

UNLOCKING OPPORTUNITIES



Evolution of digital bonds in global capital markets

In this episode, a team of A&O Shearman lawyers discuss current and emerging developments in how distributed ledger technology is reshaping debt issuance. Drawing on recent landmark transactions in their respective jurisdictions, the speakers explore regulatory approaches in Europe, Hong Kong, and the Middle East, including the goals of achieving technological neutrality, legal certainty and operational efficiency.

RORY COPELAND

Welcome to this A&O Shearman podcast on digital bonds.

I'm Rory Copeland, and I'm a senior associate in A&O Shearman's Financial Services Regulatory team in London.

In this episode, we're going to explore how digital bonds are being used in capital markets around the world now that the technology has begun to mature into an increasingly mainstream way to issue debt.

We'll look at real-world examples and noteworthy use cases. We'll also discuss some of the key legal, regulatory and operational considerations for institutions thinking about issuing bonds on the blockchain.

And to do that, I'm delighted to be joined by three colleagues from across our global network who have advised on some of the most significant and complex digital bond issuances to date.

Agnes Tsang, a partner in our Global Financial Markets Group based in Hong Kong; Jodi Norman, a partner in the Financial Services Regulatory group in Dubai and the Head of Financial Services Regulation for APAC, META and Continental Europe; and Philippe Noeltner, a counsel in our Financial Services Group in Luxembourg.

PHILIPPE NOELTNER

Sure. Thank you, Rory. The digital bond market in Europe started really in 2019, when we saw the first issuances that were done by the European Investment Bank. They're utilizing different consortia of banks to underwrite and help to issue these bonds and also to operate the various platforms on which these bonds were ultimately connected to blockchain networks. That spurred different legislative initiatives across Europe to ensure we actually have the regulatory certainty that the use of distributed ledgers does not pose an issue from a purely legal perspective.

Since then, in Luxembourg, we've had four blockchain laws. We've also seen some legislative initiatives in France as well as in Germany. Because of that, we've seen different players, notably in the private sector but

also in the public sector, using this technology to issue their debt.

Here, I'm also thinking of the Inter-American Development Bank (IDB) and private players such as Intesa Sanpaolo and Siemens—you know, a number of different players, utilizing different frameworks and platforms.

So, we're really seeing a sort of broader move into the digital bond market, which indicates that there's a lot of interest from the capital markets ecosystem as a whole to develop and utilize the technology. Obviously, this is not to say that the FMIs—ie Clearstream and Euroclear—are not looking into this space as well.

In Europe, we've really seen different types of issuers and different types of platforms being provided to allow issuers and investors to connect to these blockchain networks.

RORY COPELAND

That's fantastic, thank you. I wonder whether, Agnes, as a counterpoint, you could share your experience from Hong Kong?

AGNES TSANG

Thanks, Rory. In terms of Hong Kong, it all started back in 2022 when the Hong Kong Monetary Authority (HKMA) commenced Project Evergreen, which was a pilot that used DLT (distributed ledger technology) to settle a digital bond on a delivery-versus-payment basis.

Security tokens, representing beneficial interests in the green bond issued by the Hong Kong government, and cash tokens representing a claim for fiat Hong Kong dollars against the HKMA, were deployed, and a key objective was to test the financial infrastructure and the legal and regulatory framework for the use of DLT in the bond lifecycle.

The first pilot was completed in 2023, and the second, using a slightly different structure, was completed in 2024. After that, we have seen issuances by financial institutions as well as corporates. Hong Kong's legislative framework for bond issuances is tech-neutral. Therefore, the existing securities offering regime would also apply to digital bond transactions.

RORY COPELAND

Thank you, Agnes. That's a fantastic contrast. Jodi, given how innovative the UAE and surrounding jurisdictions are known for being on tech, have you experienced similar growth in digital bond markets?

JODI NORMAN

Thanks, Rory. In the Middle East, and particularly within the UAE, we're seeing a real acceleration in tokenization activity. One of the most significant recent developments was the launch of MENA's first digital bond by First Abu Dhabi Bank in partnership with the Abu Dhabi Securities Exchange and HSBC. This transaction is a clear signal that the region is embracing digital securities and distributed ledger technology at an institutional level.

We're also seeing increased interest from regional sovereigns and corporates in exploring tokenized bonds and other digital instruments, which is helping to position the UAE as a regional hub for digital capital markets.

So, overall, the region is positioning itself as a leader in the digital capital markets space, with a strong focus on regulatory clarity and market infrastructure.

RORY COPELAND

Thank you. It's fantastic to hear about the activity in the digital bonds market in each of your jurisdictions.

I'm also interested in the comments that both Philippe and Agnes made in passing about legal and regulatory changes that have been necessary to enable the kind of growth that we've seen.

Philippe, you mentioned the Luxembourg legal reforms, and Agnes, you mentioned tech-neutrality. I wondered whether we could look at these three jurisdictions again for examples of the kinds of legal regulatory changes that have been necessary for growth, or indeed whether everything you've described has been possible based on the existing legal framework.

Philippe, perhaps you could kick us off with a little bit more detail on the Luxembourg legal reforms.

PHILIPPE NOELTNER

Absolutely. Thank you, Rory. The point is that the Luxembourg legislator opted to amend its legislative framework in order to reach tech-neutrality, very similar to what Agnes has mentioned. The legislator took a light-touch approach and indicated that custodians, issuers or even central account keepers/settlement organizations could use networks that are either private or public and distributed or centralized. This gives you a wide array of options as an issuer or even as a custodian to either issue or keep the various securities that you're dealing with.

So, on that basis, this really gave a lot of legal certainty to different players to set up their platforms in the EU and in accordance with the Luxembourg legal system. So there we've seen the HSBC Orion platform set up in Luxembourg, thanks to this legal flexibility. We've also seen the GS DAP platform relying on this Luxembourg legal framework. And you also have Clearstream with the D7 initiative that's relying on this legal system. So, it's fair to say that we've been privileged enough to see, let's say, a rise in financial market infrastructure and financial market-like infrastructures being operated by newcomers like Goldman Sachs and HSBC in that space, relying on the Luxembourg legal framework because of the certainty that it gives.

The [other] point that I'd like to mention is that the legal framework really supports both direct and intermediated holding models, meaning the issuer can either interact directly with an investor or through the use of a custodian.

On that basis, you have different issuing options for either smaller-scale or bigger-scale issuances and the full recognition that is the security that's living and really operating its true lifecycle on distributed models that is fully legally enforceable—that's something that's quite powerful when you look at different legal systems. And the fact that the Luxembourg legislator took this option and decided to recognize this new technology certainly breathes life into innovation for the capital markets.

RORY COPELAND

It's fantastic to hear the amount of thought from the Luxembourg legislature that has gone into creating the legal framework that you've described. Agnes, is the same true in Hong Kong?

AGNES TSANG

It's actually quite similar, I think, in terms of the approach taken by the regulators. And the point that I made earlier on, because of the fact that the legal and regulatory framework is tech-neutral, it makes it flexible for the government regulators as well as market participants to look at a different structure as well as how they can deploy them. And I think another key is the regulators, in particular, mentioned that they adopt the same business, same risk and same rules approach, so the existing regime relating to dealing in securities, advising on securities, and offering would still apply to distribution of digital bonds.

Another flexibility that the legislation offers is that it does not expressly specify whether debt securities need to be in paper form or dematerialized form, which makes the legal analysis easier from a corporate issuer angle, depending on where the issuer is incorporated.

We don't just look purely at where the digital bonds are being issued (the local regime) but also at where the issuer is located. That would also impact the analysis. To give you an example, the recent transaction that we did for a PRC bank—because the Chinese regulations themselves are also neutral in terms of the form the bond can be—again makes the analysis easier.

So I think it's not just about looking at the legislative regime in terms of the offering, but also where the issuer is located, whether it's a corporate versus a sovereign versus a financial institution, and whether there are local-law restrictions in terms of issuing the bond in a particular format. For example, looking at companies' legislation—whether there are things like you need to keep a register for the bond—it doesn't matter whether it's a 'demat' form or a paper form.

There are other requirements that need to be taken into consideration; there are a lot of factors that could impact the legal analysis.

RORY COPELAND

I suppose with all those relevant factors in play, it's really fantastic to have market leading and high-profile transactions that set out the stall for how the digital bonds market, whether that be in Hong Kong or in Luxembourg or in the Middle East, can work to create a standard which others can follow. And it is wonderful to be talking to three of the people who have helped to create those standards in their respective jurisdictions.

Jodi, sticking on the topic of legal frameworks and legal reforms, have the Middle East jurisdictions needed to make reforms? Have they started to do so already? What are you seeing in your markets?

JODI NORMAN

So yes, here in the UAE we're seeing a lot of legal and regulatory change to accommodate digital securities. Here, we have a unique operating environment in as far as the UAE operates two of the main financial centers in the Abu Dhabi Global Market (ADGM) and the Dubai International Financial Centre (DIFC), and these regimes effectively act as sandboxes because they had the capacity to move very quickly in terms of modifying their law and regulation, so both the DIFC and the ADGM had taken significant steps to recognize and accommodate DLT-based securities within their regulatory frameworks.

The ADGM, for example, has issued detailed guidance on the use of distributed ledger technology and established a comprehensive regime for digital securities, including the recognition of DLT as a valid infrastructure for the issuance, holding and transfer of securities.

The DIFC has similarly updated its regulatory approach to ensure that DLT-based instruments can be issued and traded in compliance with existing securities laws.

In 2024, the DIFC enacted its Digital Assets Law, establishing a comprehensive legal framework for digital assets, including tokenized securities.

This law provides a clear definition of key concepts, recognizes digital assets as a new form of intangible property and sets out robust rules for their control, transfer and legal protection.

Importantly, it integrates digital assets into the wider DIFC legal ecosystem, modifying existing laws on contracts, insolvency and personal property to expressly accommodate digital assets and tokenize instruments.

The DIFC's legal certainty, technological neutrality and support for both smart and hybrid contracts make it an attractive venue for issuers, investors and fintech innovators seeking to launch and manage digital securities, and we're starting to see the fruits of those labors.

Qatar National Bank recently announced that it has the no-objection and regulatory approval to launch the DIFC's first-ever tokenized money market fund launched in partnership with the blockchain fintech DMZ Finance. This initiative leverages the DIFC's new legal infrastructure, enabling the creation, issuance and management of tokenized fund units on a blockchain platform.

It marks a significant step forward for the region, demonstrating how institutional-grade digital asset products can be brought to market in a secure, regulated environment.

RORY COPELAND

Thank you, Jodi. All of this demonstrates that market appetite is there, but also that the involvement of regulators and legislatures and key stakeholders to drive forward that work in markets is really important. And it's fantastic to have these three examples of regulatory environments that are working and producing great results.

We've talked about the issuance, distribution and transfer of the digital securities themselves, but I know that a source of ongoing consideration has been the payment leg—the means by which payments for purchase of digital bonds or other digital securities is effected, including whether this can be on-chain or atomic.

How have the conversations about atomic settlement and legal finality progressed in each of your markets? It could be that it's all been perfectly straightforward and DvP (delivery vs. payment) transactions are the norm, or, if my hunch is correct, a little bit more thinking has been required or a little bit of hesitancy seen in market actors in this area perhaps?

Philippe, would you like to begin with any thoughts?

PHILIPPE NOELTNER

Well, thank you, Rory. Luxembourg law ultimately supports atomic DvP. For those of you who are a bit less tech nerdy than the speakers here today, atomic does not refer to anything per se bad in this context. Here atomic means that one leg of the transaction cannot be fulfilled without the other. So, a transaction of DvP cannot, as a matter of tech, occur without payment and the delivery of the securities being done simultaneously. That's fine. It's up to the parties to define in their own contract in the issuance documentation. The Luxembourg legislative system does not impose a particular restriction.

In terms of what is being used as a payment leg, obviously that's a big point of discussion among market practitioners, market operators, issuers and investors.

Here we have the option to have what's known as tokenized commercial bank money, meaning that you can take some money that you have on deposit with a commercial bank and ensure that the commercial bank represents a tokenized version of that deposit on chain, and that specific tokenized entitlement can be used as the payment leg. This has been done on a number of deals for the European Investment Bank (EIB) where HSBC provided a sort of tokenized commercial bank entitlement.

We've also seen a very big implementation at the European Central Bank through the ECB trials of that technology. There you have the possibility to settle in central bank money.

What that means is that you're taking an exposure not on the commercial bank but on the central bank which means that you're reducing the bankruptcy exposure that you have to the bank for the payment leg. This is quite interesting, and we've seen various national central banks like the French Central Bank and even the Luxembourg Central Bank participating in platforms where you could have tokenized TARGET2 entitlements. TARGET2 is the payment system that occurs between the central banks.

As a result of these ECB trials, we've had a number of successful transactions. We've even had a settlement that occurred in a matter of seconds. So, if I'm not mistaken, a deal took seven to ten seconds on a deal where we acted for Goldman Sachs, which underwrote the bonds for the European Investment Bank. There, the DvP, instead of taking T+2 days or T+5 days, took T+37 seconds, which is immensely powerful.

We've also seen it for the Intesa Sanpaolo that did it and connected via the national central bank solution of Italy. There, you have different models that were tested, but without getting too technical, it was really about how you record the payment leg on-chain via the other platforms that were provided by the central banks.

So, in a nutshell, we have private initiatives and then more public sector initiatives. Private initiatives—that's the commercial bank money entitlement, which you could also argue could look like stablecoins if they're then being used for wider settlement and wider payment systems, but that's not something we've seen so far.

Under MiCA, can stablecoins be used for the payment of capital markets transactions? I firmly believe that's to come. And then it'll be interesting to see who can keep the stablecoins on their balance sheet because, as we know, specific UCITS funds, for example, are not necessarily allowed to receive these sorts of asset classes thus far.

There are a lot of moving pieces as you can see, but [this is] definitely a space to watch, because, in the end, having DvP on-chain has often been referred to as the Holy Grail for the capital markets world because that ensures you have instantaneous settlements on a risk-free basis and which are absolutely operationally and tech effective.

AGNES TSANG

We are seeing very similar examples out of Hong Kong and in the two pilots we did for the Hong Kong government.

In the first one we tested with the use of cash tokens minted on the platform, which represent Hong Kong dollars in a claim against the Hong Kong Monetary Authority. That's the payment leg. In the second example, which was multi-currency, we went back to the traditional fiat.

I think the very interesting point that Philippe mentioned is about other types of payment leg that could be deployed in the future. And I'm sure many have heard about the recent stablecoin legislation in Hong Kong, and it would be interesting to see whether stablecoins will be deployed in [other] use cases in the future.

And back to the point about settlement finality: I think the structure that's being adopted in Hong Kong is slightly different from what we're seeing out of Europe. In particular, for the digital bonds issued out of Hong Kong, the platforms operated as an extension of the CMU (Central Moneymarkets Unit), which is the central securities depository for those securities in Hong Kong.

Under the setup, digital bonds cleared and settled through the platforms, being an extension of CMU, benefit from the statutory settlement finality under local law. And in order to benefit from the settlement finality, the platform must first be designated as a clearing and settlement system by the HKMA. If not, any transaction settled via a platform which is not designated as a CSS (Central Clearing System) can only achieve settlement finality contractually.

So, the pilots that are coming out from Hong Kong are, in a way, a hybrid approach where the platform is operated as an extension of the CSS. And, I think, unlike Luxembourg, Hong Kong currently does not have an alternative model, which is something that's worth exploring, and I think having an alternative model may facilitate further issuances.

RORY COPELAND

Thank you, both. Of course, it's in the nature of these podcasts that there are only so many speakers that we could possibly have in a single podcast.

And yes, there are exciting experiences in a range of other jurisdictions relating to digital bonds that we'd love to have had time to talk about, including recent issuances in France and landmark issuances in Turkey on which we have advised and there is really so much momentum in this space, so looking forward what are you each most excited to see happen within the next year?

Jodi, I wonder if you could begin with your thoughts on the development of the market in the Middle East, given there's so much potential for growth there?

JODI NORMAN

Thanks, Rory. So, looking ahead, it is clear that the UAE is actively laying the groundwork to become a leading hub for digital capital markets, both within the region and on the global stage.

The UAE is focused on demonstrating a forward-looking vision, one that is defined by a willingness to embrace emerging technologies and a commitment to substantial strategic investment in its financial sector.

The recent advances in digital bond issuance and the development of tokenized financial products are not endpoints, but rather early milestones in a much broader journey.

For me, what's really exciting is the UAE's openness to new ideas and its readiness to invest in the development of its capital markets. It's this willingness that means the UAE is setting the stage for long-term growth and leadership in digital securities.

As these foundations continue to be built and strengthened, the UAE is positioning itself to become a future gateway for digital capital flows, connecting markets, fostering cross-border investment and driving financial innovation across the region and beyond.

It's going to be a fascinating journey, and for us, one that's just beginning.

RORY COPELAND

Thank you, Jodi. That's so energising to hear about. And Agnes, you mentioned your anticipation for what might change with the HKMA's stablecoin rules. Are there other aspects of the legal framework or indeed the market that you are expecting or excited to see changing or growing within the next short while?

AGNES TSANG

I think one point that I made earlier was whether we would be able to have an alternative model where actually there's the recognition of a platform as a settlement system.

I think that market integration for repo and secondary trading is also something we're watching quite closely. And, also, I think how different solutions can connect and interact with each other to further encourage and enhance the development of the ecosystem is quite key. At the moment, we are also seeing different pilots being done out of Europe, in particular those that Philippe has mentioned. I think they are really good examples for us to look at. Liquidity is key for bond markets and the ability to solve the interoperability between traditional and new systems would encourage and help the further development of the ecosystem.

RORY COPELAND

Thank you, Agnes. Interoperability is such an exciting challenge. Turning to you, Philippe, is this something on which there's new thinking that you're seeing within Luxembourg or the EU, and indeed whether there are any other horizons being pushed over the next little while?

PHILIPPE NOELTNER

Thank you, Rory. Yes, that's crucial. Why this matters for Europe is because we've had a capital market that was, let's say, dwarfed by the U.S. capital markets. For us, it's about how SMEs or even bigger corporates can finance themselves without relying on bank loans.

The goal is really to have a cheaper source of funding, and on that basis, we need to have offerings that are faster, cheaper and just way more straightforward.

DLT is a big promise of that and that can only come about if you can have really all the different features that you can have in a traditional bond market. What I'm referring to here is the collateralization of these digital bonds. It's

great to hold, as an investor, EIB debt or debt from the IADB or even from the Luxembourg government that has just issued one of the first digital bonds issued by a sovereign in Europe. What you need to do then is to be able to ensure that you can repo these very specific instruments and then get additional yields if you're an investor.

That's a key piece when you talk about interoperability. What it means for me is that you're able to do different things with these bonds to get maximum yield on these instruments. That's what I'm excited about. And we know that the European Central Bank is looking at potentially amending their guidelines and their framework to ensure that digital bonds—ie bonds not necessarily recorded via a traditional clearing system—can also be eligible for a central bank repo.

Once we have that, that's going to be extremely powerful for the market as a whole and will really drive demand to hold these assets because then it would be faster and cheaper to issue and to hold that debt, and then repo it and get additional yields.

Once that happens, we can say all the pieces of the puzzle have been met.

This is something that really excites me, excites my clients and also makes the overall framework very exciting.

So, with payment mechanics and the use of smart contracts to have instant repos, say on a Sunday evening when all the markets are closed, just to really leverage on an opportunistic trade, this is something that's going to really maximize the use of capital markets in Europe and truly serve as a lever to enable economic growth.

RORY COPELAND

Thank you so much, Philippe, Agnes and Jodi for giving us such a broad overview of the opportunities in the digital bond markets in your jurisdictions, and really as representatives of the growth in this area globally. We've heard about the speed of legal and regulatory change that underpins this growth and the momentum which we have going forward. There's so much to be excited about here.

Thank you again and thank you to our audience for joining us.

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