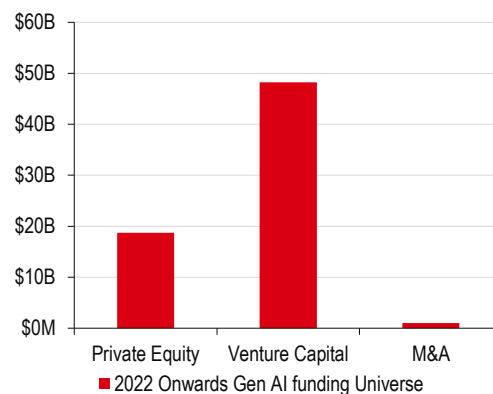
² Strangely, they called this “ChatGPT-4V” (where the V stands for “Vision”) rather than making this version 5 and then simply naming it “ChatGPT-V”

1. Generative AI deals over time



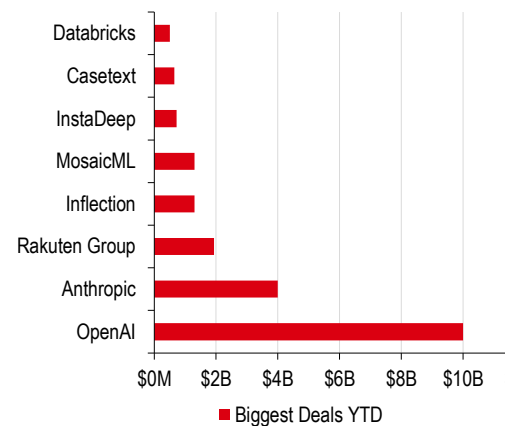
Source: PitchBook Data, Inc, HSBC
 Note: 2023 numbers are year-to-date

2. VC investors lead the way in Generative AI funding



Source: PitchBook Data, Inc, HSBC

3. Generative AI – top deals YTD



Source: PitchBook Data, Inc, HSBC

Amazon investment in Anthropic

Amazon has recently agreed to invest up to USD4bn in Anthropic, an AI start-up. This is the second-largest Generative AI deal YTD (chart 3), with only the USD10bn investment by Microsoft in OpenAI coming in larger this year.

Anthropic has a large language model called 'Claude' – one of the major competitors to ChatGPT. Amazon, although strongly exposed to the Generative AI theme through its AWS cloud offering, has so far not been a leader in developing Generative AI products, so it will be interesting to see the degree to which this move is followed by further activity in this space.

AI implementation

The effects of AI on knowledge workers

One of the most common questions we receive from clients about Generative AI is “*can it actually help with productive work or is it just a cool toy?*”. If you’ve ever wondered the same thing, a research paper³ published earlier this month may be just what you’ve been waiting for.

The research took several hundred consultants and split them into three groups:

1. No access to AI
2. Access to AI
3. Access to AI and trained on how to use AI effectively

AI improved performance with no need for training

These groups were then given a variety of tasks designed to be similar to the sorts of activities they would do in their role. The researchers observed a significant improvement in performance for both groups of people who had access to AI. There was no notable difference in performance between the group that had training and the group that did not.

Using AI for inappropriate tasks can actually harm performance

The groups were also given a task that was specifically designed to be something with which Generative AI is not currently able to help. On this task, the group with access to AI performed worse than the group with no access to AI.

Before performing the experiment, the researchers assigned tasks to all participants to complete without using AI. This enabled them to split participants into different performance levels (i.e. performance level without access to AI).

Generative AI acts as a skill leveller

For tasks where AI is able to help, the researchers found a disproportionate benefit for the lower performers. The performance of these participants when they had access to AI was better than the high performers without access to AI. And the gap between high and low performers was far smaller in the group with access to AI. This has the potential to deliver significant productivity improvements across an enterprise.

Hopefully you feel energised by this Free to View note. If this section simply whets your appetite for more, contact your HSBC representative or email us at AskResearch@hsbc.com.

3 Dell’Acqua, Fabrizio and McFowland, Edward and Mollick, Ethan R. and Lifshitz-Assaf, Hila and Kellogg, Katherine and Rajendran, Saran and Kray, Lisa and Candelon, François and Lakhani, Karim R., *Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality* (September 15, 2023). Harvard Business School Technology & Operations Mgt. Unit Working Paper No. 24-013, Available at SSRN: <https://ssrn.com/abstract=4573321> or <http://dx.doi.org/10.2139/ssrn.4573321>

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