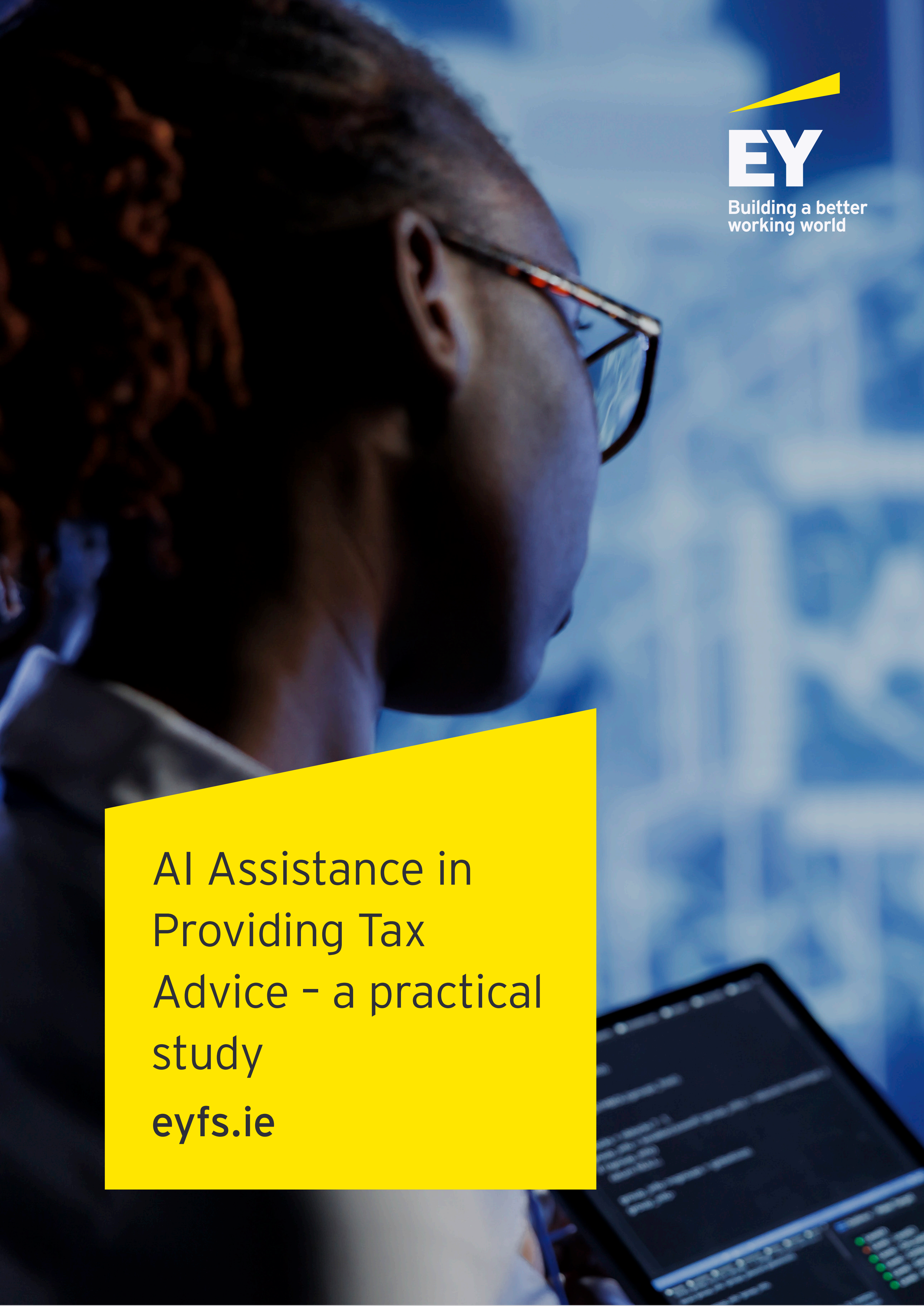

Building a better working world

AI Assistance in Providing Tax Advice – a practical study

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Abstract

Gen-AI has been identified as a potential useful tool in providing legal advice. The purpose of this article is to investigate the use of Gen-AI as a tool to provide tax advice. The answers provided to tax questions by the various tools are analysed and the opportunities and limits of the Gen-AI tools are explored. The article should be of interest to tax and AI professionals as a number of points made in relation to Gen-AI and tax have not been made, as far as we are aware, elsewhere.

Introduction

Generative Artificial Intelligence (Gen-AI) has been identified as a potentially useful tool in legal analysis, financial advice and problem solving (Choi & Schwarcz, 2023), there is limited research on the abilities and limitations of fast developing AI systems and tools in providing tax advice (Blair-Stanek, Holzenberger, & Van Durme, 2023).

The purpose of this article is to test a number of Gen-AI tools with real world tax questions and evaluate their answers. We did this to test their capabilities, to evaluate their limitations and to understand how they might best be used by tax professionals.

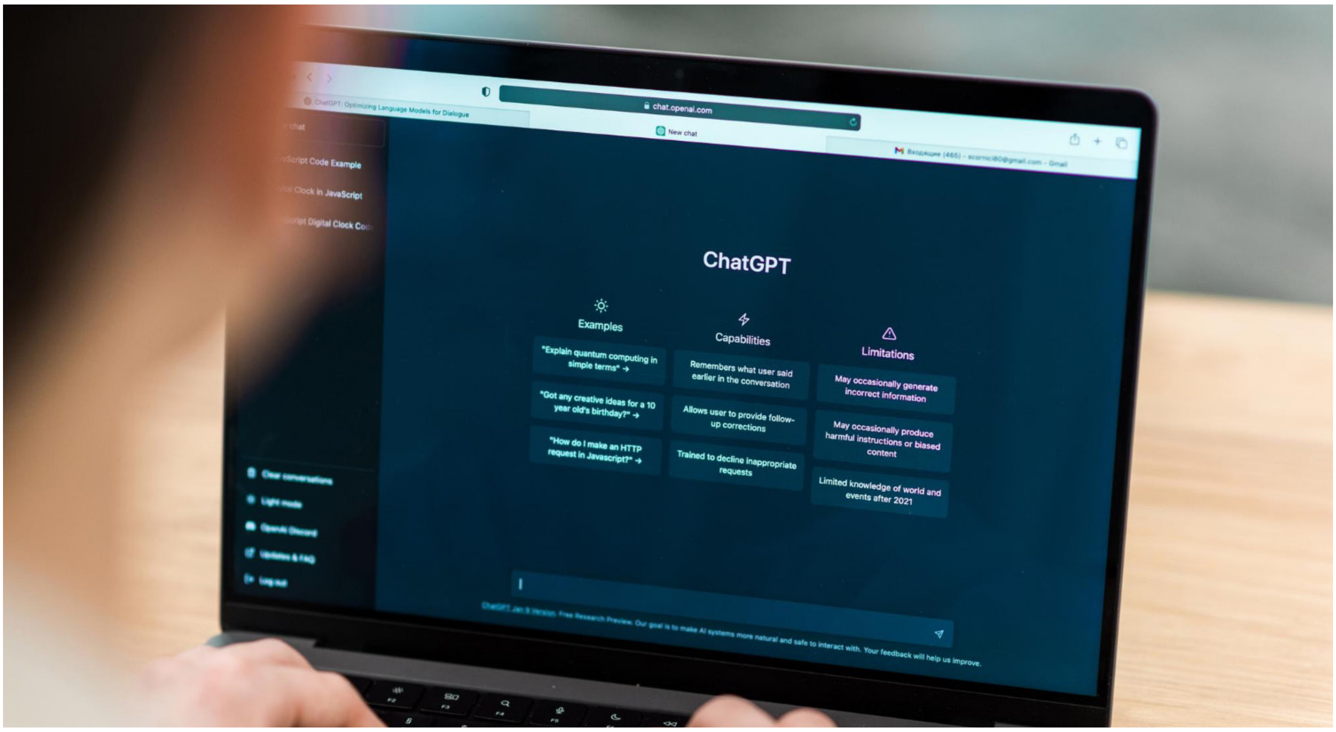
The study was prepared by a number of interns, with assistance from others, in the FSO tax team in EY Ireland over the summer of 2023.

We note concerns about the misuse of intellectual property (Appel, Neelbauer, & Schwei, 2023) and client confidentiality have been identified in using AI tools – it is not the purpose of this article to discuss those concerns.

What is AI

AI, or artificial intelligence, is a field of computer science that aims to create machines capable of performing tasks requiring, hitherto, human intelligence. ‘AI is defined as the ability of a machine to perform cognitive functions that we associate with human minds, such as perceiving, reasoning, learning, interacting with the environment, problem solving, decision-making, and even demonstrating creativity’ (Collins, 2021). There are a number of AI solutions and products on the market, the most popular in 2023 being OpenAI’s ChatGPT.

Generative AI (Gen-AI), is a subfield of artificial intelligence that involves creating computer models that can generate new data, such as images, videos, music or text. Unlike traditional AI systems that are designed to classify or predict existing data, generative



models use machine learning algorithms to learn from existing data and create new data that is similar in style, content and structure.

Generative Pre-trained Transformers (GPTs) are a type of Large Language Model (LLM). LLMs are created by analysing statistical relationships between words in texts, allowing the tool to generate text with training. GPTs, a newer type of LLM, take this a step further, adding new techniques, to allow for greater verisimilitude to human output with less need for external training.

The significance of these tools is that they can enable tasks that were thought to require human intervention to be automated. These tasks include, amongst others, language translation, document summarization, building websites, designing visuals, writing computer code, researching complex topics, Q&A bots and, even, writing poems.

Creating a GPT, either generalised ones like Chat GPT, Bing ai, or a bespoke specialised one, for example, within a company to answer specific questions, is a complex and interactive process. The first step in this process ('training') involves the software engineers developing the model by feeding unlabelled data to the GPT. Then the GPT would 'read' the sentences in the data, break them down and reconstruct new sentences from the data (Murgia, 2023). After this the GPT would be left 'unsupervised', without human interaction, to attempt to create human-like and, where factual responses are required, accurate answers to 'prompts'. Finally, and this is an important point in the context of giving tax or legal advice, the engineers would fine-tune the answers generated by the GPT in supervised training, including customising the responses for knowledge-areas, industrial sectors or even individual companies.

'Chat GPT Goes to Law School'

A recent study by Goldman Sachs concluded that 44% of current legal work tasks and 35% of business and financial operations tasks could be automated by AI. The study found that up to 25% of industry employment is exposed to automation by AI in the Euro area; with the legal and administrative fields likely to be most affected (Hatzius, 2023).

A number of recent articles have looked at the use of AI models in the context of legal analysis. These have mainly focused on law and bar exams being performed by AI tools – 'Chat GPT goes to Law School'! (Choi, Hickman, Monahan, & Schwarcz, (forthcoming 2023)). The results would appear to show clear benefits to using AI in legal analysis but also limitations (Choi & Schwarcz, 2023) (Choi, Hickman, Monahan, & Schwarcz, (forthcoming 2023)) – with AI 'performing best at organization, composition and simple analysis of legal rules, struggling with more complex legal judgments and issue-spotting' (Choi & Schwarcz, 2023).

The Tax Question and the answer according to EY and the Irish Revenue authorities

We started by asking various GPT tools a domestic Irish tax question which is well known to Irish tax advisers: 'What is the Corporation Tax rate on Deposit Interest in Ireland?'

This question addresses a well-established, for Irish tax advisers, issue in the Irish tax system. As most readers are aware, Ireland has a 12.5% corporate tax rate for 'trading' income (that is income from carrying on an active business). However, it is important to note that other types of income ('passive', non-trading' income – such as certain interest, royalties etc) are subject to a 25% corporate tax rate and capital gains (for example, gains on the disposal of capital assets) are taxed at a rate of 33%.

In this context deposit interest throws up a problem: is the deposit interest trading or non-trading income? For example, while 'interest' is expressly included in income that is taxable at 25%, for a bank interest income is clearly trading income and taxable at 12.5%. Therefore, where a company makes a deposit and earns deposit interest, depending on the circumstances in the company, that deposit interest could be trading or non-trading.

The crux of the matter is that deposit interest may be subject to a tax rate of 12.5% or 25%, depending on the circumstances in which it is earned; as stated in the Revenue Commissioners' Tax and Duty Manual, deposit interest is considered prima facie non-trading income, and therefore it is subject to the 25% tax rate.

However, Revenue also provides examples of situations where deposit interest may be taxed at 12.5% such as when the interest arises on deposits that relate to regulatory capital, capital integral to a trade or, when the capital is partially for trading and partially non-trading, allowing for the interest to be apportioned accordingly to the specific situation in which it is earned.

How did Gen-AI perform?

How deposit interest is taxed was, we felt, suitable for the Gen-AI tools that were used (see below), which currently use historical data, as this is a tax issue that has been around for over 20 years and there is analysis of the issue available on

the Irish Revenue Commissioners' website which could be used to validate any response (The Revenue Commissioners, 2022). (The current document on the web was reviewed in June 2022 but was identical in all material respects to previous versions going back to the early 2000s. Many Gen-AI tools do not provide for current data but the data here would be available, over the summer of 2023, for example Chat GPT's data was only up to September 2021.)

We posed the question to the Gen-AI tools directly, as well as through a limited number of additional 'prompts' and 'personas', such as posing the question from the point of view of a senior Irish Revenue official as well as a Tax Partner in EY. The responses, using personas, we received from the Gen-AI models were indistinguishable to us from non-persona responses (albeit, as has been pointed out to us, the tools we were using were the free-to-use versions with more limited capability than other versions). The questions were posed to the Gen-AI tools over the summer of 2023.

The answers generated by the various Gen-AI tools to the prompts provided are summarised below. It is worth noting that none of the questions posed led to any 'hallucinations', when the tool generates false information, a concern that has arisen in the past when Gen-AI has been used in practical legal situations where the tool 'invented' cases that did not actually exist (Bohannon, 2023).

Corporation Tax rates on deposit interest suggested by Gen-AI Tools:

You will recall, from the above, that the answer to the question as to how deposit interest is taxed in Ireland is that it could be taxed at 12.5% or 25% and that depends on whether the funds on deposit are held for trading purposes. Here is what the AI platforms responded with:

ChatGPT	12.5% but then replaced by 25%
Notion AI	25% (denies that 12.5% is available unless in specialized industry exemptions, which are actually irrelevant in this context)
Microsoft Bing (using the 'More Creative' conversation style)	12.5%, 20%, 25%, 33% *
Snapchat AI	'I'm not sure about the exact rate, but you can easily find it online.'
Tax GPT	25%
Chat Sonic	25% (confirms that 12.5% is not available)

*Microsoft Bing's answer to Question 1 was 25% on 4 July 2023, but when asked the same question a week later on 12 July 2023, the answer was 33% (which is the rate of Deposit Interest Retention Tax – a withholding tax on deposit interest that largely applies only to Irish resident individuals). When asked again Bing responded: 'If the deposit interest is derived from a trading activity, it may be taxed at the 12.5% rate.'

The summary above does not quite reflect the quality of the responses. Our findings were similar to a project at John Hopkins University using AI with the US taxes: 'GPT-3 was completely baffled by the [US] tax code...' albeit the project leaders still thought their project to use AI to find, and then close, 'tax loopholes' was 'doable' (Rosen, 2023).

For example in response to our queries:

Chat GPT:

1. *What is the corporation tax rate on deposit interest in Ireland?*

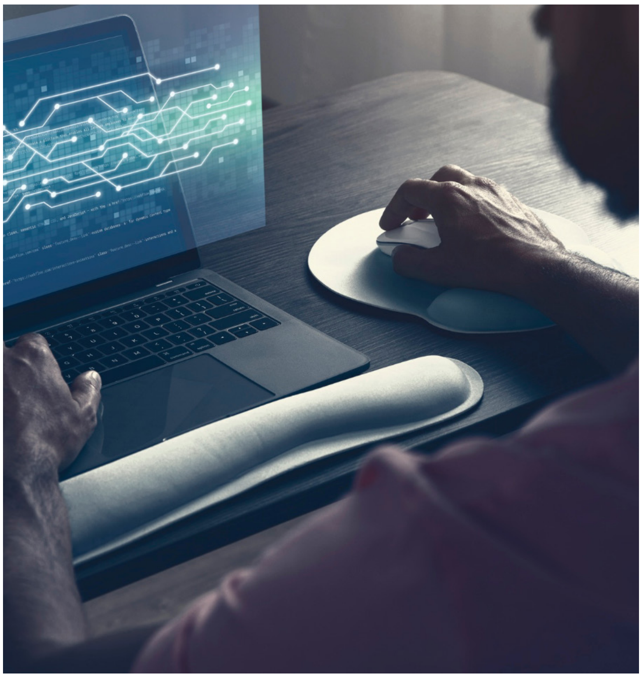
   As of my knowledge cut off in September 2021, the corporation tax rate on deposit interest in Ireland is the standard rate of 12.5%. However, please note that tax rates and regulations can change over time, so it's always a good idea to consult the latest information from official sources or seek professional advice to ensure accuracy.

2. *Are there scenarios in which the corporation tax rate on deposit interest in Ireland would differ from the 25% rate?*

   I apologize for the incorrect information in my previous response. The corporation tax rate on deposit interest in Ireland is 25%. As of my knowledge cutoff in September 2021, there were no specific scenarios or exceptions where the corporation tax rate on deposit interest differed from this standard rate. However, it's important to note that tax regulations can change over time, and there may be specific provisions or incentives that could impact the tax treatment of deposit interest for certain entities or industries. It is always recommended to consult the latest information from official sources or seek professional advice for the most up-to-date and accurate details regarding tax rates and regulations.

3. *In which scenarios would deposit interest not be charged at the Corporation Tax rate of 25%?*

   Deposit interest in Ireland is generally subject to the standard corporation tax rate of 25%. However, there are certain scenarios where deposit interest may be subject to different tax treatment [continues with a series of irrelevant examples]....



The responses provided by the Gen-AI tools not only failed to draw attention to the Guidance provided by Revenue on deposit interest, but also did not convey that the applicable tax rate on deposit interest is subject to the specific circumstances in which the interest is earned. Having said that, we focused on Chat GPT above, as it provided the more appropriate answers.

There is so much hype around Gen-AI it must be transformative?

We have been here before.

In the 1950s and 1960s progress in computing was rapid, leading to heightened expectations of future progress: for example Herbert Simon, who won the Nobel Memorial Prize for Economics in 1978, predicted in 1957 that within 10 years 'a digital computer will be the world's chess champion unless the rules bar it' (Dreyfus, 1992, p. 81). The MIT professor Marvin Minsky, adviser to Stanley Kubrick on HAL – the very model of malign artificial intelligence - in the film 2001, A Space Odyssey (1968), announced in 1967: 'Within a generation the problem of creating 'artificial intelligence' will be substantially solved' (Dreyfus, 1992, p. x).

Despite the immense increase in computing power since then, progress has been much slower than initially hoped. It took, despite the limitations of a chess board, only 64 squares and no outside-of-board context, until May 1997 for Deep Blue, an IBM super-computer specially created to play chess and with substantial human interaction between games, to beat the world chess champion Gary Kasparov (Kasparov, 2017).

But this slower than expected progress was not a surprise to one person, who had predicted it in the mid-1960s. However, Hubert L Dreyfus was a philosopher and not an expert in computers or computing and so his arguments, some of which we will deal with below, were not fully considered at the time.

Dreyfus was hired in 1964 by the US research body, the RAND Corporation, to evaluate RAND's efforts, led by Simon, with Artificial Intelligence. The paper he wrote for RAND in 1965 'was famously combative, analogising AI research to alchemy and ridiculing AI claims' (Armstrong, Sotala, & O h´Eigeartaigh, 2014).

What Dreyfus immediately noticed about the AI team in RAND was that they were making an assumption, an assumption so basic and familiar to everyone that the AI experts did not even realise it was an assumption. The assumption was old, at least 2,000 years old, and extremely pervasive. The assumption was that knowledge is what is written down and that intelligence is the ability to manipulate and act, in some form of objectively correct manner, on that knowledge.

Dreyfus thought that AI researchers should, at the very least, be aware of this assumption and if, as Dreyfus thought, their assumption was wrong that a lot of their effort would be wasted in tackling the wrong kind of problems.

If Dreyfus was correct then he predicted that progress in creating 'artificial intelligence' would be a lot slower than people thought, require much more computing power and, most importantly, that the goal of creating a machine more 'intelligent' than a human being was, because there was knowledge that the machine could never 'know', perhaps, impossible.

Applying Gen-AI to tax advice – opportunities and potential difficulties:

Many experts have identified taxation as being suitable for the use of AI tools to supplement the work of human experts (Shaw, 2023). After all, the tax rules have to be formally articulated in legislation and there is an immense amount of case law, guidance, literature publicly and internally within tax practices available in electronic form to be fed into the tools.

But on the other hand, there is more to tax rules than just the written tax-code. Dreyfus argued that the 1960s AI experts were ignoring certain forms of knowledge and intelligence that were not capable of or difficult to formalise. These included:

- Information and knowledge are often 'tacit' – we know more than we can say, write or code (Browning & Lecun, 2022) (Polanyi, 1958, p. 69 ff). Oliver Wendall Holmes noted that even in the law, every culture has its own 'tacit assumptions' and 'unwritten practices' – this is why identical legislation can be interpreted by different people, companies, countries in different ways. The law fits within a social and cultural context that is not written down.
- This is an important reason why Gen-AI doing well in law exams is somewhat misleading; academic knowledge assessed in exams is entirely focused on articulated knowledge – the professor explains in words, spoken or written down, and the student articulates answers in multiple choice boxes or essays. There is plenty of tacit knowledge, an experienced examinee will apply that tacit knowledge in approaching a question or formulating a response efficiently – but the response has to be articulated. Anyone who has listened to a recording of an advice call or a meeting will know how much is not clearly articulated or left entirely unsaid – much real world client communication and advice is tacit.
- The machine can never know the pain of paying away tax money, or the pride of contributing to society, the fear of a tax audit or the triumph of agreement with the tax authority or the actions that balance out these emotions for each individual in different ways. Only a human being can feel these and be aware that others will feel these too; this informs not only your advice but the way you articulate that advice. We can call this 'emotional intelligence' in the adviser, but knowledge of people (taxpayers, tax authorities, businesspeople) is a concrete factor in all tax advice.

We asked some of the Gen-AI tools about risk management issues on their responses. Clearly, the creators of the tools are extremely concerned, within the limits of the tool (for example, using historical information), that the tools provide accurate information:

4. *Do you take responsibility for your work?*

'Hello, this is Bing. I'm not sure what you mean by taking responsibility for my work. Can you please clarify?'

5. *Do you care if you provide incorrect information?*

'I do care about providing accurate and reliable information. That's why I always perform web searches and reference factual statements to the search results. However, I cannot guarantee that the search results are always correct or up to date. I'm still learning and improving, so I appreciate your feedback and suggestions.'

As Dreyfus predicted, even the most up to date tools do not function like a human brain. The Gen-AI tool searches the data for probable responses and responds based on the preponderance of data. 'Generative AI is trained on vast amounts of raw data – for example, the text of millions of web pages or books – and learns the patterns within it, in order to generate the most likely correct response when prompted with a question written in text in that language' (Criddle, 2023) [emphasis added].

The improbable answer is where a tax adviser shows her worth; critical thinking about a whole new way of approaching a tax rule. The chess program models and mathematically ranks every possible

move; the chess grandmaster 'sees the board as demanding a certain move' (Dreyfus, 1992, p. xxviii).

This probabilistic feature of looking at the pattern of the words may explain one feature of the responses. That was a focus on Deposit Interest Retention Tax (DIRT) which is a withholding tax on deposit interest but from which companies are exempt and, in any event if they do not claim the exemption, just forms a prepayment of the company's final tax liability or is refundable. But, of course, the overlap in words, 'deposit', 'interest' and 'tax', may have sent the AI astray. This was not intentional on our part and originally puzzled us.

In what circumstance would deposit interest be taxed at 12.5% in Ireland:

[Chat GPT]: In Ireland, deposit interest is generally subject to Deposit Interest Retention Tax (DIRT). The standard rate of DIRT is 33%, but there are circumstances where a reduced rate of 12.5% may apply.....h

[Chat GPT – in a separate response]: Hello! I am [persona of senior Revenue official]. As of 2023, there is no specific corporation tax rate on deposit interest in Ireland. Corporation tax is typically applicable to a company's profits rather than interest income from deposits.

However, deposit interest in Ireland is subject to Deposit Interest Retention Tax (DIRT), which is a withholding tax deducted by financial institutions on certain deposit interest payments. As of 2023, the DIRT rate is 33%.

[Tax GPT]: In which scenarios would deposit interest not be charged at the Corporation Tax rate of 25%?

I apologize for the confusion in my previous response. In Ireland, deposit interest is not subject to the corporation tax rate of 25%. Instead, it is subject to Deposit Interest Retention Tax (DIRT). As of my knowledge, the current DIRT rate is 33%.[...] In Ireland, deposit interest is subject to Deposit Interest Retention Tax (DIRT) and not the corporation tax rate [...]

Gen-AI and International Tax:

We also asked various Gen-AI tools a series of international tax questions. The results were interesting. The questions that we asked were:

- ***How are US LLCs taxes in the US?***
  The answers to these questions, in Chat GPT and Bing AI, seemed, to us, non-US tax experts, as being of a very high-quality; dealing with the default position of LLCs, the difference between single member LLCs and multi-member LLCs, filing a form 8832 with the IRS and so on.
- ***What is the UK tax treatment of US LLCs?***
  Again the answers seemed, to us, to be very high quality, discussing the UK Supreme Court decision of 2015 in the Anson case and outlining the relevant criteria. Many responses also covered the UK CFC rules that can result in a US LLC being deemed to be UK tax resident.
- ***Give me 150 words on why the UK tax treatment of US LLCs is so complex?***
  Again we thought the answers were high-quality.
- ***Give me 150 words on how you would make a US LLC transparent for UK tax?***
  When we asked this less abstract, more practical, question and requiring a discussion that involved the interaction of the two regimes, the answers became a lot more unstable:
  ChatGPT: 'To make a US LLC transparent for UK tax purposes, careful consideration of the entity's structures and elections is essential. The UK generally recognizes the transparent nature of LLC…' [The actual UK HMRC default position is that LLCs are opaque; the default US position is transparent.]
  Chat GPT (separate interaction): 'To make a US LLC transparent for UK tax purposes, several strategic steps can be taken. First, electing to treat the LLC as a partnership for UK tax can facilitate transparency…' [You cannot 'elect' to make an LLC a partnership in the UK, that is a US construct. You can file a tax return on that basis in the UK but that is not an election.]
  Bing ai: 'One way to make a US LLC transparent for UK is to elect to be taxed as a partnership in the US. This will require filing a Form 8832 with the IRS…' [Filing a form with the IRS may not influence HMRC.]

In summary, the tools were very successful in outlining the general US tax treatment for US LLCs and on the general UK tax treatment of US LLCs. The tools were dramatically less successful when application of these rules was required.

A recent article by two researchers at the the Bank of International Settlements (Perez-Cruz & Shin, 2024), explains why: articulating the general rules is one skill but applying them to a particular situation is actually a completely different skill and one where tacit knowledge is critical. 'As LLMs are confined to interacting with the world purely through the medium of language, they lack the non-linguistic, shared understanding of the world that can only be acquired through active engagement with the real world.... [they cannot] draw on tacit knowledge, including that acquired through interactions with the physical world.'

To human beings the rules in one country and the different rules in another country loom very large. Close your eyes and picture a typical US scene and then a typical UK scene; they will be quite different. To be aware of these differences is a form of tacit knowledge; we know that the IRS rules are irrelevant to HMRC (unless there is a UK that makes the IRS rule relevant, in which case that is a UK rule).
As the FT noted, 'algorithms can detect patters in past data… and make predictions or recommendations without explicit instructions from humans' (Criddle, 2023) . Here the tools have detected a pattern but the pattern has lead to error. With training, more data, the tools can develop new patterns and the responses will improve. But obviously, every new international tax issue, every tax change, will throw up new problems for which there may be no pattern to draw on. As Perez-Cruz and Shin noted that their work highlighted 'two key weaknesses [of the Gen-AI tools]. The first is the failure to engage properly in counterfactual reasoning. The second is the failure of awareness of its own ignorance' (Perez-Cruz & Shin, 2024).

How to do better. Using AI to your maximum advantage.

Gary Kasparov, the former chess world champion, has provided useful guidance on using artificial intelligence: '[R] emember Moravec's paradox, it says that what machines are good at is where humans are weak, and vice versa' (Kasparov, 2017, p. 244). It may be fruitful to explore where both can work together adding additional capability to both; 'a synthesis of the best of man and machine'. (Kasparov, 2017, p. 244)

Lorraine Daston in her 2022 book Rules: A short history of what we live by, looked at the history of rules and algorithms (Daston, 2022). She compared 'thick' and 'thin' rules. One example she gave was of instructions in cookbooks. Older cookbooks gave instructions using thick rules, rules that required experience,

set context and focus on getting the right answer. 'brown' mean? How 'brown' is 'brown'?). In modern cookbooks, the rules are thin – 'preheat fan oven to 170 degrees, place in oven for 25 minutes'.

Tax legislation seems like a good example of a myriad of thin rules. Daston writes that thin rules are, in many ways, the hallmark of the modern regulatory state. But even within the thinnest rule there are topics that require judgment like, in Ireland, the taxation of deposit interest. Therefore, the first role of any tax adviser using AI is to break down the question into the thinnest rules possible.

Another point that Daston made was that 'Algorithms escape context by ignoring it' (Daston, 2022, p. 271). Therefore, a second role of tax advisers using AI is to give the tool that context. Here it is useful to remember that the AI professionals do not call the questions we ask the AI tools 'questions' but call them 'prompts'.

Bearing this in mind, our AI colleagues have suggested some tips, useful in every situation where you are interacting with these tools:

- **Contextual Awareness:** Ensure that you have set out your questions in context. This can help to avoid misunderstandings and provide more accurate answers. In other words, an experienced tax adviser will have a good idea of what might be the relevant context and will provide that to the tool. The tool itself will not seek to discover that context.

- **Prompt chain** - Set out a series of questions and build on the answers to get to the right level of detail. This helps set context and focus on getting the right answer.
- **Ask to wait** – If you need to provide context or ask a series of questions but want a considered response, then ask chatbot to wait to deliver an answer. This works best if you give instructions up front – i.e. Confirm you have received information each time I submit- but don't generate an answer until I tell you to 'go'.
- **Describe the output:** Table format, word count, sentence length. In the style of an author. For a formal or informal audience.
- **Train on data** - give examples and the right answers.
- **Be critical and curious** – ask the GPT to explain how it came to an answer. Ask it to explain definitions and assumptions to give rigour to answers
- **Correct and improve** - If you aren't satisfied with an answer tell the tool. Ask it to try again or tell it the right answer and ask it to save this for the future.
- **Seek guidance**- GPTs are all clearly trained to give a prompt to tell the user to seek formal advice for taxation matters- however, you can ask it to find you the appropriate documents to understand the rules yourself.

Using these tips, we received a fully correct answer to our question on deposit interest using the following sequence of prompts (breaking the question down into thinner rules, prompting context and querying a later, not fully correct, answer):

What is the corporate tax rate in Ireland?

What are the exceptions to the 12.5% corporate tax rate? Broken out by income type.

How is interest taxed in the Irish corporate tax system?

Give examples of situations where interest is taxed at 25%

Give examples of situations where interest is taxed at 12.5%

Would the interest on deposit of regulatory capital be taxed at 12.5%

Are you sure that is correct?
What materials should I read to confirm this information?

The vision our AI colleagues have is that we will, together, build databases of tax knowledge, often especially created for your firm or industry area, using reliable sources (public and private). It can assist with client specific examples by the use of 'personas'.

They see the tax professionals and the machines constantly interacting, as the humans give feedback on the answers, improving subsequent answers, creating auditable answers with clear citations, outlining the processes the machine has followed (so it is not a black-box answer). Our colleagues across all large accountancy firms already have demonstration models of how AI tools can be used in this way. Ultimately, there is always a human being there: questioning/prompting, reviewing, correcting and approving.

The better question – when is AI likely to be most useful in tax?

Our expectation is that AI will be most useful in tax matters where the rules are at their thinnest, where the volume of data is at its greatest and where judgement, discretion and tacit knowledge are minimised or where their absence will result in immaterial errors.

Conclusion

The purpose of this article has been to try to evaluate generative AI tools, albeit generally available tools without any specific tax domain training, in providing an answer to practical tax questions. We have then used the answers provided to explore some aspects of providing tax advice that may not have been clearly articulated elsewhere.
There is no doubt that Gen-AI will be a transformational tool for tax advisers. This would seem to the experience in Allen & Overy: 'If you approach it from the basis of, "I'm going to have to read

through and check it all anyway" then it's useful. I don't think it's quite something you can just take and run with'. They [A&O lawyers] suggest that their AI tool, Harvey, is like a very articulate 13-year-old, saying "you wouldn't trust a 13-year-old to do your tax return".' (Grimes, Criddle, & O'Connor, 2023). Recently a senior UK judge said that he found AI 'jolly useful' but in situations where he

already had significant expertise (Farah, 2023). It seems clear, however, that 'LLMs cannot, as yet, act as a substitute for the rigorous reasoning abilities necessary for some core analytical activities' (Perez-Cruz & Shin, 2024). We also need to be careful; instead of seeking to maximise the benefits of Gen-AI we may seek to minimise the usefulness of human beings.
Already, we may be unnecessarily discouraging young people from taking up careers in accountancy, the law and tax; in fact, these tools will never replace human beings but will make the job of tax adviser more interesting, exciting, fast-moving and productive (Shaw, 2023).

There is one final important issue with applying AI to tax advice, both on the adviser side and on the tax authority side. The historian, Lorraine Daston in her 2022 book Rules: A short history of what we live by, has argued that the 'thin' rules of algorithms 'flourish in the same settings that averages to; where what happened in the past is a reliable guide to what will happen in the present and future'. Instead, she argues for the benefits of 'thick' rules that require judgment and experience to apply in practice; these rules allow for innovation, anomalies and equity. The danger is that we will start to write or apply the tax rules to cater for AI. She writes: 'making the world safe for algorithms turns out to mean freezing context; a world without anomalies or surprises' (Daston, 2022, p. 271). Of course, in a dynamic, innovative commercial environment, a tax code that cannot cope with surprises is somewhat unhelpful. A tax system that eliminates fairness may not be one we want to live within.

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