



# Real-Time Payments Economic Impact and Financial Inclusion

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A Cebr report for ACI Worldwide  
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# About



- ACI Worldwide is pleased to present the definitive view of real-time payments globally. ACI's Prime Time for Real-Time report looks at the growth and impact of real-time payments worldwide and is now in its third edition. For the first time, proprietary research from Cebr provides an unprecedented view of the economic benefits stimulated by real-time payments. For further information about ACI Worldwide please visit <https://www.aciworldwide.com/>
- For over 30 years the Centre for Economics and Business Research (Cebr) has supplied independent economic forecasting and analysis to hundreds of private firms and public organisations. Our Economic Advisory team specialises in economic impact assessments, having advised several government departments as well as FTSE and multi-national firms on a range of topics. Cebr's Forecasting team delivers award-winning forecasts of the UK and global economies, helping our clients stay ahead of the game in anticipating future economic developments. For further information about Cebr please visit <https://cebr.com/>.



# Executive Summary



# Executive Summary

## What are real-time payments?

Real-time payments refer to payment systems that can offer instantaneous transfer of funds at any time. Payment systems enable the smooth connection of funds between buyers and sellers, and real-time payment are a disruptive technology in this space with the potential to revolutionise the way that funds are circulated across the economy, promoting economic growth and productivity improvements, prerequisites to elevating living standards, while also supporting in enhanced financial inclusion.

## How do they create economic and broader social advantages?

Key channels through which instant payments can stimulate economic gains are:

- Improving the efficiency and reducing the costs of the payment infrastructure and wider financial system;
- Unlocking working capital and reducing 'float' times; and
- Supporting the formalisation of economic activity that traditionally occurs beyond the jurisdiction of formal institutional frameworks, through reducing cash usage.

In combination with this, instant payments can foster financial inclusion through reducing the cost, improving the efficiency, and enhancing the overall experience of consumers engaging with financial institutions. Improved financial inclusion has broader benefits for both individuals and the financial sector, which is a new theme explored within this report.

## Methodological Framework

Section 1 of this report contains an update to the a project initially conducted in 2022 with 30 countries, focusing on economic impacts. This updated analysis covers forty countries over three stages:

- A bottom-up estimation of the net efficiency savings in 2023 from the adoption of real-time payments system for businesses and consumers;
- The estimation of the macroeconomic impacts in 2023 as a result of the agent-level efficiency savings; and
- A forecast of the benefits to 2028 for businesses and consumers, and at the aggregate macroeconomic level.

Section 2 explores for the first time, the relationship between instant payments and financial inclusion. Our analysis finds an empirical link between increased volumes of real-time payment and a rise in financial inclusion in a dataset covering 48 countries from 2011-2021.

## Outputs of the study

The final outputs of Section 1 are two-fold. Firstly, a bottom-up model for businesses and consumers presents the net efficiency savings from the adoption of real-time payments in each country. We present this as a dollar figure. Then a macroeconomic impact framework is leveraged to estimate the total economic impact in each country that is supported by real-time payments. We present this as a dollar figure, as a percentage share of GDP, and as an equivalent jobs figure.

The final outputs of Section 2 are also two-fold. Firstly, we present country specific projections for the number of newly banked individuals expected by 2028, estimated based on forecasted changes in the payment mix. The study finds an empirical link between increased volumes of real-time payments and a rise in financial inclusion across the majority of the countries, with this relationship strongest amongst younger, female and lower income individuals. Secondly, customer lifetime value estimates inform modelling of impacts to the aggregate 'bottom-line' benefit to financial institutions, following the increase in the customer base.

**\$164.0 billion**

scale of GDP supported in 2023 by real-time payments across the 40 countries observed.

Based on 2023 real-time payment utilisation, this represented 6.1 % of the maximum attainable macroeconomic benefit.

**\$285.8 billion**

scale of GDP supported in 2028 by real-time payments across the 40 countries observed.

Based on 2028 real-time payment forecasts, this represents 9.0% of the maximum attainable macroeconomic benefit.

**\$345.3 billion**

aggregate impact to the bottom lines of financial institutions across the 28 countries analysed in section 2 by 2028.

Based on 2028 real-time and electronic payments forecast

### Top 5 Real-Time Markets

**India, Brazil, China, Thailand, Mexico**

Business and consumer level benefits:

2023	2028
\$99.6 billion	\$199.7 billion

Formal GDP Supported by Real-Time:

2023	2028
\$114.6 billion	\$188.1 billion

equivalent to 0.43% of the combined GDP of the 5 countries, or the equivalent output of 10,182,258 workers across the five countries

equivalent to 0.56% of the combined GDP of the 5 countries, or the equivalent output of 13,178,749 workers across the five countries

### Leading 5 Developed Markets

**USA, Canada, UK, France, Germany**

Business and consumer level benefits:

2023	2028
\$2.9 billion	\$8.1 billion

Formal GDP Supported by Real-Time:

2023	2028
\$9.7 billion	\$17.7 billion

equivalent to 0.03% of the combined GDP of the 5 countries, or the equivalent output of 90,239 workers across the five countries

equivalent to 0.04% of the combined GDP of the 5 countries, or the equivalent output of 144,869 workers across the five countries

### Top 5 financial inclusion uplift markets

**Pakistan, Philippines, India, China, Nigeria**

Profit opportunity for financial institutions:

2021 - 2028
\$288 billion

Financial inclusion uplift:

2021 - 2028
138 million

equivalent to 4.1% of the total population of the 5 countries.



# Glossary

- **Payment System Cost**
  - In this study, the payment system costs take into account not only the direct costs of making payments (e.g. bank account fees or ATM withdrawal charges), but also the wider indirect or social costs (e.g. shoe-leather costs or central banks costs in producing and processing banknotes).
- **Payment Float**
  - The inefficiencies that result from money being locked in the financial system as payments between two parties wait to be fully processed.
- **Cost of Failed Transactions**
  - The wider costs associated with failed transactions. A failed transaction incurs a cost due to three main channels: The cost of fees that individuals and organisations incur from a payment failing; the labour costs per organisation for repairing a failed payment; and the costs that are associated with lost business through consumer attrition or churn.
- **Total Agent-Level Impacts**
  - The sum of the efficiency savings for businesses and consumers. This comprises of the country-specific gains across the three channels: the payment system, the payment float, and failed transactions.
- **Informal Economy**
  - As per the IMF, the informal economy represents the “illegal activities and unreported income from the production of legal goods and services, either from monetary or barter transactions, that would be taxable were they reported to the tax authorities.” It should be noted that throughout this report, we use the terms ‘informal economy’ and ‘shadow economy’ interchangeably.
- **Macroeconomic Impact**
  - The aggregate macroeconomic impact is defined as the magnitude of economic output in each country that is supported by real-time payments. We present this as a dollar figure, as a percentage share of GDP, and as an equivalent jobs figure.
- **Equivalent Jobs Supported**
  - The final metric of the macroeconomic impact is an equivalent jobs figure. This represents the number of employees required to produce the equivalent level of economic output that is supported by real-time payments in each country, given country-specific average productivity rates.
- **Realised Benefits**
  - The estimates for the economic impacts of real-time payments in 2021 and 2026, per real-time’s current and forecasted share of the payment mix in the respective years.
- **Maximum Additional Benefits**
  - The maximum additional benefits are the estimates for the economic impacts of real-time payments in 2021 and 2026, based upon a hypothetical counterfactual scenario of 100% real-time payment utilisation across the payment mix in each country.
- **Profit opportunity**
  - The potential profit opportunity due to an anticipated enlarged customer base. Also referred to in this report as the ‘bottom-line’ opportunity.
- **Financial inclusion**
  - The provision of financial services to all individuals and businesses, particularly those marginalized or underserved. In this report we have proxied financial inclusion with share of the adult population (or adult population of a subgroup) that has a bank account at a registered financial institution.



# Introduction



# The economic role and value of payments systems

- Payment systems enable the smooth connection of funds between buyers and sellers. They deliver the liquidity required for economic activities to take place and hence are critically important to the functioning of the increasingly interconnected global economy. An efficient payment system can play a central role in promoting economic growth and delivering long-term productivity improvements which are prerequisites to elevating living standards.
- Payment systems are often regarded as one of the most important social infrastructures. [1] In this report we assess a range of the benefits of real-time that manifest for both businesses and consumers, as well as at the aggregate macroeconomic level.
- Real-time payments have the potential to revolutionise the way that funds are circulated across the economy by delivering payments near instantaneously. This process allows all parties act with greater confidence following each transaction, since payments are synchronous between payer and beneficiary and are either irrevocably made or rejected.
- The key areas that instant payments can stimulate economic gains are through improving the efficiency and reducing the costs of the payment infrastructure and wider financial system; through unlocking working capital and reducing 'float' times; and through formalising swathes of economic activity that traditionally occurs beyond the jurisdiction of formal institutional frameworks.
- Real-time payments also have the potential to foster greater financial inclusion. In addition to the financial benefits of an expanded customer base for financial institutions, the extension of access to financial services can be bring wider social benefits and economic efficiencies. This is due to the potential of an improved payments infrastructure to enhance accessibility, to provide mechanisms to improve cashflow and liquidity constraints, and for wider behavioural incentives. These are discussed further, later in this report.
- This report contains two sections. In the first, we estimate the economic impact of this technology and conclude that today there are significant benefits for both businesses and consumers, and at the economy-wide level as a result of real-time payments. The second focuses on the potential uplift in financial inclusion that the adoption of real-time payments may bring. We refer to these sections as the 'Section 1 - Economic Impact' section and 'Section 2 - Financial Inclusion impacts' respectively. This delineation is a result of our modular approach to the analysis, as alluded to above financial inclusion uplifts will likely engender second order economic impacts beyond the channels specifically considered in the Section 1 analysis.
- Section 1 of our research adds to the literature by estimating the economic impact of real-time payments in 40 country-specific scenarios. Impacts are quantified under two distinct lenses. Firstly, we estimate the realised benefits in each country based on current real-time adoption rates. Secondly, we hypothesise the scale of the additional untapped benefits that would be attainable if all payments took place instantaneously.
- Our analysis is conducted for each country in 2023 and 2028 (where data is available). There is no one-size-fits-all approach and by taking into account the unique structural characteristics of each country within the sample, the results reflect the heterogenous nature of how real-time payments ultimately manifest into economic impacts.
- Section 2 seeks to verify and assess the magnitude of the empirical link between real-time payments use and an increase in financial inclusion. Theory for why this may be the case is set out, before the relationship informed by the dataset on financial inclusion in 48 countries from 2011-2021 is presented. Ultimately, for each country we estimate the increase in the banked share of the population and the wider opportunity this presents for the financial services sector in each market.
- We also explore how this relationship varies between different groups of the population, finding interesting differentiation between age ranges, genders and income levels.
- At the outset, it is important to stress that measuring the economic and financial inclusion impacts of real-time payments is a broad and challenging exercise. While we have identified and modelled some of the key channels by which real-time payments support economic impacts on a best effort basis, we suspect that a non-zero share of the total benefits available will manifest through additional pathways not specifically analysed in this report. The extension of our analysis relative to prior studies to include the benefits of financial inclusion is an attempt to mitigate this, however this report is still unlikely to be fully exhaustive.
- Our analysis throughout this report, is carried out through a purely economic lens. The cost or efficiency savings, along with benefits via financial inclusion that we estimate suggest that there are some unequivocal net benefits for an economy that can be achieved through utilising real-time payments. We do not however suggest that there is no longer a place for non-instant electronic payments or paper-based payments going forward.
- In specific circumstances, there will likely always remain advantages of different payment systems. Equally, an immediate radical shift in the payment mix to this extreme scenario would likely bring significant disruptive transition costs not modelled in this report. Over time, we anticipate country-specific dynamics and relative advantages and disadvantages of different payment types, will shape the optimal payment mix.





# Real-time payments and disruptive technology

- The rise of real-time payments presents itself as this generation's leap forwards for payment systems. The key advancement of this technology is that payment systems providers can offer instantaneous transfers of funds at any time for all payment categories from P2P to B2B.
- Before presenting our analysis in detail, it is important to consider how real-time payments might challenge the payment systems status quo, and whether one can learn from lessons of the past. In essence, real-time payments represent a classic example of disruptive technology. This is a technology that affects the normal operation of a market or sector, displacing older established products. In this case, over time real-time payments have the potential to displace significant activity otherwise occurring through paper-based instruments, or slower electronic transactions.
- Similarly, the last half century, a major step change in the context of increased automation and the financial system was the introduction of the ATM, or automatic teller machine. As these were established, there was a concern that bank teller jobs would be replaced.
- This is a frequent concern with disruptive technology, and indeed one that has been discussed significantly in the context of real-time payments and the consideration of their economic impacts, as a part of this project. One might think that new technology will always replace and substitute the traditional service provider, in this case human jobs.
- However, a key factor that is often overlooked is the complementarity between incumbent processes and the new technology. For example, when new technology allows for labour to be more productive in the same job by having some of the more repetitive tasks automated, they can focus on the more skilled, value-adding aspects of that job.
- Supporting this, data from the USA shows that following the introduction and rapid expansion of ATM machines in the mid-1990s, bank teller jobs in fact increased. Since 2000, this growth has slightly outstripped that of the wider labour force. [1]
- The ATM reduced the average number of tellers required to operate a bank branch, making each branch cheaper to operate overall. This meant that the demand for branch offices increased, resulting in the derived demand for bank tellers to increase as a result. This derived demand increased to such an extent following the labour-saving introduction of the ATM that job losses were offset, and a greater number of jobs overall were created.
- This is a more general pattern with similar cases occurring in the legal sector following the introduction of electronic discovery software for doing discovery of documents in lawsuits. Here, the number of paralegals increased rather than decreased.
- In the context of real-time payments, if certain tasks within the overall payment provision service can be automated through instant payments, this will leave greater resources available to be deployed where non-instant payments add the most value.
- An example of this might be for fraud prevention. As their name suggests, instant payments must be cleared within seconds, and hence fraud checks must be streamlined to accommodate this. A potential consequence of this is an increase in the number of fraudulent transactions that do not get flagged. However, real-time payments could lead to an overall reduction in fraud incidence even if intrinsically, the real-time infrastructure is less effective at catching fraudulent transactions compared to non-instant, electronic alternatives. This result can manifest if greater automation frees up resources from other areas of the wider payment system to work on the prevention of fraud. Ultimately fraud incidence drops, resulting in an unequivocal net societal benefit.
- Alternatively, labour can be redeployed in a different sector based upon the most efficient use. Adam Smith's classical economic theory of the 'invisible hand' suggests that these resources will naturally be reallocated to the industry in which they can be most efficient. On a net economy-wide basis, this complimentary process can augment demand for skilled labour, elevate productivity, increase earnings, and ultimately raise living standards.



Section 1

## **Economic Impacts:**

### Scope and Methodology

# Scope and modelling framework

- The section is designed with an objective to estimate the economic impact of adopting real-time payment systems, assessing forty countries across six global regions.
- To perform the economic impact assessment of real-time payments, a comprehensive methodology is designed with a bottom-up approach. In that, the assessment first identifies and estimates the various channels of costs savings from introducing real-time payments in the current payment environment of each economy. Secondly, it quantifies the impact of the total savings across the whole economy in terms of support to national output, and finally extrapolates the benefits by five years into the future to showcase the increased stream of benefits in 2028.
- The study covers analysis on forty countries representing the six major global regions. There are eleven countries from Europe, eight countries spanning the Americas, three from the African continent, and twelve countries across the broad Asia-Pacific region. With the exception of Russia, the analysis has full coverage of the G20 member nations.
- The three stages of the overall analysis include –
  - i. A bottom-up estimation of the net efficiency savings in 2023 from the adoption of real-time payments system for businesses and consumers;
  - ii. The estimation of the macroeconomic impacts as a result of the agent-level efficiency savings; and
  - iii. A forecast of the benefits to 2028 for businesses and consumers, and at the aggregate macroeconomic level.
- For the model estimating the economic impacts of real-time payments in 2023 and 2028, we use transaction volume and transaction value data for each component of the payment mix. Underpinning the study, we leverage data provided to us from Global Data on payment volumes and values for each country, disaggregated at the payment instrument level. [1]
- In terms of the payment mix for each country, the analysis going forward assesses three distinct payment instruments: real-time payments, traditional electronic (non-instant) payments, and paper-based payments.
- To estimate the counterfactual scenario of 0% instant payments, in all channels of this model we estimate a 'new' payment mix that is based on the distribution of electronic (non-instant) payments versus paper-based payments. This allows us to produce an estimate for how the transactions that are currently undertaken through real-time instruments would likely have been made in the absence of this technology. Here, we distribute the volume of real-time transactions proportionate to the current non-instant electronic versus paper payment mix, while applying the average real-time transaction value to those transactions which ensures that the overall, newly estimated payment system with zero instant payments has the same number of transactions and the same total transaction value.
- To estimate the potential maximum *additional* benefit that real-time payments present, we construct a counterfactual framework within each country that estimates the efficiency savings and wider benefits associated with hypothetical 100% real-time utilisation.
- It must be stressed that full real-time adoption is not a realistic or likely scenario for any country in the near term future, even for those with the most advanced payment systems. In general, while we are seeing a shift away from paper-based instruments, based on the information regarding the payment landscape today, full real-time adoption is still not realistic for the timeframe assessed within this study. Results should be considered indicative of the potential scale of benefits, rather than any form of prediction or forecast.
- The framework for estimating the total cost savings (or benefits) for firms and consumers comprises of three channels:
  - Channel 1: the adoption of real-time payments technology will lead to a change (typically a reduction) in the unit costs per transaction.
  - Channel 2: the adoption will suffice in reducing the 'payment float' – in other words, the reducing the funds locked in the payment system after a payment is issued but before it is settled.
  - Channel 3: the reduction in the rate of failed transactions as a direct result of real-time payment usage.
- **The rest of this section elaborates on the methodology for the reader including the technical details for the components of the three stages of the overall analysis, (i), (ii), and (iii).**

[1] Note: The exception to this is that GlobalData did not have an estimate for the 2023 payment mix of Kuwait, Qatar and Vietnam. As a result, the payment mix was estimated by Cebr using transaction data from the State Bank of each countries. In addition, there was no capacity to forecast the payment mix of these nations robustly to 2028, hence the analysis extends to 2023 only.

## (i) Channel 1 – Net impact on total transaction costs across the payment system

- All payments involve a transfer of wealth between payers and payees. For transactions occurring through the financial system, the processing of these payments does not come without a cost. Examples of these costs include physical infrastructure costs such as buildings, bank branches, and ATM networks; resources used across the tracking, clearing, settlement, and correcting processes; hardware and software for the computer systems used to support the payment infrastructure; and labour costs needed to support the payment infrastructure such as bank tellers or cash-in-transit services.
- Such costs occur on either a marginal basis or on a fixed basis. Typically, paper-based payments have a higher unit cost per transaction (particularly with larger transaction values) because there are more manual inputs that are required to complete each transaction relative to electronic payments that typically have a more automated process with low variable costs. [1]
- The data points used for this channel are predominantly via the academic literature. To estimate the unit costs per transaction, we use a best-fit relationship between transaction volumes per capita and unit costs per transaction that was produced by Deloitte. [1] This model is based on a review of the literature looking back to 1993, assessing volumes per capita and unit payment system cost estimates in order to produce a sample of data points. From this, a best-fit relationship is estimated for each payment instrument.
- Therefore, by applying the payment volume data provided by GlobalData, and cross-referencing this with population estimates for each country, we are able to estimate transaction volumes per capita for each country to provide a bespoke estimate for the unit cost of each transaction for each instrument in the payment mix. This unit cost is applied to the respective volume of transactions via each instrument to find an estimate for the total cost of transactions across the payment system in each country.
- It is crucial to note that this methodology captures not only the direct costs of making a transaction, but also the indirect or social costs. These indirect costs are the net sum of all resource costs borne by the payment system e.g., beyond the direct cost of processing payments at a bank, further costs that must be considered are the opportunity costs of the time that it takes an individual to physically obtain cash or the time taken to perform credit transfers and direct debits, central banks costs in producing and processing banknotes, and retail bank costs of cash deposits and disbursements. [2] In summary, it is important that a holistic approach is taken here regarding the productivity boost that real-time payments can induce through costs per transaction, over and above the fees or charges levied onto customers.
- At present, there is a dearth of evidence on the unit cost per transaction for instant payments. There is some ambiguity as to whether real-time payments always result in lower unit costs than non-instant electronic payments. This is because there are certain elements that lower costs (such as more efficient processing and improved data) while others raise unit costs (such as the requirement to run the service 24/7/365). [1]
- As a result, the ultimate cost differential between instant and non-instant electronic payments is uncertain and hence, the most pragmatic assumption to make here is that the unit costs here are equivalent. **The impact of real-time payments through net costs of the payment system, is therefore primarily determined by the fact that real-time payments displace and reduce the volume of transactions that would have otherwise occurred via paper-based instruments.**

[1] Deloitte. (2019). "[Economic impact of real-time payments.](#)"

[2] Krüger, M. and Seitz, F. (2014). "[Costs and benefits of cash and cashless payment instruments.](#)"

## (i) Channel 2 – Reduction in the opportunity cost associated with the payment float

- The payment system float is the term used for inefficiencies in the payment system that result from time spent waiting for payments to be fully processed. Generally, payment systems involve two main processes: clearing and settlement. Clearing is the stage in the process relating to the transfer of instructions for each individual payment, while settlement is the actual transfer of the funds between the payor and the payee.
- With real-time payments, these processes are synchronised and are actioned simultaneously such that within seconds, a payment is either irrevocably made or it is rejected. However, with non-instant payments (electronic or otherwise), there is a delay between funds being debited from the payer and subsequently credited to the payee while the back-end clearing and settlement processes take place. This delay – the payment float – causes money to be locked in the financial system, beyond the scope of the real economy, placing a limiting factor on economic activity. Therefore, real-time payments can reduce the amount of time that money is locked in the financial system, thereby generating benefits through increased economic activity by businesses as well as consumers.
- We estimate the positive impact that real-time payments can have across the economy by calculating the reduction in the total opportunity cost that is associated with the length of time that money is locked in the financial system due to non-instant payments.
- The concept of opportunity cost is commonly used in microeconomic theory to place a value on what you give up when you make any decision. For example, a commuter might buy a \$5 coffee every day on her way to work. However, every day she is explicitly or implicitly giving up the opportunity to spend that \$5 in a different way. An explicit alternative might be to spend \$5 on a sandwich rather than a drink, while an implicit alternative might be to save the money instead, putting aside \$1,300 per year to go on a holiday or to spend on a new TV. This is an illustrative example of the fact that all decisions, whether they involve money or not, have costs in the short-run and long run that are associated with alternative options.
- In the context of real-time payments, when a transaction takes place via a non-instant payment method, the opportunity cost is the economic activity that could have been generated by that money if it was not locked in the financial system.
- The loss associated with each individual transaction are small as non-instant payment clear after a small number of working days, on average. However, when these modest costs are aggregated up to an economy wide level, the annual opportunity costs have the potential to become substantial.
- Real-time payments will reduce the amount of money that is kept out of the real economy, unlocking greater working capital, and thereby generating lower total opportunity costs associated with the overall payment system.
- To estimate the return on this capital, in line with traditional economics and accounting methods, we estimate the time value of money on each working day. This involves calculating the future value of each transaction by discounting its present value with the prevailing interest rate in each country, over the period of time that the money is stuck in the financial system (known as the float time or clearing time). The difference between the future and present values is the opportunity cost. This is calculated per working day and subsequently scaled up to produce an annual cost.
- The data points used for this channel are annual interest rates and average clearing time data associated with each payment method. Data for interest rates was sourced from central banks, while the latter was sourced either directly from the central bank or from commercial banks for some countries in which data gaps persisted. 2023 interest rate data was not yet complete by the time of the analysis, therefore we used the average of monthly interest rates in 2023. In most cases, this was already confirmed until August, in some cases until September or October. We use the real interest rate in each country to estimate the real return on the locked capital. In the context of 2023, there have been high levels of inflation observed as countries still recover from the effects of Covid-19 and the Ukrainian War, driven by factors such as rising fuel prices, global supply chain shortages, and the energy crisis. This results in the real interest rate for many countries turning negative, potentially penalising savers and stimulating expenditure. In this model, if the real interest rate is negative, we apply an assumption for the discount factor used to proxy the return on capital. In these cases, we apply a 1.0% real return on capital.

## (i) Channel 3 – Reduction in the wider costs associated with failed transactions

- The systems underpinning real-time payments have the capacity to reduce the number of failed transactions – theoretically to zero – and hence reduce the associated costs with such failed transactions.
- Payments can fail for reasons such as due to errors in payment detail inputs, data entry issues due to human error, or poor reference data and validation tools. A failed transaction incurs a cost due to three main channels:
  - The cost of fees that individuals and organisations incur from a payment failing;
  - The labour costs per organisation for repairing a failed payment; and
  - The costs that are associated with lost business through consumer attrition or churn.
- We assume that instant payments have a potential for a 0% failure rate. The rationale for this is that real-time payments require a central infrastructure with details of both the payor and the payee's banks. Mistakes can be anticipated before payments occur through technologies such as Confirmation of Payee [1], verifying to the payor that they have, for example, entered the payee details accurately before funds are transferred. This can remove the potential for human error and has the *potential* to reduce all payment failures within the banking system to zero.
- The availability of relevant data regarding bilateral (or otherwise) payment system failure rates is limited. The data points used for this channel are leveraged from a review of the quantitative literature on the topic, providing estimates for the cost of failed payments estimates. All transactions, regardless of instrument, have the capacity to fail with varying probabilities. Accurately and robustly estimating the likelihoods and values of these potential outcomes is highly problematic. So based on the available data, for each region we estimate an average expected cost per transaction that implicitly bakes in the probability that the payment will fail and the associated cost of that payment failing. We can do this by triangulating the known data points that we have from GlobalData and LexisNexis, ultimately producing an expected cost of failure per transaction.
- LexisNexis estimated that the total cost of failed payments globally in 2020 was \$118.5 billion, a figure that encapsulated bank fees, labour costs, and crucially the costs of lost business outlined above. [2] We are leveraging their estimates of this total cost, disaggregated on a continental level. This is an important step to make because the relative importance of each factor making up total costs is heterogeneous between regions. For example, while bank fees are relatively similar globally, in the Middle East and Africa (MEA), fees account for 75% of the region's cost compared to only 58% in Europe. The driving factor behind this is that average salaries, and hence labour costs, are greater in Europe by comparison. This results in 34% of Europe's total cost being via labour costs compared to only 17% in MEA. [3] This data is outlined in the table on the following page.
- The current impact of real-time payments is estimated as the difference between the current cost and the cost if real-time payments had the same assumed failure rate as non-instant payment instruments.
- Regarding the potential, but currently untapped cost savings that could be achieved if all transactions were undertaken through real-time instruments, we assume that this could theoretically fall to zero with sufficiently advanced and well implemented payment system frameworks. Therefore, this figure is equal to the current estimated cost of failed payments in each country.

[1] Open Banking. (2022). "[Confirmation of Payee.](#)"

[2] LexisNexis. 2021. "True cost of failed payments."

[3] For completeness, the shares of labour costs out of the total regional cost for the Americas and APAC were 27% and 29%, respectively.

# (i) Channel 3 cont. – Reduction in the wider costs associated with failed transactions

- The LexisNexis report estimates global costs of failed payments via three channels: labour costs, customer attrition, and fees.
- Labour costs relate to the human resources that are employed for the purposes of fixing failed payments that could otherwise be deployed in an alternative industry, generating more value adding products and services.
- Consumer attrition refers to the lost revenue to businesses due to customers that experience a failed payment and subsequently choose not to make a purchase. This lost expenditure represents a decline in overall consumption as a direct result of payment failures. The cost associated with attrition contributes to a wider macroeconomic impact if the consumption is absolutely lost due to a failed transaction. However, attrition for a specific business may not necessarily have a negative impact on total consumer spending, because the loss of consumption of a good/service due to a failed transaction may simply be substituted to an alternative merchant.
- Fees are penalty payments that are payable by customers as well as payment providers as a result of failed transactions, partially reflecting the costs associated with the inefficiencies created by payment failures.
- In the following data table, we present results for the efficiency savings that are generated by real-time payments through reduced failed transactions with all three components included as we understand that instant payments can prompt a reduction in the gross costs of payment failures, leading to efficiency savings for firms and consumers. However, when translating these costs to a wider macroeconomic benefit for each country, the most appropriate methodology does not incorporate the sum at face value, in particular the fees and customer attrition components.
- The figures were updated to the 2023 costs based on holistic regional and worldwide inflation rates in order to estimate the current benefits of real-time payment via the reduction in failed transactions more accurately.

**Costs of failed payments by region and cost component, \$ million and %**

Region	Labour Costs		Customer Attrition		Fees		Total	
	Cost	% of Region	Cost	% of Region	Cost	% of Region	Cost	% of Region
Asia-Pacific	\$30,400	62%	\$14,200	29%	\$4,400	9%	\$49,000	100%
Europe	\$25,900	58%	\$15,200	34%	\$3,600	8%	\$44,600	100%
Americas	\$24,100	63%	\$10,300	27%	\$3,800	10%	\$38,300	100%
MEA	\$2,900	75%	\$600	17%	\$300	8%	\$3,800	100%
<b>Total</b>	<b>\$83,300</b>	<b>61%</b>	<b>\$40,400</b>	<b>30%</b>	<b>\$12,100</b>	<b>9%</b>	<b>\$135,700</b>	<b>100%</b>

Source: LexisNexis, Cebr analysis

## (ii) Constructing the Macroeconomic Impact Framework for Real-Time Payments

- Once the net efficiency savings for firms and consumers are estimated, based on both 2023 real-time adoption rates and 100% instant payment adoption, we can integrate these results into the macroeconomic impact framework to estimate the country-wide benefits of real-time payments.
- **The final output of the macroeconomic impact framework is the total economic impact in each country that is supported by real-time payments. We present this as a dollar figure, as a percentage share of GDP, and as an equivalent jobs figure [1].**
- Translating agent-level benefits to aggregate economy impacts requires prudent handling because some components of the agent-level model should not be incorporated at face value. Critically, we only include efficiency savings that generate *additional* final economic output. Key instances where benefits from the founding model are omitted from the macroeconomic impact framework are net payment system costs and portions of the failed payments channel.
- Firstly, differences in net payment system costs are excluded because although the overall cost associated with the effective functioning of the payment system is less, the counterfactual payment system is still responsible for generating significant value-adding economic activity.
- Real-time transactions unequivocally improve the efficiency of certain aspects of the holistic payments infrastructure. However, where there is ambiguity, is the reallocation of these resources (labour, capital, time) and how these will ultimately convert into an overall net increase of final economic output in each country. This is because we do not have evidence to suggest whether the redeployment of those resources will be more or less productive (compared to their current allocation) once they are reallocated elsewhere in the economy.
- There is definitely a positive impact; a more efficient payments system frees up resources to partake in other value-adding activity. However, the magnitude of this impact is challenging to identify with a high degree of certainty. Therefore, these impacts feature as sizeable efficiency savings for firms and consumers alike, but are not included in the macroeconomic impact framework.
- With regards to certain aspects of the failed payments channel, again not all will stimulate net gains to the final output of each economy. For instance, it is ambiguous as to whether or not a reduction in fees (i.e. penalty payments that are payable by customers and payment providers as a result of failed transactions) will manifest into economy-wide gains.
- On one hand, a reduction in fees payable by consumers leads to greater disposable income for consumption elsewhere in the economy, on value-adding goods and services. However, where fees contribute to overall revenues of payment providers, this implies that fees could paradoxically be considered a revenue-generating component of business activity. The loss of these fees could be considered a loss to financial sector output, even if strictly this is an inefficient use of resources, which could instead be reallocated to other productive means.
- Finally, we do not include the customer attrition component of the total failed transaction costs in the macroeconomic impact framework due to an ambiguity of its aggregate macroeconomic impact.
- Customer attrition refers to the loss of consumers for a business. One of the causes of this is due to a failed payment. If a transaction fails at a particular vendor, this poor experience may cause a consumer to either switch to a separate seller, or leave the market entirely. The figure in this report represents substitution of consumer spending between suppliers, rather than ultimately lost consumption. As a result, at the aggregate economy level, there is not necessarily a decrease in net spending by consumers. Hence, a reduction of failed payments may not contribute to greater final output through reducing customer attrition. Instead, the positive impact of reduced failed payments manifests as an efficiency saving for businesses that are no longer required to recapture lost consumers as a result of failed transactions.
- **To summarise, the channels of the agent-level model that are included in the macroeconomic impact framework are the payment float impacts, the labour costs share of the failed payments impact, and finally the impact that real-time payments have in formalising segments of the shadow economy.** This final mechanism is explained in full on the following slide.

[1] Note: This should be interpreted as the equivalent number of workers (at the mean productivity rate) that are required to produce a level of national output equal to the annual economic impact associated with real-time payments.



## (ii) Increased formal economic activity due to a reduction in the shadow economy

- Currently, there is lack of comprehensive and credible data on whether instant payments reduce all types of fraudulent activity. However, there is some indication that these payment types have a positive effect on reducing illicit activity in the economy because they have the potential to replace cash-based transactions. Within the analysis, we consider this by looking at an often unreported segment of the economy, known as the 'shadow economy', within which transactions are typically cash dominant.
- Cash payments serve as an instantaneous transfer of wealth between two parties. Electronic but non-instantaneous payments have a lag between the exchange of funds among the payer and the payee, whereas real-time payments can be considered as a substitute payment method due to the instantaneous transfer of money.
- The International Monetary Fund defines the 'shadow economy' to represent "illegal activities and unreported income from the production of legal goods and services, either from monetary or barter transactions, that would be taxable were they reported to the tax authorities." [1] It should be noted that throughout this report, we use the terms 'informal economy' and 'shadow economy' interchangeably. Research shows that a reduction in the cash share of the economy leads to reduction in the shadow economy. [2] We use the academic evidence as a basis to build a model estimating the costs savings from this channel.
- The study by Schneider establishes that a one percent decrease in the cash share in the total payment mix in the economy leads to a 0.075% decrease in the shadow economy. [2] Using this relationship, we estimate the current impact that real-time payments have on the informal economy due to their contribution towards reducing cash usage. We subsequently re-evaluate the size of the shadow economy and find a new estimate for the additional economic activity that may have been occurring illicitly were it not for real-time payments. The difference between these two estimates serves as the share of each country's GDP that real-time payments are responsible for formalising. Note that we refer to this as 'formalising', as we are considering activity which otherwise still would occur, but in the informal sector, as opposed to in reported economic statistics.
- Regarding a payment mix with 100% real-time payments, it follows that there would be no cash payments. Schneider also finds that if cash instruments drop out of the payment mix entirely, then the shadow economy will fall by 20.1%. Therefore, following the same rationale, we can find a new implied size of the informal economy and estimate the additional economic activity that could be formalised through complete adoption of real-time payments in 2023.
- This channel is directly incorporated into the analysis as part of the macroeconomic impact framework because it is an aspect of real-time payments that formalises additional value-adding activity and thus directly contributes to formal aggregate economic output.
- To estimate the size of the informal economy in each country, we use timeseries data from the Centre for Applied Macroeconomic Analysis [3] which includes measures of informality over the period 1990-2018 from which we are able to forecast to 2023 and 2028.
- Finally, as an additional step in the analysis, we further estimate the value of exchequer revenues that real-time payments are responsible for formalising. This is done for the estimates of both current real-time adoption and complete real-time adoption in the payment mix. This is estimated by applying World Bank, IMF, and OECD estimates tax revenue to GDP ratios to each country. From this, we can produce an estimate for the addition to exchequer revenues that is associated with the formalisation of a portion of the shadow economy.
- Gross domestic product and tax revenue data is critical for estimating the impact of real-time payments in formalising informal economic activity. For this we use Cebr's in-house estimates of GDP by country in 2023 taken from our World Economic League Table (WELT) report for 2023 [4] which is underpinned by the IMF's World Economic Outlook database, as well as estimates published by the national statistics offices of each country published by the World Bank.

[1] IMF. (2002). "[Hiding in the shadows. The growth of the underground economy.](#)"

[2] Schneider, F. (2017). "[Restricting or Abolishing Cash: An Effective Instrument for Fighting the Shadow Economy, Crime and Terrorism?](#)"

[3] Elgin, C., Kose, M., Ohnsorge, F., and Yu, S. (2021). "[Understanding informality.](#)"

[4] Cebr. (2023). "[World Economic League Table 2023.](#)" 14<sup>th</sup> ed.

## (iii) Forecast of impacts to 2028 for the wider economy as well as for businesses and consumers

- The final component of the analysis involves forecasting the economic impacts with a five year time horizon to 2028.
- Regarding the framework for the bottom-up model of benefits for firms and consumers plus the macroeconomic benefits that are stimulated by the use of real-time payments, the mechanism for 2028 is symmetric to the modelling framework for 2023, as described in the previous slides in this section.
- There are, however, a few key differences with regards to the datapoints that underpin the 2028 forecast.
- Critically, the payment mix for each country is re-estimated, driving a significant proportion of the results. This data is based on forecasted adoption rates of real-time payments, plus changes in the proportions of electronic (non-instant) transactions and paper-based transactions making up the remainder of the overall payment mix within each country. All payment mix estimates – for both 2023 and 2028 – are provided by GlobalData. [1]
- In terms of the **agent-level model**, in the first channel (net impact on total transaction costs across the payment system) we apply the same structural equations to new transaction volume and population data. Therefore, the unit costs per transaction for each payment type do change nominally, but in real terms they are held constant between 2023 and 2028.
- This also applies in the third channel (reduction in the costs associated with failed transactions) as, on a per transaction basis, in real terms each transaction has the same expected cost of failure. Overall, we predict that the total global cost of failed transactions to increase in 2028 compared to 2023, but this is driven by the overall increase in the total number of transactions.
- Stepping back to the second channel (reduction in the opportunity cost associated with the payment float), real interest rates are held constant between 2023 and 2028. We do so because forecasting interest rates is notoriously inaccurate. Interest rates are a monetary policy tool which today are typically used to control inflation. How each country's economy evolves in the next five year will affect how interest rates change.
- We assume a 'no change' scenario in which interest rates are held constant across the two time periods to produce business and consumer impacts that are attributable to the forecasted developments to each country's payment mix, particularly the predicted growth in real-time transactions.
- As a result of these, the agent-level impacts are predominantly driven by the evolution of the payment mix in each country.
- For the **macroeconomic impact framework**, there are some key data points that differ between 2023 and 2028. One change is to the forecasted size of the shadow economy. We use timeseries data dating back to 1990 from the Centre for Applied Macroeconomic Analysis to approximate the 2028 estimates of informal output as a share of GDP in each country whilst maintaining directional trends over time. Furthermore, real GDP is forecasted to 2028 based on Cebr's World Economic League Table (WELT) report which affects the results in two ways.
  - Firstly, this is used to estimate the impact of real-time payments through increased formal economic activity due to a reduction in the shadow economy. The forecasted real GDP estimates are combined with the forecasted shadow economy sizes in each country as primary data inputs in this channel.
  - Secondly, when estimating the relative size of the macroeconomic impact in each country (which drives the calculation for the equivalent support of employment), real GDP must be adjusted appropriately to reflect total national output in 2028.

[1] Note: All payment mix estimates are provided by GlobalData with the exception of Kuwait, Qatar and Vietnam. As a result, the payment mix was estimated by Cebr using transaction data from the State Bank of each countries. In addition, there was no capacity to forecast the payment mix of these nations robustly to 2028, hence the analysis extends to 2023 only.



Section 1

## **Economic Impacts:**

## Findings



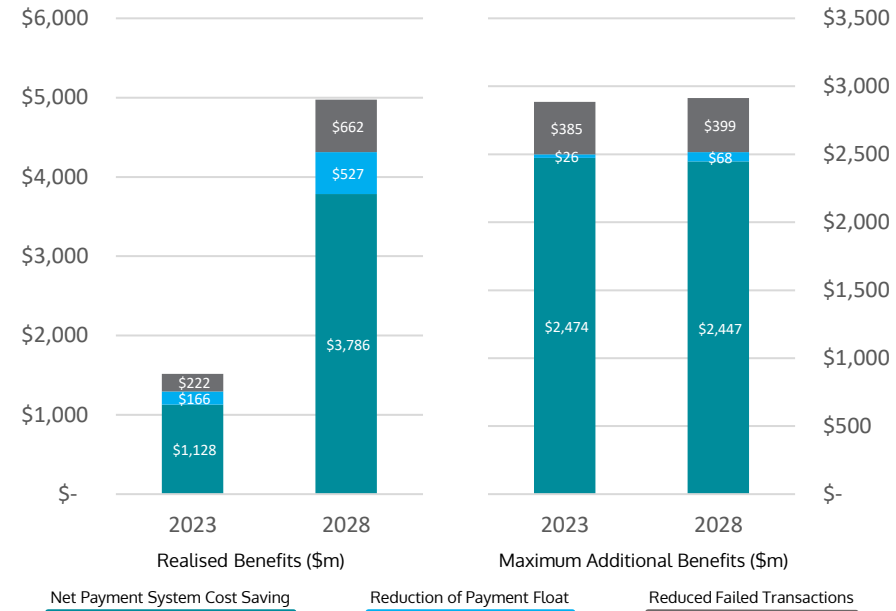
# Argentina

- Argentina is the second largest economy in South America. It is an upper-middle-income country, and ranked as the 33rd largest global economy in 2023 (Cebr World Economic League Table, 2023).
- In 2023, total efficiency savings for businesses and consumers, through the use of real-time payments, generated benefits worth \$1,516 million. This was led by the reduction in the payments system cost, accounting for 74% of this total. On a per transaction basis, real-time payments in Argentina in 2023 had a 21% lower average payment cost, compared to non-instant payments. Under current adoption rates of real-time payments, this represented a cost saving of \$1,128 million.
- This substantially increased benefit compared to in 2021 is driven by the fact that by 2023 the country has shifted from a predominantly paper-based payment mix (67.7% of all transactions) to a more balanced one (paper-based transactions now only account for 42.7% of all). Real-time payments accounted for 36.6% of all transactions.
- At the macroeconomic level, these benefits amounted to \$5,968 million in 2023 (0.94% of formal GDP), with the increase driven by real-time payments formalising \$5,743 million of shadow economy activity through reduced cash usage.
- It is estimated that the share of real-time transactions will be the dominant payment type by 2028, as 62.4% of them will be conducted by this method. At the business and

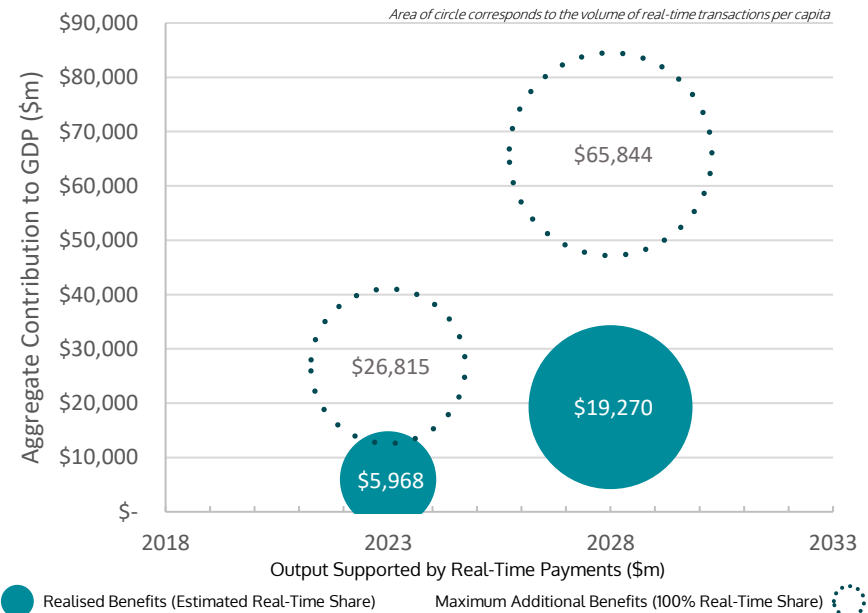
consumer level, net efficiency savings increase to \$4,975 million. Ultimately, the forecasted macroeconomic impact of real-time is estimated to be \$19,270 million of economic output (1.20% of formal Argentinian GDP) in 2028, equivalent to that produced by 252,515 workers, annually.

- The untapped benefits of adopting 100% real-time payments were estimated to yield potential additional savings of \$2,885 million for businesses and consumers in 2023, while the theoretical maximum level of additional economic output that real-time payments could have facilitated stood at \$26,815 million (4.0% of GDP) in the same year. Combining those additional benefits with the current benefits, 100% real-time payments utilisation could have brought a total benefit of \$4,401 million to consumers and benefits, and supported a total of \$32,784 million in Argentinian GDP.
- By 2028 the maximum additional benefits for businesses and consumers will rise to \$2,913 million, annually. This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate rising to \$65,844 million, or 3.9% of formal GDP.
- Between 2023 and 2028 we estimate that for Argentina, based on respective real-time adoption rates in each year, the realised share of the maximum attainable macroeconomic benefits rises from 18.2% to 22.6%.

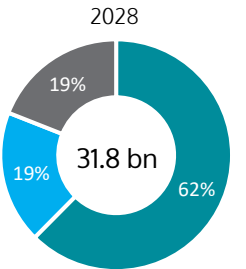
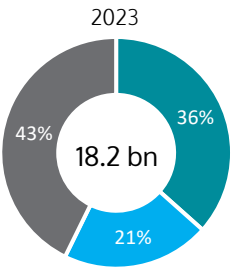
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

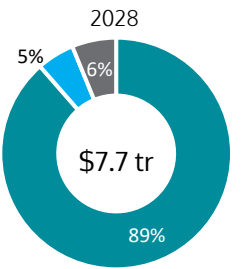
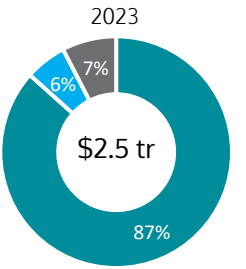


Payment Mix By Transaction Volume (bn)



- ⚡ Instant Payments
- 📄 Electronic (non-instant) Payments
- 📄 Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

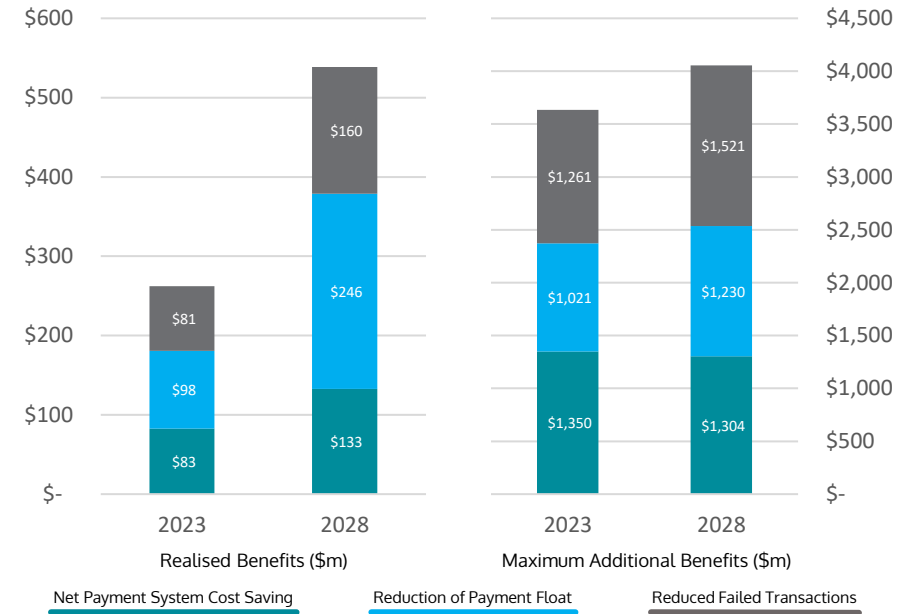




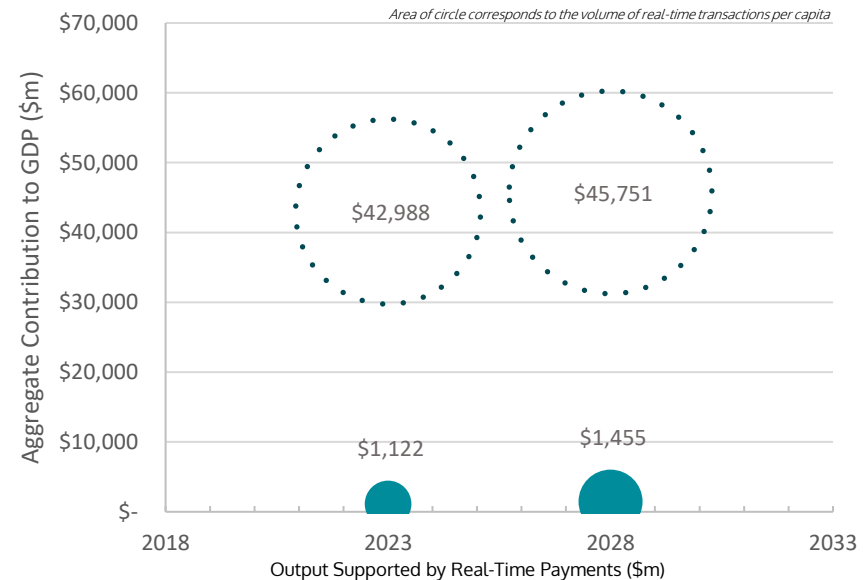
# Australia

- As of 2023, Australia is estimated to have ranked as the 14th largest global economy and is classified as a high-income country (Cebr World Economic League Table, 2023).
- The 2023 share of real-time payments (6.1% of all transactions) led to a total estimated efficiency saving of \$262 million for businesses and consumers, driven principally by reduction in the payment float. Based on these real-time adoption rates in Australia, instant payments unlock a total transaction value of \$4,294 million per day, through a reduced float time. This working capital facilitates an estimated \$98 million of business output in the same year.
- With regards to the realised aggregate economic benefits in 2023, real-time transactions support economic output equivalent to 0.07% of GDP (\$1,122 million), or the output of 8,985 workers, annually.
- Forecasts to 2028 estimate that real-time payments will represent 16.0% of the payment mix following a CAGR of real-time transactions of 14.5% over the five-year period. In the same year, total estimated efficiency saving for businesses and consumers reach \$539 million. This subsequently contributes to the realised macroeconomic benefits of real-time payments increasing to \$1,455 million (0.08% of formal GDP).
- If all transactions were real-time in 2023, we estimate that the theoretical maximum cost saving for businesses and consumers could increase by an additional \$3,633 million, to a total of \$3,895 million. This maximum potential increase rises to \$4,056 million in 2028, as real-time adoption increases, and a greater share of that theoretical benefit is already realised.
- Similarly, between 2023 and 2028 we estimate that for Australia, the realised share of the maximum potential macroeconomic benefits of real-time payments rises from 2.5% to 3.1%.
- This represents a maximum of \$42,988 million and \$45,751 million of additional economic output in 2023 and 2028, respectively. These latter figures are equivalent to a 2.5% and 2.3% addition to formal GDP in Australia under full real-time adoption.

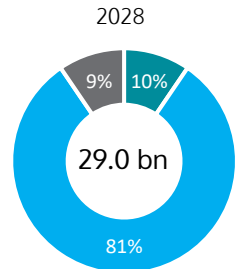
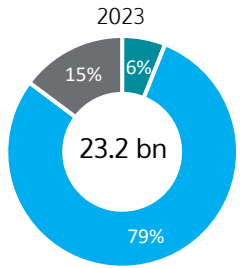
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

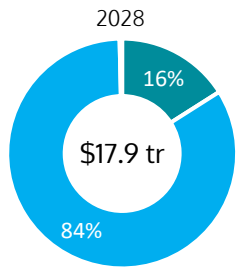
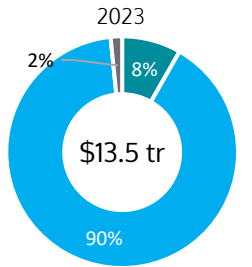


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





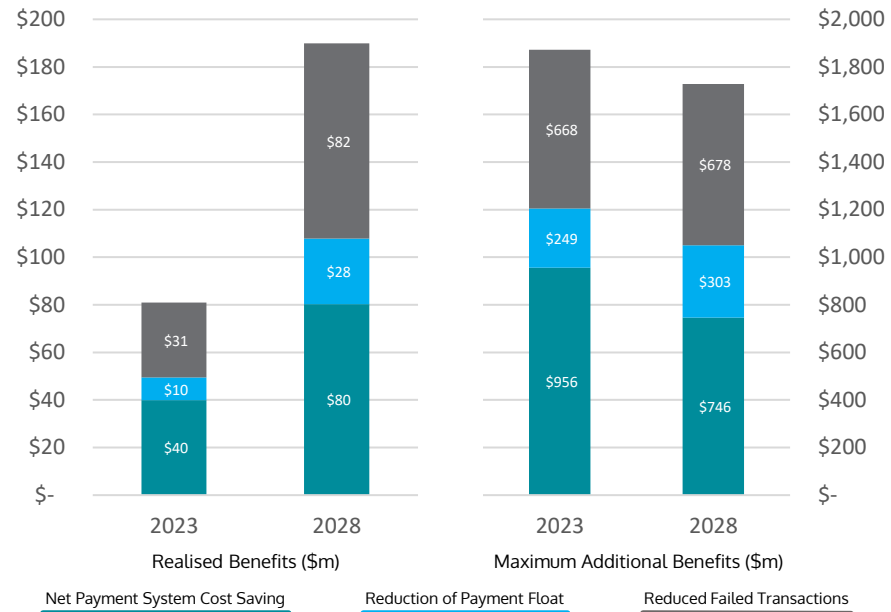
# Austria

- Austria is a small, well-developed European country and falls into the classification of a high-income economy and ranked as the 33rd largest global economy in 2023 (Cebr World Economic League Table, 2023).
- The current share of real-time payments (4.5% of all transactions in Austria) led to an estimated efficiency saving of \$81 million for businesses and consumers, driven principally by the net payment system cost saving. On a per transaction basis, real-time payments in Austria had a 19.4% lower average payment cost in 2023, compared to non-instant payments, which led to a saving of \$40 million. With regards to the realised aggregate economic benefits in 2023, real-time transactions contributed to 0.04% of GDP (\$171 million), or the output of 1,632 workers, annually.
- Forecasts to 2028 estimate that the efficiency saving for businesses and consumers grow to \$190 million. This is in line with the forecast CAGR of real-time transactions of 21.1% over the five-year period, by 2028 real-time payments are estimated to represent 10.8% of the payment mix. These impacts contribute to the realised macroeconomic benefits of real-time rising to \$413 million (0.08% of formal GDP).
- If all transactions took place through the real-time payment infrastructure in Austria, in addition to the current benefits, the maximum additional

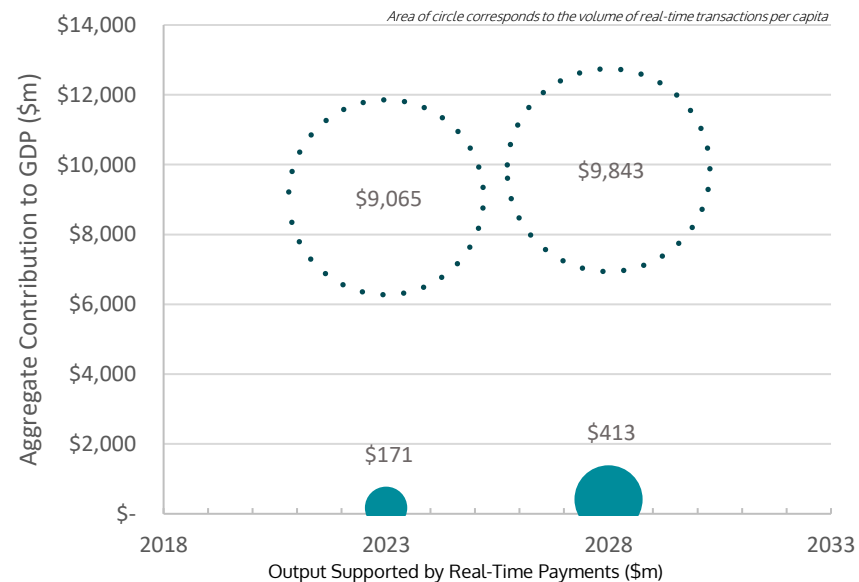
benefit for businesses and consumers was an estimated \$1,872 million in 2023, contributing to a maximum of \$9,065 million in additional output (equivalent to an additional 1.9% of formal GDP), in the same year. Summing the current and potential further benefits associated with full real-time utilisation, consumer and business benefits could have totalled \$1,953 million, while a total of \$9,236 million in Austrian GDP could have been facilitated.

- Looking forwards to 2028, maximum additional business and consumer level benefits will decrease by 8% to \$1,728 million, while the maximum additional macroeconomic benefit will rise to \$9,843 million of economic activity; again, a 1.9% addition to formal GDP in 2028.
- Between 2023 and 2028 we estimate that for Austria, the realised share of the maximum attainable macroeconomic benefits of real-time payments will more than double from 1.9% to 4.0%.

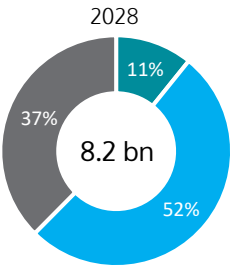
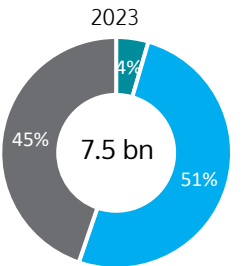
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

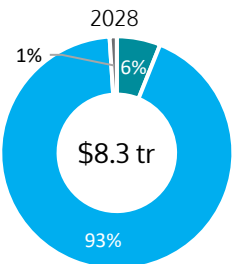
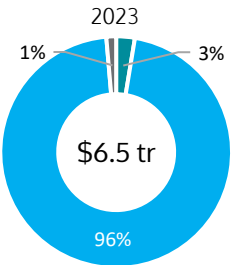


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





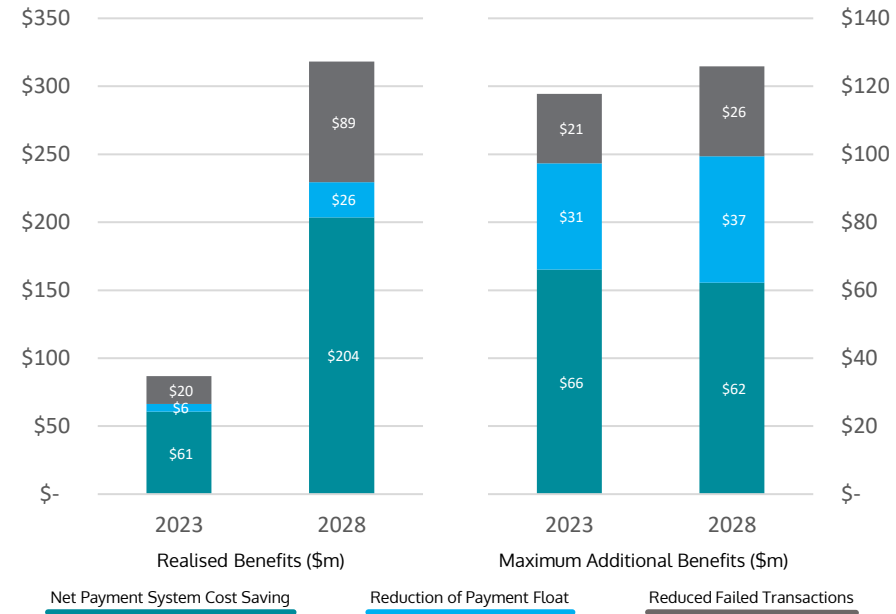
# Bahrain

- Situated in the Persian Gulf, The Kingdom of Bahrain is a high-income island nation and ranked as the 93rd largest global economy in 2023 (Cebr World Economic League Table, 2023).
- Bahrain demonstrates a unique payments system network where the volume of real-time payments accounts for the largest share (49.9%) of transactions by volume, followed by non-instant electronic payments (31.9%) and paper-based payments (18.2%) in 2023.
- This means that compared to other countries, a relatively significant share of the maximum benefits are already realised. The adoption of real-time payments yields Bahraini businesses and consumers benefits of \$87 million in 2023, predominantly driven by net payment system cost savings. On a per transaction basis, real-time payments in Bahrain had a 25.9% lower average payment cost, compared to non-instant payments. Based on 2023 adoption rates, this represents a cost saving of \$60.8 million for consumers and businesses across the country.
- At the macroeconomic level, these benefits amounted to \$537 million of economic output in 2023. This is equivalent to the output of 10,247 workers, annually and represents a 1.22% share of formal GDP.
- The strong forecasted real-time uptake results in realised business and consumer level benefits reaching \$318 million in 2028. This subsequently stimulates \$678 million in economy-wide benefits (1.32% of formal GDP); equivalent to the output

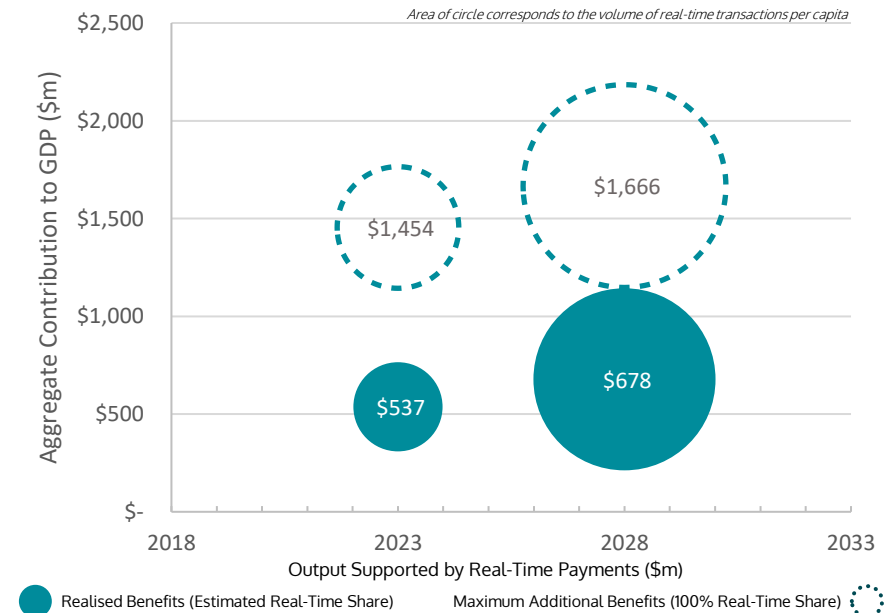
of 12,549 workers, annually.

- High real-time volumes in Bahrain result in the already realised share of the maximum attainable economic benefits from instant payments being relatively large, compared to other countries. In 2023, we estimate that Bahrain captured 42.4% of the maximum attainable microeconomic benefits of real-time payments, the largest share in our sample in that year. By 2028, this share is forecasted to rise further to 71.7%.
- In monetary terms, the theoretical maximum further level of economic output that real-time payments could facilitate was \$1,454 million in 2023 and \$1,666 million in 2028; equivalent to a 3.1% addition to formal GDP in Bahrain as a result of full real-time adoption in both years.
- Broken down, if all transactions took place through the real-time payments system in Bahrain, the maximum additional benefit to businesses and consumers was an estimated \$118 million in 2023, rising to \$126 million by 2028. Combining these with the current and forecasted benefits of existing real-time utilisation rates, consumers and businesses could benefit by a total of \$205 million and \$444 million in 2023 and 2028 respectively.

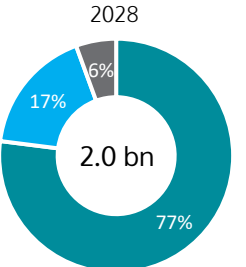
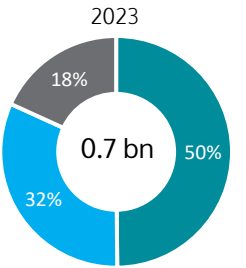
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

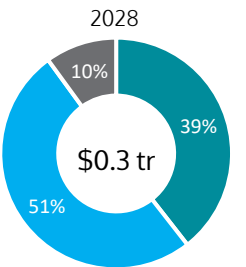
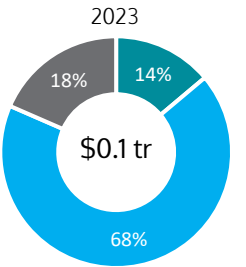


Payment Mix By Transaction Volume (bn)



- ⚡ Instant Payments
- 📄 Electronic (non-instant) Payments
- 📄 Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

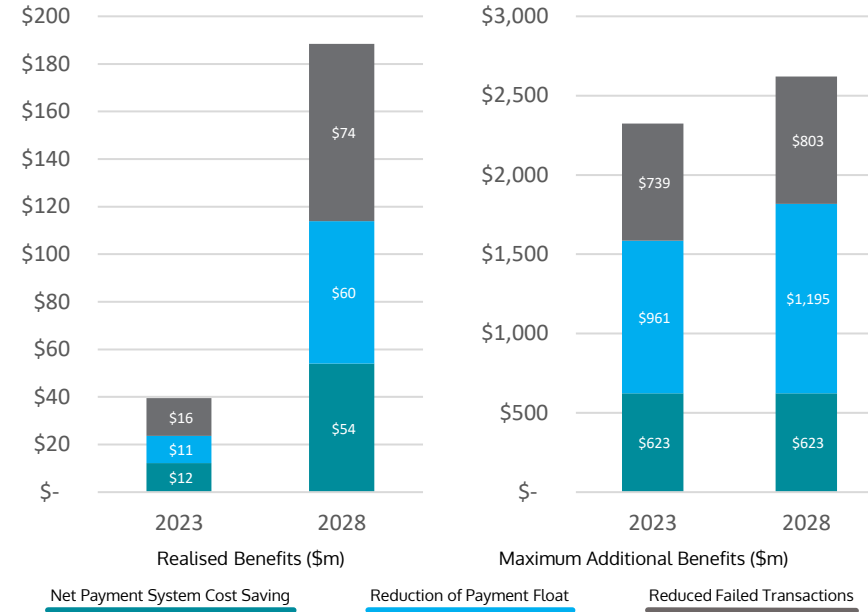




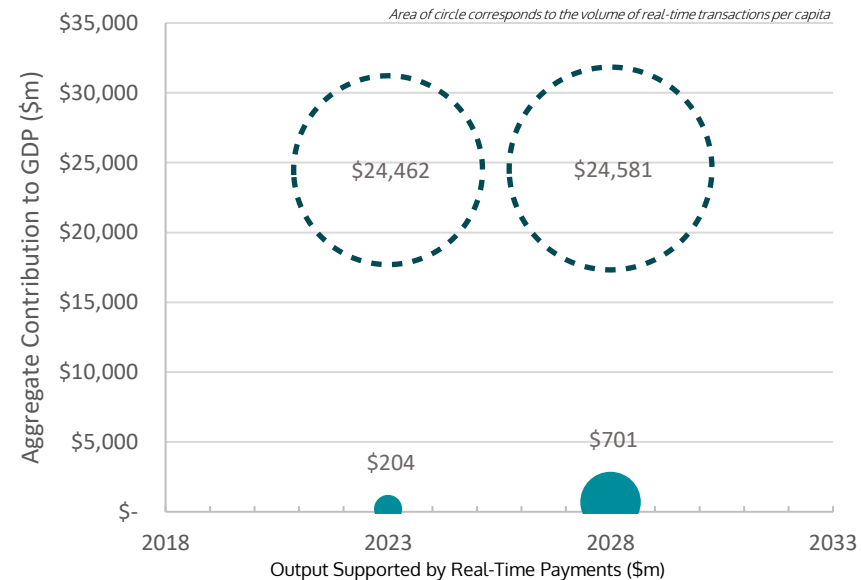
# Belgium

- Belgium is a high-income country located on the North-western coast of continental Europe. As of 2023, it ranked as the 24th largest global economy (Cebr World Economic League Table, 2023).
- Only 2.1% of all transactions in the country were real-time in 2023, a figure much lower than the neighbour and Eurozone counterpart Netherlands.
- Due to this low adoption rate of real-time data, the recognised benefits are relatively low. Businesses and consumers in Belgium benefitted from efficiency savings of \$39 million in 2023, with real-time payments ultimately supporting 0.04% of the formal economy (\$204 million) in the same year; equivalent to the output supported by 1,780 jobs.
- By 2028, the share of transactions by volume is forecasted to grow to 8.5% – at a CAGR of 36.2% – driving the impact of real-time payments for businesses and consumers to reach \$188 million. This result is underpinned by the significant benefits generated by the reduction in the value of failed transactions, with \$74 million.
- At the macroeconomic level, economy-wide efficiency gains are estimated to facilitate \$701 million of economic output (0.12% of formal GDP) in 2028; equivalent to the output supported by 6,315 jobs.
- If all transactions were real-time in 2023, we estimate that the theoretical maximum further cost saving for businesses and consumers would equal \$2,324 million, rising to \$2,620 million in 2028. Combined with the realised benefits, the overall potential benefits stand at \$2,363 million in 2023 and \$2,809 million in 2028.
- Under complete real-time adoption, these agent level impacts are estimated to contribute to a maximum of \$24,462 million and \$24,581 million of additional economic output in 2023 and 2028, respectively, or \$24,666 million and \$24,282 million in total. These former sets of figures are equivalent to a 4.1% addition to formal GDP in Belgium under full real-time adoption both in 2023 and 2028.
- Between 2023 and 2028 we estimate that for Belgium, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 0.8% to 2.3%.

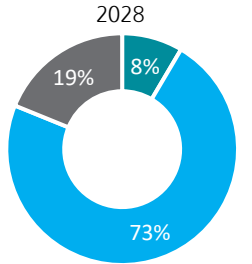
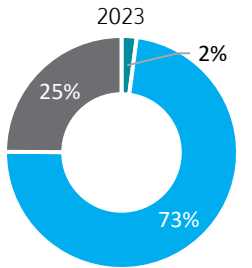
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

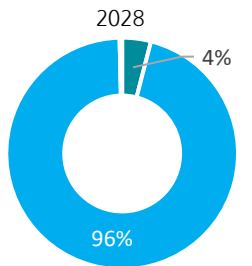
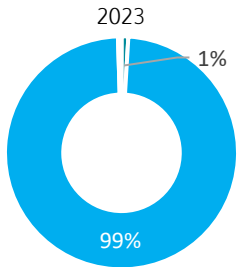


Payment Mix By Transaction Volume (bn)



- ⚡ Instant Payments
- 📄 Electronic (non-instant) Payments
- 🏠 Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





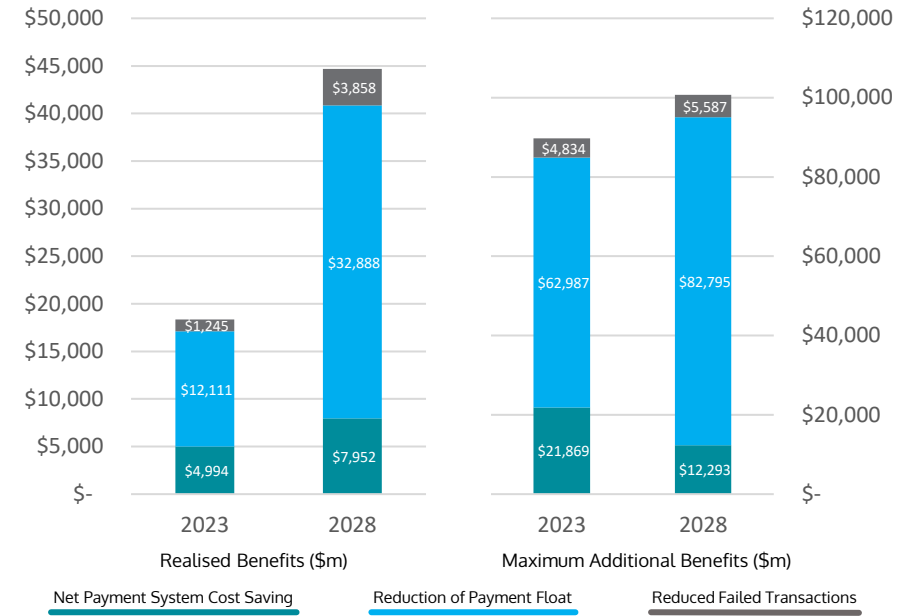


# Brazil

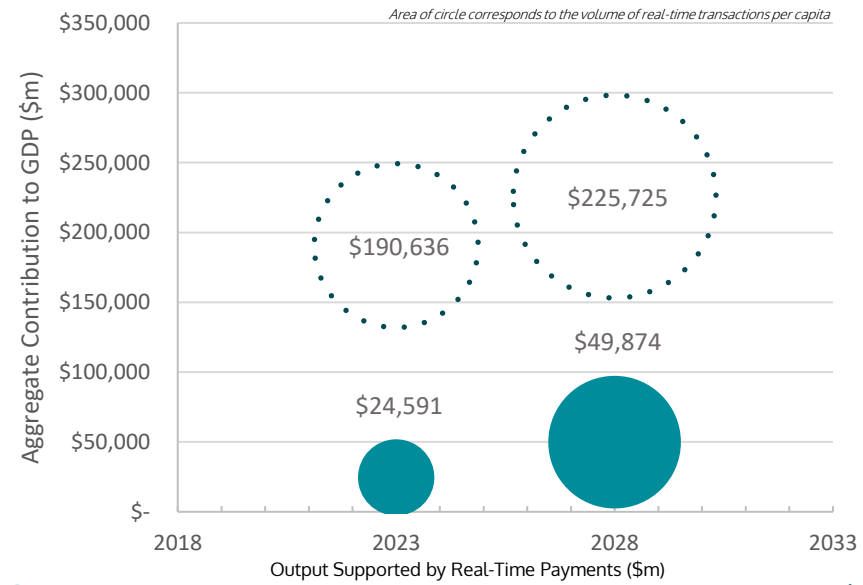
- Brazil ranked as the 11th largest global economy in 2023 – the largest South American economy – and is an upper-middle income country (Cebr World Economic League Table, 2023).
- Real-time payments generated business and consumer level benefits of \$18,350 million in 2023, the second largest in our sample. The largest contribution to this total was from the reduction in payment float costs. Based on current real-time adoption rates in Brazil, instant payments unlocked a total transaction value of \$15,176 million per day in 2023 through a reduced float time. This working capital facilitated an estimated \$12,111 million of business output in the same year.
- At the macroeconomic level, the realised benefits in 2023 were estimated at \$24,591 million, equivalent to 1.32% of formal GDP or the output of 1,301,073 jobs.
- However, these economic impacts are expected to almost double by 2028 as real-time's share of the payment mix in Brazil rises to 40.8% from 20.5% in 2023. This expansion is mirrored by a significant spurt in realised benefits. The benefits at the business and consumer level rise to \$44,698 million, while macroeconomic efficiency gains total \$49,874 million in 2028. This is a figure equivalent to 2.41% of formal GDP or the output of 2.5 million workers and in absolute terms is an

- impact which doubles compared to 2023.
- With full real-time adoption, there are significant additional macroeconomic benefits that could be unlocked in Brazil. Total business and consumer level benefits could increase by a further \$89,690 million; a significant increase above the realised benefits due to the payment mix in 2023 being characterised by a large share of paper-based payments (43.4%). Full real-time adoption could contribute to an additional 9.2% of formal GDP (\$190.636 million of national output) if all transactions were processed instantaneously, supporting the equivalent output of 9,043,134 additional jobs.
- In 2023, the realised share of the maximum attainable macroeconomic benefits from real-time payments was 11.4%. As real-time's share of the payment mix in Brazil is forecast to significantly rise by 2028, so does its realised share of the maximum potential macroeconomic benefits, with this metric reaching 18.1% in the same year.
- Regarding the scale of the maximum additional benefits in 2028 for Brazil, business and consumer level benefits could increase further by \$100,675 million, reaching a total of \$145,373 million. An additional economic benefit of \$225,725 million could be attained; a 9.6% addition to formal GDP.

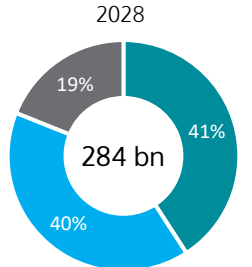
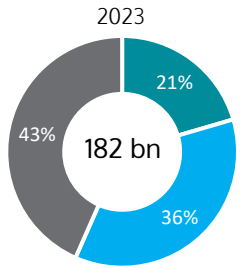
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

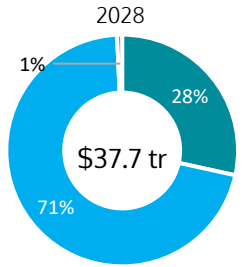
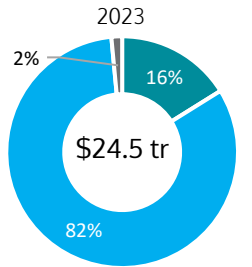


Payment Mix By Transaction Volume (bn)



- ⚡ Instant Payments
- 📄 Electronic (non-instant) Payments
- 📄 Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





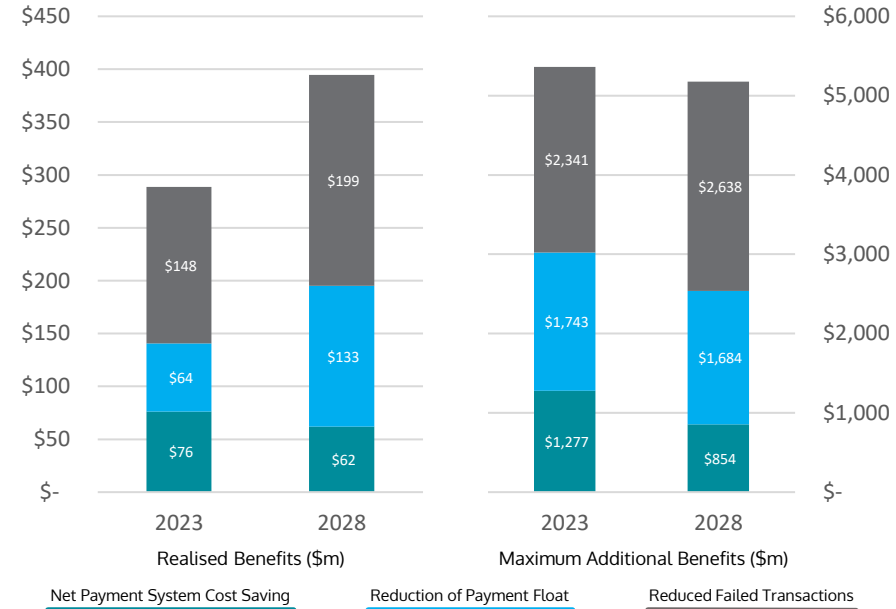
# Canada

- Canada is a high-income country ranked as the 8th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- Supported by a relatively typical real-time payment mix share for an advanced economy (5.9% of all transactions), in 2023, the net benefits of real-time payments for businesses and consumers hit \$289 million. The largest component of this was net savings through the reduction of failed transactions. Failed transactions generated an associated annual cost of \$135.7 billion, borne by financial institutions, consumers, and other businesses across the globe. In Canada specifically, we estimate the total cost of failed transactions to be \$2,341 million per year. However, by reducing the probability that a transaction fails, real-time payments saved these stakeholders from an additional \$148 million of payment failure costs in 2023.
- Based on forecasted adoption rates to 2028, real-time payments are anticipated to account for 7.0% of the payment mix. The resulting net benefits of real-time payments for businesses and consumers are expected to increase moderately to \$395 million by the same year.
- At the macroeconomic level, the real-time payments system was estimated to support economy-wide benefits worth \$1,550 million in 2023; equivalent to 0.07% of GDP or the output of 14,076 workers. This is forecasted to drop to \$1,181 million (0.05% of GDP) by 2028.
- The cause of this slight decline is

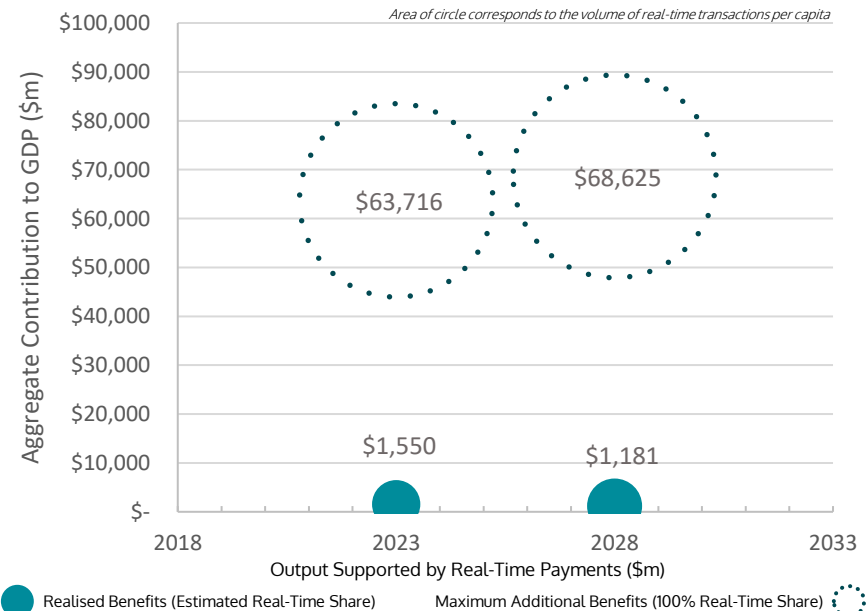
because of the reduced impact that real-time payments are expected to have in the formalisation of shadow economy activity. Cash usage is expected to be low in 2028 across Canada, with electronic (non-instant) payments accounting for almost 95% of all transactions. Therefore, the degree to which real-time payments are displacing paper-based instruments is limited compared to 2023. As a result, there is a fall in the absolute value of informal activity that real-time payments are credited for formalising.

- If the payment infrastructure was fully instantaneous, theoretical additional business and consumer level benefits are predicted to amount to \$5,361 million in 2023, dropping to \$5,175 million in 2028. This decline in the potential additional benefit is driven by a greater share of the maximum theoretical benefit already being forecast to be realised by 2028, as the real-time payments share increases. Summing up the realised and potential benefits, the overall values add up to \$5,649 million in 2023 and \$5,569 million on 2028.
- The maximum additional macroeconomic benefits for Canada are \$63,716 million in 2023 (a formal GDP addition of 2.8%) and \$68,625 million in 2028 (a formal GDP addition of 2.7%).
- Between 2023 and 2028 we estimate that for Canada, the realised share of the maximum attainable macroeconomic benefits of real-time payments falls from 2.4% to 1.7%.

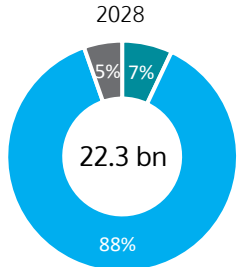
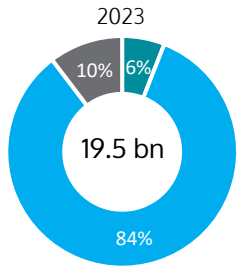
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

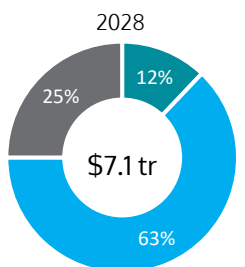
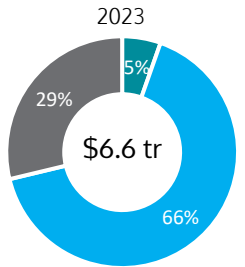


Payment Mix By Transaction Volume (bn)



- ⚡ Instant Payments
- 📄 Electronic (non-instant) Payments
- 🏠 Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





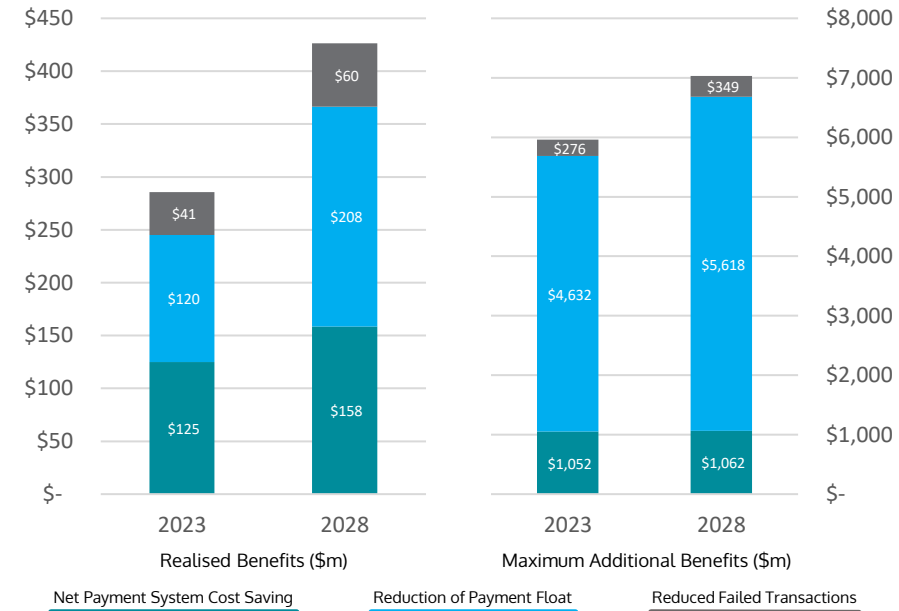
# Chile

- Classified as a high-income country, Chile was ranked as the 47th largest economy in the world in 2023 (Cebr World Economic League Table, 2023).
- In 2023, total efficiency savings for businesses and consumers, through the use of real-time payments, generated benefits worth \$286 million. This was led by the reduction in the payments system cost, accounting for 44% of this total. On a per transaction basis, real-time payments in Argentina in 2023 had a 16.8% lower average payment cost, compared to non-instant payments. Under current adoption rates of real-time payments, this represented a cost saving of \$125 million.
- At the macroeconomic level, these benefits amounted to \$619 million in 2023 (0.21% of formal GDP), with the increase driven by real-time payments formalising \$487 million of shadow economy activity through reduced cash usage.
- It is estimated that the share of real-time transactions will increase slightly to 14.7%. At the business and consumer level, net efficiency savings increase to \$426 million. Ultimately, the forecasted macroeconomic impact of real-time is estimated to be \$740 million of economic output (0.22% of formal Chilean GDP) in 2028, equivalent to that produced by 19,632 workers, annually.
- The untapped benefits of adopting

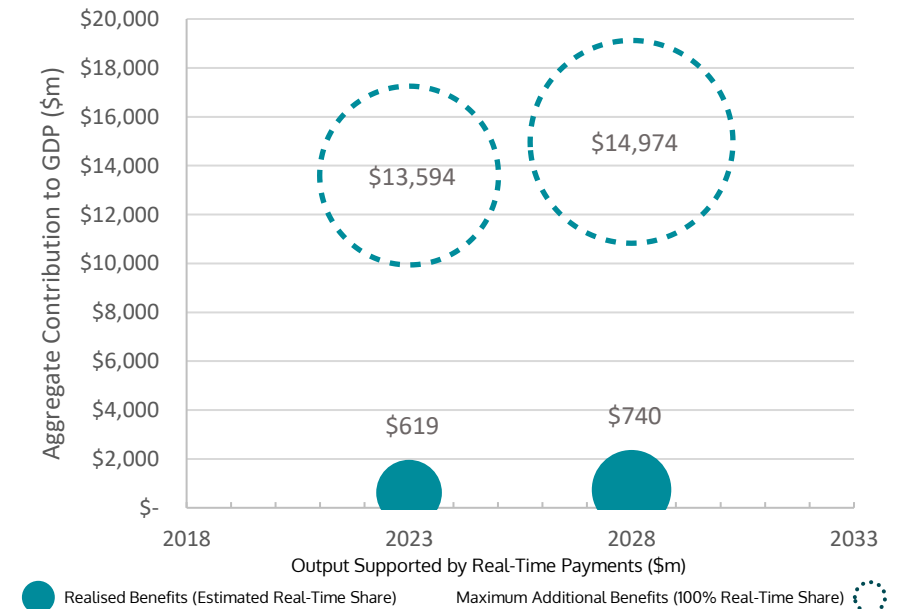
100% real-time payments were estimated to yield potential additional savings of \$5,959 million for businesses and consumers in 2023, while the theoretical maximum level of additional economic output that real-time payments could have facilitated stood at \$13,594 million (4.4% of GDP) in the same year. Combining those additional benefits with the current benefits, 100% real-time payments utilisation could have brought a total benefit of \$6,245 million to consumers and benefits, and supported a total of \$14,213 million in Chilean GDP.

- By 2028 the maximum additional benefits for businesses and consumers will rise to \$7,029 million, annually. This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate rising to \$14,974 million, or 4.2% of formal GDP.
- Between 2023 and 2028 we estimate that for Chile, based on respective real-time adoption rates in each year, the realised share of the maximum attainable macroeconomic benefits rises from 4.4% to 4.7%.

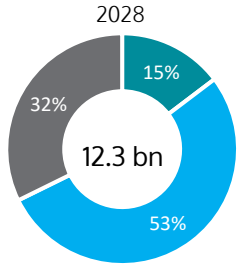
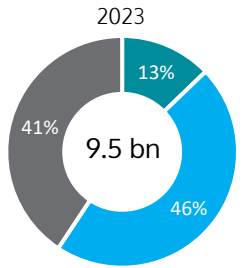
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

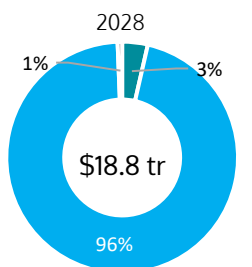
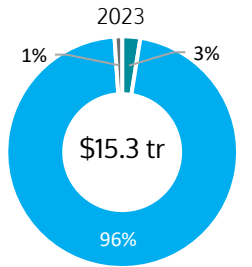


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

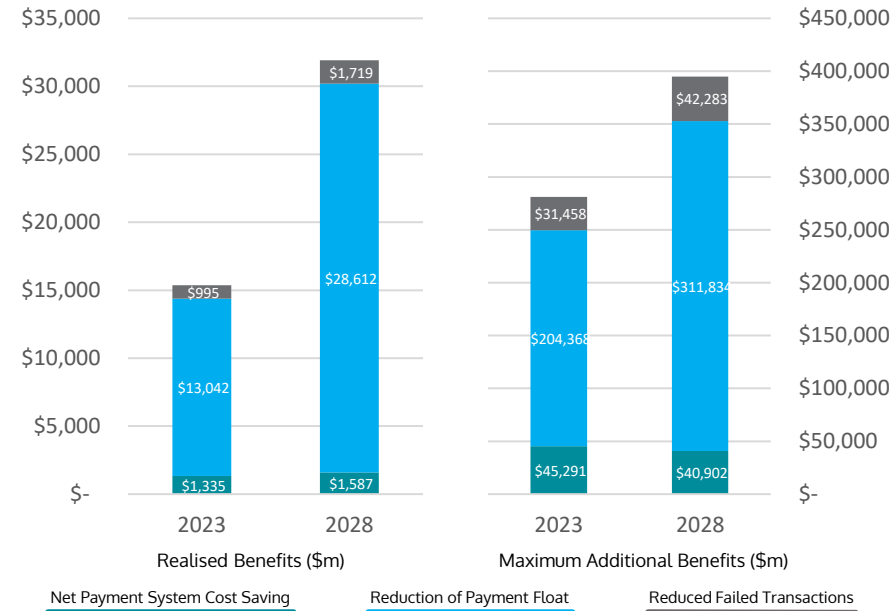




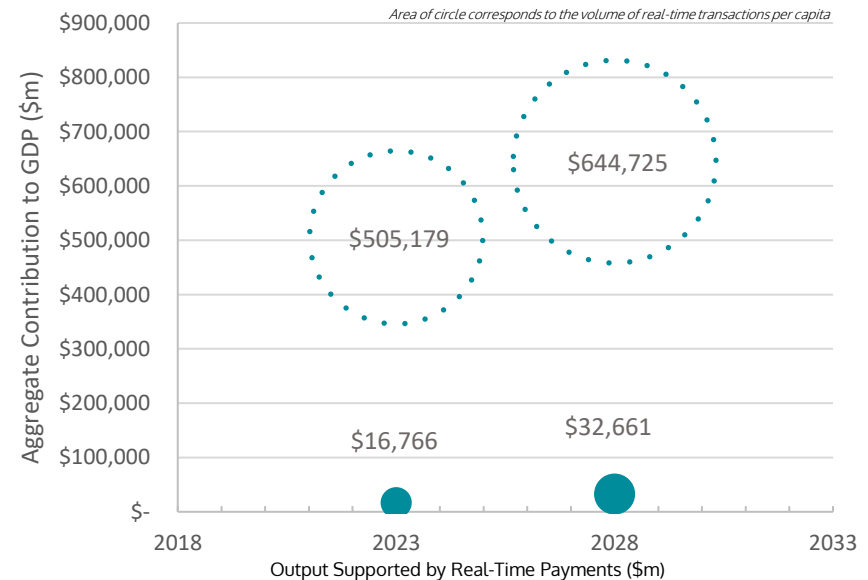
# China

- China is classified as an upper-middle-income country that ranked as the 2nd largest global economy in 2023 (Cebr World Economic League Table, 2023).
- In 2023, net benefits for businesses and consumers of real-time payments hit \$15,371 million, supported by real-time accounting for 3.1% of all transactions (in 2021 this was 5.7%). The largest component of this was net savings through a reduction in the payment float, subsequently unlocking working capital for businesses. Based on current real-time adoption levels in China, instant payments unlocked a total transaction value of \$167,623 million per day in 2023 through a reduced float time. This working capital facilitated an estimated \$13,042 million of business output in the same year.
- The macroeconomic benefits in 2023 of current real-time adoption rates were estimated to be \$16,766 million of formal economic output. This is equivalent to 0.09% of Chinese GDP, or the output of 659,509 workers, annually.
- By 2028, business and consumer level benefits rise to \$31,918 million (again with the reduction in the size of the payment float accounting for the largest contribution to this), and the 2028 real-time share of all transactions will rise to 3.9% in relative terms. Based on 2028 adoption estimates, the forecasted macroeconomic benefits in 2028 are estimated to be \$32,661 million of economic output (0.14% of forecasted formal GDP).
- When it comes to the untapped benefits of real-time through a theoretical 100% real-time adoption, in 2023 there was an additional \$281,116 million of efficiency savings which Chinese businesses and consumers could have enjoyed. This figure is forecasted to increase to a maximum of further \$395,019 million of additional agent-level gains in 2028. Summing these further gains with those already realised due to current levels of real-time adoption, the maximum theoretical consumer and business level gains stand at \$296,487 million and \$426,938 in 2023 and 2028 respectively.
- Furthermore, we estimate that there was \$505,179 million in additional economic output that China could have unlocked in 2023 if all payments were real-time, which would have supported an additional 2.6% of formal GDP (equivalent to the output of an additional 19 million workers). In 2028, the maximum additional macroeconomic benefit is forecasted to also increase to \$644,725 million (an additional 2.6% of formal GDP).
- Between 2023 and 2028 we estimate that for China, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 3.2% to 4.8%.

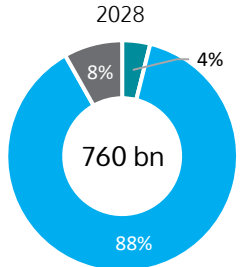
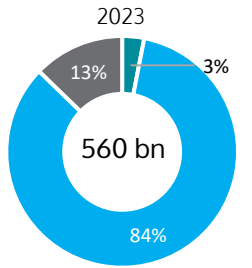
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

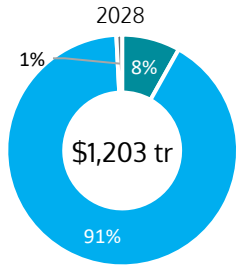
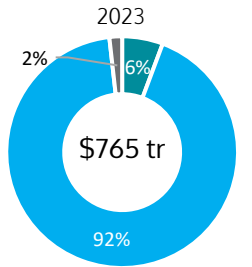


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





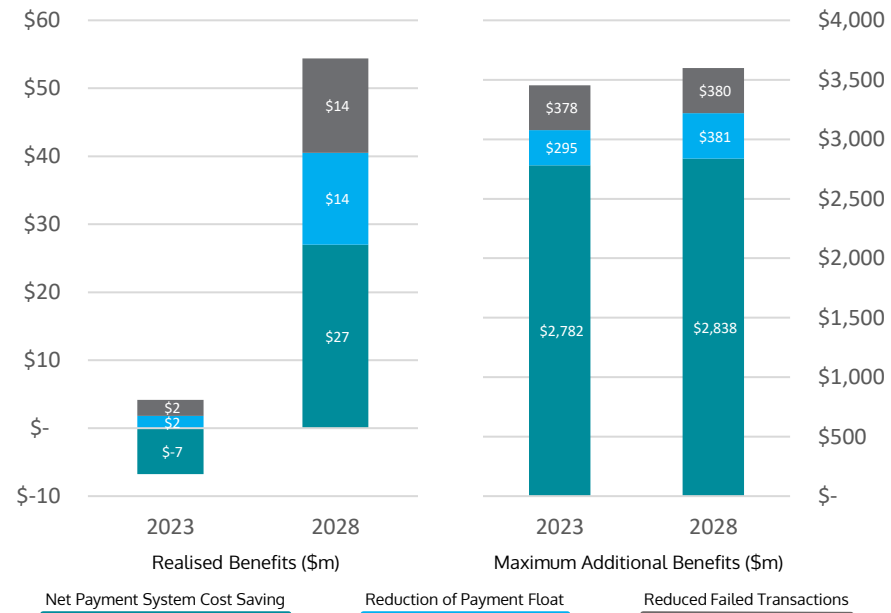
# Colombia

- Colombia, an upper-middle-income country, is ranked as the 46th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- The 2023 payment mix of Colombia was dominated by cash, with 83.2% of all transactions in the country made via paper-based payment methods. Real-time is expected to grow to 3.5% in 2028, however its current share of transaction volumes is very small (0.6%).
- Based on this, the high initial costs and low real-time take up means the costs per real-time transaction are yet to drop below the dominant paper-based transactions. For businesses and consumers, the higher real-time cost per transaction led to a negative impact of -\$3 million in 2023. Economy-wide efficiency gains estimated to facilitate \$46 million of economic output (0.01% of formal GDP) in the same year.
- By 2028, we estimate that realised benefits for businesses and consumers will rise to \$54 million, and the net payment system cost savings will have the biggest impact. On a per transaction basis, real-time payments in Colombia will have a 8.4% lower average payment cost, compared to non-instant payments.
- By 2028, the forecasted economy-wide impact of real-time is estimated to reach \$282 million of economic output (0.07% of formal GDP), equivalent to that supported by 18,498 jobs. Therefore, if Colombia can successfully integrate real-time transactions into its payment mix, it will be able to enjoy significant

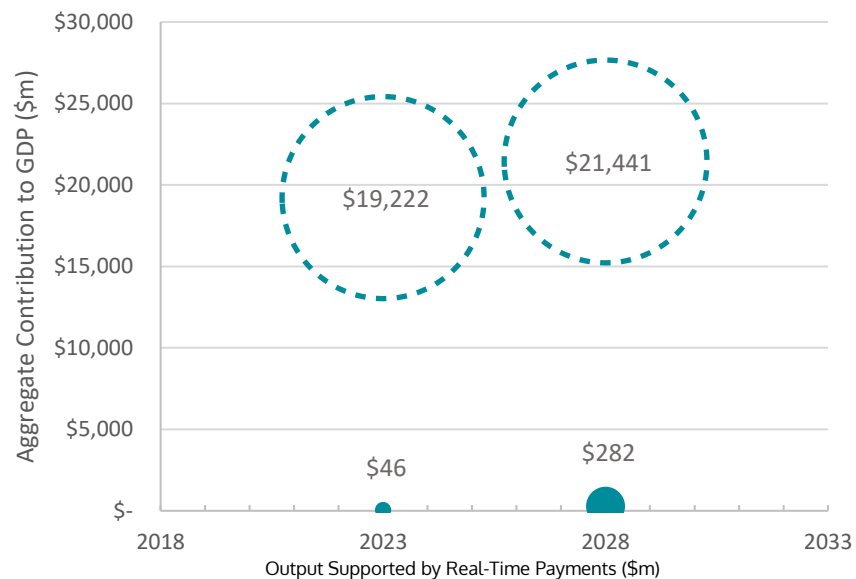
economic benefits in the future.

- The untapped benefits of adopting 100% real-time payments are estimated to yield maximum potential further savings of \$3,454 million for businesses and consumers in 2023, while the theoretical maximum level of additional economic output that real-time payments could facilitate stands at \$19,222 million (5.5% addition to formal GDP) in the same year. Combining those additional benefits with the current benefits, 100% real-time payments utilisation could have brought a total benefit of \$3,452 million to consumers and benefits, and supported a total of \$19,268 million in GDP.
- By 2028 the maximum further benefits for businesses and consumers will increase to \$3,598 million annually; totalling \$3,653 million with currently modelled realised benefits included.
- This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate rising to \$21,441 million, or 5.2% of formal GDP.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that Colombia captures of total attainable economic benefits of real-time payments rises from 0.2% to 1.3%.

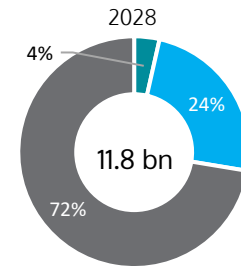
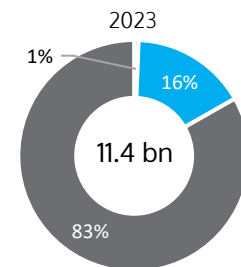
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

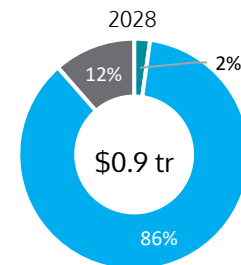
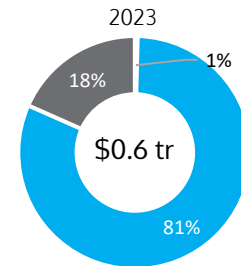


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



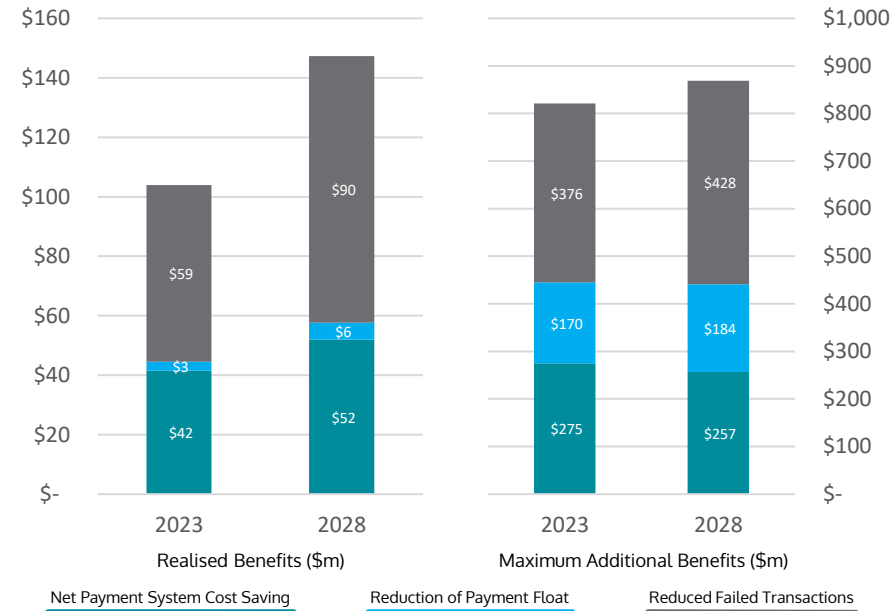


# Denmark

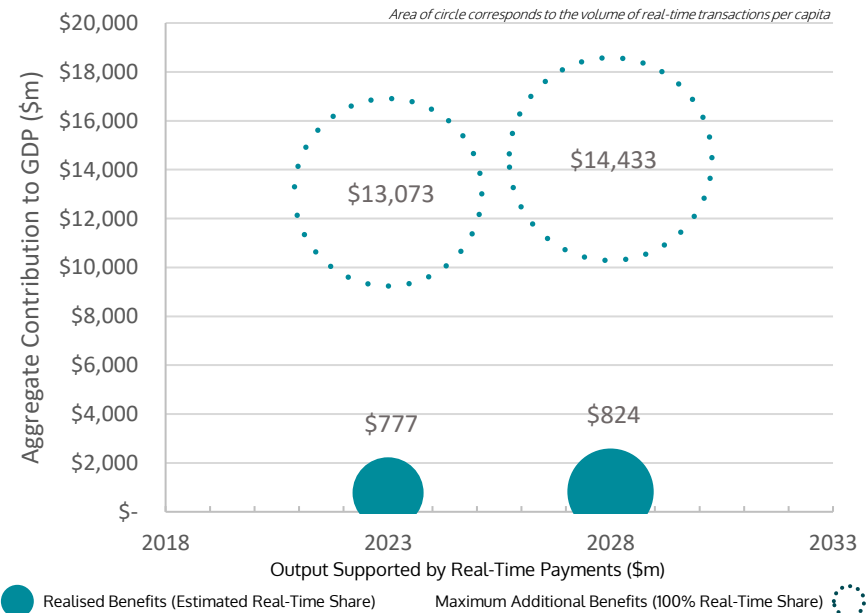
- Denmark is ranked as the 40th largest global economy in 2023 and is classified as a high-income country (Cebr World Economic League Table, 2023).
- The current share of real-time payments (13.7% of all transactions in Denmark) led to an estimated efficiency saving of \$104 million for businesses and consumers, driven principally by a reduction in the costs associated with failed transactions. Failed transactions generated an associated cost of \$135.7 billion annually, borne by financial institutions, consumers, and other businesses across the globe. In Denmark specifically, we estimate the total cost of failed transactions to be \$376 million per year. However, real-time payments saved these stakeholders from an additional \$59 million of payment failure costs in 2023. With regards to the realised aggregate economic benefits in 2023, real-time transactions contributed to 0.20% of GDP (\$777 million), or the output of 6,015 workers, annually.
- Forecasts to 2028 estimate that the efficiency saving for businesses and consumers grow to \$147 million. This is in line with the forecast CAGR of real-time transactions of 8.6% over the five-year period, by 2028 real-time payments are estimated to represent 17.3% of the payment mix. These impacts contribute to the realised macroeconomic benefits of real-time rising to \$827 million (0.19%

- of formal GDP).
- If all transactions took place through the real-time payment infrastructure in Denmark, in addition to the current benefits, the maximum additional benefit for businesses and consumers was an estimated \$821 million in 2023, contributing to a maximum of \$13,073 million in additional output (equivalent to an additional 3.3% of formal GDP), in the same year. Summing the current and potential further benefits associated with full real-time utilisation, consumer and business benefits could have totalled \$925 million, while a total of \$13,850 million in Danish GDP could have been facilitated.
- Looking forwards to 2028, maximum additional business and consumer level benefits will increase by 6% to \$869 million, while the maximum additional macroeconomic benefit will rise to \$14,433 million of economic activity; again, a 3.3% addition to formal GDP in 2028.
- Between 2023 and 2028 we estimate that for Denmark, the realised share of the maximum attainable macroeconomic benefits of real-time payments drops from 5.6% to 5.4%.

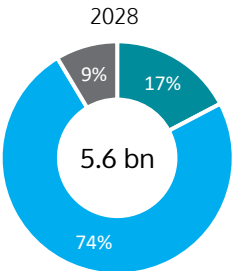
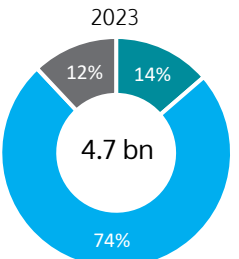
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

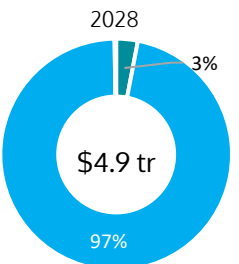
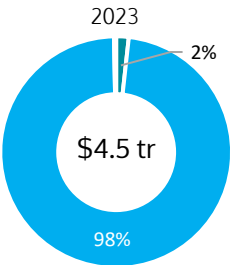


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





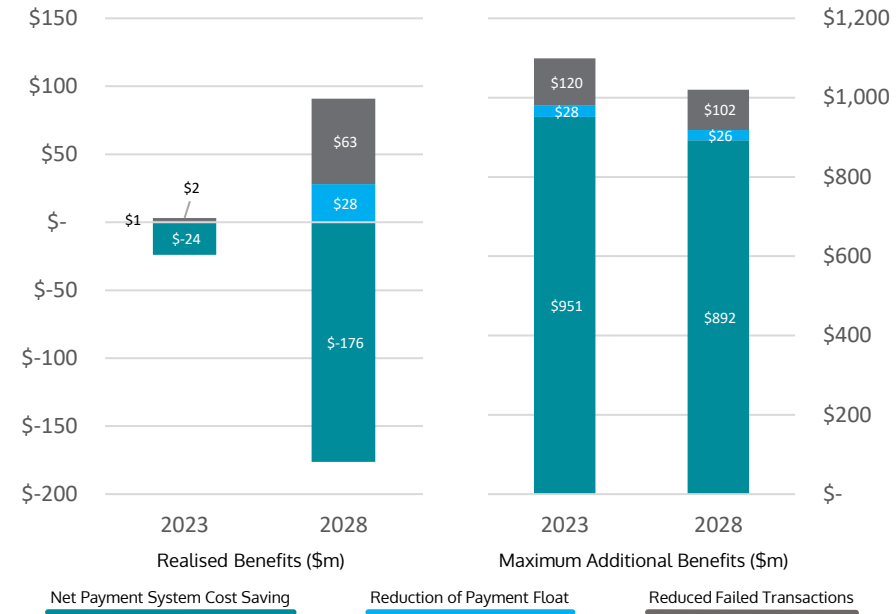
# Egypt

- Egypt ranked as the 42th largest global economy in 2023 and is classified as a lower middle-income country (Cebr World Economic League Table, 2023).
- In 2023, net benefits for businesses and consumers of real-time payments was -\$21 million. The reason behind the negative impact is the very low number of transactions per capita: for electronic payments (both instant and non-instant) it is 8.0, while for paper transactions it is 10.7. Both of them are the lowest among the countries which had GlobalData estimates. Due to this, Egypt is yet to recognise the benefits of real-time data, as the unit cost per transaction is lower for paper-based transactions at the moment.
- 57.0% of all transactions in 2023 were paper-based across Egypt, more than half of the total volume. Therefore the real-time payments volume is still low, only 1.8%. By 2028, this real-time share is anticipated to grow to 38.2%, with an exceptionally strong CAGR of 94.9%. However, as the transactions per capita remains low, the per cost transaction for electronic payments remains higher than for paper-based payments. Therefore, even though the unit cost per transaction reduces from \$2.32 to \$1.51, it will still remain higher than \$1.25, the average transaction cost of paper-based payments. Thus, by 2028, we estimate business and consumer benefits to remain negative, -\$85 million.
- The macroeconomic benefits of real-time in 2023 were estimated to be \$165 million of economic output in

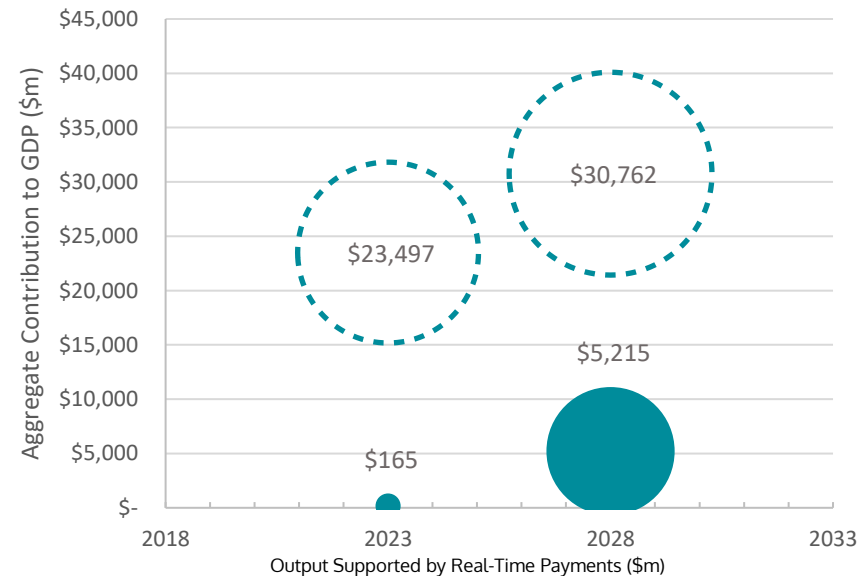
Egypt, rising to \$5,215 million by 2028. These represent 0.04% and 0.9% of current and forecasted Egyptian GDP respectively, supporting the equivalent of 11,565 and 296,145 jobs.

- If all transactions took place through the real-time payment infrastructure in Egypt, the maximum additional benefit for businesses and consumers was an estimated \$1,099 million in 2023, contributing to a maximum of \$23,497 million in additional output (equivalent to an additional 5.3% of formal GDP) in the same year. These would result in total benefits of \$1,078 million and \$23,662 million, respectively, combining these additional benefits with those already estimated to be realised, per current and forecasted levels of real-time adoption.
- Looking forwards to 2028, maximum additional business and consumer level benefits will decrease to \$1,020 million, while the maximum additional macroeconomic benefit will rise to \$30,762 million of economic activity; a 5.0% addition to formal GDP in 2028. The overall values including realised and these additional figures are \$935 million and \$35,977 million, respectively.
- Between 2023 and 2028 we estimate that for Egypt, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises significantly from 0.7% to 14.5%.

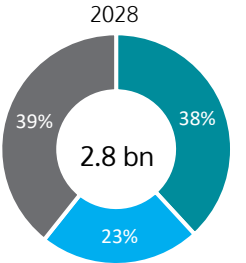
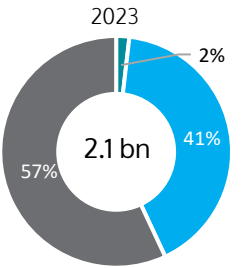
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

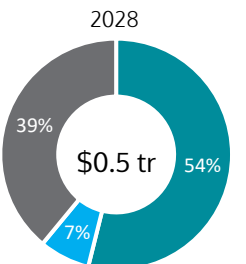
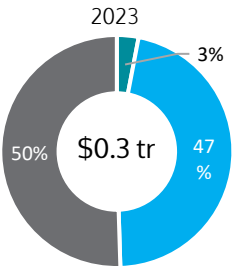


Payment Mix By Transaction Volume (bn)



- ⚡ Instant Payments
- 📄 Electronic (non-instant) Payments
- 📄 Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





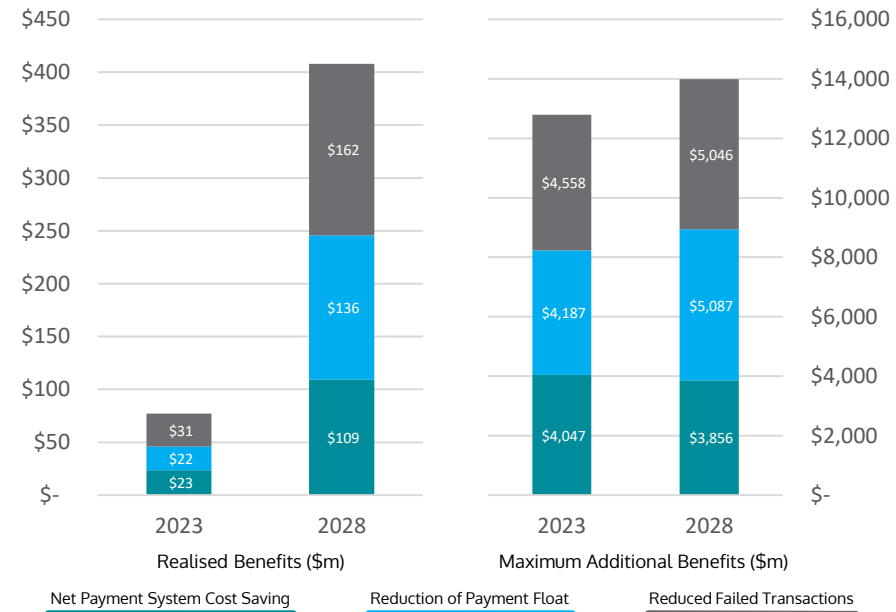
# France

- France is classified as a high-income country and ranked as the 7th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- However, considering that France is one of the largest economies in the world, real-time payment usage remains low as of 2023, accounting for just 0.7% of total transaction volumes. As a result, the current overall economic impact is relatively limited, while the untapped potential is significant.
- In 2023, net benefits for businesses and consumers reached \$77 million (less than a fourth than that of the Netherlands), supporting \$229 million of the total national output (0.01% of formal GDP).
- The primary factor generating these benefits was the ability for real-time payments to formalise activity in the shadow economy by reducing cash usage. Given the scale of the French economy, the country's 14% shadow economy share represented an estimated \$381 billion of informal output in 2023. Despite the relatively small transaction share of real-time payments in France, they have the ability to formalise a relatively large level of informal economic activity (\$196 million, annually).
- Looking forward to 2028, approximately 3.1% of the payment mix is anticipated to be real-time. While still modest, this increases the anticipated economic benefits for businesses and consumers more than five-fold to \$408 million. The economy-wide impact also rises significantly to \$1,006 million,

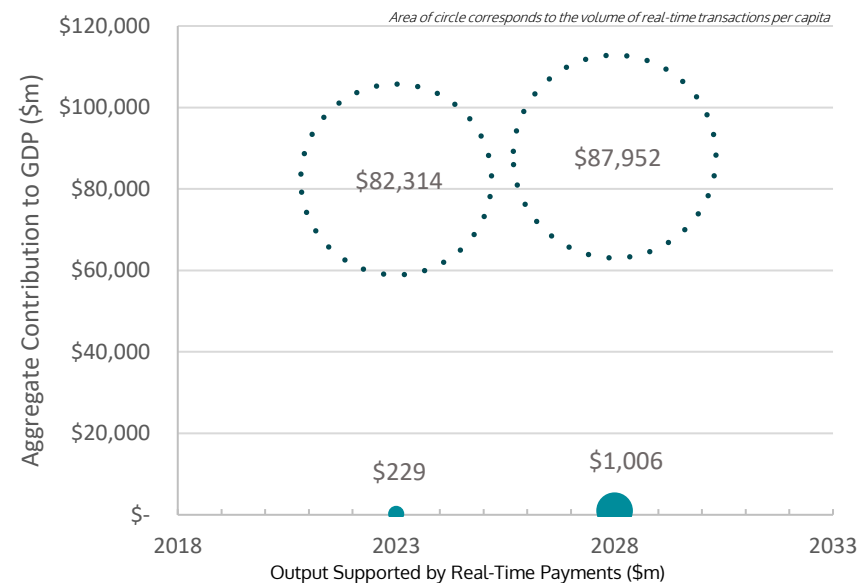
representing a 0.03% share of forecasted formal French GDP, or the equivalent output supported by 79,712 additional jobs in 2028.

- The untapped benefits of adopting 100% real-time payments were estimated to yield maximum additional savings of \$12,792 million for businesses and consumers in 2023, meaning a total of \$12,869 million including the existing savings from current real-time usage. The theoretical maximum level of further economic output that real-time payments could have facilitated stood at \$82,314 million (2.9% of GDP) in the same year, resulting in \$82,543 million overall.
- However, by 2028 the maximum additional benefits for businesses and consumers will rise to \$13,989 million annually, or \$14,397 million including benefits which are forecasted to be realised per France's estimated payments mix in the same year. This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate rising to \$87,952 million, or 2.8% of formal GDP, which would bring up the total benefits to \$88,958 million.
- Between 2023 and 2028 we estimate that for France, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 0.3% to 1.1%.

## Net Efficiency Savings for Businesses and Consumers

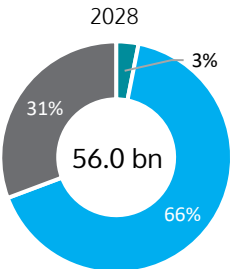
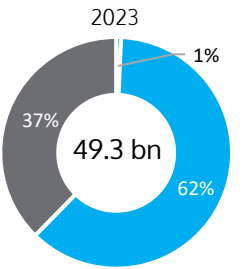


## Aggregate Macroeconomic Impact



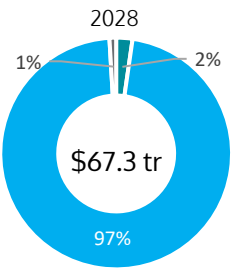
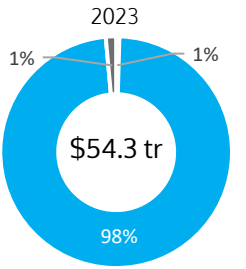
● Realised Benefits (Estimated Real-Time Share) ● Maximum Additional Benefits (100% Real-Time Share)

Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)







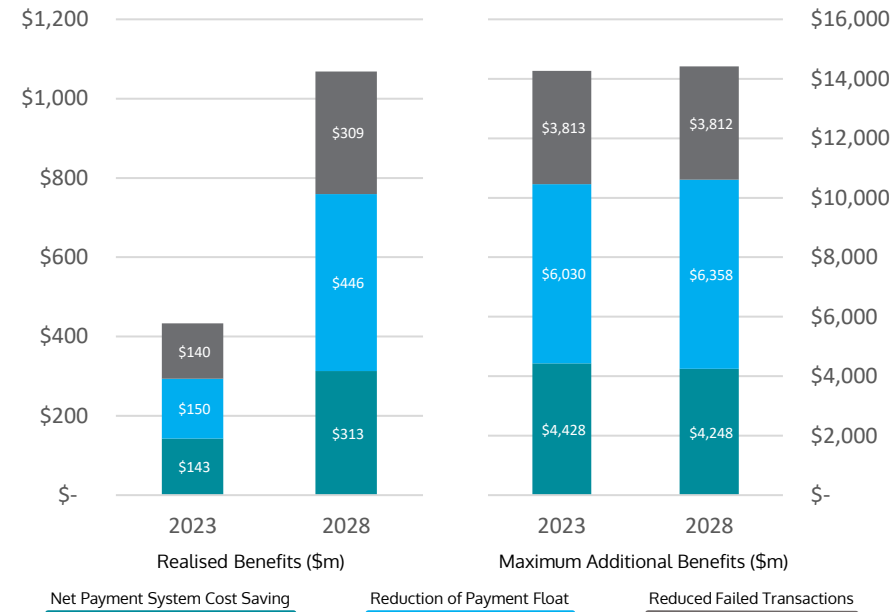
# Germany

- Germany – a founding member of the European Union as well as its largest economy – is a high-income country and ranked as the 3rd largest global economy in 2023 (Cebr World Economic League Table, 2023).
- With its current share of real-time adoption, German businesses and consumers gain estimated net efficiency saving of \$433 million in 2023, which is predominantly driven by a reduction in the payment float. Instant payments unlocked a total transaction value of \$6,505 million per day in 2023 through a reduced float time in Germany. This working capital facilitated an estimated \$150 million of firm output in the same year.
- As of 2023, the macroeconomic benefits of using real-time payments was an estimated \$1,832 million (0.05% of formal GDP); equivalent to the output of 19,613 workers.
- In 2023, the share of real-time payments was recorded at 3.5%, but this is estimated to more than double to 7.5% by 2028. This robust growth in real-time uptake will result in business and consumer level benefits reaching \$1,068 million in 2028. This is forecasted to support 0.08% of formal GDP in 2028, or \$3,637 million of output; equivalent to the output of 36,345 workers.
- Regarding the untapped benefits of real-time through a theoretical 100%

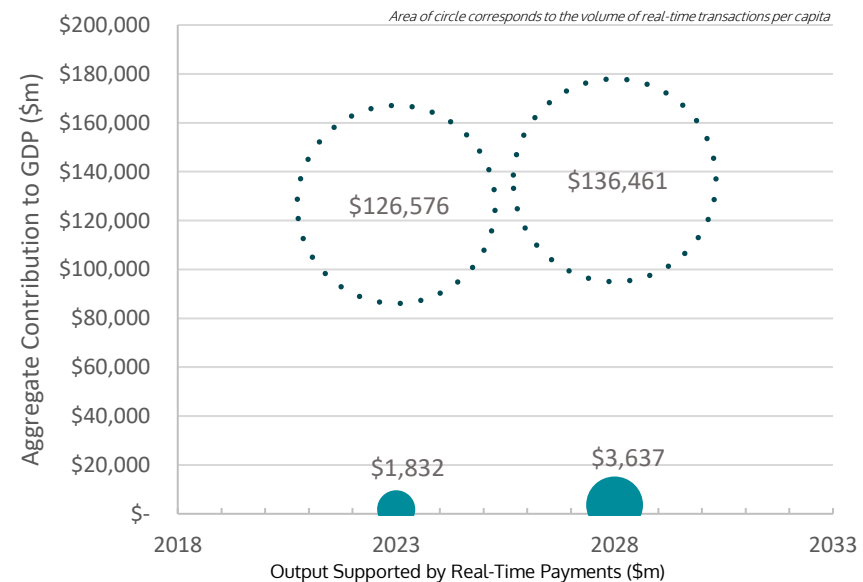
real-time adoption, in 2023 there was an additional unrealised \$14,270 million of efficiency savings which German businesses and consumers could have enjoyed. This figure is forecasted to increase further to a maximum of \$14,418 million of additional agent-level gains in 2028. Combining these with the current benefits of existing real-time utilisation rates, consumers and businesses could be worth £14,704 million and £15,486 million in 2023 and 2028 respectively.

- Furthermore, we estimate that there was an additional \$126,576 million of economic output that Germany could have unlocked in 2023 through full real-time utilisation, which would have supported an additional 3.1% of formal GDP (equivalent to the output of an additional 1.3 million workers). In 2028, the maximum further macroeconomic benefit is forecasted to also increase to \$136,461 million (an additional 3.0% of formal GDP).
- Between 2023 and 2028 we estimate that for Germany, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 1.4% to 2.6%.

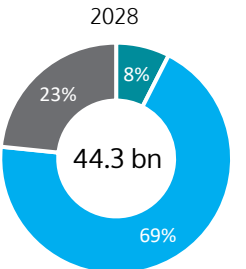
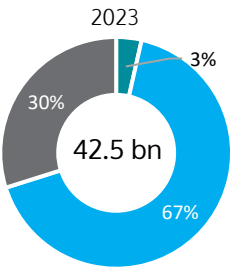
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

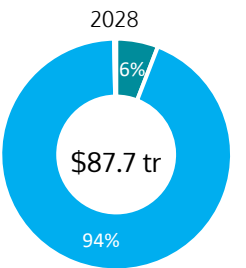
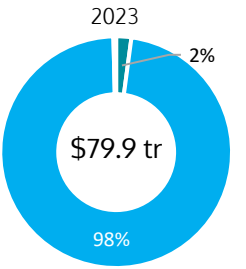


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

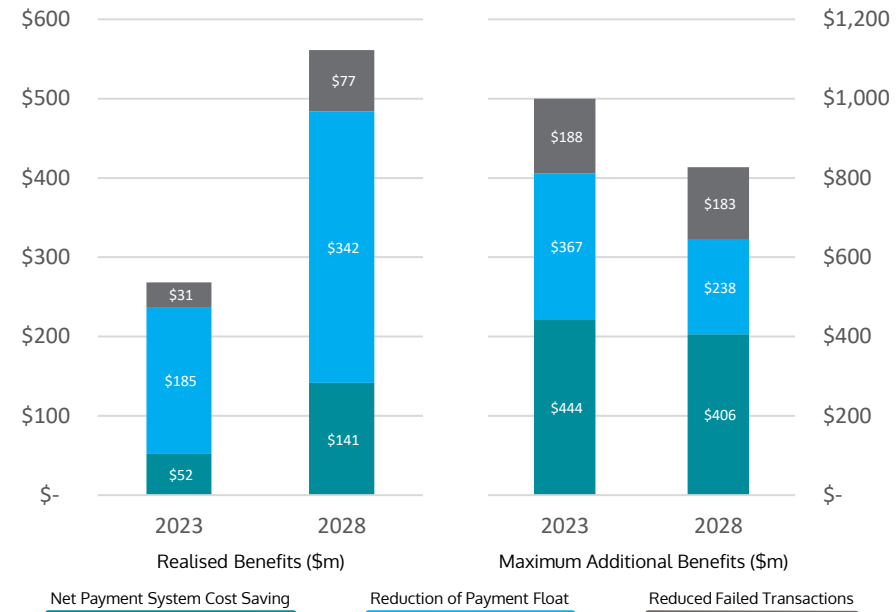




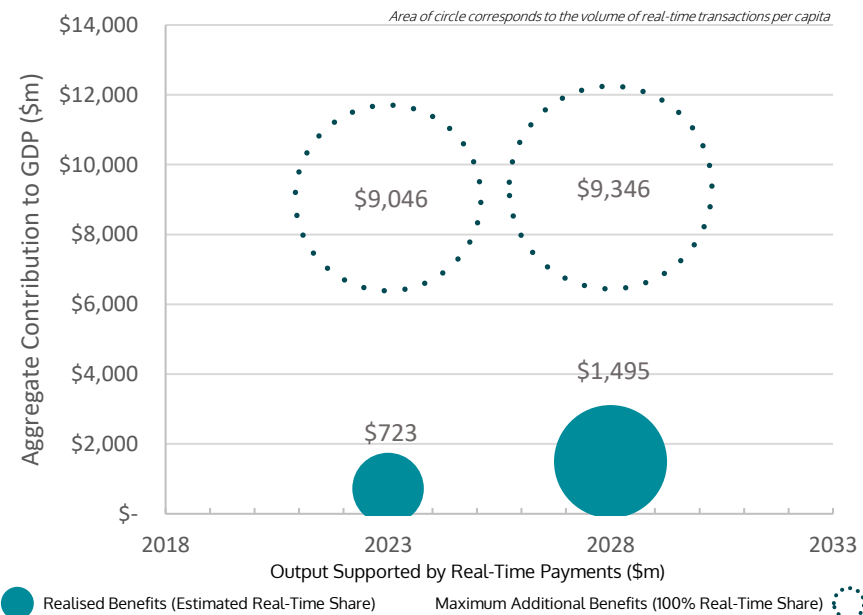
# Hong Kong (SAR China)

- Hong Kong had a GDP per capita of \$69,987\* in 2022, making it one of the richest countries in the world, ranking as the 41st largest global economy in 2023 (Cebr World Economic League Table, 2023). \*PPP adjusted.
- With its current share of adoption, Hongkonger businesses and consumers gained estimated net efficiency saving of \$268 million; predominantly driven by a reduction in the payment float. Instant payments unlocked a total transaction value of \$2,314 million per day in 2023 through a reduced float time in Hong Kong. This working capital facilitated an estimated \$185 million of firm output in the same year.
- The share of real-time payments was recorded at 14.1% in 2023, which is estimated to more than double to 29.7% by 2028. The strong predicted real-time uptake will result in business and consumer level benefits reaching \$561 million in 2028.
- The macroeconomic benefits of using real-time payments were an estimated \$723 million of economic output (0.19% of formal GDP) in 2023; equivalent to the output of 6,993 workers. In relative terms, this impact is double compared to the benefits associated with real-time across China in 2023 (0.09% of Chinese GDP).
- As the share of real-time across the payment mix grows, this is forecasted to support 0.34% of formal GDP in 2028. The scale of this impact is substantial and is equivalent to
- \$1,495 million of output, annually. In relative terms, this impact also significantly outpaces the forecasted benefits associated with real-time across China in 2028 (0.14% of Chinese GDP).
- If all transactions took place through the real-time payments system in Hong Kong, the potential additional benefit to businesses and consumers was an estimated \$1,000 million in 2023. Combining these additional benefits with the realised benefits, 100% real-time payment utilisation could have induced a total benefit of £1,268 million. By 2028, the maximum additional benefits for businesses and consumers are expected to drop to \$827 million out of a total benefit of £1,388 million. This is as a result of real-time adoption increasing significantly in the years to 2028, hence a greater share of the theoretical benefit will be realised.
- Equivalently, between 2023 and 2028 we estimate that for Hong Kong, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 7.4% to 13.8%.
- Under full real-time adoption, an additional \$9,046 million of economic output is forecasted to be supported by real-time, equivalent to an additional 2.3% of GDP in 2023. This could further rise to \$9,346 by 2028 (an additional 2.1% of GDP).

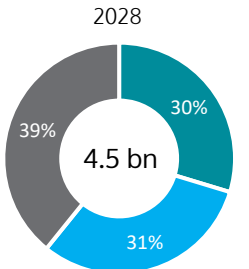
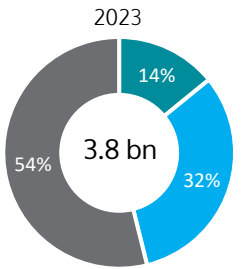
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

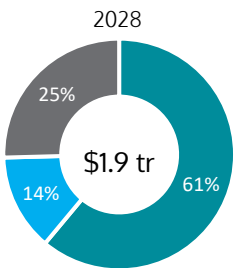
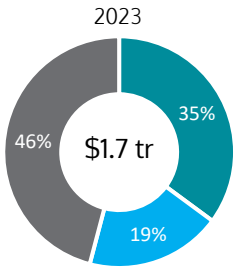


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



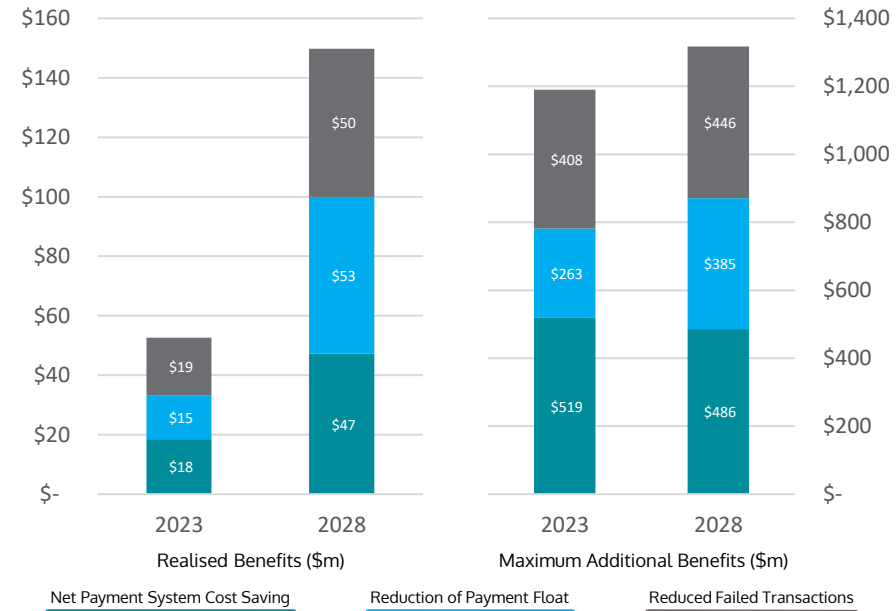


# Hungary

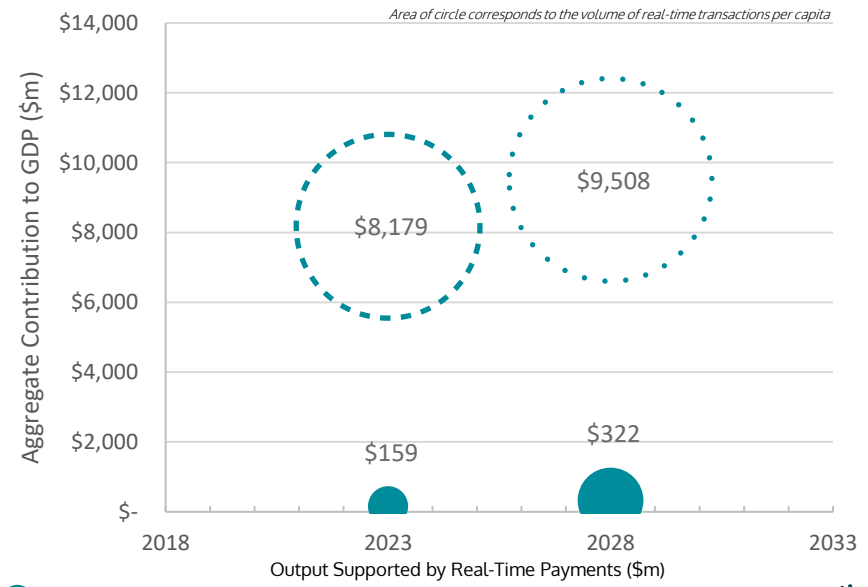
- Hungary, a high-income country, ranked as the 58th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- With its current share of real-time adoption, Hungarian businesses and consumers gained estimated net efficiency saving of \$53 million in 2023, which is predominantly driven by a reduction in the costs associated with failed transactions. In Hungary, we estimate the total cost of failed transactions to be \$408 million in 2023. However, through reducing the probability of failure, real-time payments saved these stakeholders from an additional \$19.4 million of payment failure costs.
- In 2023, economy-wide efficiency gains are estimated to facilitate \$159 million of economic output (0.09% of formal Hungarian GDP). The country has a relatively young real-time infrastructure with the first scheme launching in 2020. 4.5% of all transactions are real-time accounting for 4.3% of total transaction value in 2023.
- By 2028, the share of real-time payments is estimated to increase by more than double to 10.0%. This robust real-time uptake will result in business and consumer level benefits reaching \$150 million in 2028. This is forecasted to support 0.16% of formal GDP in 2028. Compared to other European countries in relative terms, the scale of this impact is above

- average and is equivalent to \$322 million of output, annually.
- When it comes to the untapped benefits of real-time through a theoretical 100% real-time adoption rate, in 2023 there was a total benefit of \$1,242 million of efficiency savings for Hungarian businesses and consumers to enjoy. Of this total, Hungarian businesses and consumers realised 4.2%, leaving an additional \$1,190 million of additional benefits left untapped.
- By 2028, out of the total benefits of \$1,467 million, Hungarian businesses and consumers enjoy 10.2%, suggesting that there is an additional \$1,317 million for these stakeholders to take advantage of by increasing real-time payment utilisation.
- The maximum additional macroeconomic benefits for Hungary are \$8,179 million in 2023 (a formal GDP addition of 4.6%) and \$9,508 million in 2028 (a formal GDP addition of 4.5%).
- Between 2023 and 2028 we estimate that for Hungary, the realised share of the total attainable macroeconomic benefits of real-time payments rises from 1.9% to 3.3%.

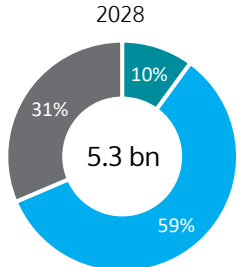
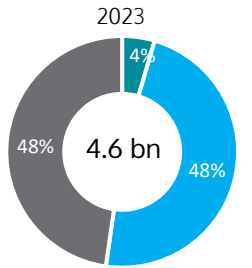
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

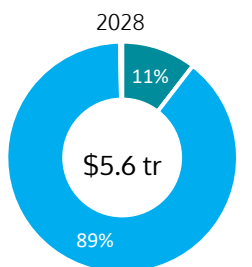
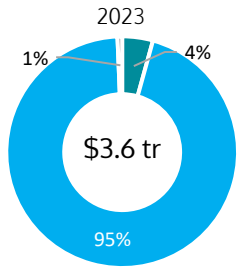


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



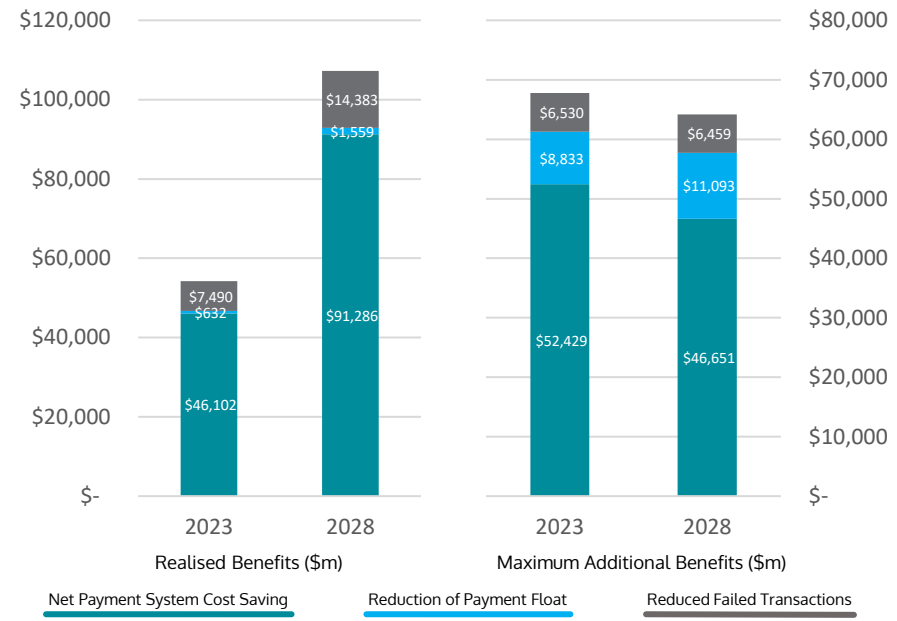


# India

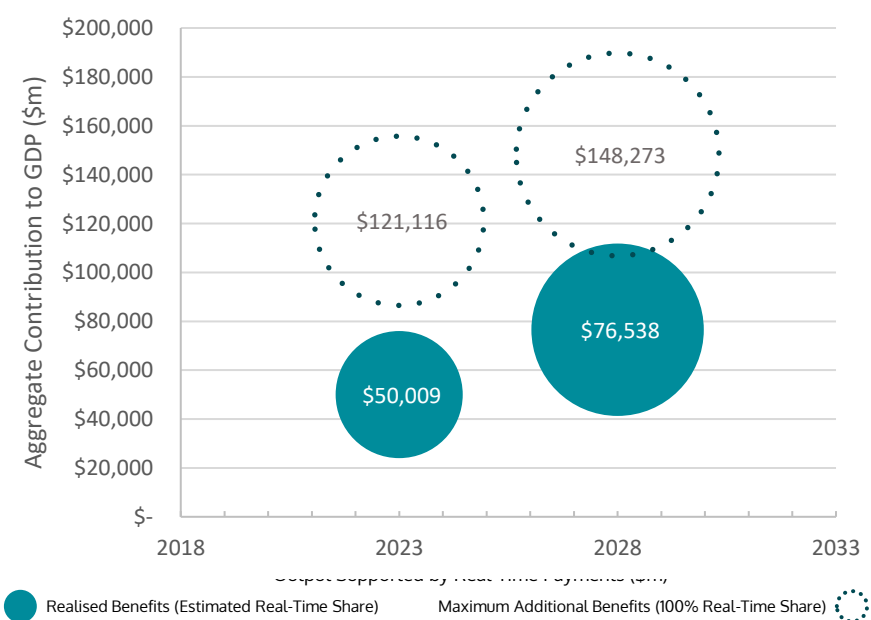
- India, the second-most populous country in the world, is classified as a lower middle-income country and in 2023 ranked as the 5th largest global economy (Cebr World Economic League Table, 2023).
- In 2023, India recorded the largest absolute number of real-time transactions in the world at over 129 billion, representing 53.4% of all transactions in the country, making it the only one where more than half of payment transactions are conducted via real-time payment. Indian businesses and consumers benefited an estimated \$46,102 million from the adoption of real-time payments in 2023, which is predominantly driven by net savings in the payments system costs. On a per transaction basis, real-time payments in India had a 37.5% lower average payment cost in 2023, compared to non-instant payments.
- Total business and consumer level benefits contributed to an economy-wide impact of \$50,009 million of economic output in 2023 that was supported by real-time payments (1.37% of formal GDP); equivalent to the output of approximately 6.8 million workers.
- The share of all transactions occurring via real-time instruments is expected to increase further to 69.0% by 2028. The strong predicted real-time uptake results in realised business and consumer level benefits reaching \$107,228 million in 2028. This is forecasted to support 1.51% of formal GDP (an impact of \$76,538 million) in 2028. The scale of this impact is extensive and is equivalent to the

- output of 8.0 million workers, annually.
- If all transactions took place through the real-time payments system in India, the maximum additional benefit to businesses and consumers was an estimated \$67,792 million in 2023, decreasing to \$64,203 million by 2028. Combining these with the current and forecasted benefits of existing real-time utilisation rates, consumers and businesses could benefit by a total of \$122,015 million and \$171,432 million in 2023 and 2028, respectively.
- High real-time volumes in India result in the already realised share of the total attainable economic benefits from instant payments being relatively large, compared to other countries. In 2023, we estimate that India captured 29.2% of the maximum attainable macroeconomic benefits of real-time payments. By 2028, this is forecasted to rise to 34.0%, the largest share in our sample in that year.
- In monetary terms, the theoretical maximum further level of economic output that real-time payments could facilitate was \$121,116 million in 2023 and \$148,273 million in 2028; equivalent to a 3.2% and a 2.8% addition to formal GDP in India under full real-time adoption, respectively.

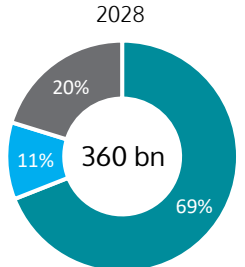
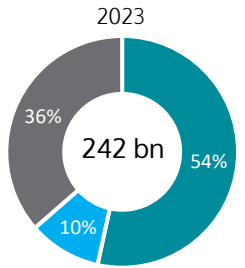
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

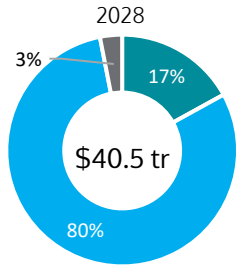
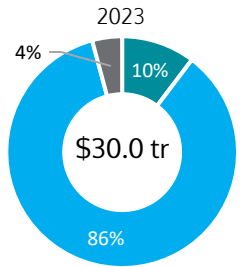


## Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

## Payment Mix By Transaction Value (\$ tr)

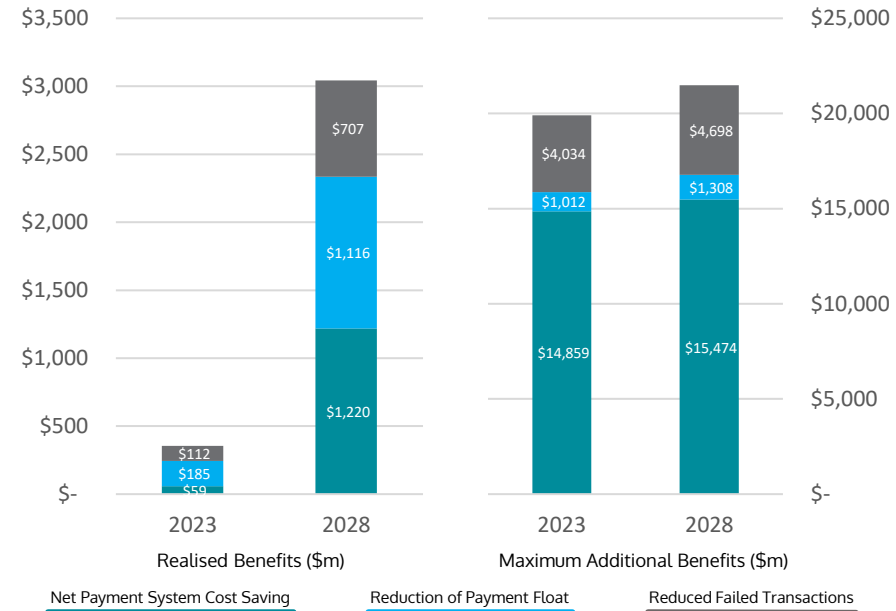




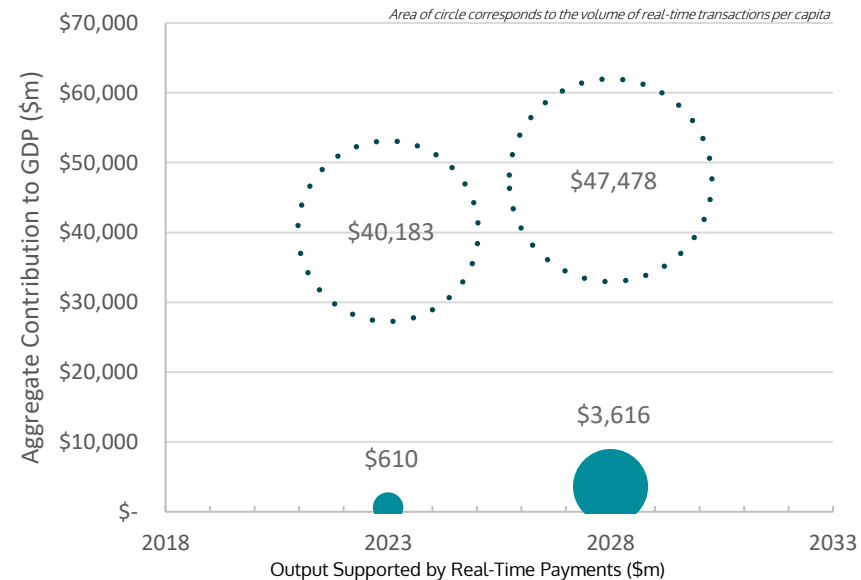
# Indonesia

- Indonesia ranked as the 17th largest global economy in 2023 and is classified as a lower middle-income country (Cebr World Economic League Table, 2023).
- With regards to real-time payments, Indonesia's BI-FAST system initially launched late in December 2021, with its full launch in 2022. As a result, the economic impact of real-time payments in 2023 is relatively low. Benefits to Indonesian businesses and consumers was \$356 million. However, the hypothetical maximum attainable benefit to Indonesian businesses and consumers from full adoption of real-time payments was estimated at \$19,905 million for 2023. Macroeconomic gains stood at \$610 million, which is 0.05% of GDP and supports 61,494 jobs, while hypothetical macroeconomic gains stood at an additional \$40,183 million of economic output (2.9% of GDP, 3.9 million jobs) in the same year.
- By 2028, the forecasted share of the payment mix that real-time payments account for is 13.1%, while the majority of transactions are predicted to remain as paper-based instruments (63.1%). Based upon this forecast, businesses and consumers stand to gain a net value of \$3,043 million in 2028. The realised macroeconomic benefits of real-time are anticipated to reach \$3,616 million in 2028, equivalent to the output of 304,037 workers or 0.21% of formal GDP.
- By 2028 the maximum additional benefits for businesses and consumers will rise to \$21,481 million, annually. This suggests that 12.4% of the total benefit pool of \$24,524 million for businesses and consumers will be realised.
- Regarding the theoretical maximum level of additional economic output that real-time payments could facilitate, by 2028 we predict that this addition will rise to \$47,478 million from \$40,183 million in 2023, representing a 2.7% addition to formal GDP.
- Between 2023 and 2028 we estimate that for Indonesia, the realised share of the total attainable macroeconomic benefits of real-time payments rises from 1.5% to 7.1%.

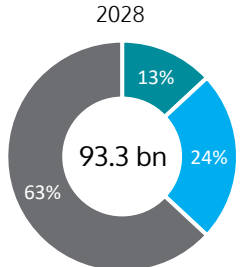
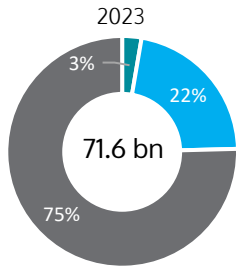
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

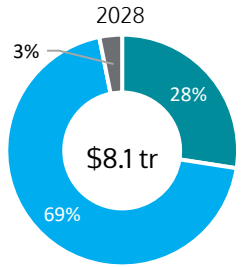
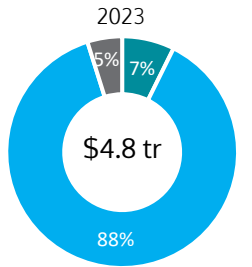


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



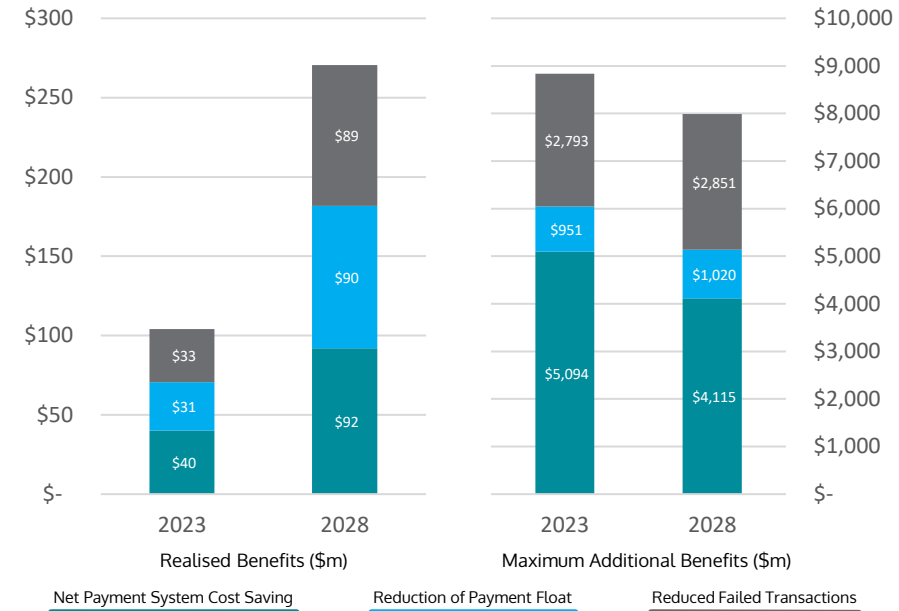
† Payment mix data for Indonesia was not available for 2021. As a result, Cebr analysis based upon GlobalData estimates for the payment mix in Indonesia in 2020 and 2026 were used to interpolate the payment mix estimate for 2021.



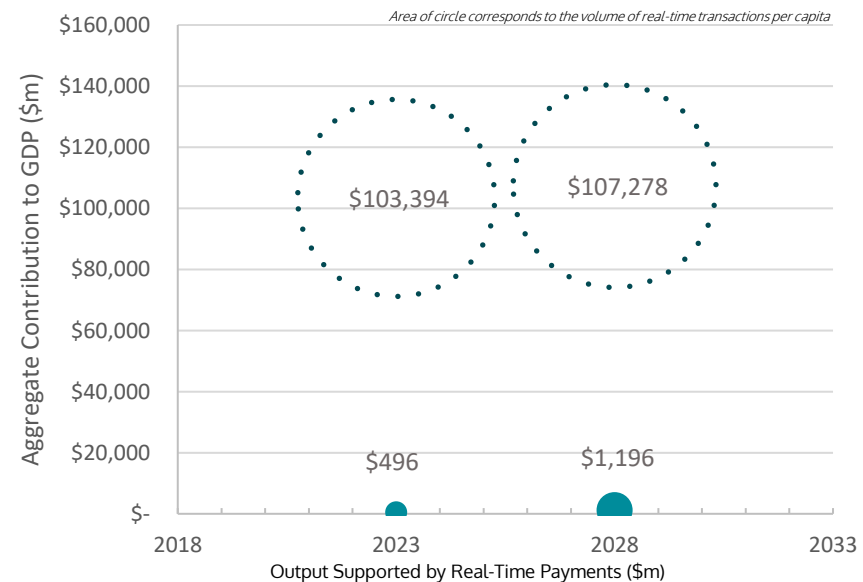
# Italy

- In 2023, the Southern European country Italy ranked as the world's 10th largest economy (Cebr World Economic League Table, 2023).
- In contrast to its European peers, Italy has a primarily paper-based payment mix. Two thirds of all transactions in the economy are paper based, leaving real-time payments with a marginal share of 1.2%, as of 2023. Italian businesses and consumer therefore enjoyed relatively modest benefits from real-time payments, totalling only \$104 million in efficiency savings. This is still twice as much as the \$51 million recognised in 2021.
- This benefit contributes to the real-time payments system facilitating \$496 million in macroeconomic gains in 2023 (0.03% of formal GDP); equivalent to the output of 5,860 workers. This macroeconomic impact is predominantly driven by the formalisation of shadow economy activity. Cebr estimates that, in Italy, real-time payments were responsible for the formalisation of \$454 million of economic activity that would have otherwise occurred outside of the formal institutional and bureaucratic frameworks.
- By 2028, the share of real-time payments is forecasted to increase to 3.0%, with paper-based transactions remaining dominant. The benefits at the business and consumer level are forecasted to increase to \$271 million, while the macroeconomic benefits of these real-time adoption rates are estimated to rise to \$1,196 million of formal economic output; equivalent to that of 13,499 workers, or 0.06% of formal GDP in 2028.
- In addition to the realised benefits, the untapped benefits of adopting 100% real-time payments were estimated to yield additional savings of \$8,837 million for businesses and consumers in 2023. In the same year, the theoretical maximum level of additional economic output that real-time payments could facilitate stood at \$103,394 million (a 5.0% addition to GDP).
- However, by 2028 the maximum additional benefits for businesses and consumers is expected to fall to \$7,986 million, annually. This maximum potential increase decreases as real-time adoption increases and a greater share of the total theoretical benefit is already realised.
- Overall, the total benefit for businesses and consumers falls from \$8,941 million in 2023 to \$8,257 million in 2027 (a 9% fall) despite a general rise in the total transaction volume of Italy, which is forecasted to increase by 4.0%.
- This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate rising to \$107,278 million, or 4.9% of formal GDP.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that Italy captures of total attainable economic benefits of real-time payments rises from 0.5% to 1.1%.

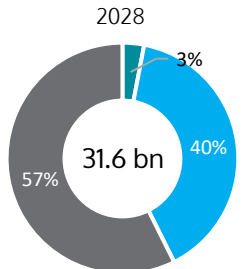
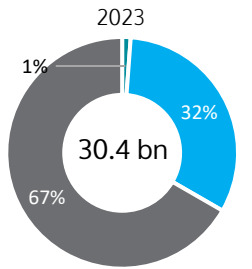
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

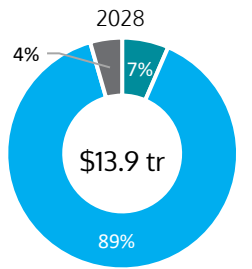
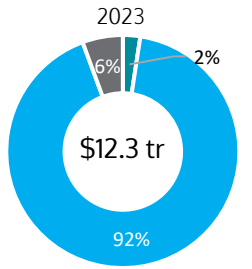


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





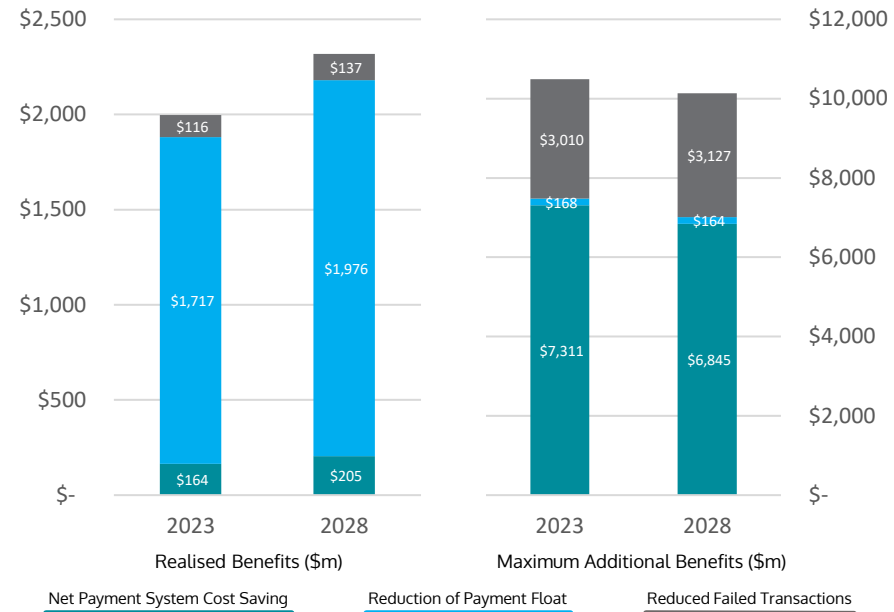
# Japan

- Japan is a high-income economy in East Asia, and the world's 4th largest in 2023 (Cebr World Economic League Table, 2023).
- Japan is one of the few advanced economies that remains predominantly cash-based (62.0% of all transactions) in the modern day, with just 3.7% of all transactions in 2023 made through real-time instruments. However, despite its low share of instant payments, Japan still stands to benefit very highly from the technology.
- The total benefit to businesses and consumers was estimated to be \$1,997 million in 2023, the seventh largest across Cebr's sample. This result is a function of the payment float mechanism: Japan has a payment mix with a high paper-based share combined with high-value real-time transactions meaning that instant payments unlock a total transaction value of \$104,438 million per day in 2023 through a reduced float time. This working capital facilitates an estimated \$1,717 million of business output in the same year. This is significantly lower compared to the estimated \$3,111 million in 2021. The reason behind this is the inflation rate in Japan increasing to 3.2%, while the nominal interest rate remained at 1.5%, therefore the real interest rate is negative. To avoid negative values, we use 1.0% as a floor for every country's interest rate, however in this case it doesn't facilitate the same estimation as in 2021.
- In 2023, Japan realised total macroeconomic benefits worth \$2,966 million (0.07% of GDP),

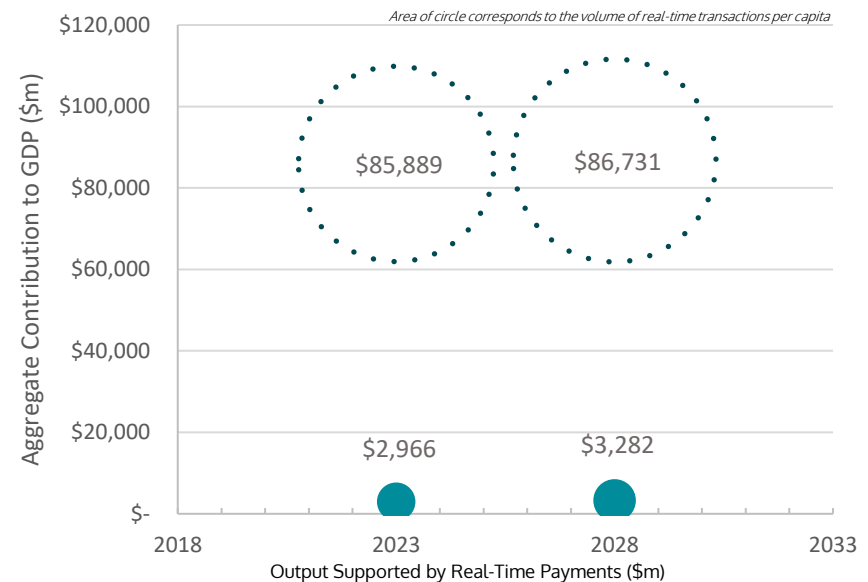
equivalent to the output of 46,849 workers.

- The share of real-time payments is forecasted to increase to 4.2% by 2028. As a result, the economic impacts at both the business and consumer level and the economy-wide level are predicted to also increase slightly in real terms. In 2028, the benefit for businesses and consumers is forecasted to be \$2,318 million, supporting \$3,282 million of the total national output (0.07% of formal GDP); equivalent to the output of 50,153 workers.
- If all transactions took place through the real-time payments system in Japan, in addition to the realised benefits, the maximum additional benefit for businesses and consumers was an estimated \$10,488 million in 2023, which would decrease to \$10,135 million by 2028. This additional benefit decreases because of the realised share of the total attainable benefits increasing by 2.6 percentage points to 18.6% in 2028.
- Under full real-time adoption, an additional \$85,889 million of output is forecasted to be supported by real-time, equivalent to the addition of 2.0% of GDP in 2023. This could further rise to \$86,731 by 2028 (a 1.9% addition to formal GDP).
- Between 2023 and 2028 we estimate that for Japan, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 3.3% to 3.6%.

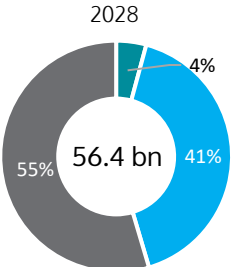
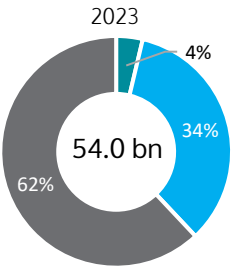
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

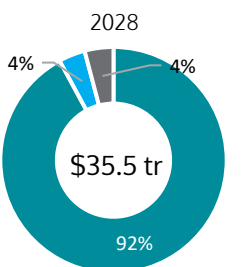
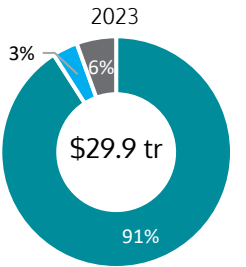


Payment Mix By Transaction Volume (bn)

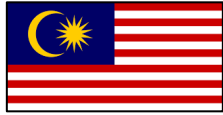


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



● Realised Benefits (Estimated Real-Time Share) ● Maximum Additional Benefits (100% Real-Time Share)



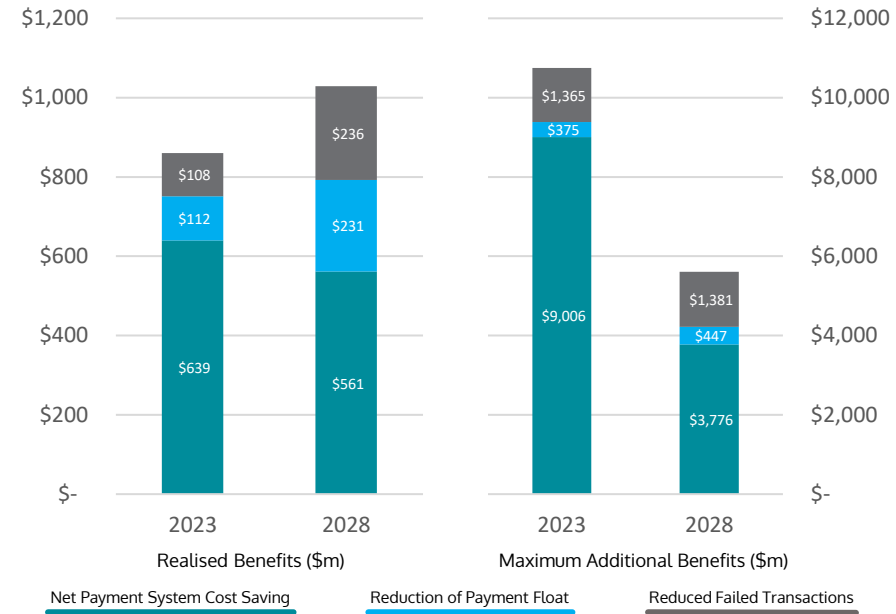
# Malaysia

- Malaysia is an upper middle-income country, at roughly the same level of prosperity as Greece or Turkey. In absolute terms, Malaysia ranked as the 39th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- In recent years, adoption of real-time instruments in Malaysia has been rapid in terms of transaction volumes, rising from a 0.3% share in 2020 to 7.4% in 2023, with forecasts suggesting the share will climb further to 14.6% in 2028.
- Led by the reduction in net payments system costs, total efficiency savings for businesses and consumers, through the use of real-time payments, generated benefits worth \$860 million in 2023. On a per transaction basis, real-time payments in Malaysia had a 40% lower average payment cost, compared to non-instant payments. This represents a cost saving of \$639 million.
- At the macroeconomic level, economy-wide efficiency gains are estimated to facilitate \$731 million of economic output (0.18% of formal GDP). This is equivalent to the output supported by 30,962 jobs.
- Looking forwards to 2028, net efficiency savings for businesses and consumers are estimated to increase to \$1,029 million. While the forecasted macroeconomic impact of real-time is estimated to be \$1,450

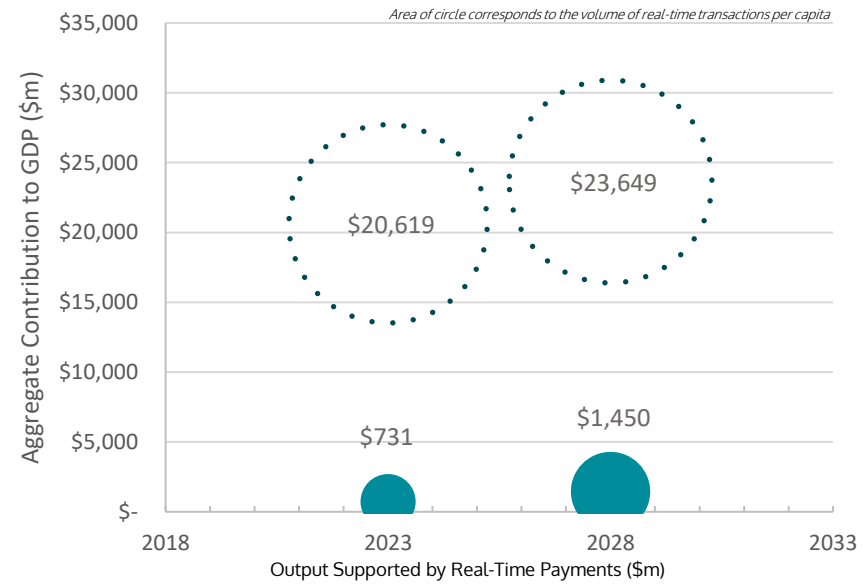
million of economic output (0.29% of formal Malaysian GDP) in 2028, equivalent to the output of 54,284 workers, annually.

- Between 2023 and 2028, the annual untapped benefits for businesses and consumers associated with complete real-time adoption are expected to fall from \$10,746 million to \$5,605 million. This is caused by a reduction of the total additional benefits through net payment system costs from complete real-time adoption. By 2028, the costly paper-based instruments are expected to drop to 47.8% of the payment mix, from 65.1% in 2023. As a result, the potential for real-time transactions to displace paper-based instruments under a hypothetical 100% instant payment scenario is relatively limited.
- At the macroeconomic level, the theoretical maximum level of additional economic output that real-time payments could facilitate was \$20,619 million in 2023 and \$23,649 million in 2028; equivalent to a 4.9% and a 4.6% addition to formal GDP in Malaysia under full real-time adoption, respectively.
- Between 2023 and 2028 we estimate that for Malaysia, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 3.4% to 5.8%.

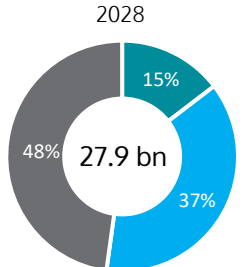
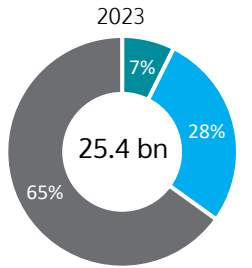
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

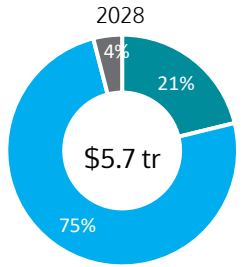
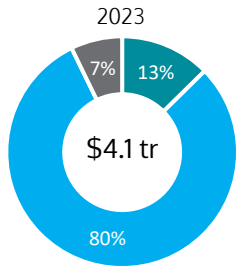


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)







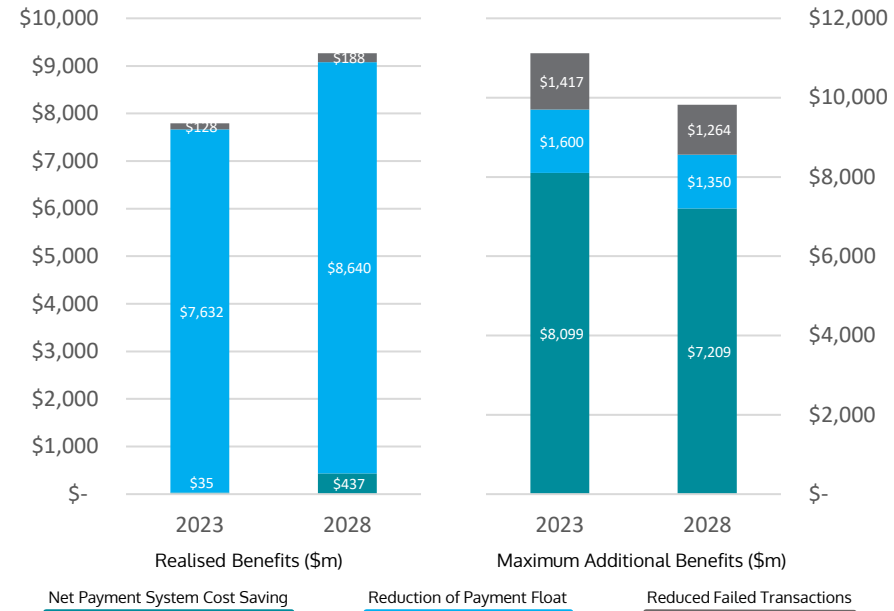
# Mexico

- Mexico is Latin America's second-largest economy behind Brazil. At the aggregate level, in 2023 it ranked as the 15th largest global economy (Cebr World Economic League Table, 2023).
- While 8.3% of payments were real-time in 2023 – a volume share that was greater than in Germany or the USA – 80.0% of transactions took place via paper-based instruments that year.
- In 2023, net benefits of real-time payments for businesses and consumers hit \$7,795 million, rising to \$9,265 million in 2028. The high paper-based volume means that significant agent-level benefits are generated through the impact of real-time in reducing the payment float since paper-based instruments typically have the longest clearing times.
- The impact in 2021 for businesses and consumers was \$1,003 million. The reason of the significant rise in the recognised impact was in the reduction of the payment float, which is driven by the inflation and the interest rates. While in 2021 the inflation rate in Mexico was higher than the interest rate, in 2023 this has reversed. Due to this, the realised benefits through this channel has increased greatly.
- In 2023 and 2028 respectively, 98% and 93% of the attained net benefits for businesses and consumers are derived by reducing the payment float. These results are so high also because of the high paper-based transaction volume which leads to real-time increasing payment system costs.
- The business and consumer level benefits contribute to wider annual macroeconomic gains of \$10,286 million (0.71% of formal GDP) and \$12,798 million (0.79% of formal GDP) in 2023 and 2028, respectively. In terms of the number

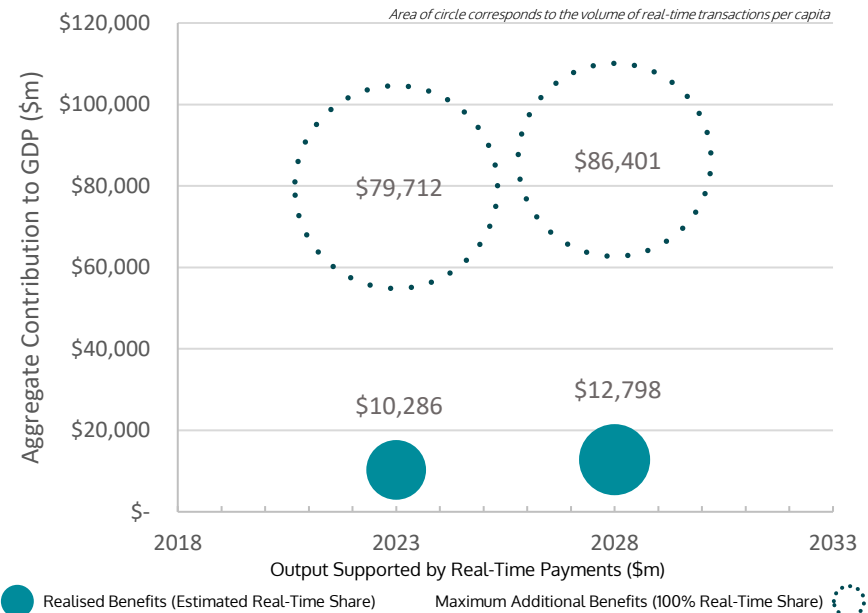
equivalent workers supported in 2023 and 2028, this impact is equal to the output supported by 411,136 and 467,131 jobs, respectively.

- The untapped benefits of adopting 100% real-time payments are estimated to yield maximum additional savings of \$1,116 million for businesses and consumers in 2023, while the theoretical maximum level of additional economic output that real-time payments could facilitate stands at \$79,712 million (5.2% of GDP) in the same year. This means that including the already realised benefits associated with current levels of real-time payments, total benefits would have been \$18,911 million and \$89,998 million, respectively.
- By 2028, as the real-time share is forecast to increase, the theoretical unrealised benefit for businesses and consumers is forecast to reduce to \$9,822 million annually. The theoretical maximum level of additional economic output that real-time payments could facilitate rises to \$86,401 million, or an additional 5.1% of formal GDP, which results in an overall benefit of \$99,199 million. This is primarily driven by a significant modelled reduction in the size of the shadow economy, caused by reduced cash usage.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that Mexico captures of the total potential economic benefits of real-time payments rises from 11.4% to 12.9%.

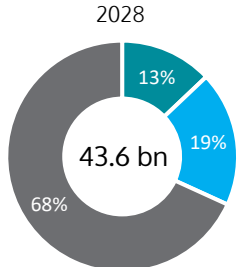
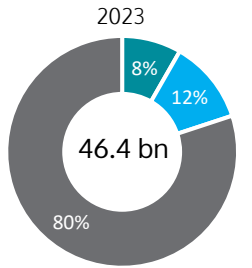
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

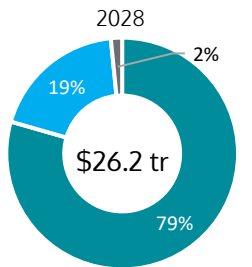
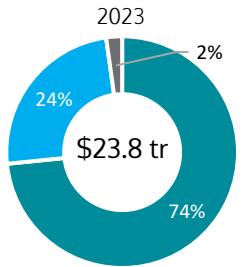


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





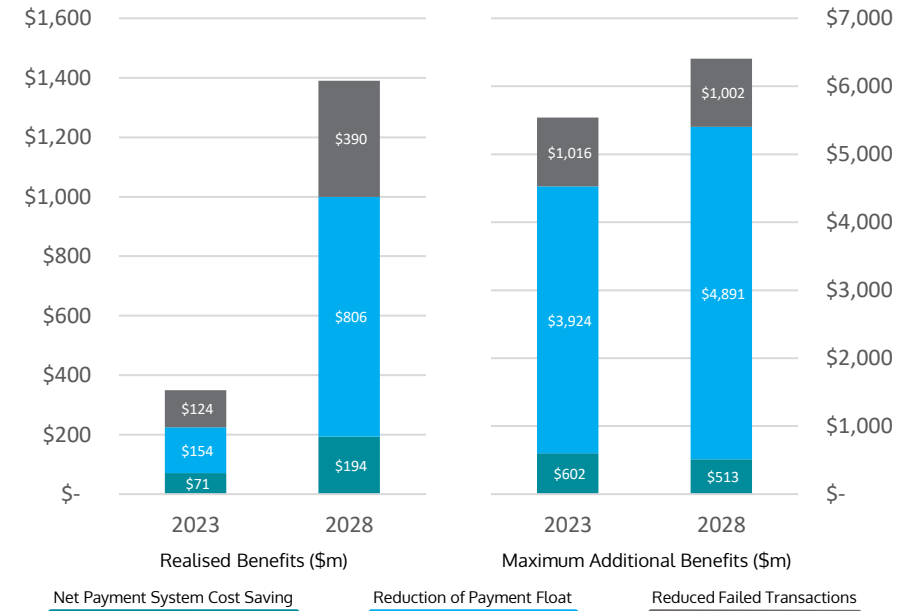
# Netherlands

- Netherlands is a high-income country located on the North-western coast of continental Europe. As of 2023, it ranked as the 19th largest global economy (Cebr World Economic League Table, 2023).
- 10.9% of all transactions in the country were real-time in 2023, a figure outpacing Eurozone counterparts France and Germany.
- As a result of its strong real-time adoption, businesses and consumers in the Netherlands benefitted from efficiency savings of \$349 million in 2023, with real-time payments ultimately supporting 0.13% of the formal economy (\$1,332 million) in the same year; equivalent to the output supported by 12,685 jobs.
- By 2028, the share of transactions by volume is forecasted to grow to 28.0% – at a CAGR of 25.8% – driving the impact of real-time payments for businesses and consumers to reach \$1,390 million. This result is underpinned by the significant benefits generated by the reduction in the size of the payment float, which is estimated to unlock a total transaction value of \$38,883 million per day in 2028 through a reduced float time. This working capital facilitates an estimated \$806 million of business output in 2028.
- At the macroeconomic level, economy-wide efficiency gains are estimated to facilitate \$3,542 million

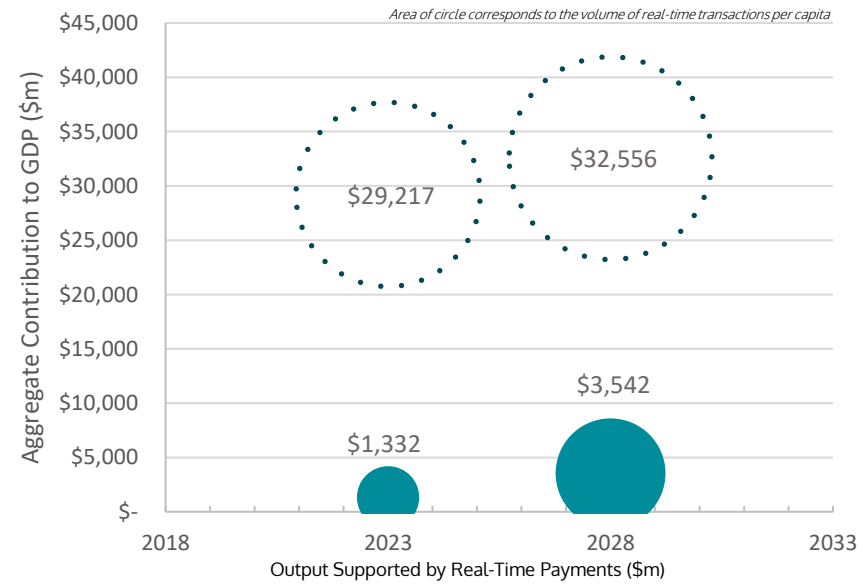
of economic output (0.33% of formal GDP) in 2028; equivalent to the output supported by 31,829 jobs.

- If all transactions were real-time in 2023, we estimate that the theoretical maximum further cost saving for businesses and consumers would equal \$5,542 million, rising to \$6,406 million in 2028. Combined with the realised benefits, the overall potential benefits stand at \$5,891 million in 2023 and \$7,795 million in 2028.
- Under complete real-time adoption, these agent level impacts are estimated to contribute to a maximum of \$29,217 million and \$32,556 million of additional economic output in 2023 and 2028, respectively, or \$30,549 million and \$36,098 million in total. These former sets of figures are equivalent to a 3.0% and 3.2% addition to formal GDP in the Netherlands under full real-time adoption in 2023 and 2028, respectively.
- Between 2023 and 2028 we estimate that for the Netherlands, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 4.4% to 9.8%.

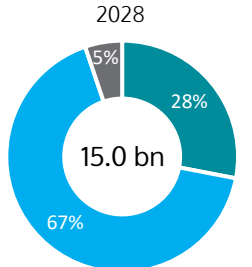
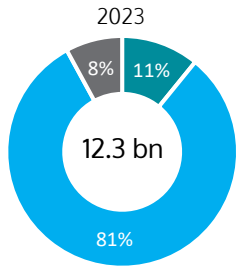
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

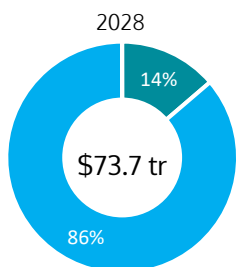
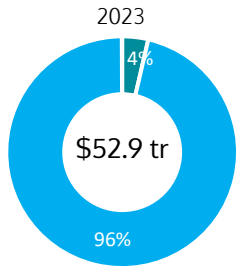


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





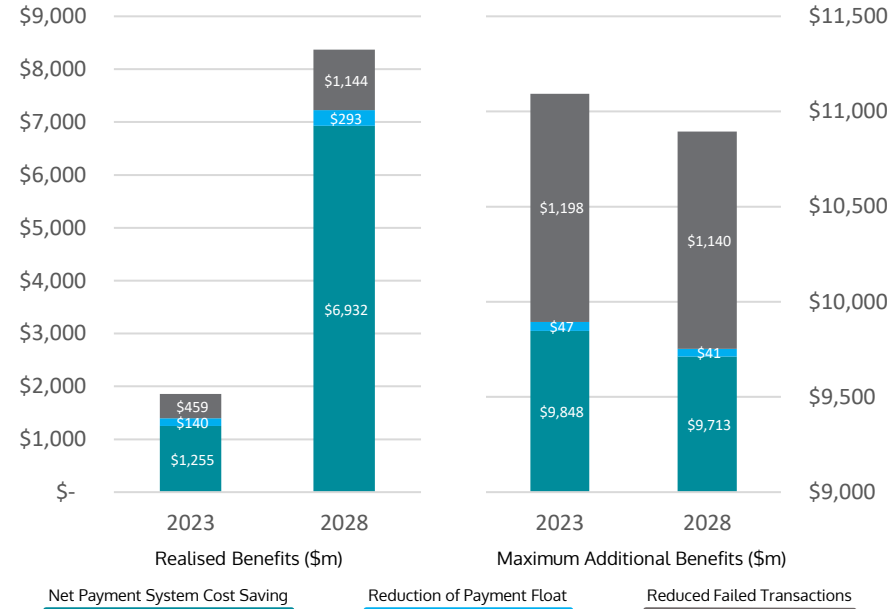
# Nigeria

- Nigeria is an emerging market in West Africa. It is the world's 29th largest economy and the largest in Africa (Cebr World Economic League Table, 2023).
- Due to its mature real-time market but paper-dominated payment mix, Nigeria has both healthy existing benefits as well as significant potential to grow even further. In 2023, the use of real-time payments benefitted businesses and consumers \$1,854 million in efficiency savings. These gains contributed to real-time payments supporting 1.42% of Nigerian GDP (\$7,048 million of final output) in the same year.
- Of the overall realised macroeconomic gains of real-time payments, the largest contributing factor in 2023 (and 2028) was the benefit of real-time payments through shadow economy formalisation. In Nigeria, the size of the informal economy was estimated to be 47% of formal GDP in 2023, equivalent to approximately \$236 billion of informal economic output. In the absence of real-time payments, Nigeria's informal economy would have been 2.9% larger. Hence, instant payments were responsible for formalising \$6,779 million of economic output in that year.
- Business and consumer benefits are expected to reach \$8,368 million by 2028, driven by paper-based payments being displaced by real-

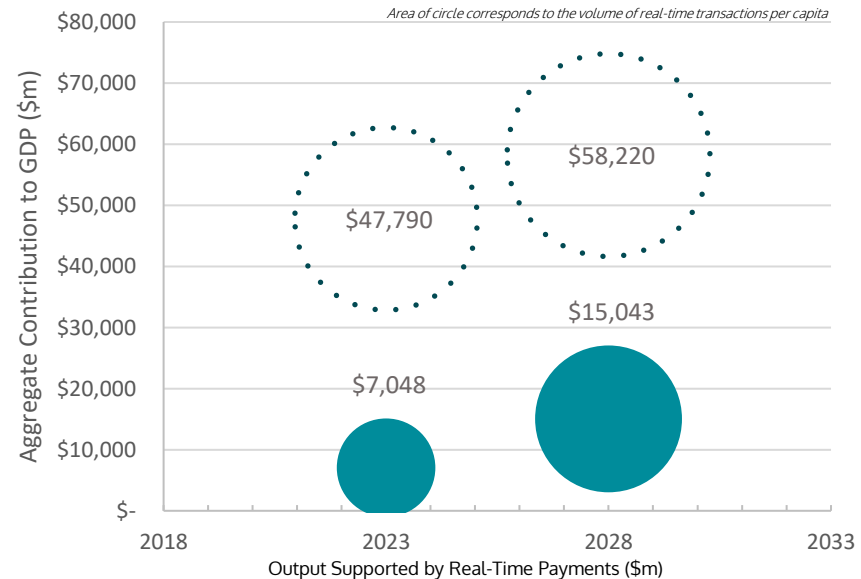
time instruments (which are forecasted to grow to 50.1% of the payment mix). The economy wide impacts are also expected to grow, with 2.42% of Nigerian GDP supported by real-time in 2028, equivalent to \$15,043 million of economic output, or that supported by 2.0 million workers.

- If all transactions took place through the real-time payments system in Nigeria, the additional further benefit to businesses and consumers would be an estimated \$11,093 million in 2023, which would slightly decrease to \$10,894 million by 2028. Combining those additional benefits with the realised benefits, 100% real-time payments utilisation could have brought a total benefit of \$12,947 million to consumers in 2023, and could bring \$19,262 million in 2028.
- Under full real-time adoption, an additional \$47,790 million of output is forecasted to be supported by real-time, equivalent to an additional 8.7% of GDP in 2023. This could further rise to \$58,220 million by 2028 (an additional 8.4% of GDP).
- Between 2023 and 2028 we estimate that for Nigeria, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 12.9% to 20.5%.

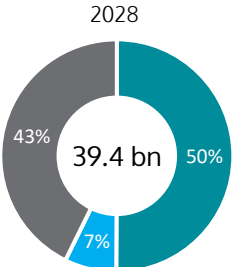
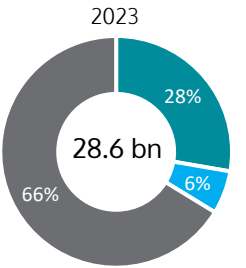
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

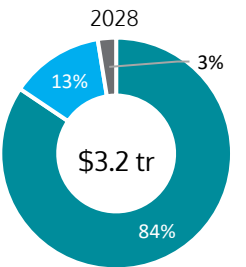
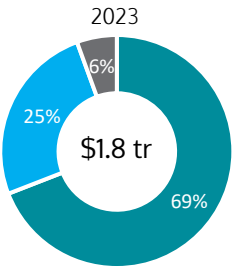


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





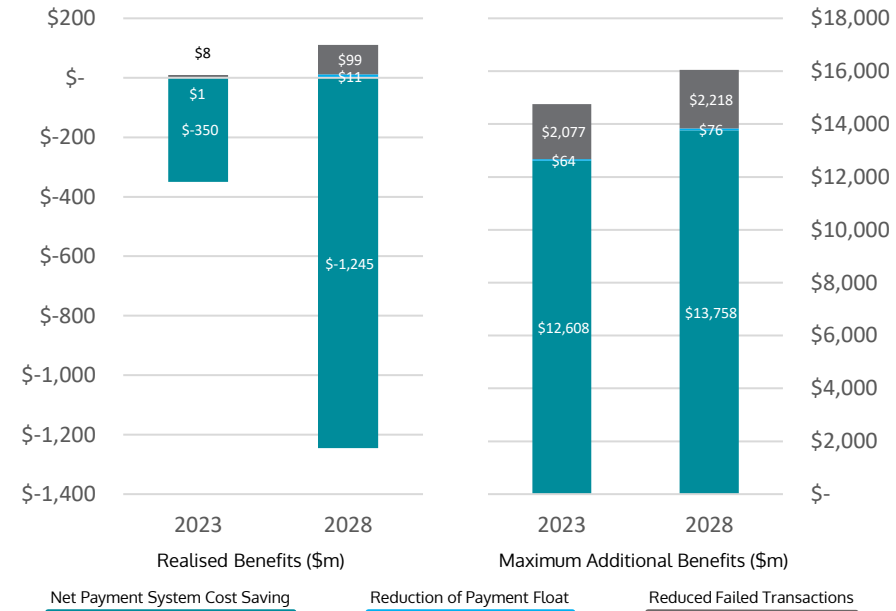
# Pakistan

- Classified as a lower middle-income country, in 2023 Pakistan ranked as the 43rd largest global economy (Cebr World Economic League Table, 2023).
- The low level of real-time take up (0.4% of all transactions were real-time in 2023) led to negligible realised benefits in 2023. By 2028, the number of transactions by volume is forecasted to reach approximately 1.7 billion, which is estimated to account for a 4.3% share.
- Based on this, the high initial costs and low real-time take up means the costs per real-time transaction are yet to drop below the dominant paper-based transactions (99.2% share). For businesses and consumers, the higher real-time cost per transaction led to a negative impact of -\$341 million in 2023.
- As the share of real-time grows over time, Pakistan will start to unlock significant (but as yet untapped) benefits, as the cost per transaction of real-time payments falls. However, this is not forecast to happen by 2028, based on estimated adoption rates. As the real-time market share increases but before economies of scale are realised, the increased volume of real-time transactions drives an increasing negative impact, as the per transaction payments systems cost of real-time payments is still higher than the alternative. This negative business and consumer impact is forecast to reach -\$1,134 million by 2028.
- However, at the macroeconomic level, we additionally consider the

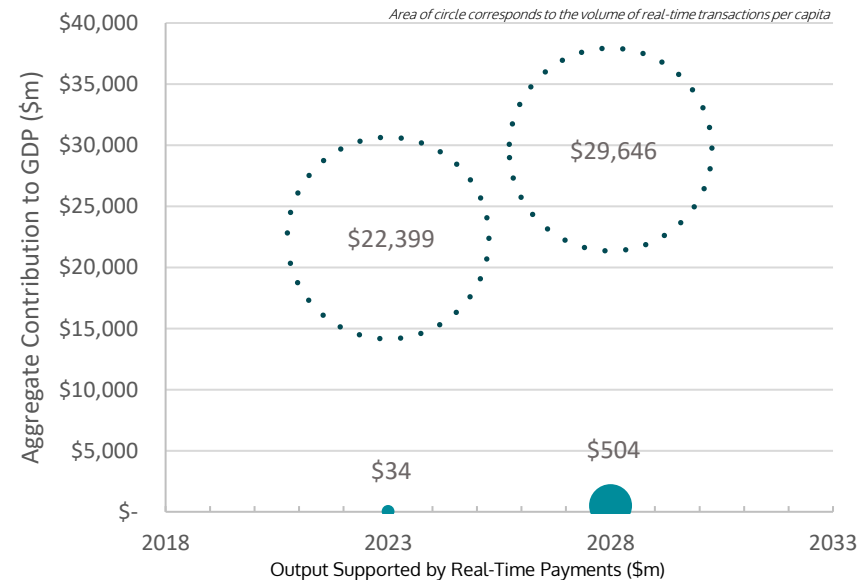
positive impact that real-time payments has in formalising informal economy transactions, through reducing cash usage. This formalisation of previously informal sector activity represents an addition to formal GDP. Given the low level of real-time usage in 2023, this impact is relatively minor, but it did act to stimulate a slight net positive support to Pakistani GDP (\$34 million).

- By 2028, the economic output support by real-time payments is forecast to increase significantly, to \$504 million; equivalent to the output supported by 92,094 jobs.
- If the payment infrastructure was solely real-time, theoretical further business and consumer level benefits are predicted to equal \$14,749 million in 2023, rising to \$16,051 million in 2028.
- The maximum additional macroeconomic benefits for Pakistan are \$22,399 million in 2023 (a formal GDP addition of 6.2%) and \$29,646 million in 2028 (a formal GDP addition of 6.1%). As the realised effects are currently very small, this is very similar to the modelled combined realised and untapped benefits.
- Between 2023 and 2028 we estimate that for Pakistan, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 0.2% to 1.7%.

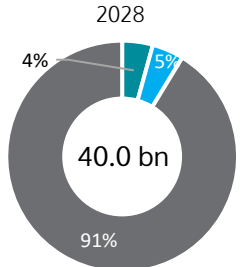
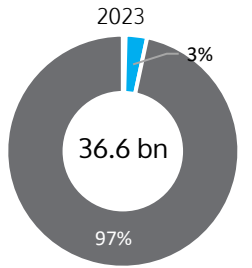
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

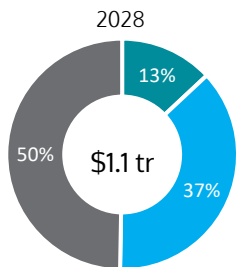
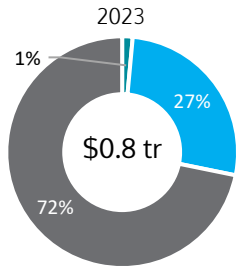


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





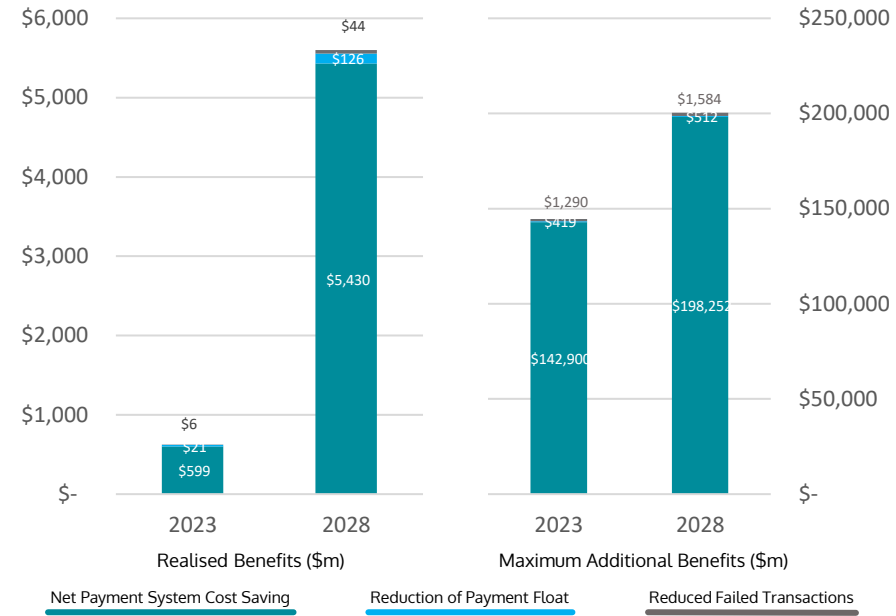
# Peru

- Peru is an upper-middle-income country which ranked as the 51st largest global economy in 2023 (Cebr World Economic League Table, 2023).
- Only 0.4% of payments were real-time in 2023, and 87.4% of transactions took place via paper-based instruments that year, suggesting that Peru is still in the early stages of adopting real-time payment.
- In 2023, net benefits of real-time payments for businesses and consumers hit \$625 million, rising to \$5,599 million in 2028. The reason for the drastic increase is the fall in the share of paper-based transaction volume to 78.8% and the rise in both real-time and non-real-time electronic payments. Due to this, the already high unit cost per transaction increased for paper-based payments, accelerating the benefits recognised from the net payment system cost saving further, to \$5,430 million..
- The business and consumer level benefits contribute to wider annual macroeconomic gains of \$57 million (0.02% of formal GDP) and \$376 million (0.13% of formal GDP) in 2023 and 2028, respectively. In terms of the number equivalent workers supported in 2023 and 2028, this impact is equal to the output supported by 3,893 and 24,155 jobs, respectively.
- The untapped benefits of adopting 100% real-time payments are estimated to yield maximum additional savings of \$144,609 million for businesses and consumers in 2023, while the theoretical maximum

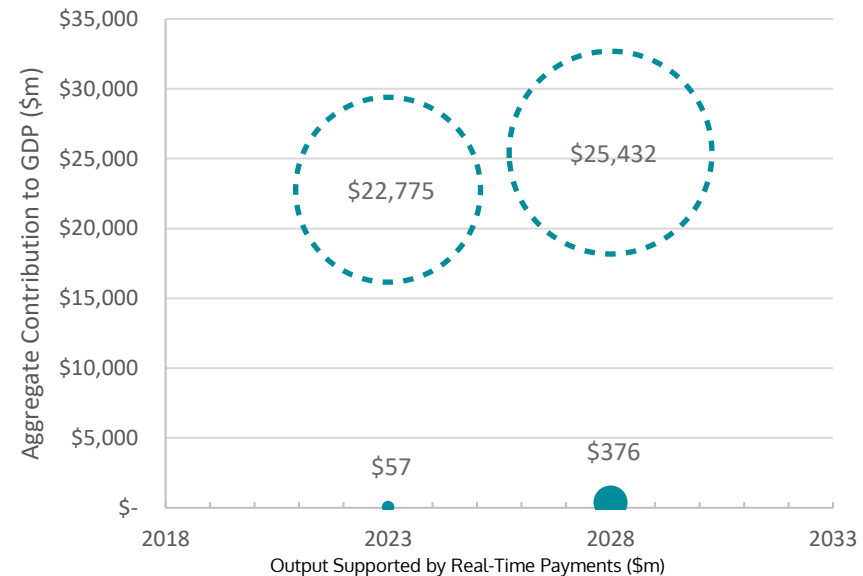
level of additional economic output that real-time payments could facilitate stands at \$22,775 million (8.2% of GDP) in the same year. This means that including the already realised benefits associated with current levels of real-time payments, total benefits would have been \$145,233 million and \$22,827 million, respectively.

- By 2028, the theoretical unrealised benefit for businesses and consumers is forecast to increase to \$200,252 million annually. The theoretical maximum level of additional economic output that real-time payments could facilitate rises to \$25,432 million, or an additional 7.9% of formal GDP, which results in an overall benefit of \$25,808 million. This is primarily driven by a significant modelled reduction in the size of the shadow economy, caused by reduced cash usage.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that Peru captures of the total potential economic benefits of real-time payments rises from 0.3% to 1.5%.

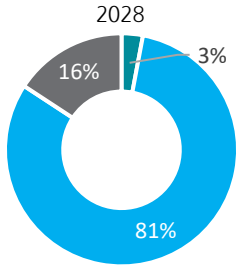
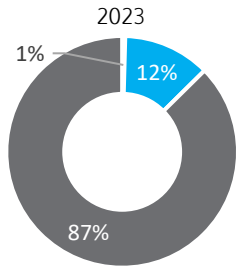
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

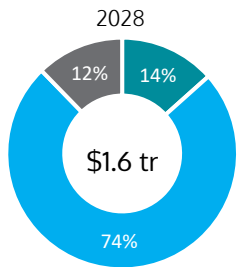
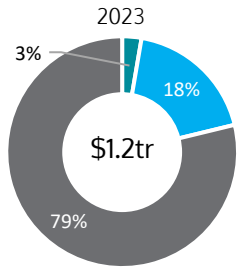


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

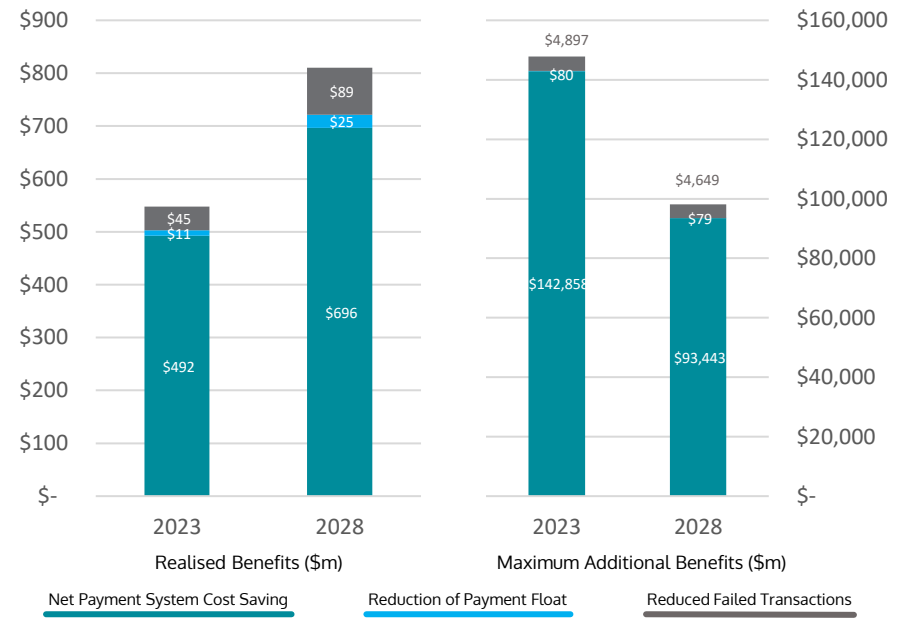




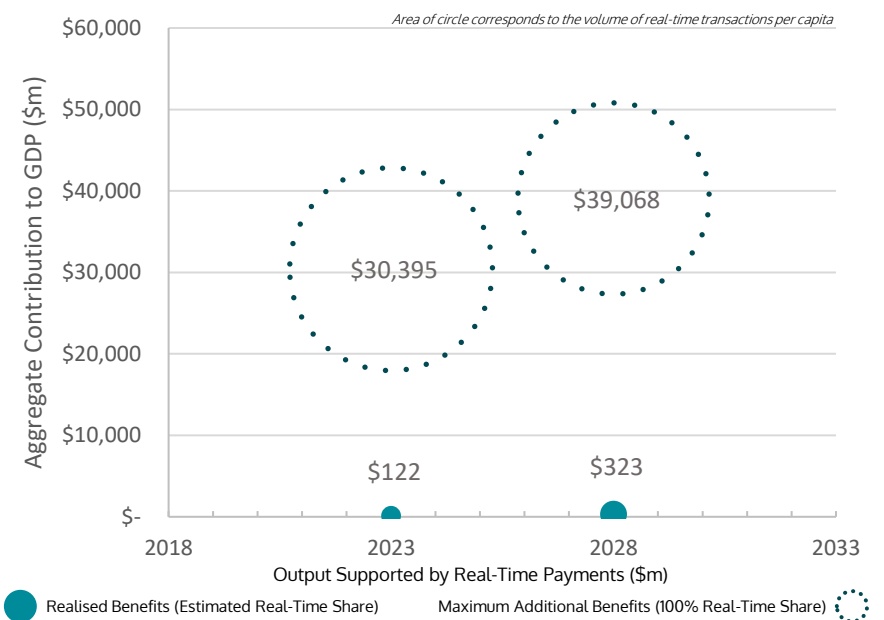
# Philippines

- As of 2023, the Philippines is classified as a lower-middle-income country, ranking as the 42nd largest global economy (Cebr World Economic League Table, 2023).
- The 2023 payment mix of the Philippines was heavily dominated by cash, with 98.1% of all transactions in the country made via paper-based payment methods. Real-time is expected to grow to 1.9% in 2028, however its current share of transaction volumes is very small (0.9%).
- As a result, the realised impacts are relatively low in comparison to the other countries, although the unrealised potential benefits are significant. In 2023 business and consumer level benefits reached \$548 million, with economy-wide efficiency gains estimated to facilitate \$122 million of economic output (0.03% of formal GDP) in the same year.
- The reason for the great increase in the business and consumer level benefits compared to 2021 (\$17 million) is the significant rise in the net payment system cost saving. While in 2021 this had a negative effect (\$-3 million), in 2023 it reached \$492 million. The reason is the increased economies of scale: the volume of real-time transactions rose from 481 million to 777 million, and paper-based payments fell from 96.6 billion to 83.7 billion.
- By 2028, we estimate that realised benefits for businesses and consumers will total \$810 million, almost exclusively driven by net payment system cost savings. On a per transaction basis, real-time payments in the Philippines will have a 29.4% lower average payment cost, compared to non-instant payments.
- By 2028, the forecasted economy-wide impact of real-time is estimated to reach \$323 million of economic output (0.06% of formal GDP), equivalent to that supported by 29,238 jobs. Therefore, if the Philippines can successfully integrate real-time transactions into its payment mix, it will be able to enjoy significant economic benefits in the future.
- The untapped benefits of adopting 100% real-time payments are estimated to yield maximum potential further savings of \$147,835 million for businesses and consumers in 2023, while the theoretical maximum level of additional economic output that real-time payments could facilitate stands at \$30,395 million (6.8% addition to formal GDP) in the same year. Combining those additional benefits with the current benefits, 100% real-time payments utilisation could have brought a total benefit of \$148,383 million to consumers and benefits, and supported a total of \$30,517 million in GDP.
- By 2028 the maximum further benefits for businesses and consumers will fall to \$98,170 million annually; totalling \$98,980 million with currently modelled realised benefits included.
- This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate falling to \$ 39,068 million, or 6.5% of formal GDP.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that the Philippines captures of total attainable economic benefits of real-time payments rises from 0.4% to 0.8%.

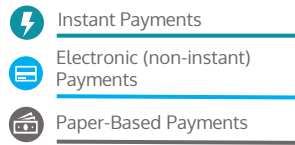
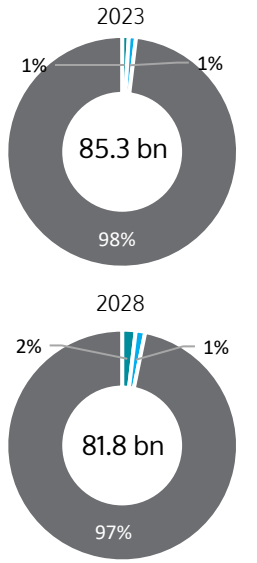
## Net Efficiency Savings for Businesses and Consumers



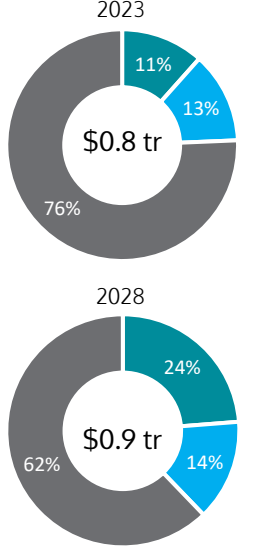
## Aggregate Macroeconomic Impact



Payment Mix By Transaction Volume (bn)



Payment Mix By Transaction Value (\$ tr)

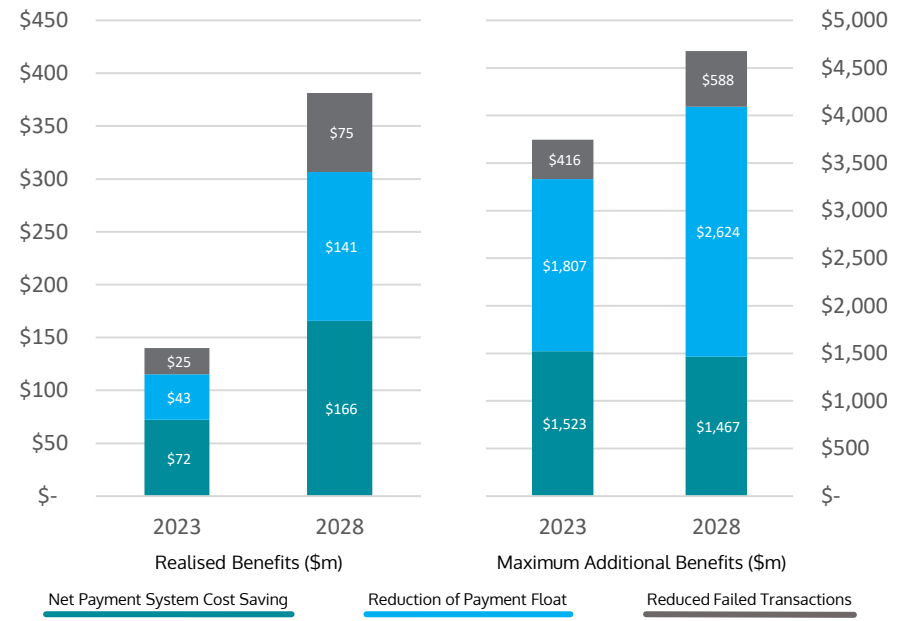




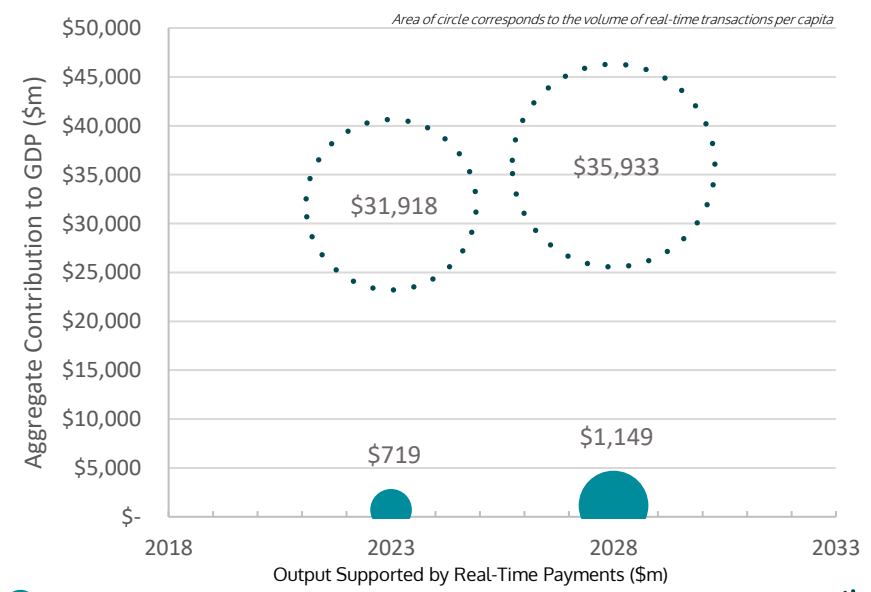
# Saudi Arabia

- The Saudi Arabian economy is the second largest in the Middle East and is classed as high-income. At the aggregate level, the Saudi Arabian economy is the world's 18th largest (Cebr World Economic League Table, 2023).
- In 2023, net benefits for businesses and consumers of real-time payments hit \$140 million. The largest component of this was net savings through the transaction costs. Based on current real-time adoption rates, instant payments facilitated an estimated \$72 million of business output in the same year.
- 36.3% of all transactions in 2023 were paper-based across Saudi Arabia, which is half of the 2021 rate. Therefore the volume real-time payments increased from 1.7% to 5.6%, suggesting that most payments transitioned from paper to non-instant electronic payment. By 2028, this real-time share is anticipated to grow to 11.3%, with a strong CAGR of 24.6%. This share of transactions supports a significant increase in the business and consumer level benefits forecasted. By 2028, we estimate this will increase to \$381 million.
- The macroeconomic benefits of real-time in 2023 were estimated to be \$719 million of economic output in Saudi Arabia, rising to \$1,149 million by 2028. These represent 0.07% and 0.09% of current and forecasted Saudi Arabian GDP respectively, supporting the equivalent of 10,565 and 16,048 jobs.
- If all transactions took place through the real-time payment infrastructure in Saudi Arabia, the maximum additional benefit for businesses and consumers was an estimated \$3,747 million in 2023, contributing to a maximum of \$31,918 million in additional output (equivalent to an additional 3.0% of formal GDP) in the same year. These would result in total benefits of \$3,887 million and \$32,637 million, respectively, combining these additional benefits with those already estimated to be realised, per current and forecasted levels of real-time adoption.
- Looking forwards to 2028, maximum additional business and consumer level benefits will increase by 19% to \$5,228 million, while the maximum additional macroeconomic benefit will rise to \$35,933 million of economic activity; a 2.9% addition to formal GDP in 2028. The overall values including realised and these additional figures are \$5,060 million and \$37,082 million, respectively.
- Between 2023 and 2028 we estimate that for Saudi Arabia, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 2.2% to 3.1%.

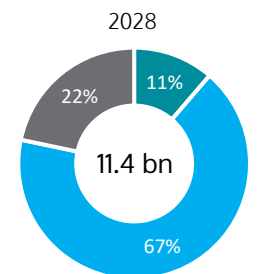
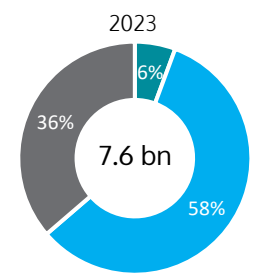
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

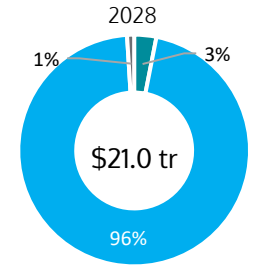
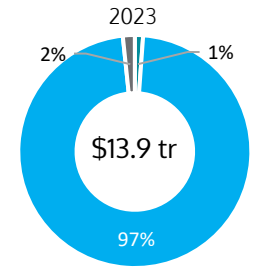


## Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

## Payment Mix By Transaction Value (\$ tr)





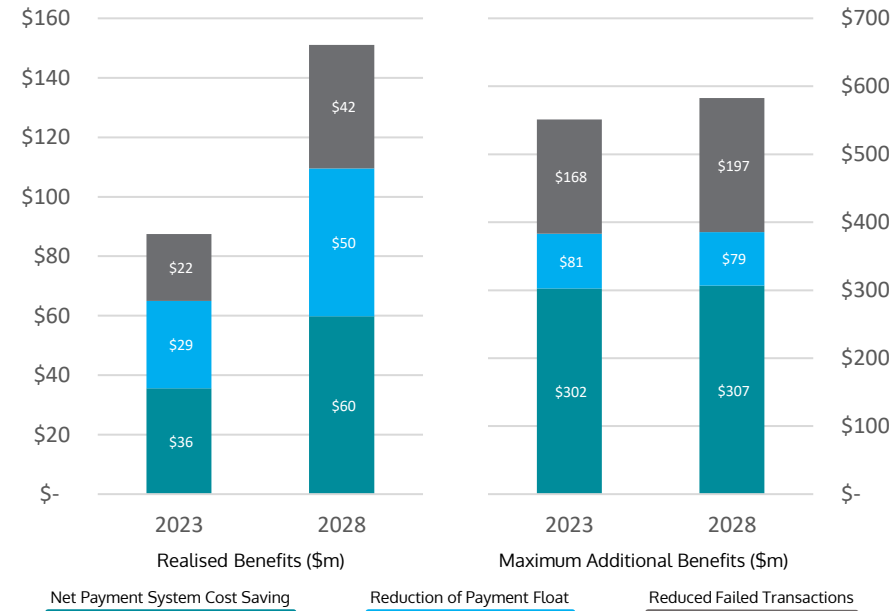
# Singapore

- Featuring amongst the world's most competitive economies, Singapore is one of the four Asian Tiger economies and has seen consistently high levels of economic growth over the last four decades. It is a high-income country and ranked as the 34th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- Of the \$87 million in business and consumer level benefits in 2023, real-time payments generated the largest agent-level economic impact through a reduction in the net payment system costs. Based on current real-time adoption rates in Singapore, instant payments facilitated an estimated \$36 million of business output in the same year.
- In 2023, economy-wide efficiency gains were estimated to facilitate \$503 million of economic output (0.12% of formal Singaporean GDP). The country has a reasonably well-established real-time infrastructure with the first of two schemes launching in 2014. 11.8% of all transactions are real-time, accounting for 29.4% of total transaction value in 2023.
- Based on current real-time adoption forecasts, which see real-time payments account for 17.4% of all transactions in 2028, total annual realised business and consumer benefits are estimated to rise to \$151 million. Economy-wide output supported by real-time payments is

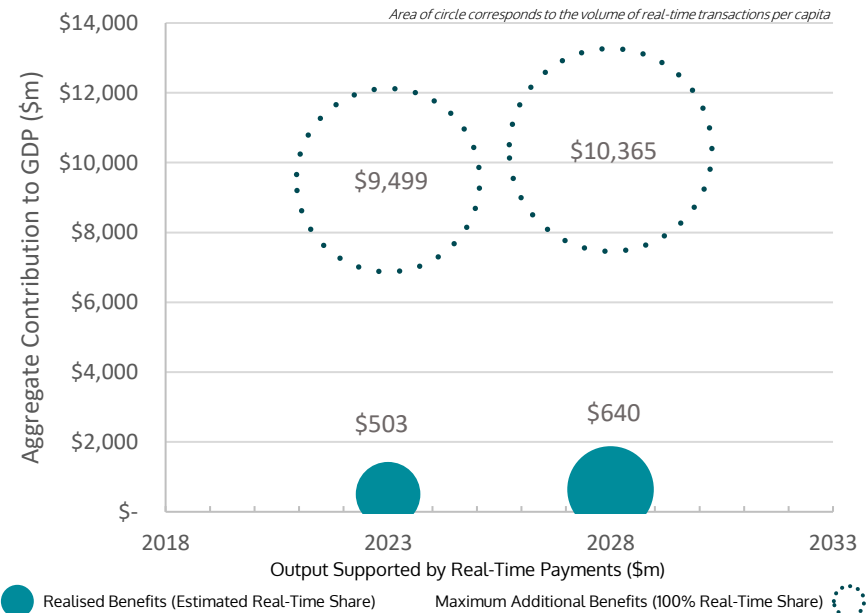
estimated to rise to \$640 million in 2028 (0.13% of forecasted Singaporean GDP). This is equivalent to the output supported by 4,512 jobs.

- If all transactions were real-time in 2023, we estimate that the theoretical maximum cost saving for businesses and consumers would reach \$639 million; an additional \$551 million on top of the \$87 million already realised. The equivalent maximum potential benefit in 2028 is \$734 million.
- These agent level impacts could contribute to a further \$9,499 million and \$10,365 million of additional economic output in 2023 and 2028, respectively under full real-time adoption. These latter figures are equivalent to 2.2% and 2.1% additions to formal GDP in Singapore respectively in each year.
- Between 2023 and 2028 we estimate that for Singapore, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 5.0% to 5.8%.

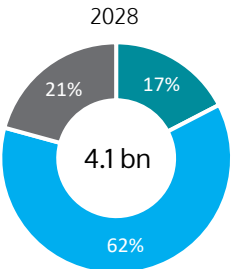
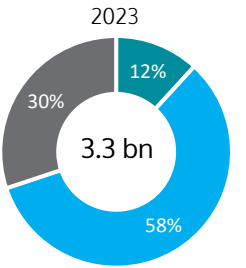
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

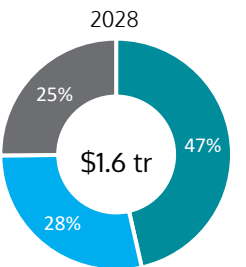
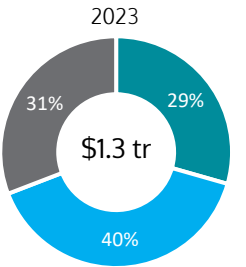


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



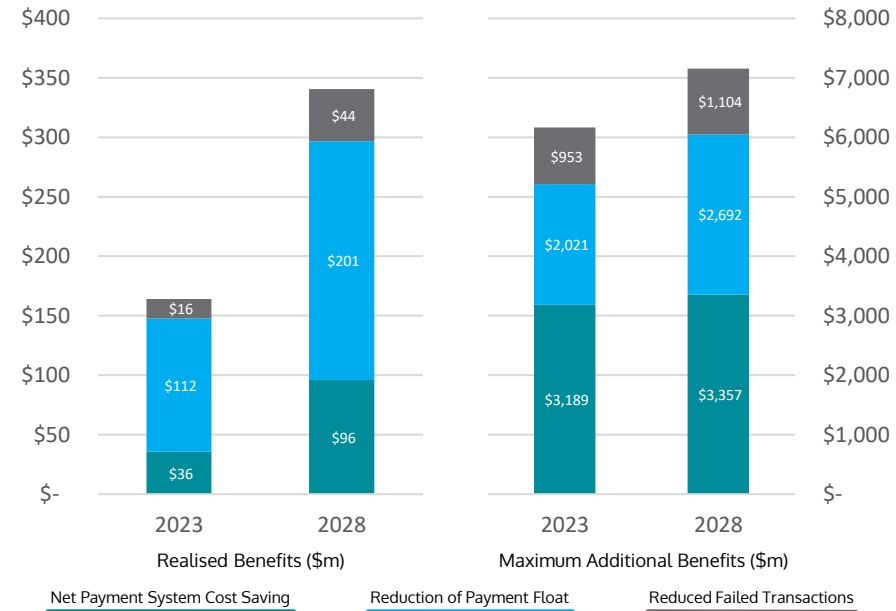




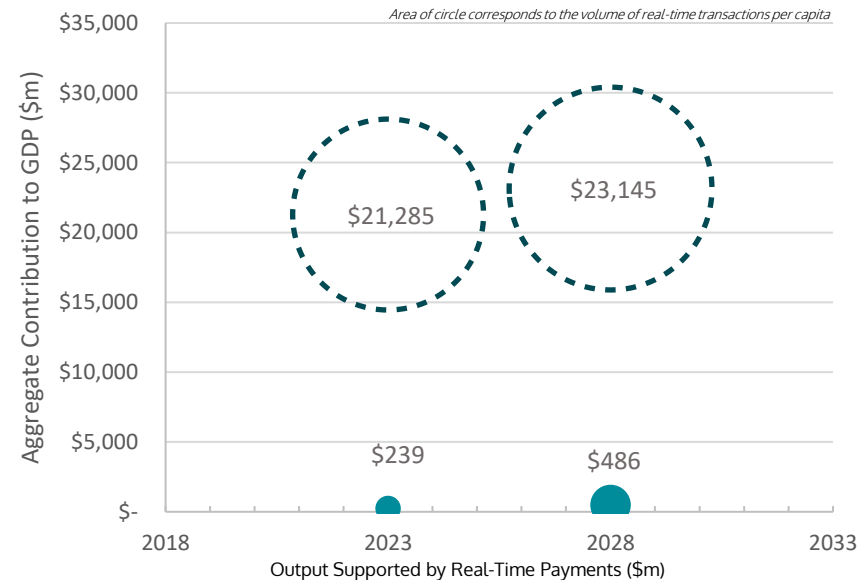
# South Africa

- South Africa is the second largest economy in Africa after Nigeria and generally considered to be the most industrialised country on the continent. Classified as an upper-middle-income country, in 2023 South Africa ranked as the 38th largest economy in the world (Cebr World Economic League Table, 2023).
- Current business and consumer level benefits stood at \$164 million in 2023. South Africa's first real-time payments infrastructure, Real-Time Clearing (RTC) was launched in 2006, however adoption rates have been low. 17 years later and the real-time share of overall transaction volumes stands at only 1.7%. At the economy level, in 2023 real-time payments stimulated \$239 million in economic output, equivalent to 0.06% of GDP.
- Today, cash dominates the payment mix (55.1%) and is still expected to be king in South Africa by 2028, although, the share of paper-based instruments out of total transaction volumes is anticipated to drop to 49.5% in 5 years' time as real-time volumes grow to a share of 3.8%.
- Driven by this growth in real-time transactions over the intermediary period, by 2028 the business and consumer level benefits are forecast to grow to \$341 million. This growth will increase the economy-wide benefits to \$486 million (0.11% of GDP) which is equivalent to the economic output generated by 20,525 jobs.
- If all transactions were real-time in 2023, we estimate that the theoretical maximum cost saving for businesses and consumers would reach \$6,327 million, rising to \$7,493 million by 2028. These represent additions of \$6,163 million and \$7,152 million on the already realised (and forecasted to be realised) benefits as of 2023 and 2028, based on current (and projected) levels of real-time payments utilisation.
- These agent level impacts would translate to a theoretical additional \$21,285 million and \$23,145 million of additional economic output in 2023 and 2028, respectively. These latter figures are equivalent to a 4.9% and 5.0% addition to formal GDP in South Africa under full real-time adoption.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that South Africa captures of total potential economic benefits of real-time payments rises from 1.1% to 2.1%.

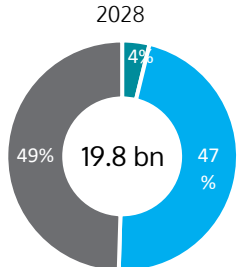
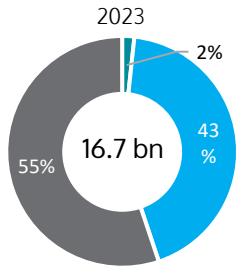
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

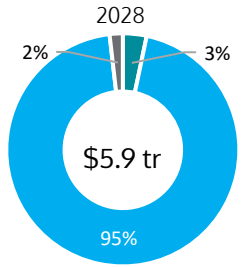
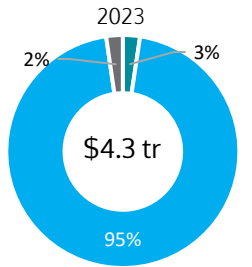


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

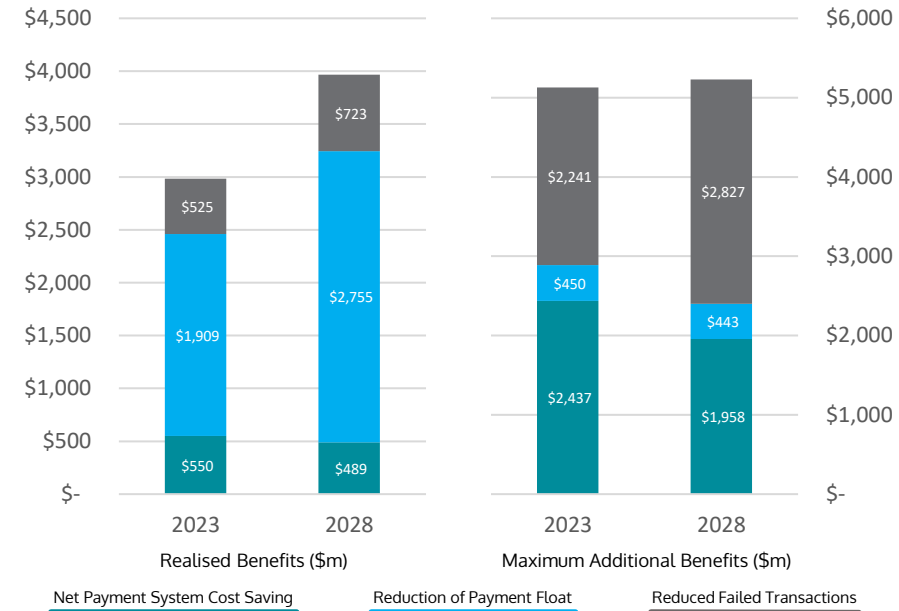




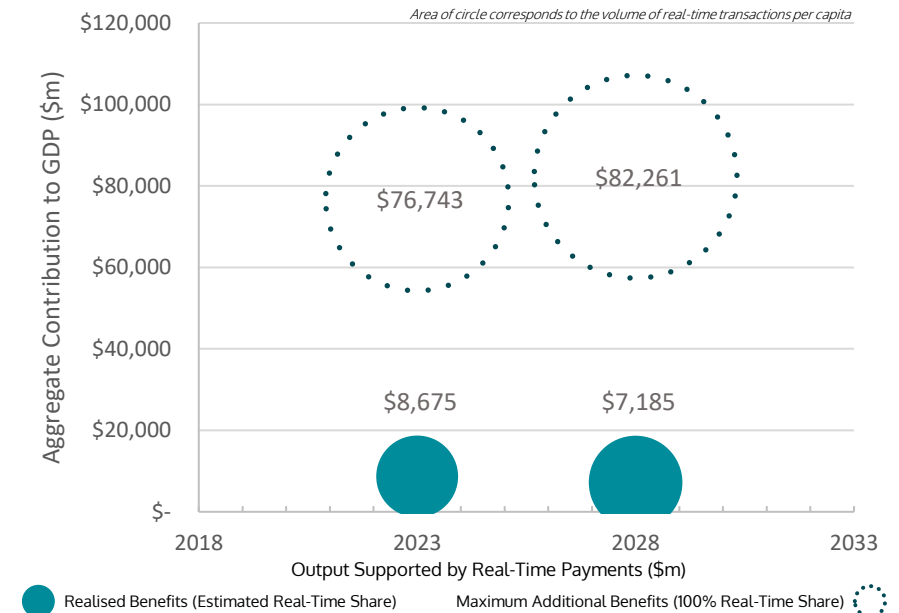
# South Korea

- The Republic of Korea is a high-income economy in East Asia. Alongside Singapore, Taiwan, and Hong Kong, Korea is one of the four Asian Tiger economies, characterised by significant economic growth between the 1960s and 1990s. Today, it ranks as the 13th largest global economy (Cebr World Economic League Table, 2023).
  - In 2023, net benefits for businesses and consumers of real-time payments hit \$2,984 million. The largest component of this was net savings through a reduction in the payment float, subsequently unlocking working capital for businesses. Based on real-time adoption levels in South Korea as of 2023, instant payments unlock a total transaction value of \$95,462 million per day, through a reduced float time. This working capital facilitated an estimated \$1,909 million of business output in the same year.
  - The macroeconomic benefits in 2023 under current real-time adoption rates were estimated to be \$8,675 million of economic output, or 0.50% of formal GDP. This is equivalent to the output supported by 141,460 workers in the same year. This economic impact is the sixth largest across our sample in absolute terms.
  - The large benefits in 2023 may be a result of the fact that real-time payments in the South Korea date back to the late 1980s, as one of the oldest infrastructures in the world.
- Real-time payments in 2023 are typically high-value, accounting for 80.9% of total spend from just 19.0% of total transaction volume.
  - Based on 2028 real-time adoption estimates, business and consumer level benefits are forecasted to rise to \$3,967 million. But, by 2028 it is estimated that 0.36% of economic output (\$7,185 million) will be underpinned by efficiency savings as a result of real-time payments, equivalent to the productive capacity of 107,945 workers.
  - If the payment infrastructure was fully instantaneous, the maximum additional benefit to businesses and consumers was an estimated \$5,129 million in 2023, rising slightly to \$5,228 million by 2028. Combining these with the realised benefits of existing real-time utilisation rates in 2023 and 2028, consumers and businesses could benefit by a total of \$8,113 million and \$9,195 million, respectively.
  - The maximum additional macroeconomic benefits for South Korea are \$76,743 million in 2023 (an addition to formal GDP of 4.2%) and \$82,261 million in 2028 (an addition to formal GDP of 4.0%).
  - Between 2023 and 2028 we estimate that for South Korea, the realised share of the maximum attainable macroeconomic benefits of real-time payments falls from 10.2% to 8.0%.

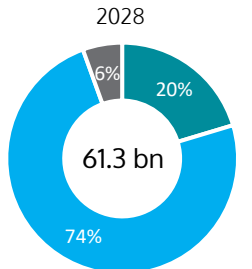
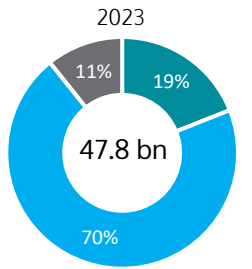
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

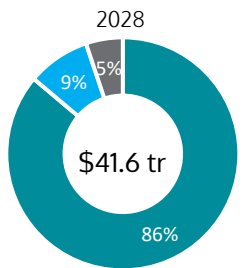
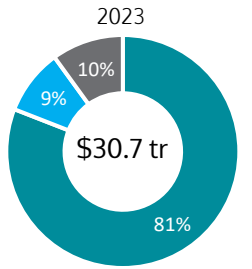


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



Realised Benefits (Estimated Real-Time Share) Maximum Additional Benefits (100% Real-Time Share)



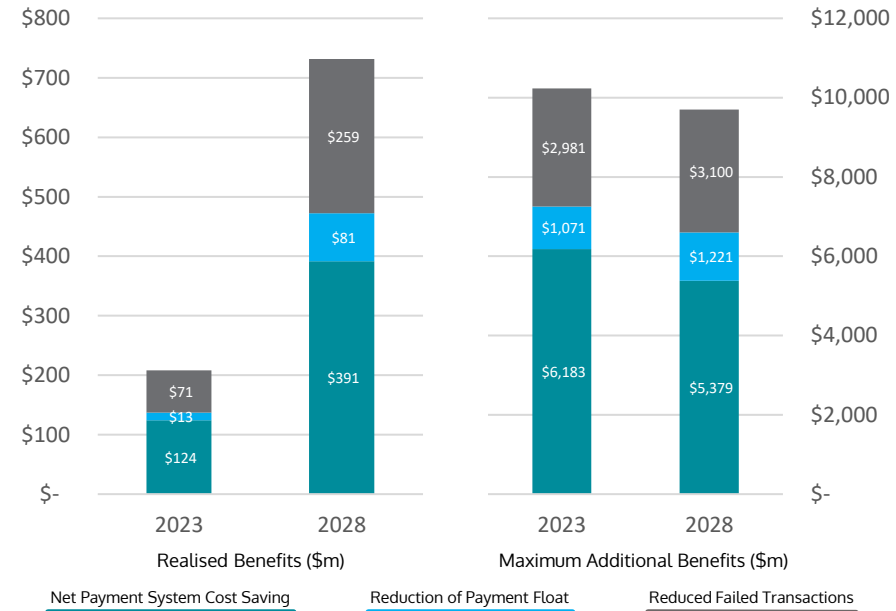
# Spain

- Spain is classified as a high-income country and ranked as the 16th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- With its current share of real-time adoption, Spanish businesses and consumers gain estimated net efficiency saving of \$208 million in 2023, which is predominantly driven by a reduction in the net payment system costs. On a per transaction basis, real-time payments in Spain had a 24% lower average payment cost, compared to non-instant payments. This represents a cost saving of \$124 million.
- As of 2023, the macroeconomic benefits of using real-time payments was an estimated \$534 million (0.04% of formal GDP); equivalent to the output of 7,783 workers.
- In 2023, the share of real-time payments was recorded at 2.3%, but this is estimated to more than triple to 7.7% by 2028. This robust growth in real-time uptake will result in business and consumer level benefits reaching \$732 million in 2028. This is forecasted to support 0.12% of formal GDP in 2028, or \$1,880 million of output; equivalent to the output of 25,351 workers.
- Regarding the untapped benefits of real-time through a theoretical 100% real-time adoption, in 2023 there was an additional unrealised \$10,236 million of efficiency savings which

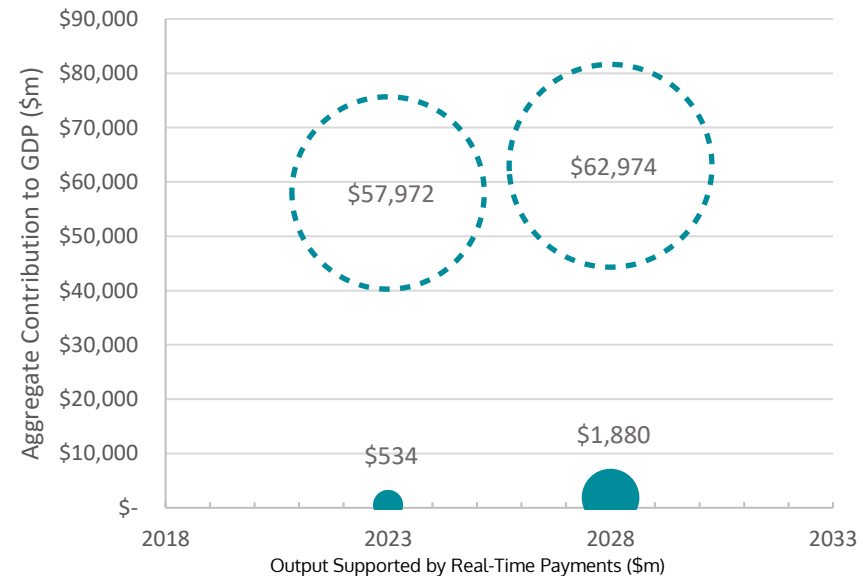
Spanish businesses and consumers could have enjoyed. As benefits will be realised more efficiently, the the further benefits will slightly decline to a maximum of \$9,700 million of additional agent-level gains in 2028. Combining these with the current benefits of existing real-time utilisation rates, consumers and businesses could be worth £10,444 million and £10,431 million in 2023 and 2028 respectively.

- Furthermore, we estimate that there was an additional \$57,972 million of economic output that Spain could have unlocked in 2023 through full real-time utilisation, which would have supported an additional 4.0% of formal GDP (equivalent to the output of an additional 811,581 workers). In 2028, the maximum further macroeconomic benefit is forecasted to also increase to \$62,974 million (an additional 3.8% of formal GDP).
- Between 2023 and 2028 we estimate that for Spain, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 0.9% to 2.9%.

## Net Efficiency Savings for Businesses and Consumers

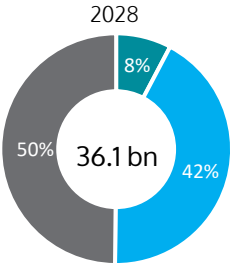
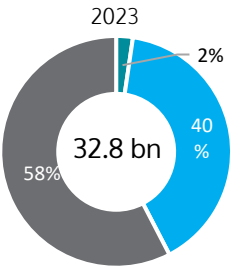


## Aggregate Macroeconomic Impact



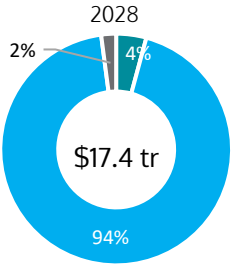
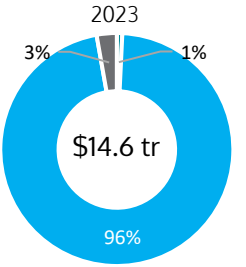
● Realised Benefits (Estimated Real-Time Share) ● Maximum Additional Benefits (100% Real-Time Share)

Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

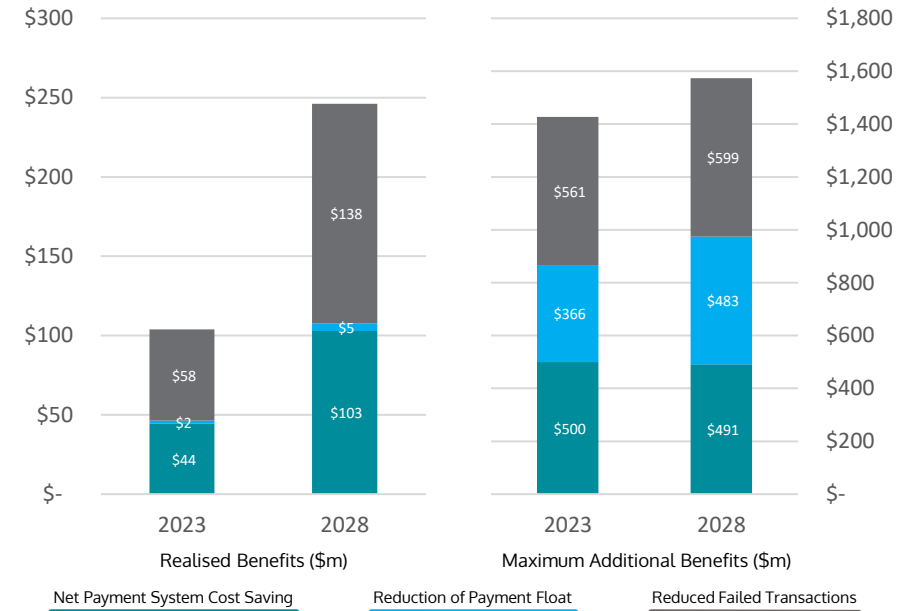




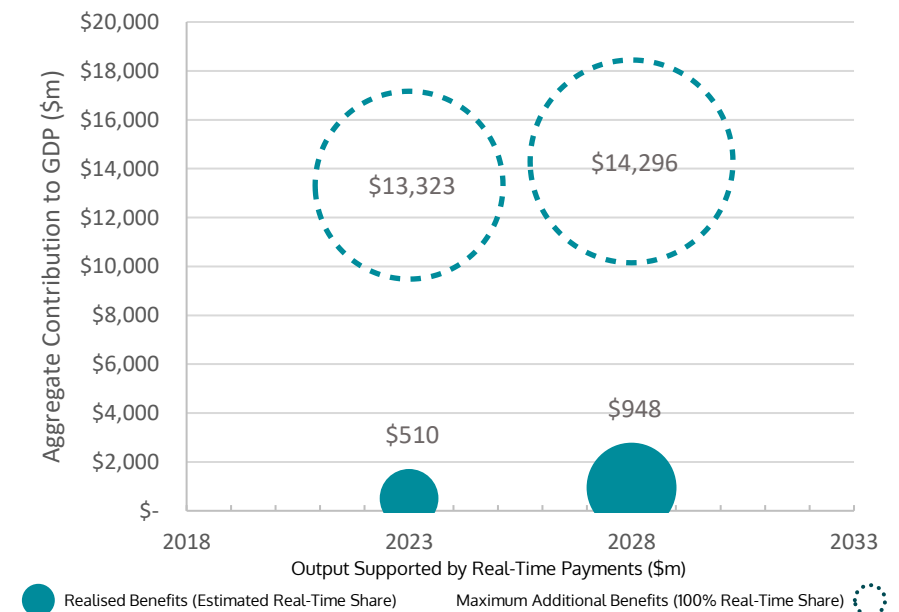
# Switzerland

- Switzerland is an advanced economy in Central Europe. As of 2023, Switzerland is the world's 20th-largest economy (Cebr World Economic League Table, 2023).
- Real-time payment usage is relatively high in Switzerland compared to other European countries as of 2023, accounting for 9.3% of total transaction volumes. However, the current overall economic impact is relatively limited.
- In 2023, net benefits for businesses and consumers reached \$104 million, supporting \$510 million of the total national output (0.06% of formal GDP).
- The primary factor generating these benefits was the ability for real-time payments to formalise activity in the shadow economy by reducing cash usage. Given the scale of the Swiss economy, the country's 8% shadow economy share represented an estimated \$64 billion of informal output in 2023. Despite the relatively small transaction share of real-time payments in Switzerland, they have the ability to formalise a relatively large level of informal economic activity (\$488 million, annually).
- Looking forward to 2028, approximately 18.8% of the payment mix is anticipated to be real-time. This more than doubles the anticipated economic benefits for businesses and consumers to \$246 million. The economy-wide impact also rises to \$948 million, representing a 0.11% share of forecasted formal Swiss GDP, or the equivalent output supported by 5,440 additional jobs in 2028.
- The untapped benefits of adopting 100% real-time payments were estimated to yield maximum additional savings of \$1,427 million for businesses and consumers in 2023, meaning a total of \$1,531 million including the existing savings from current real-time usage. The theoretical maximum level of further economic output that real-time payments could have facilitated stood at \$13,323 million (1.6% of GDP) in the same year, resulting in \$13,833 million overall.
- By 2028 the maximum additional benefits for businesses and consumers will rise to \$1,573 million annually, or \$1,819 million including benefits which are forecasted to be realised per Switzerland's estimated payments mix in the same year. This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate rising to \$14,296 million, or 1.6% of formal GDP, which would bring up the total benefits to \$15,244 million.
- Between 2023 and 2028 we estimate that for Switzerland, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 3.7% to 6.2%.

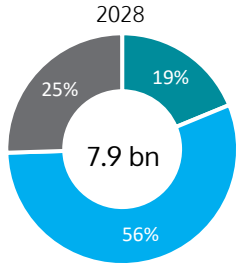
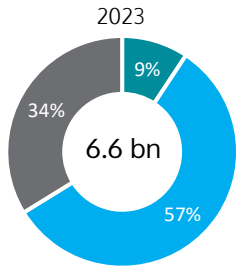
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

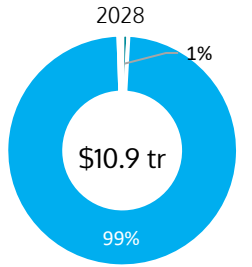
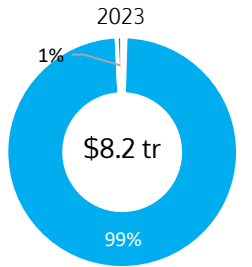


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





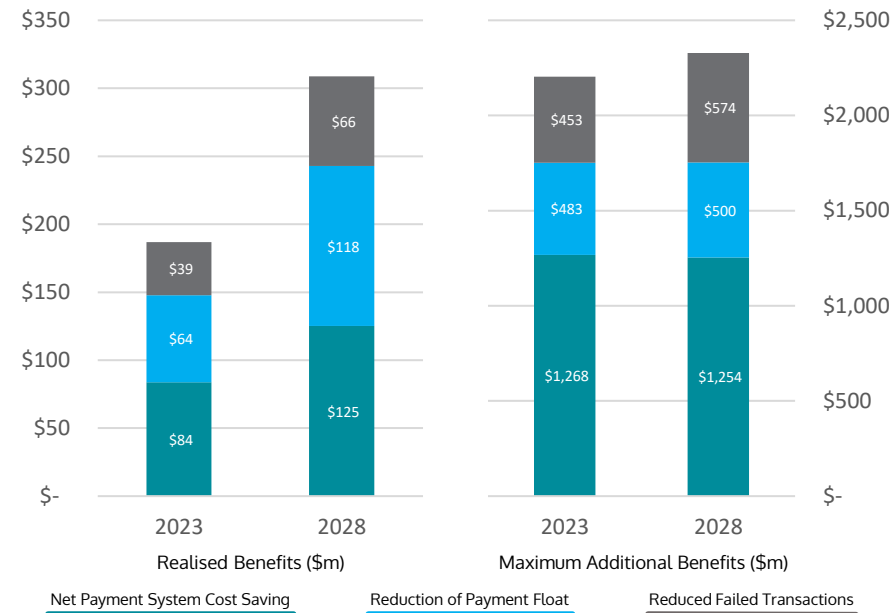
# Taiwan

- As of 2023, Taiwan is classified as a high-income country, ranking as the 21st largest global economy (Cebr World Economic League Table, 2023).
- With its current share of adoption, Taiwanese businesses and consumers gained estimated net efficiency saving of \$187 million; predominantly driven by a reduction in the net payment system cost. On a per transaction basis, real-time payments in Taiwan had a 19% lower average payment cost, compared to non-instant payments. This represents a cost saving of \$84 million.
- The share of real-time payments was recorded at 7.9% in 2023, which is estimated to increase to 10.3% by 2028. The predicted real-time uptake will result in business and consumer level benefits reaching \$309 million in 2028.
- The macroeconomic benefits of using real-time payments were an estimated \$1,421 million of economic output (0.17% of formal GDP) in 2023; equivalent to the output of 20,066 workers. In relative terms, this impact is almost double compared to the benefits associated with real-time across China in 2023 (0.09% of Chinese GDP).
- As the share of real-time across the payment mix grows, this is forecasted to support 0.16% of formal GDP in 2028. The scale of this impact is substantial and is equivalent to

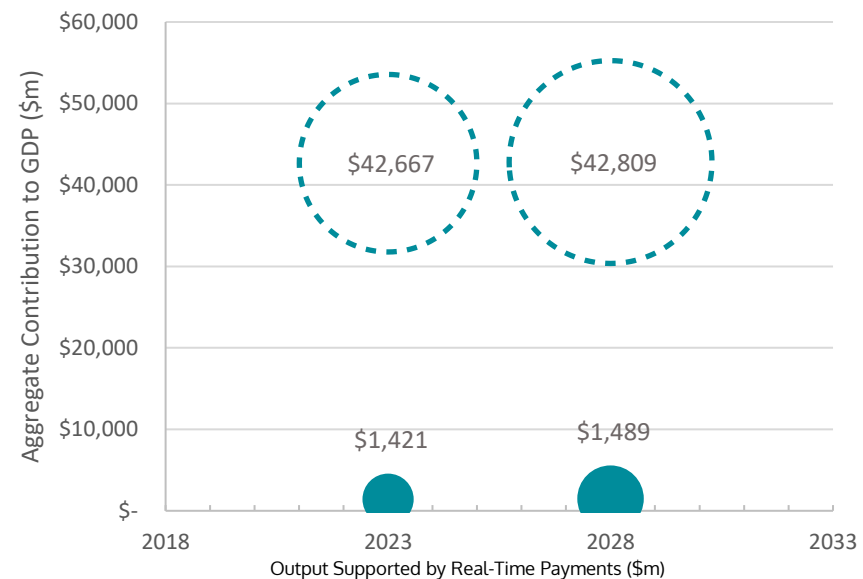
\$1,489 million of output, annually. In relative terms, this impact also outpaces the forecasted benefits associated with real-time across China in 2028 (0.14% of Chinese GDP).

- If all transactions took place through the real-time payments system in Taiwan, the potential additional benefit to businesses and consumers was an estimated \$2,204 million in 2023. Combining these additional benefits with the realised benefits, 100% real-time payment utilisation could have induced a total benefit of £2,391 million. By 2028, the maximum additional benefits for businesses and consumers are expected to rise to \$2,328 million out of a total benefit of £2,637 million.
- Equivalently, between 2023 and 2028 we estimate that for Taiwan, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 3.2% to 3.4%.
- Under full real-time adoption, an additional \$42,667 million of economic output is forecasted to be supported by real-time, equivalent to an additional 4.9% of GDP in 2023. This could further rise to \$42,809 by 2028 (an additional 4.5% of GDP).

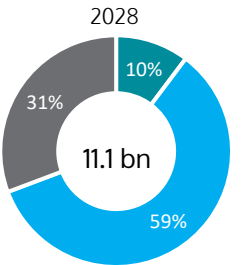
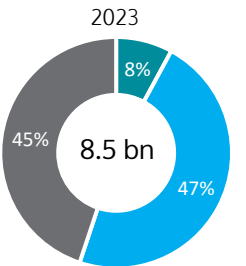
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

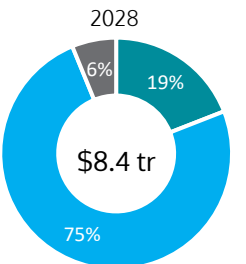
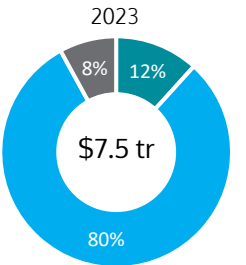


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





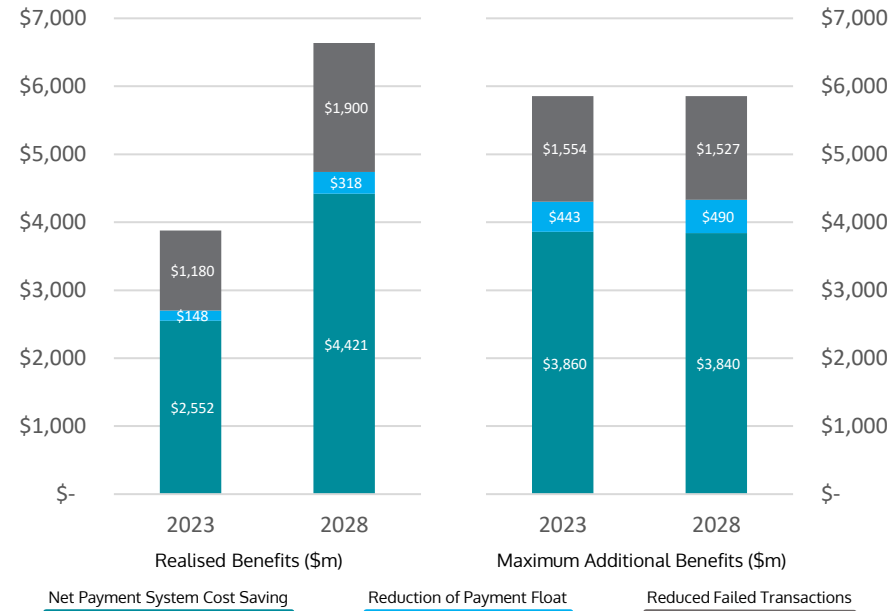
# Thailand

- As of 2023, Thailand is classified as an upper middle-income country, having seen strong growth rates over the last few decades. Indeed, its economic growth has pulled millions out of poverty, resulting in the nation being lauded as a development success story, featuring as the 30th largest global economy in 2023 (Cebr World Economic League Table, 2023).
- In volume terms, 43.2% of transactions were executed through its real-time infrastructure in 2023, the third largest share in the 40-country sample of Cebr's economic impact assessment behind Bahrain and India. In 2023, the total economy-wide impact generated by real-time payments stood at \$12,988 million, or the equivalent output of 1.0 million workers. This is equivalent to 2.61% of formal GDP. This macroeconomic benefit is supported by 2023 business and consumer level benefits to the sum of \$3,880 million.
- The macroeconomic benefit of real-time payments is predominantly driven by the formalisation of informal economy activity. Not tackling this could pose a plethora of challenges for the nation and could undermine further progress on economic development. Through their displacement of paper-based transactions, real-time payments have the potential to directly address this issue and contribute to long-term economic growth in Thailand.
- Based on forecasted real-time adoption volumes, Cebr estimates that by 2028, Thailand's informal economy will be 6.0% smaller than in the absence of real-time payments.

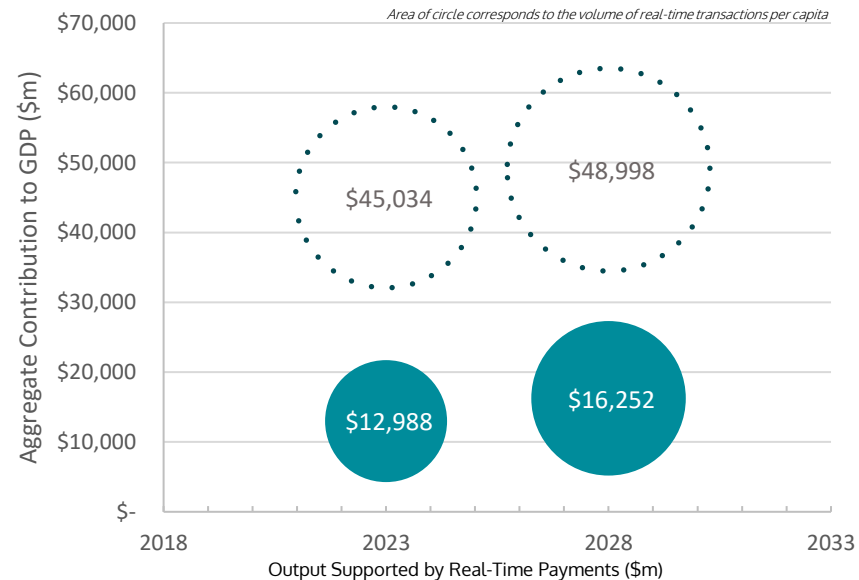
This equates to the formalisation of \$15,400 million of output that would have otherwise occurred outside of the formal institutional and bureaucratic frameworks. Ultimately, the forecasted macroeconomic benefits in 2028 are estimated to be \$16,252 million of formal economic output (2.89% of GDP) due to real-time payments; equivalent to GDP supported by 1.2 million workers. In 2028, total business and consumer benefits are estimated to be worth \$6,639 million.

- If the payment infrastructure was fully instantaneous, theoretical additional business and consumer level benefits are predicted to amount to \$5,857 million in 2023, and it remains the same in 2028. This would bring the estimated total benefits for 2023 and 2028 respectively, to \$9,737 million and \$12,495 million.
- The maximum additional macroeconomic benefits for Thailand are \$45,034 million in 2023 (a formal GDP contribution of 8.1%) and \$48,998 million in 2028 (a formal GDP contribution of 7.8%).
- Between 2023 and 2028 we estimate that for Thailand, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 22.4% to 24.9%.

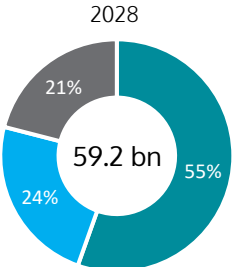
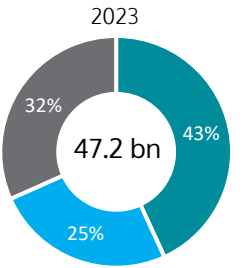
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

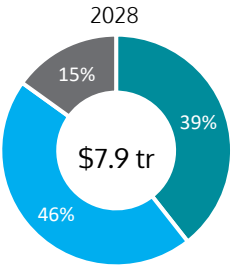
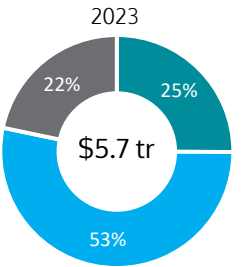


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)



● Realised Benefits (Estimated Real-Time Share) ● Maximum Additional Benefits (100% Real-Time Share)



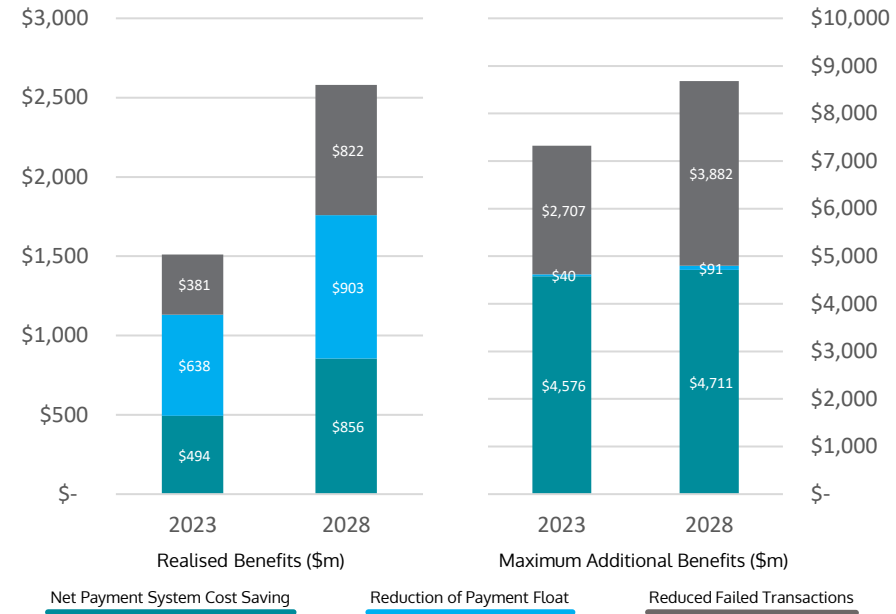
# Turkey

- Turkey is classified as an upper-middle-income country, and ranked as the 22nd largest economy in 2023 (Cebr World Economic League Table, 2023).
- As the majority of transactions by value take place as real-time (92.5% of the total value of all transactions in the country), the economic impacts already manifesting, are sizeable. Business and consumer benefits totalled approximately \$1,512 million annually in 2023. The largest component of this (\$638, or 42.2% of the total) was due to net savings from the reduction in the size of the payment float.
- At the macroeconomic level, the benefits as of 2023 amount to \$3,021 million (0.34% of Turkish GDP). The most significant contribution is through the formalisation of informal economy activity, with \$2,254 million.
- By 2028, it is estimated that the share of transactions by value will remain at the same level while the share of transactions by volume will grow to 17.5% at a strong CAGR of 16.6%. This results in the businesses and consumer level benefits swelling to \$2,580 million. The specific benefit associated with the reduction in the size of the payment float, is estimated to increase to \$903 million.
- This increase in the business and consumer levels benefits are also estimated to be associated with an increase in the contribution of real-time payments to Turkish GDP. By 2028, this is estimated to increase to \$5,124 million. This is equivalent to 0.37% of formal Turkish GDP, or the

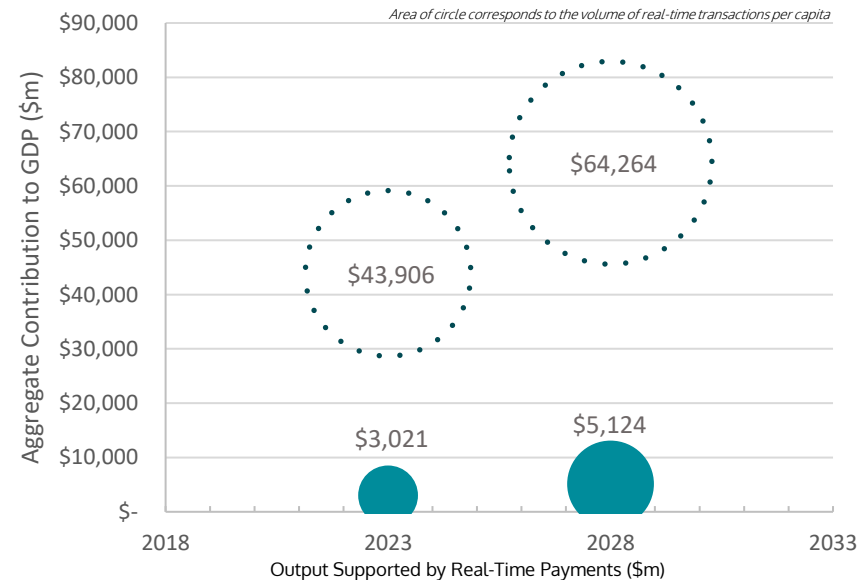
output supported by 124,206 jobs.

- The untapped benefits of adopting 100% real-time payments are estimated to yield maximum additional savings of \$7,323 million for businesses and consumers in 2023, while the theoretical maximum level of additional economic output that real-time payments could facilitate stands at \$43,906 million (4.7% of GDP) in the same year. Including the already realised benefits based on existing levels of real-time payments utilisation, the maximum theoretical agent-level benefits were \$8,835 million, while the potential economic output supported could have been \$46,927 million.
- By 2028 the maximum additional benefits for businesses and consumers will rise to \$8,683 million, annually. This contributes to the theoretical maximum level of additional economic output that real-time payments could facilitate increasing to \$64,264 million, or 4.4% of formal GDP.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that Turkey captures of total potential economic benefits of real-time payments rises from 6.4% to 7.4%.

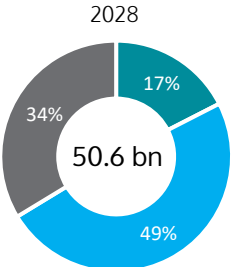
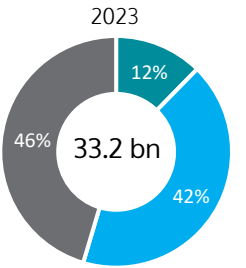
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

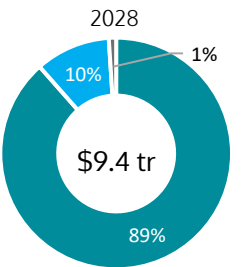
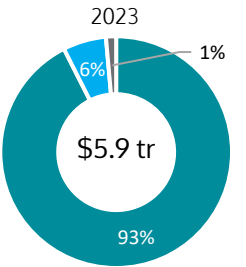


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)

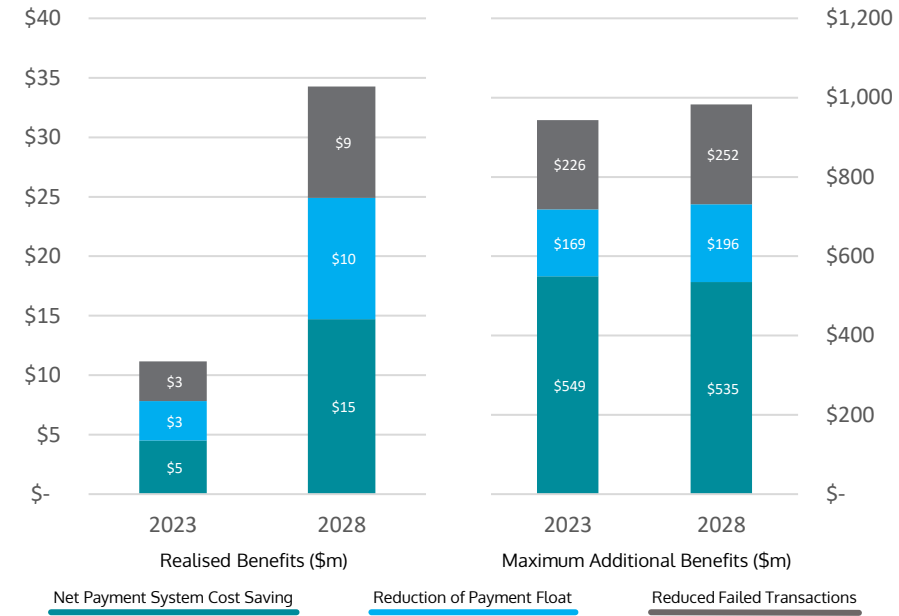




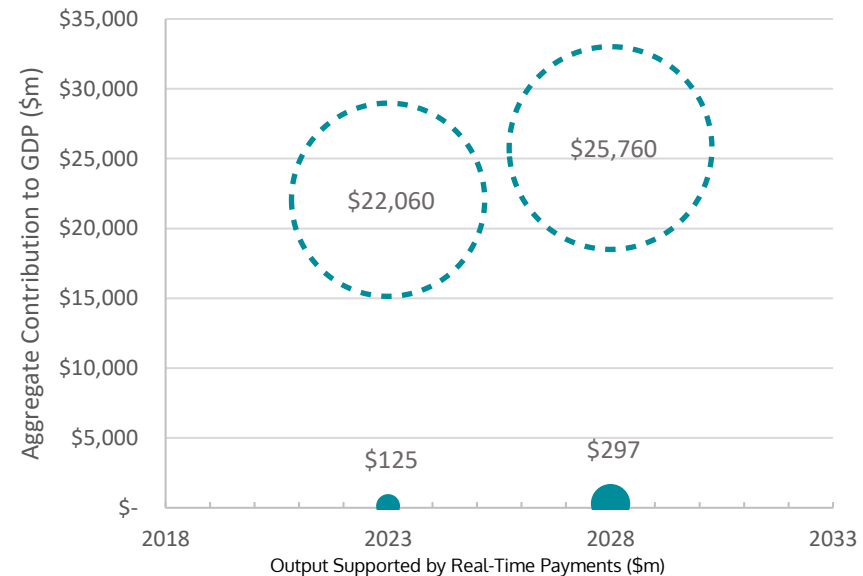
# United Arab Emirates

- The United Arab Emirates is classified as a high-income country and ranked as the 28th largest global economy in 2023 (Cebr World Economic League Table, 2023).
  - In 2023, net benefits for businesses and consumers of real-time payments was \$11 million. As 63.2% of all transactions in 2023 were paper-based across the United Arab Emirates, and only 1.5% was conducted real-time, the realised benefits are relatively low. By 2028, this real-time share is anticipated to more than double, however, it still remains low at 3.6%, with a CAGR of 23.0%. This share of transactions supports an increase in the business and consumer level benefits forecasted. By 2028, we estimate this will increase to \$34 million.
  - The macroeconomic benefits of real-time in 2023 were estimated to be \$125 million of economic output in the United Arab Emirates, rising to \$297 million by 2028. These represent 0.02% and 0.05% of current and forecasted Emirati GDP respectively, supporting the equivalent of 3,447 and 1,540 jobs.
  - If all transactions took place through the real-time payment infrastructure in the United Arab Emirates, the maximum additional benefit for businesses and consumers was an estimated \$944 million in 2023, contributing to a maximum of \$22,060 million in additional output
- (equivalent to an additional 4.0% of formal GDP) in the same year. These would result in total benefits of \$955 million and \$22,185 million, respectively, combining these additional benefits with those already estimated to be realised, per current and forecasted levels of real-time adoption.
- Looking forwards to 2028, maximum additional business and consumer level benefits will increase by to \$983 million, while the maximum additional macroeconomic benefit will rise to \$25,760 million of economic activity; a 3.9% addition to formal GDP in 2028. The overall values including realised and these additional figures are \$1,017 million and \$26,057 million, respectively.
  - Between 2023 and 2028 we estimate that for the United Arab Emirates, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 0.6% to 1.1%.

## Net Efficiency Savings for Businesses and Consumers

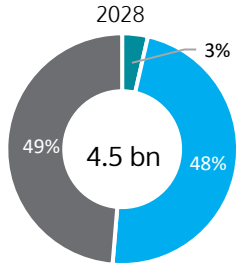
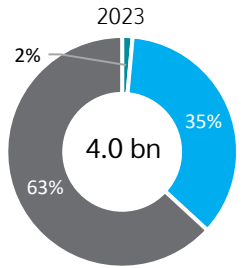


## Aggregate Macroeconomic Impact



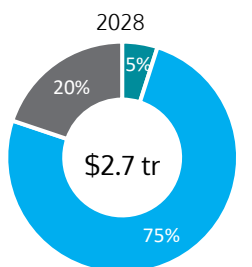
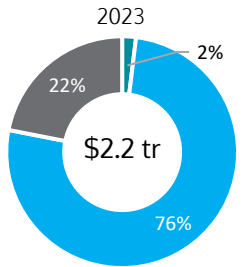
● Realised Benefits (Estimated Real-Time Share) ● Maximum Additional Benefits (100% Real-Time Share)

## Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

## Payment Mix By Transaction Value (\$ tr)



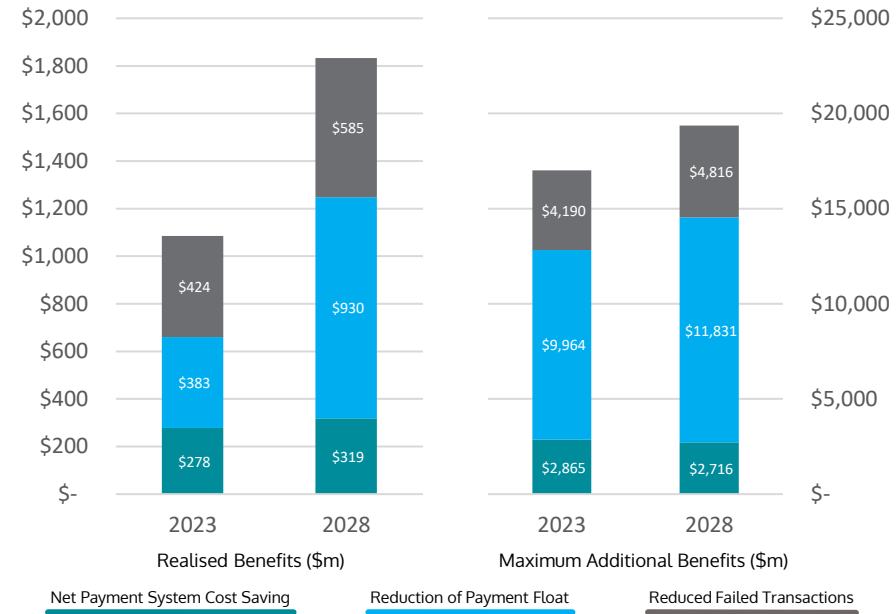




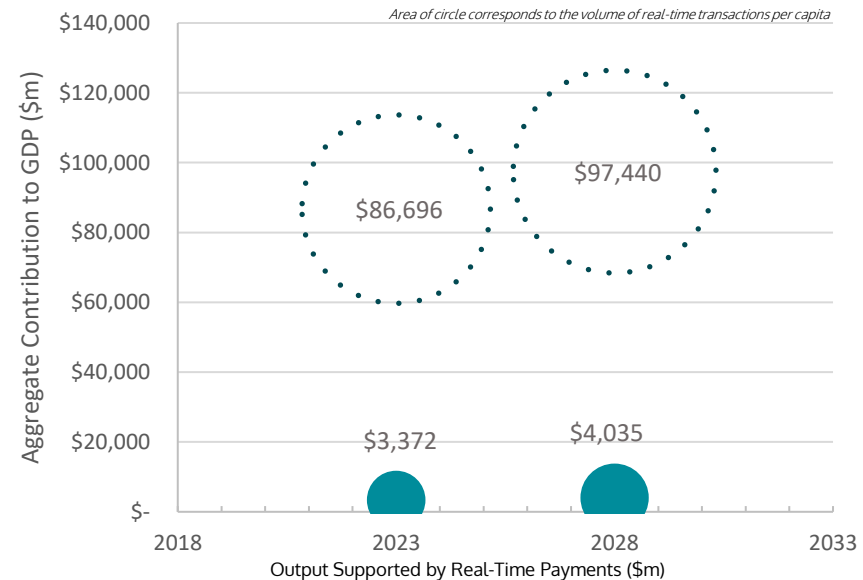
# United Kingdom

- The United Kingdom is an advanced economy in North-Western Europe. As of 2023, the UK is the world's sixth-largest economy (Cebr World Economic League Table, 2023).
- Supported by a relatively strong real-time payment mix share (9.2% of all transactions), in 2023, net benefits for businesses and consumers of real-time payments hit \$1,085 million. The largest component of this was net savings through the reduction in the number of failed transactions. Under current adoption rates of real-time payments, this represents a cost saving of \$424 million for consumers and businesses across the country in 2023.
- The macroeconomic benefits in 2023 of real-time adoption was estimated to be \$3,372 million of additional economic output. This is equivalent to 0.11% of total UK GDP, or the output of 36,269 jobs.
- By 2028, the business and consumer level benefits rise to \$1,833 million, with the main driving force of this stemming from the reduction in the size of the payment float. Based on 2028 real-time adoption estimates (growth to 10.8% of all payments), instant payments unlock a total transaction value of \$44,416 million per day, with this working capital facilitating an estimated \$930 million of business output in the same year. Ultimately, the forecasted macroeconomic benefits in 2028 are estimated to be \$4,035 million of additional economic output (0.12% of formal UK GDP).
- If all transactions took place through the real-time payment infrastructure in the UK, the maximum theoretical benefit for businesses and consumers was an estimated \$18,104 million in 2021, with \$17,019 additional to the already realised \$1,085 million. These additional theoretical benefits could have contributed to a maximum of \$86,696 million in additional output (equivalent to an additional 2.7% of formal GDP) in the same year.
- Looking forwards to 2028, maximum additional business and consumer level benefits will increase by 14% to \$19,363 million, while the maximum additional macroeconomic benefit will rise to \$97,440 million of economic activity; a 2.7% addition to formal GDP in 2028.
- Between 2023 and 2028 we estimate that for the UK, the realised share of the maximum attainable macroeconomic benefits of real-time payments rises from 3.7% to 4.0%.

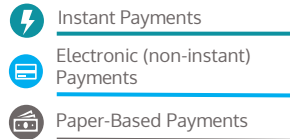
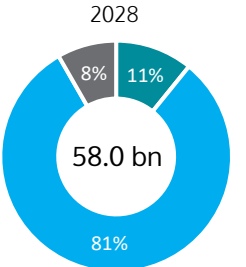
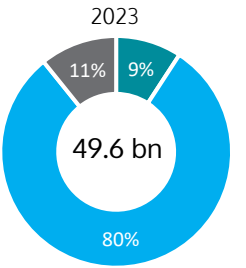
## Net Efficiency Savings for Businesses and Consumers



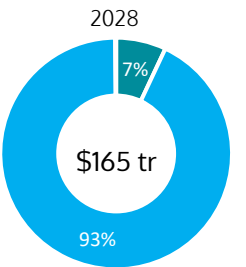
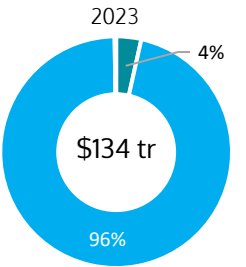
## Aggregate Macroeconomic Impact



Payment Mix By Transaction Volume (bn)



Payment Mix By Transaction Value (\$ tr)

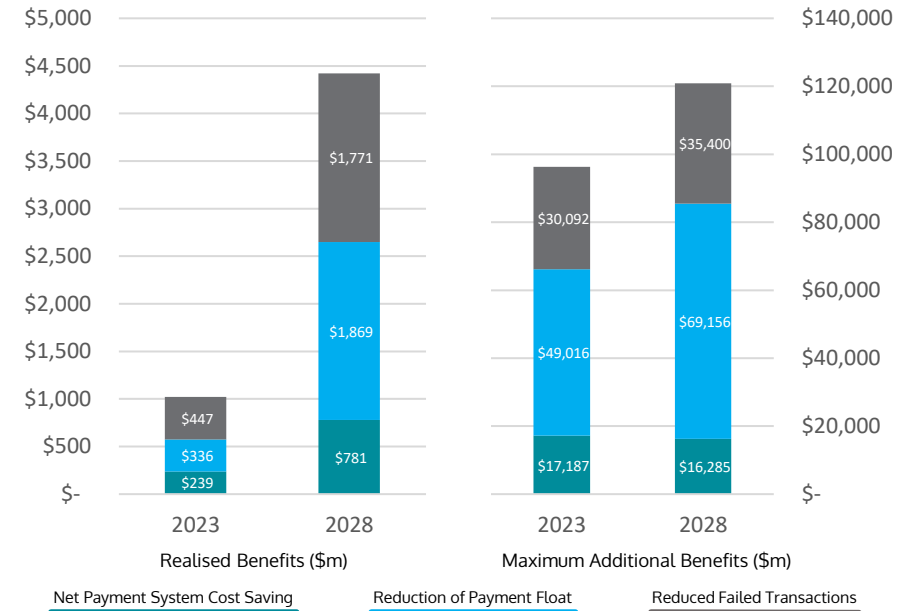




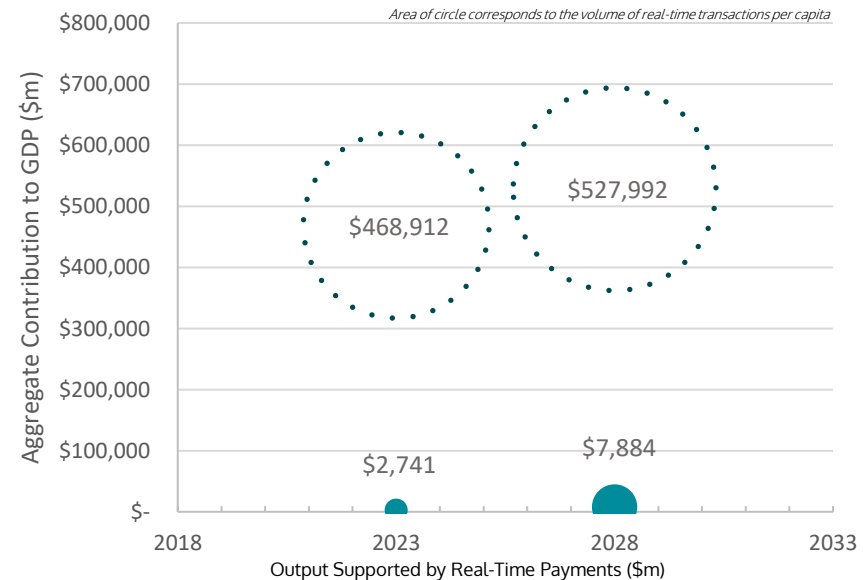
# United States of America

- The United States of America is one of the world's wealthiest countries per person, ranking as the world's largest economy in 2023 (Cebr World Economic League Table, 2023).
- However, considering the US is the largest economy in the world, real-time payment usage remains nascent in 2023, accounting for only 1.5% of total transaction volumes. As a result, the current overall economic impact is limited, while the untapped potential is significant.
- In 2023, net benefits for businesses and consumers reached \$1,022 million (only 6.7% of that of China), supporting \$2,741 million of total national output (0.01% of formal US GDP). The primary factor generating these benefits was the ability for real-time payments to formalise activity in the informal economy by reducing cash usage. Given the scale of the US economy, the country's 8% informal economy share represents an estimated \$2.05 billion in informal output. Despite the relatively small transaction share of real-time payments in the US, they have the ability to formalise a relatively large level of informal economic activity.
- Looking forward to 2028, approximately 4.8% of the payment mix is anticipated to be real-time, quadrupling the anticipated economic benefits for businesses and consumers to \$4,421 million. The economy-wide impact also rises significantly to \$7,884 million, representing a 0.03% share of forecasted formal output or the equivalent of 48,357 additional jobs.
- If all transactions were real-time in 2023, we estimate that the theoretical maximum further cost saving for businesses and consumers if all payments were real-time would reach an additional \$96,295 million, rising to \$120,841 million by 2028.
- These agent level impacts are forecasted to contribute to a maximum of \$468,912 million and \$527,992 million of additional economic output in 2023 and 2028, respectively. These figures are equivalent to a 1.8% and 1.9% addition to formal GDP in the USA under full real-time adoption in 2023 and 2028, respectively.
- In terms of the absolute support of formal economic output, between 2023 and 2028 we estimate that the realised share that the USA captures of total attainable economic benefits of real-time payments rises from 0.6% to 1.5%.

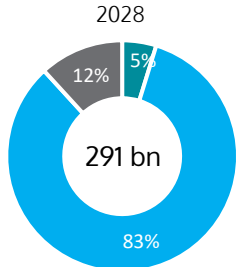
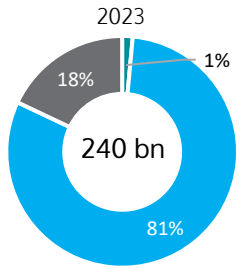
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

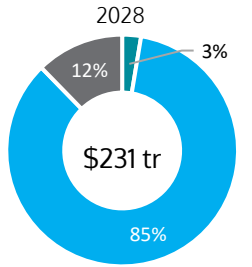
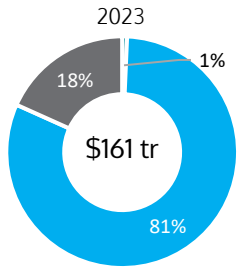


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





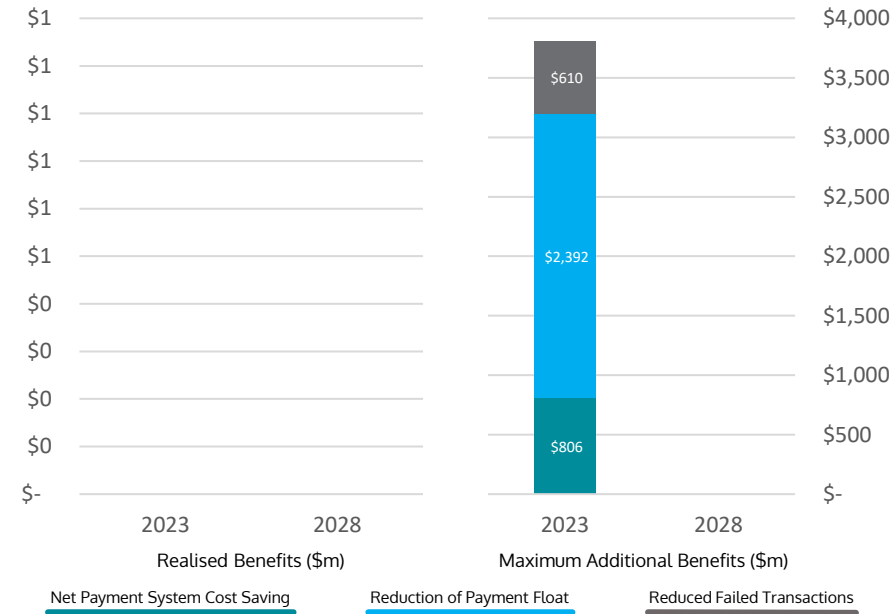
# Vietnam

- As of 2023, Vietnam had the 36th largest economy in the world with an estimated PPP adjusted GDP per capita of \$13,075 (Cebr World Economic League Table, 2023). Vietnam's economic growth story has been nothing short of a miracle, with the Đổi Mới reform period in the mid-1980's, coupled with favourable global trends, enabling the nation to achieve rapid economic growth and propelling the country from a poor country to a lower middle-class country.
- At present, Vietnam does currently have a central real-time payments infrastructure that was launched by NAPAS, the National Payment Corporation of Vietnam, in 2020. This system provides a 24/7, near real-time interbank funds transfer service across Vietnam.
- However, data availability on the usage of this is still very limited, and we are only able to estimate the payment mix for 2023, while solely disaggregating between paper-based payments and electronic payments (including those which are real-time). As real-time payments were unable to be stripped out, the economic impacts are exclusively presented for the maximum attainable benefits in 2023.
- The country has a population fast approaching 100 million and over 10.5 billion transactions in 2023 (90.4% of

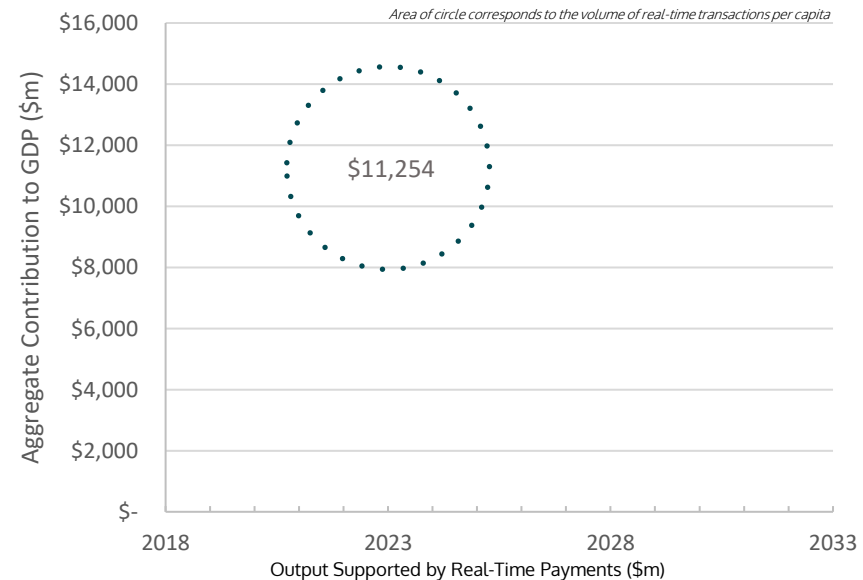
which are already electronic). Consequently, the potential unrealised benefits are the key areas for Vietnamese policymakers to look to take advantage of by increasing real-time take up rates.

- We estimate that there is a theoretical maximum of \$3,808 million in business and consumer level benefits that Vietnam can unlock in 2023, supporting 2.6% of formal GDP (\$11,254 of economic output, which is equivalent to the support of 1.4 million jobs).
- This is predominantly driven by the potential of real-time payments to reduce the size of the informal economy and formalise significant portions of economic activity. In Vietnam, we estimate that \$8,690 million of currently informal output could be shifted to the licit economy under 100% real-time payment usage.
- We do not have forecasts for the payment mix in Vietnam in 2028; therefore, we are unable to present these forward-looking economic impacts, as with other countries within the scope of work.
- However as seen by the potential impacts of full real-time utilisation in 2023, there is significant potential for the benefits of real-time payments to facilitate further economic prosperity in Vietnam.

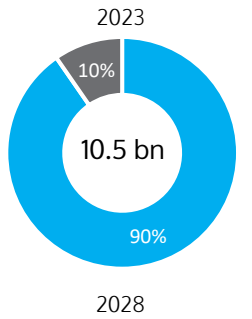
## Net Efficiency Savings for Businesses and Consumers



## Aggregate Macroeconomic Impact

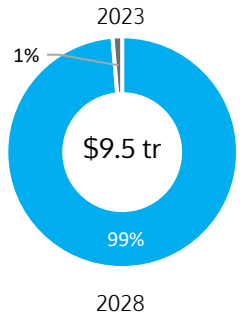


Payment Mix By Transaction Volume (bn)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

Payment Mix By Transaction Value (\$ tr)





Section 2

**Financial Inclusion:**

Scope and Methodology

2024

# Theoretical Framework: Instant Payments and Financial Inclusion

There exist three main channels through which markets adopting instant payments may see greater financial inclusion:

## Transaction Costs

Instant payments reduce transaction costs such as processing fees, the time value of money lost during delayed transactions, and the costs associated with payment failures or delays. Lower transaction costs may make financial services more **affordable** and therefore **accessible** to a larger portion of the population.

## Liquidity and Cash Flow

People may be more likely to engage with financial services to access instant payments to **mitigate cashflow and liquidity issues**. Instant payments improve liquidity management for both individuals and businesses by providing immediate access to funds [1]. This is particularly beneficial for low-income households and small enterprises, which often operate with limited financial buffers.

## Behavioural factors

Instant payments can influence financial behaviour by providing **immediate feedback on spending and account balances**, whilst also **reducing the risk of failed transactions**. This immediacy can encourage a greater sense of control, fostering greater trust and more active engagement with financial services, increasing financial inclusion [2].

[1] [Connecting the Dots: How Adoption of Instant Payments can lead to a more inclusive economy - Atlanta Fed \(2023\)](#)

[2] [The Growth of Instant Payments: How Real-Time Transactions are Changing the Payments Landscape – Payne \(2023\)](#)

# Methodology: Instant Payments and Financial Inclusion

## Financial inclusion uplifts

We seek to identify an empirical relationship between changing payments mix and increasing financial inclusion. Our key data sources are Global Data figures for the payment mix in assessed countries [1] (as discussed previously in Section 1), and estimates for financial inclusion for 48 countries from 2011-2021 from the World Bank [2]. Specifically, we proxy financial inclusion with the variable 'Share of population over the age 15 with an account at registered financial institution'.

This share is transformed and then regressed upon the value of instant payments and the value of electronic payments [3]. Following this, we find that both increasing instant payments and increasing electronic payments are both associated with increasing financial inclusion. Using this model, we can predict the share of individuals with bank accounts in 2028 based on the Globaldata payment mix forecasts.

We use a fixed effects regression to control for country-specific fixed effects that may confound the estimated relationship between payments mix and financial inclusion. There may be other time varying effects that impact financial inclusion and are associated with changes in the payments mix. These 'omitted-variables' may bias results, while the regression analysis may also be limited by other forms of endogeneity, such as reverse causality. For these results, we would caution against a causal interpretation of the results of the analysis.

The relative growth in financial inclusion implied by our econometric model, is applied to the entirety of the population of assessed countries. This allows us to consider impacts across all demographics, but necessitates some assumption around the linearity of impacts across adults and children. For estimates of CLV (discussed further in this slide) our results should therefore be interpreted as lifetime value for banks of a customer becoming banked, agnostic to whether becoming banked occurs immediately or with a lag (as may be the case for some younger children).

As the most recent financial inclusion data is from 2021, our analysis considers the impact of changes in the payment mix between 2021 and 2028, utilising changes in the payment mix over this period. This creates an inevitable differentiation with the analysis in Section 1, which covers the period 2023 to 2028 only. The projected financial inclusion uplifts due to payment mix change have been calculated with the *ceteris paribus* assumption, meaning that we have assumed all other variable will stay the same over the projected period. Notably, this means we do not have any population growth effects in banked individuals' uplift. This allows us to isolate in this report, solely growth in financial inclusion driven by payment mix variation, rather than exogenous factors.

[1] Payment mix data : Globaldata

[2] Financial inclusion data : World Bank Findex

[3] A logit transformation is used in order to bound financial inclusion estimates in a 0-100% range

[4] Our estimate is based on information from the following sources: YDC Data Economics, 2022; Natwest and UCL, 2023; Novantas Strategy & Management; Penser; Dan Rosenbaum - Oliver Wyman; ARK Investment Management; Digital Growth institute, 2024

[5] Purchasing power: World Bank

## Profit opportunity for banks

This association between instant payments and financial inclusion also represents an opportunity to banks, due to the increasing customer base.

We estimate the size of this benefit by constructing an estimate of the typical 'customer lifetime value (CLV)' of the representative consumer, in each market. Our starting point is estimates for the CLV of a typical US retail bank consumer from available literature, taking average estimates following a literature review [4].

This value was then adjusted by country-specific purchasing power estimates [5] and the relative profitability of the banking sector in each market, utilising country-specific statistics on the gross operating surplus to output ratio of the financial sector. These provide country-specific estimates of a representative CLV. For three profiles (Argentina, Brazil and Hong Kong) GOS for financial services was not reported in official supply-use tables, so was estimated based on the known values from structurally similar economies.

We then use this number to calculate the full size of the opportunity in terms of profit for banks.

Of course, the lifetime value of any individual customer will be impacted by their use of various financial services and other behaviour, with potential for significant differentiation both inter and intra-country. Our adjustments are an attempt to control for this, however as existing evidence is relatively sparse, there is a level of uncertainty in this area.

## Country selection

The above analysis was carried out for all 34 countries covered by both Globaldata and Findex over the full time period (2021 to 2028). Many countries score highly on financial inclusion with the banked share of population nearing its upper bound of 100%, or see strong electronic and instant payment substitution effects. In these instances, the financial inclusion uplift is less pronounced, and in some cases, marginally negative. These countries are excluded from the report.



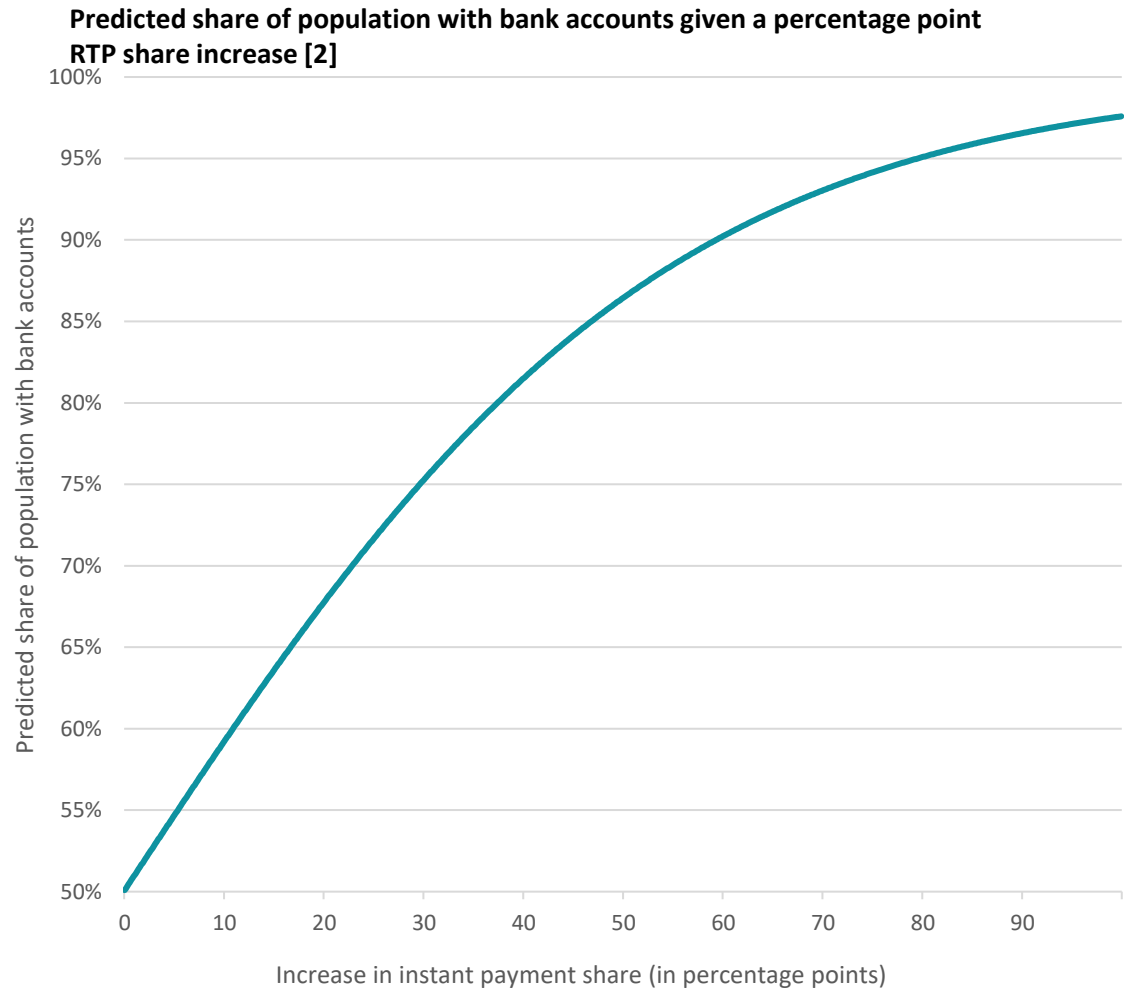
Section 2

## Financial Inclusion:

### Findings

# Finding 1: There exists a positive empirical link between instant payments and financial inclusion

- This graph is informed by our predictive model, estimated by data on 48 countries from 2011-2021. It shows that **as the share of payments that are instant increase, we observe higher financial inclusion.** Intuitively, this relationship begins to diminish with very large increases, as the maximum value of 100% is approached.
- This gives us confidence that instant payments specifically are associated with an increase in increasing financial inclusion, compared to potential other factors. Correlation in lots of countries trumps correlation in one country.
- With this relationship [1] **we can simulate ‘what-if’ scenarios for each country** given the predicted changes in their payment mix.
- For a representative example, a hypothetical country starts with 50% of its adult population banked sees a 10%point increase in the value share of instant payments then, all else being equal, we would expect the banked share of their population to rise to 59.1%



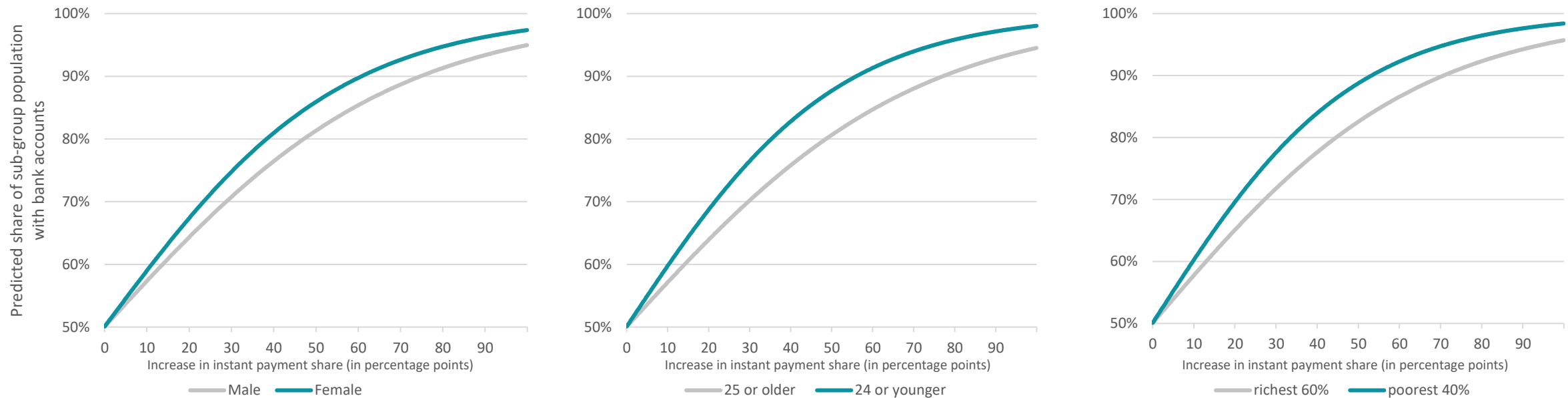
[1] In particular, we find that on average for each 1 percentage point increase in the share of total payments that are instant, the log-odds of an individual being having a bank account increase by roughly 0.037, *ceterus paribus*. This is the statistically significant coefficient the specifies the relationship in the above graph.

[2] The graph above is an illustrative example of the statistically significant relationship applied to a “what-if” example of a country that initially sees 50% of its population banked if the RTP share of payments were to increase



# Finding 2: The association between instant payments and financial inclusion is strongest for the young, for women and for lower income groups.

Predicted share of sub-group with bank accounts given percentage point RTP share increase [1]



- These graphs show the unconditional predictions of financial inclusion increase as more payments are instant. The teal groups see their predicted levels of financial inclusion **increase faster with RTP adoption**.
- Taken together with the country specific uplifts in the following slide, this means **the financial inclusion increase expected to accompany RTP adoption will occur disproportionately within the young (24 and younger), female and lower income (poorest 40% by income) groups**.
- At their maximum, this difference implies that for the same level of RTP adoption the associated financial inclusion uplift is 7.4 p.p higher for younger people than older people, 4.3 p.p higher for women than men and 4.1 p.p higher for lower incomes than higher incomes [2].

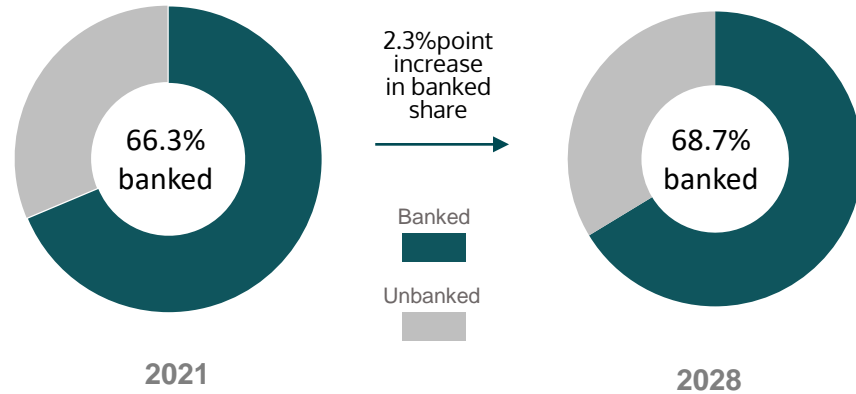
[1] Presented graphs are an illustrative example of the statistically significant relationship applied to a “what-if” example of a country that initially sees 50% of the relevant sub-group banked, if the RTP share of payments were to increase.

[2] The maximum difference here refers to the largest difference between the implied uplifts in financial inclusion between groups given any increase in instant payments. We look at this statistic as, since the relationship is non-linear, this difference will vary depending on how large the instant payments uplift is.



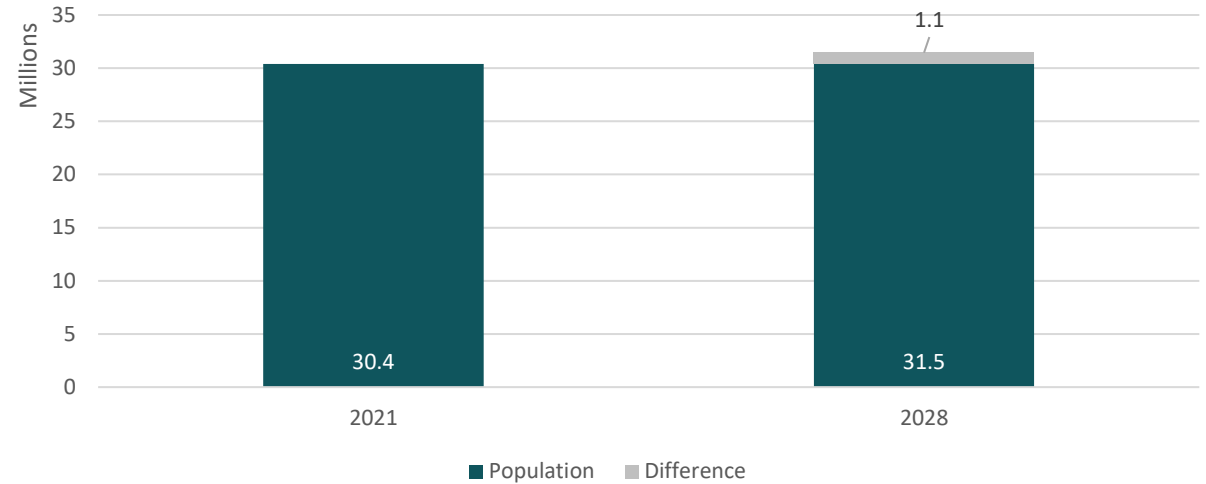
# Argentina

Share of the population that is banked in 2021 and in the 2028 projected scenario



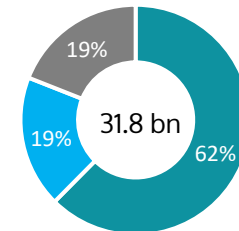
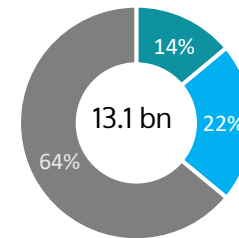
- Instant payments has the highest share by value of all payments in 2021 at 82% and will rise to 89% by 2028. Electronic (non-instant) payments and paper-based payments are forecast to remain broadly the same with their shares falling by 4 and 3 percentage points respectively.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **2.3 percentage points. This is equivalent to 1.1 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Argentina is **\$3,193**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$3.4bn** for Argentinian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

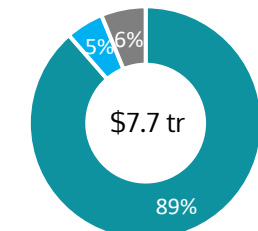
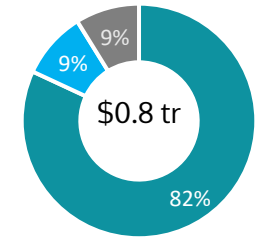


**\$3.4bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

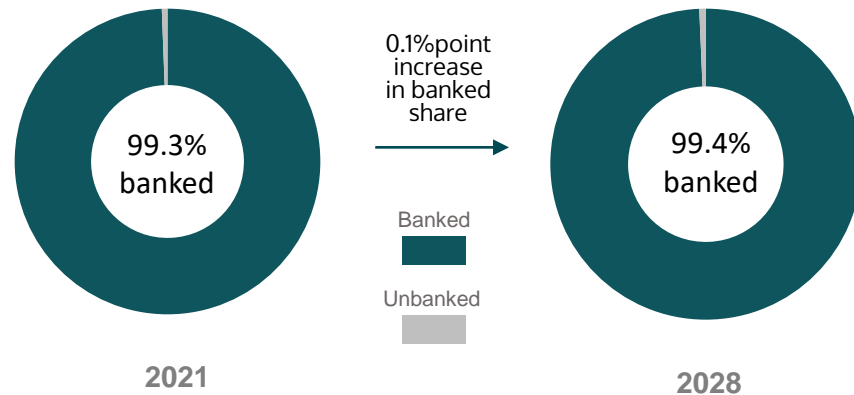


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

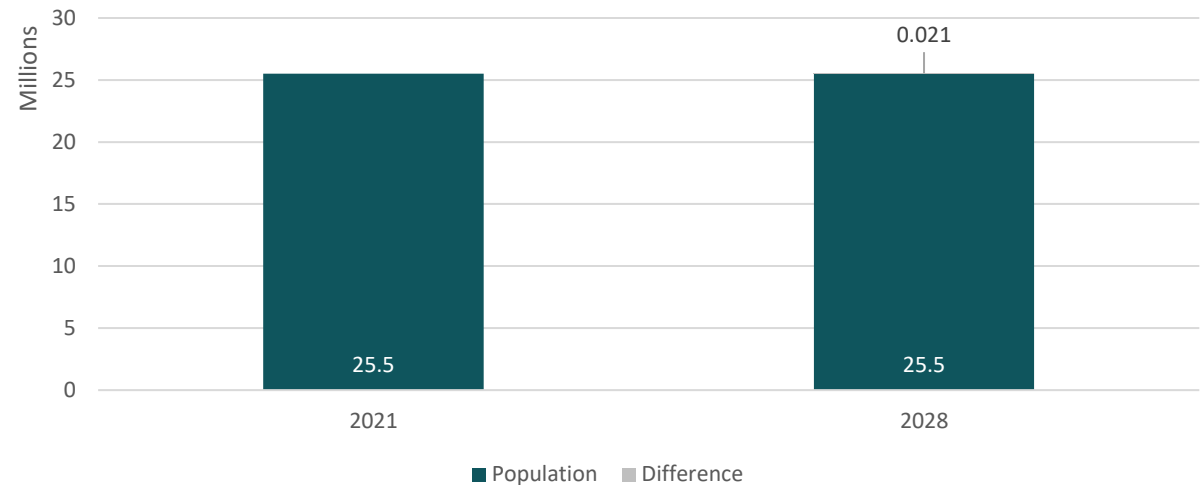


# Australia

Share of the population that is banked in 2021 and in the 2028 projected scenario



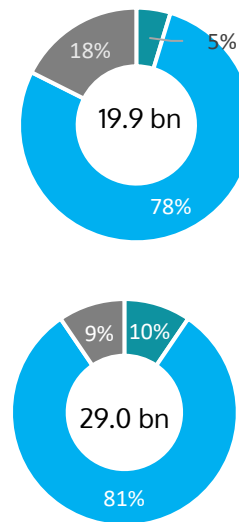
Change in the banked population, millions, 2021-28



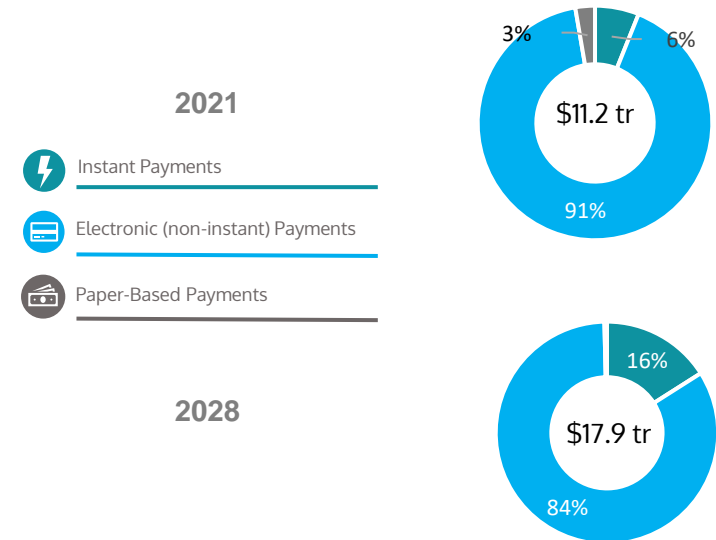
## \$167mn profit opportunity for financial institutions

- While electronic (non-instant) payments will remain the dominant type of payment method by value, its share is expected to fall by 7 percentage points. Paper-based payments is expected to decline by 3 percentage points, while instant payments use is expected increase by 10 percentage points within the 7 years.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a slight positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.1 percentage point. This is equivalent to 21,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Australia is **\$8,058**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$167mn** for Australian financial institutions, due to the increased consumer base.

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)



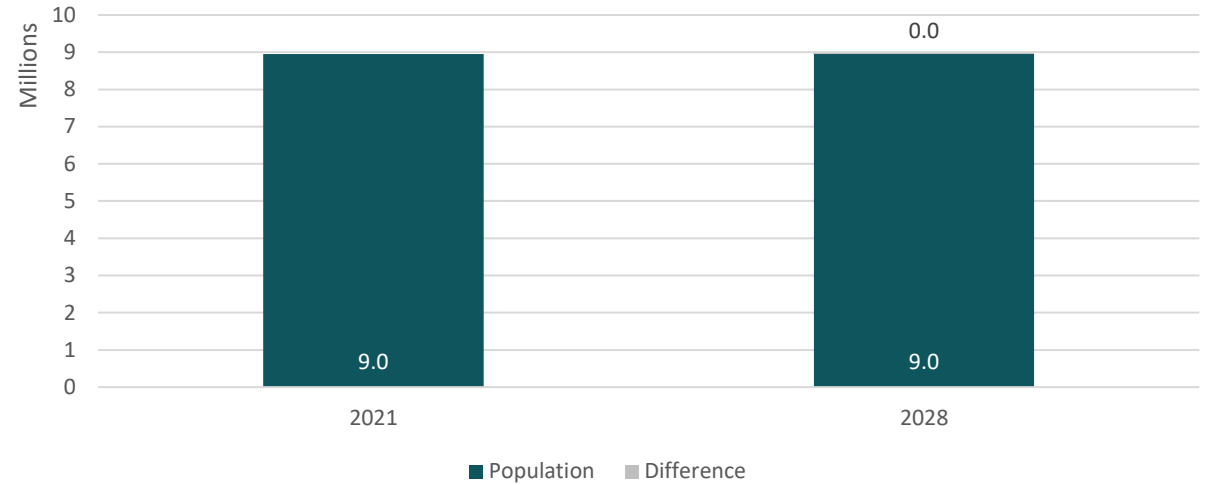
# Austria

Share of the population that is banked in 2021 and in the 2028 projected scenario



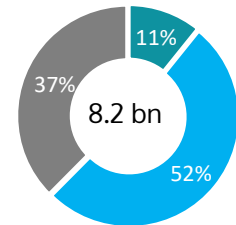
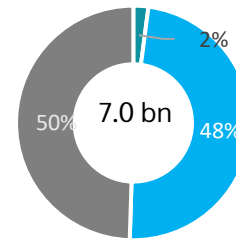
- Between 2021 and 2028, electronic (non-instant) payments will remain the dominant type of payment method but will see its share fall slightly by 5 percentage points in terms of share of transaction value. While paper-based payments will see little change over this period, instant payments are forecast to rise by 3 percentage points.
- Per Cebr modelling, given that Austria already has very high levels of financial inclusion, we do not estimate any change in this. This implies that introduction of instant payments does not represent a significant profit opportunity.

Change in the banked population, millions, 2021-28

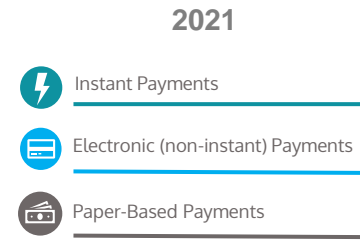
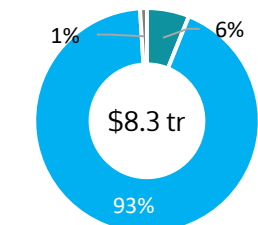
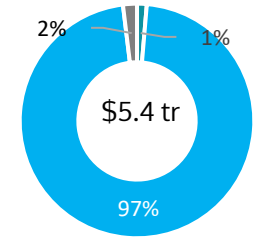


## \$0 profit opportunity for financial industries

Payment Mix by Transaction Volume (bn)



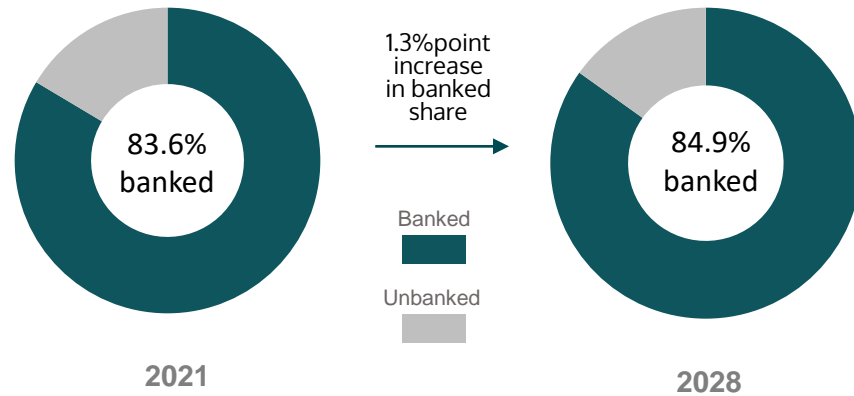
Payment Mix by Transaction Value (\$ tr)





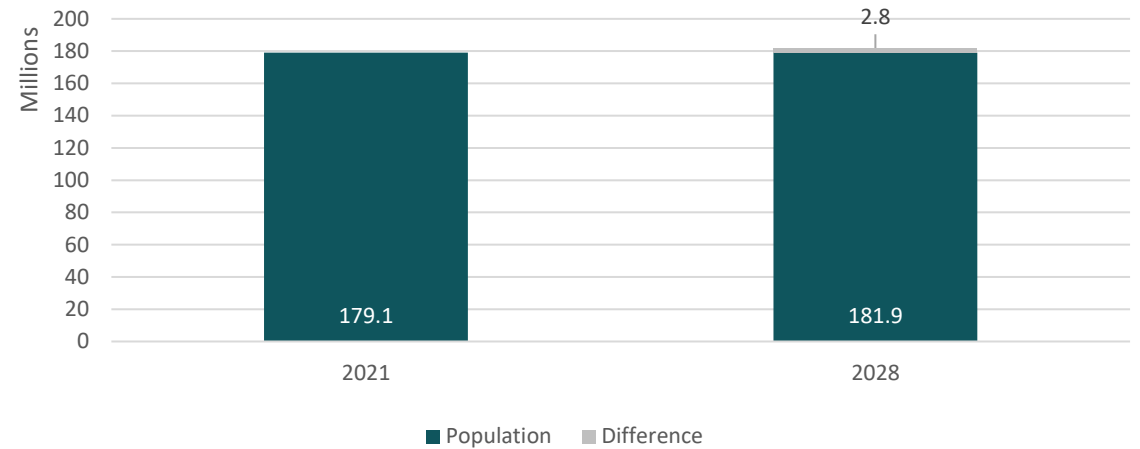
# Brazil

Share of the population that is banked in 2021 and in the 2028 projected scenario



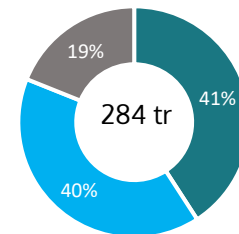
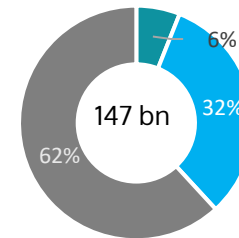
- Brazil has a significant instant payments scheme in place. Instant payments are forecasted to increase from 13% of the total value of transactions in 2021 to 28% by 2028
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a slight positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **1.3 percentage point. This is equivalent to 2.8mn new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Brazil is **\$3,133**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$8.9bn** for Brazilian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

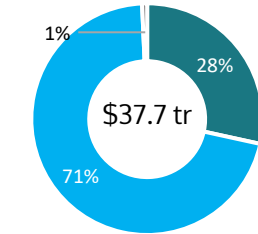
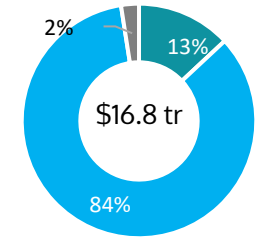


**\$8.9bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

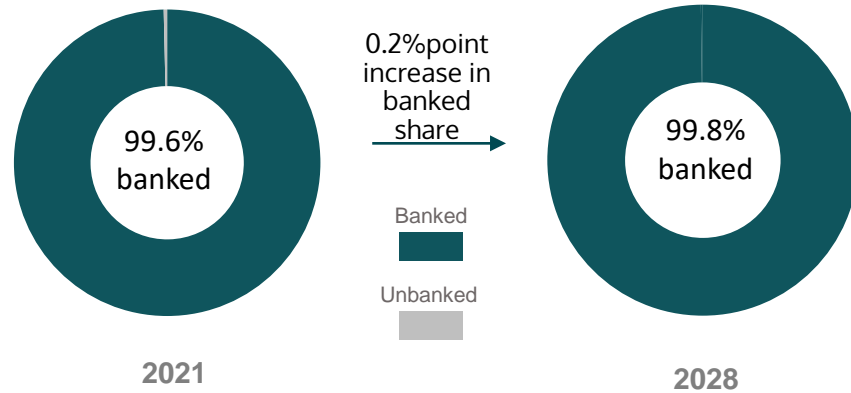


- ⚡ Instant Payments
- 💳 Electronic (non-instant) Payments
- 🏠 Paper-Based Payments



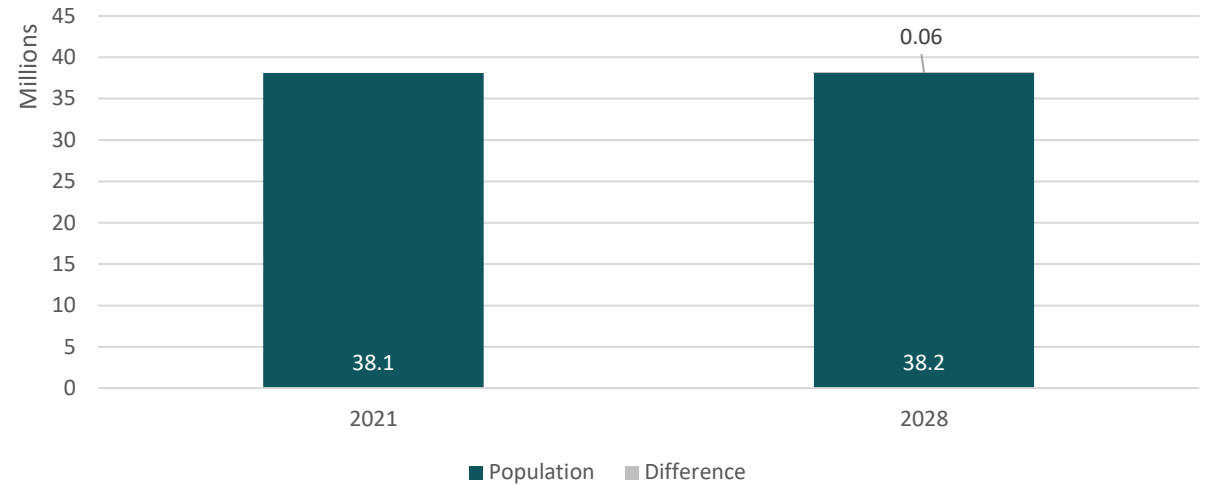
# Canada

Share of the population that is banked in 2021 and in the 2028 projected scenario



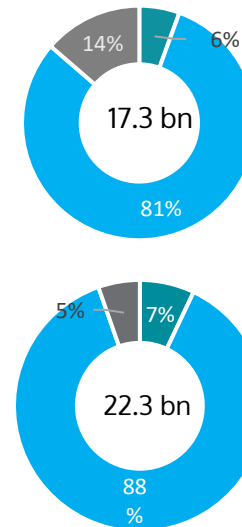
- Canada's payment mix will experience a considerable change over the next five years. Between 2021 and 2028, electronic (non-instant) payments will fall slightly by 2 percentage points, as will paper-based payments by 6 percentage points. This market share will be taken up by instant payments, which is expected to increase three-fold from 4% to 12%. The transaction value, over the next five years, is expected to increase by \$0.7 trillion.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.2 percentage point**. This is equivalent to about **62,000 new account holders**.
- We estimate that the typical lifetime value of a customer to financial institutions in Canada is **\$2,763**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$171mn** for Canadian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

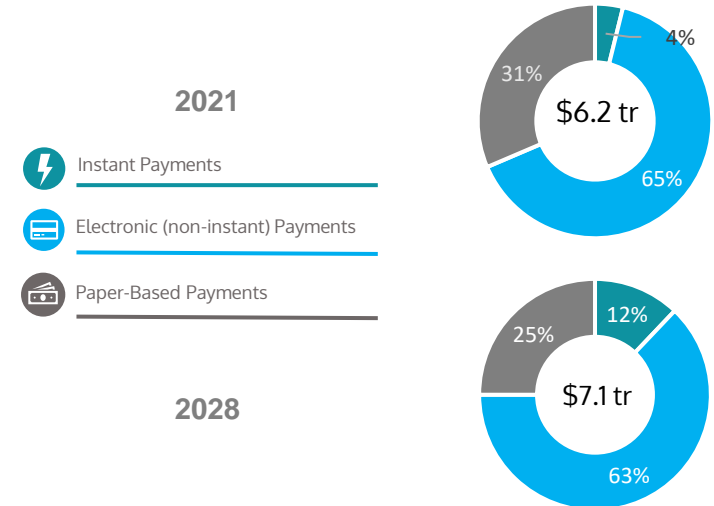


## \$171mn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

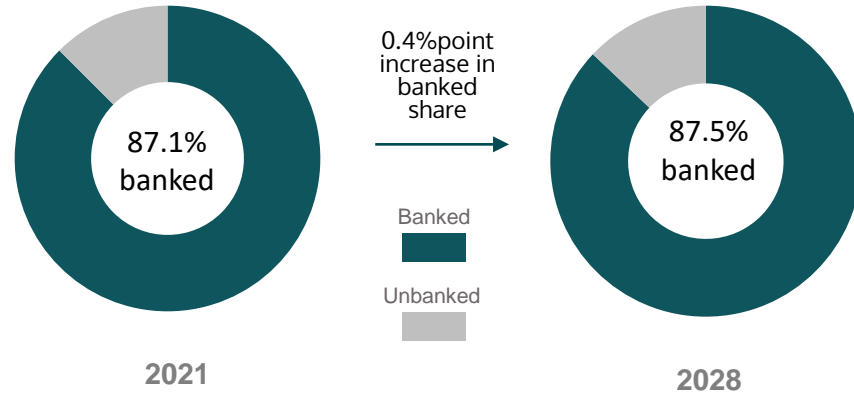


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments



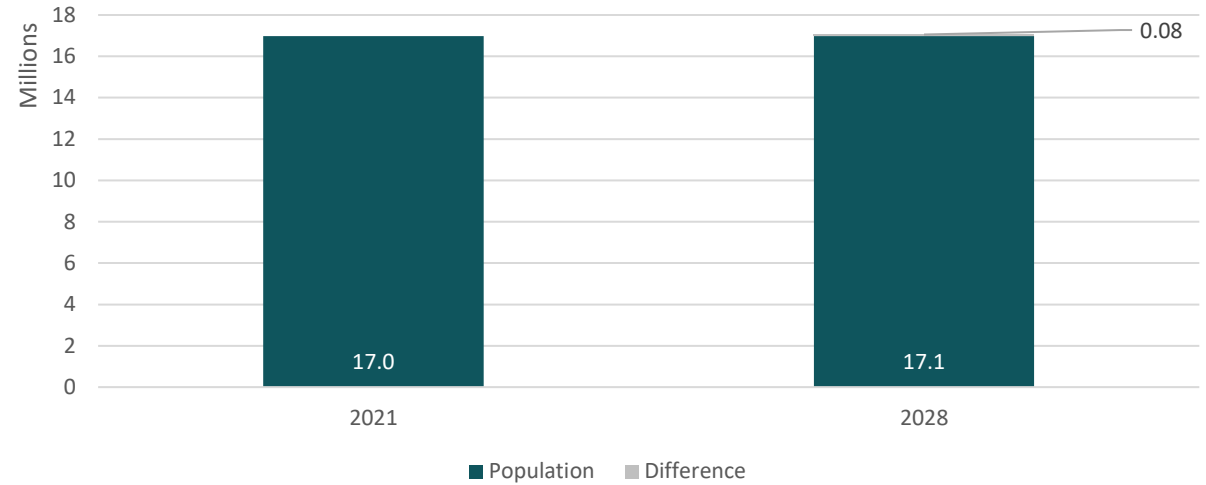
# Chile

Share of the population that is banked in 2021 and in the 2028 projected scenario



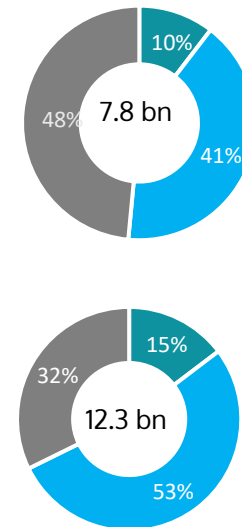
- Chile's payment transaction value is forecast to rise from \$12.2 trillion to \$18.8 trillion between 2021 and 2028. Electronic (non-instant) payments will remain the dominant type of payment method with its share unchanged at 96% during this five-year period. Instant payments are forecast to increase by 1 percentage point
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.4 percentage point. This is equivalent to 83,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Chile is **\$1,606**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$133 mn** for Chilean financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

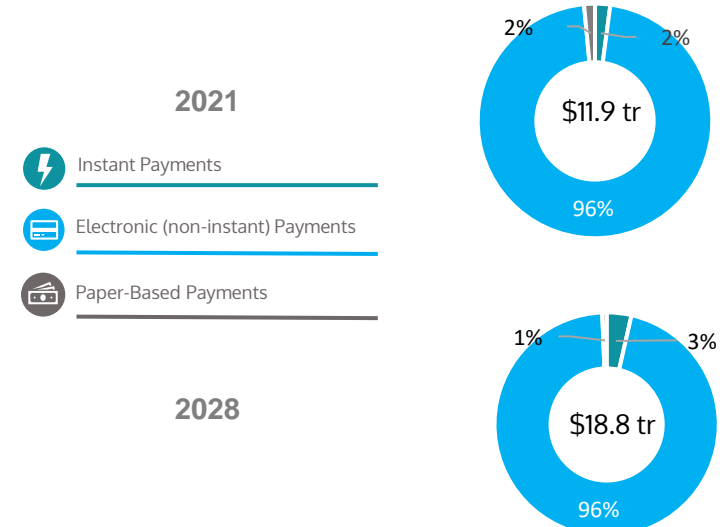


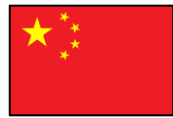
## \$133mn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



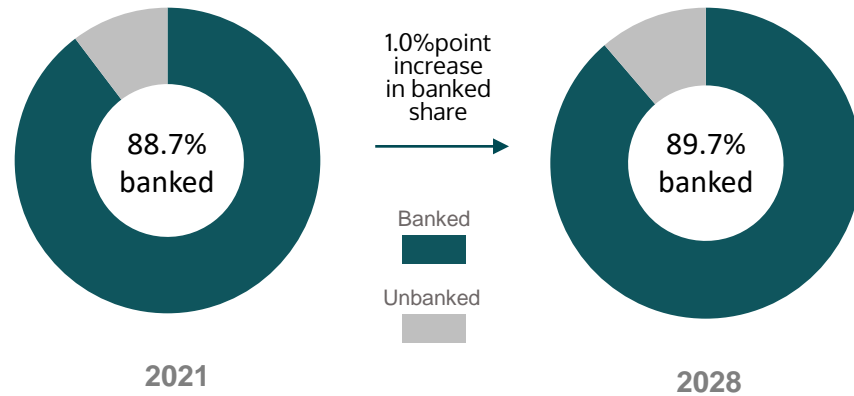
Payment Mix by Transaction Value (\$ tr)





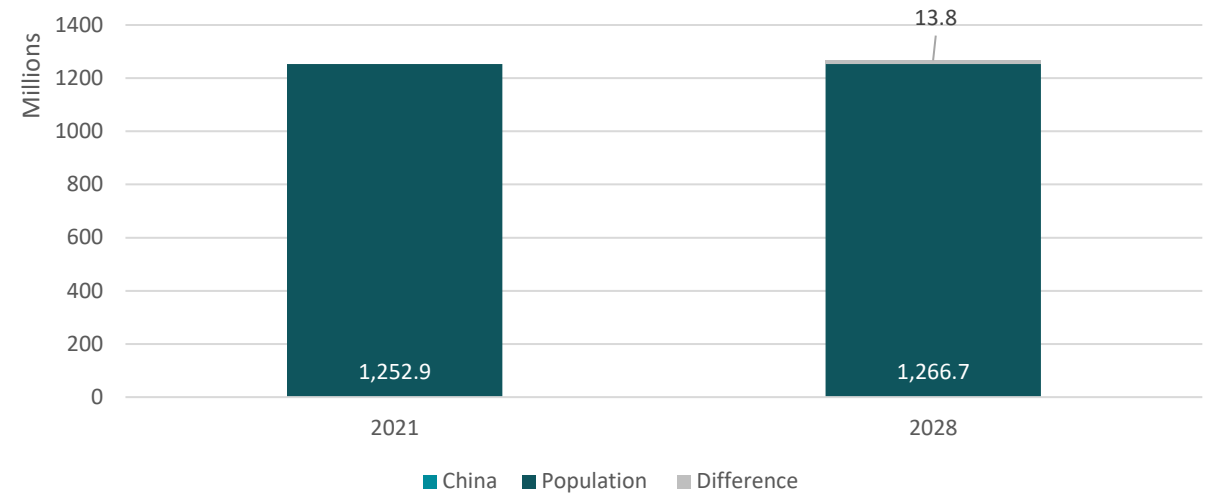
# China

Share of the population that is banked in 2021 and in the 2028 projected scenario



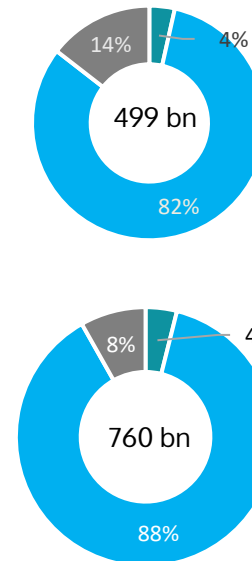
- China's payment transaction value growth is to grow substantial over the period, from \$669 trillion to \$1,203.4 trillion. It is forecast that instant payments' share of total transaction value will grow by 2 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **1.0 percentage point. This is equivalent to 13.8 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in China is **\$1,539**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$21.2 bn** for Chinese financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

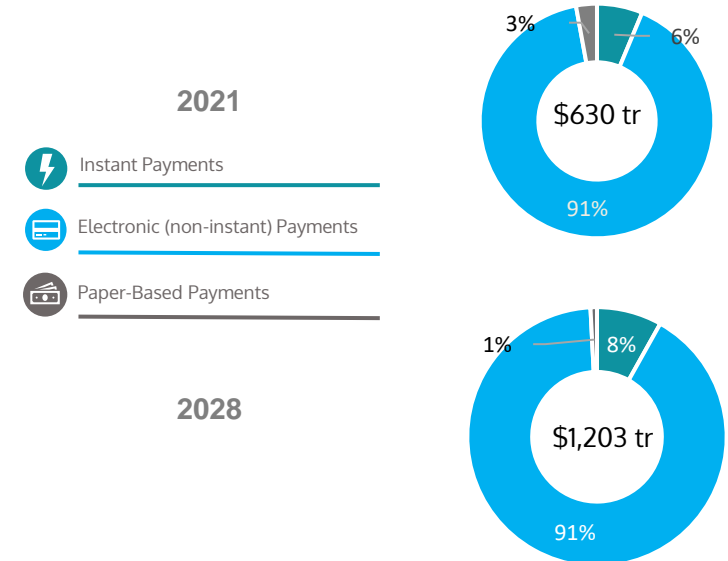


## \$21.2bn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)



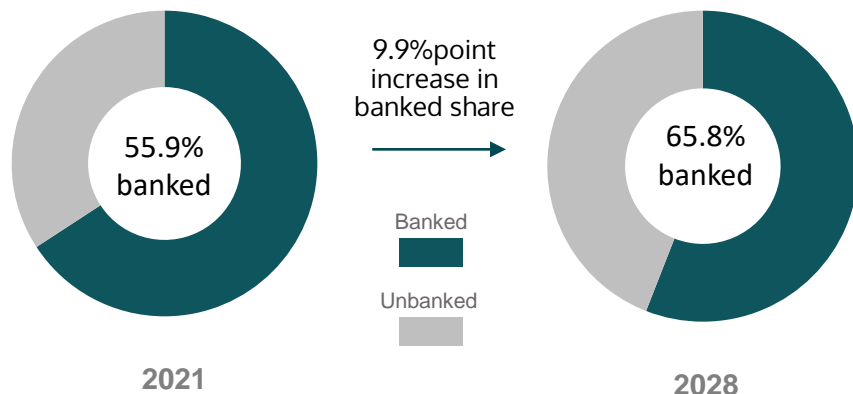
- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments





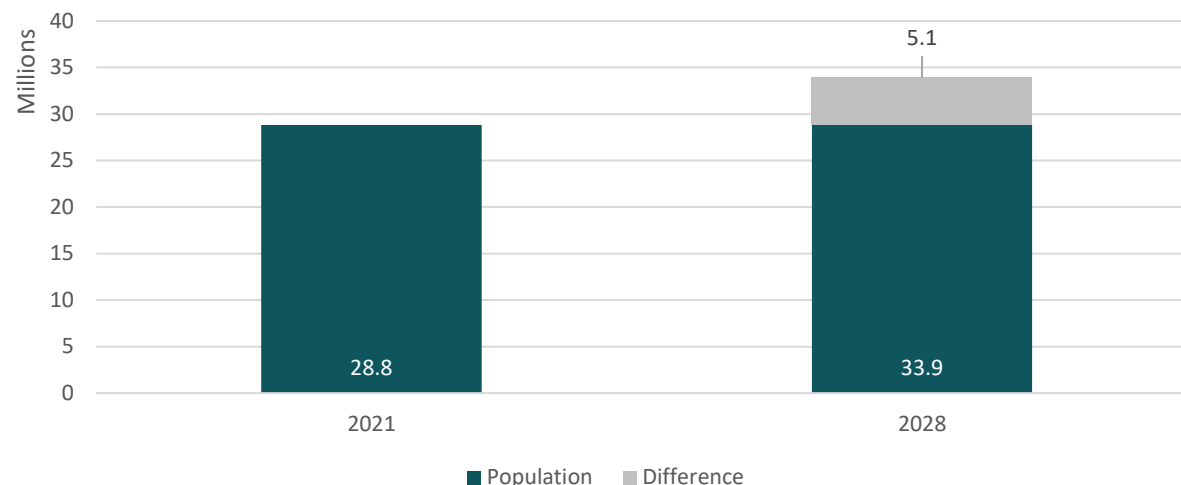
# Colombia

Share of the population that is banked in 2021 and in the 2028 projected scenario



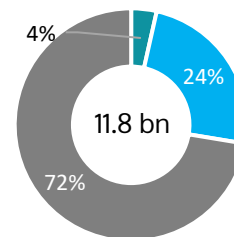
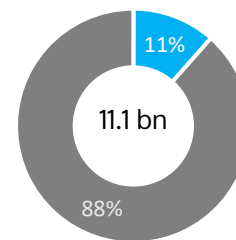
- Electronic (non-instant) payments have the highest share by value of all payments at 77% in 2021 and by 2028, this is forecast to rise to 86%. Paper-based payments are forecast to fall by 11 percentage points during this five-year period, while paper-based payments are forecast to rise by 2%.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **9.9 percentage points between 2021 and 2028. This is equivalent to 5.1 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Colombia is **\$1,492**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$7.6 bn** for Colombian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

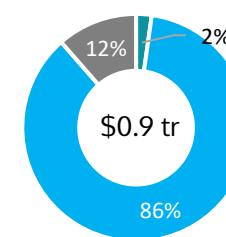
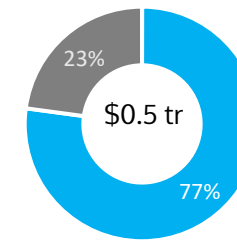


**\$7.6bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



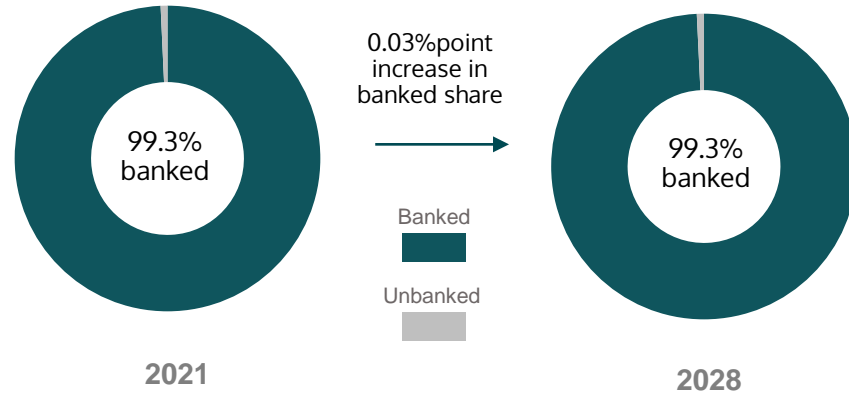
Payment Mix by Transaction Value (\$ tr)





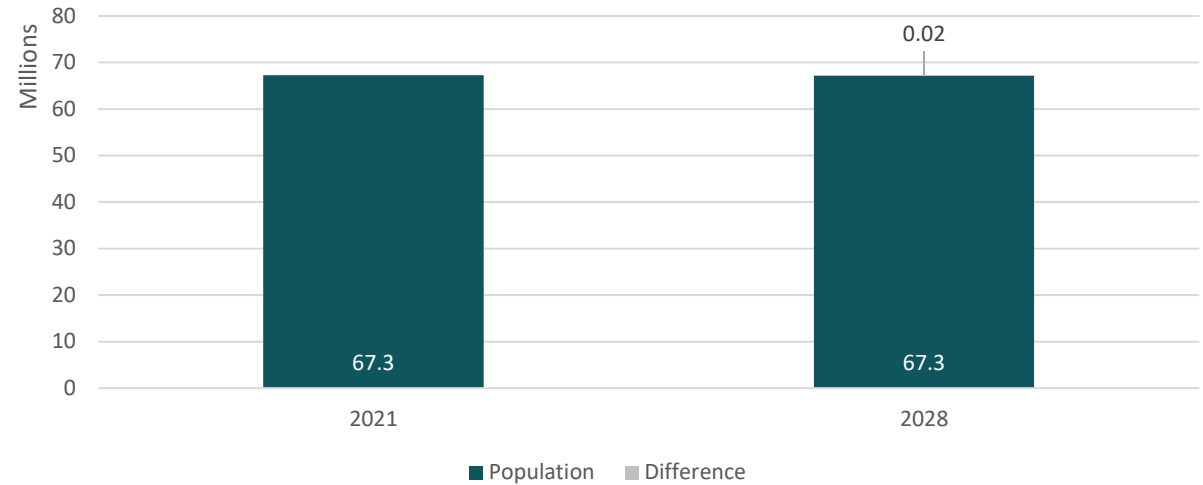
# France

Share of the population that is banked in 2021 and in the 2028 projected scenario



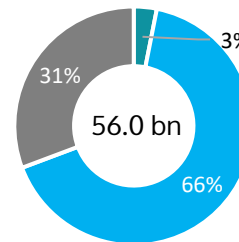
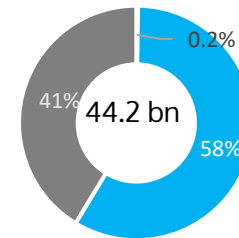
- Between 2021 and 2028 and in value terms, electronic (non-instant) payments are expected to fall by 1 percentage point. For paper-based payments, its share is expected to see a reduction of 1% negligible, with an increase in instant payments by 2 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.03 percentage point**. This is equivalent to **24,000 new account holders**.
- We estimate that the typical lifetime value of a customer to financial institutions in France is **\$1,165**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$27.5 mn** for French financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

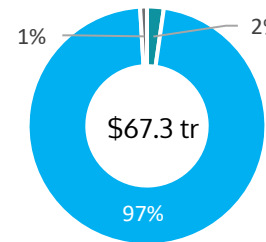
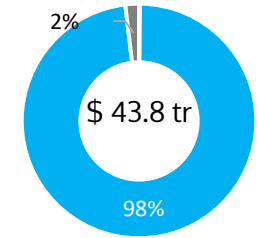


**\$27.5mn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



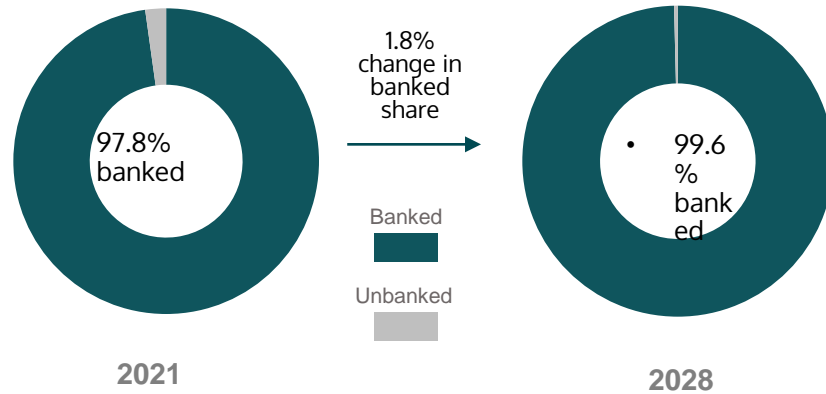
Payment Mix by Transaction Value (\$ tr)





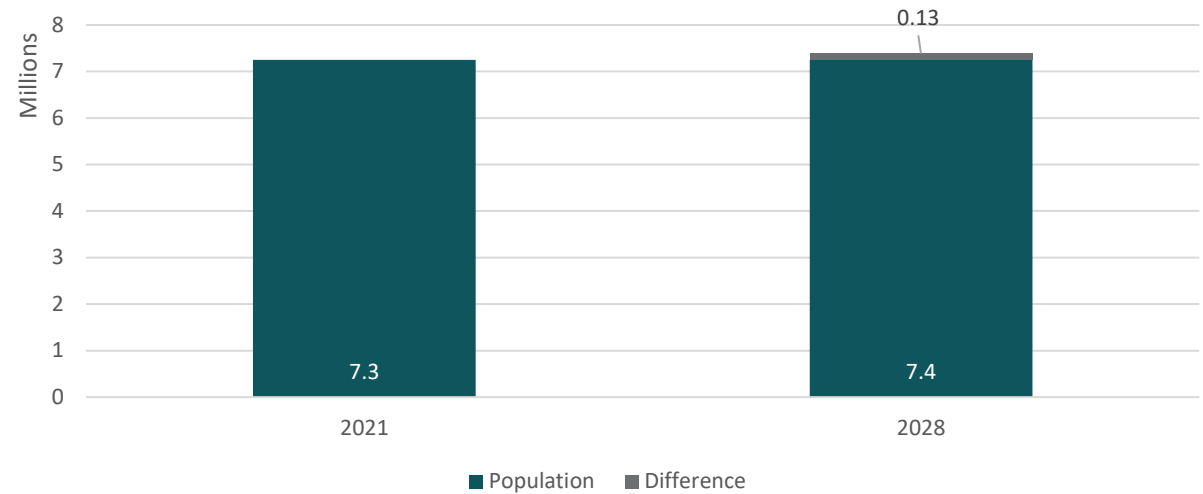
# Hong Kong

Share of the population that is banked in 2021 and in the 2028 projected scenario



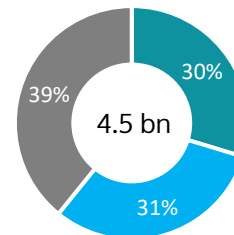
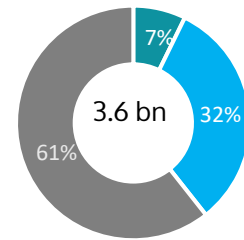
- Hong Kong is expected to see its payments mix evolve significantly over the next five years. Between 2021 and 2028, instant payments share by value of all payments is forecast to increase from 17% of all payments to 61%, removing paper-based payments from top spot. Paper-based payments are forecast to fall significantly by 38 percentage points. Electronic (non-instant) payments will fall by 7 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. A high portion of the population in Hong Kong already have bank accounts, however strong RTP growth means that we expect this fraction to increase by **1.8 percentage point**. This is equivalent to **134,000 new account holders**.
- We estimate that the typical lifetime value of a customer to financial institutions in Hong Kong is **\$4,239**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$569 mn** for their financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

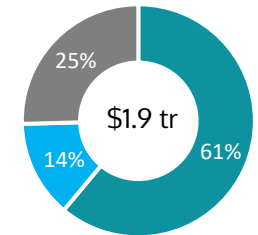
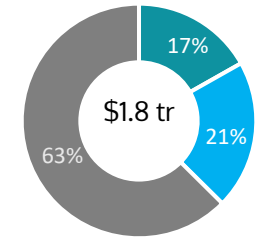


## \$569mn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

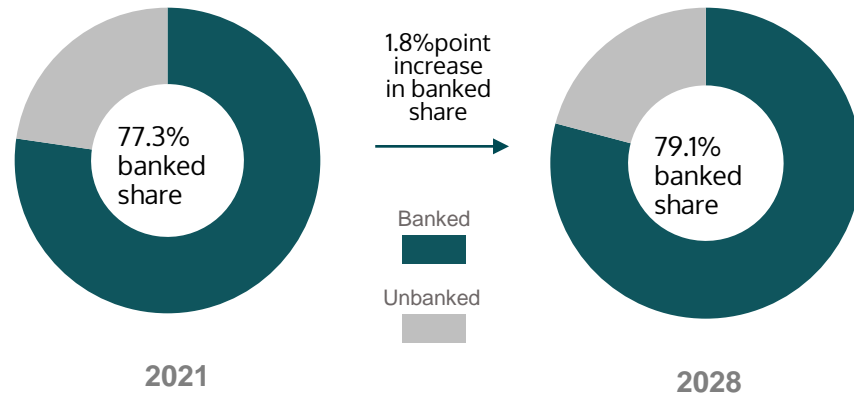


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments



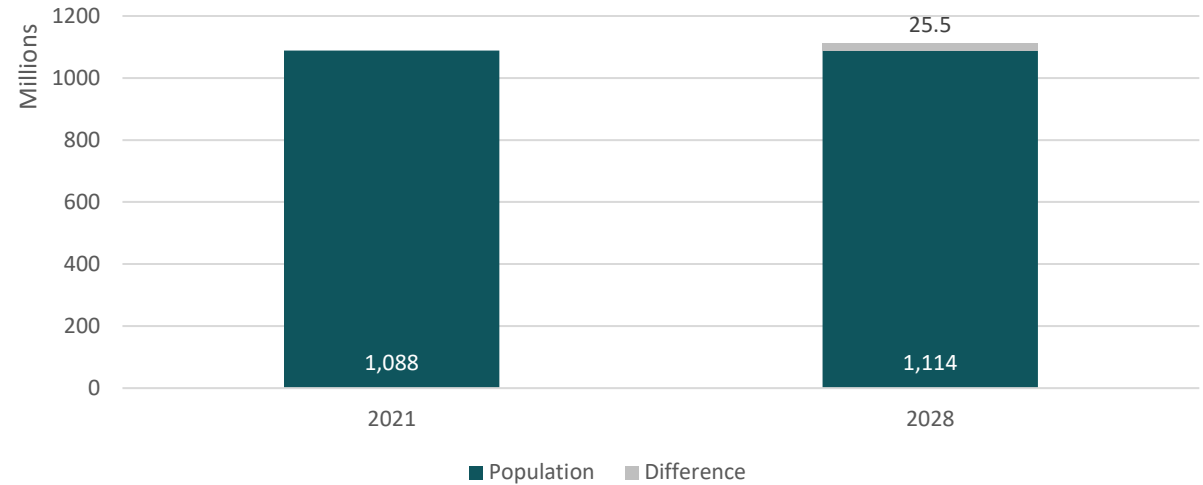
# India

Share of the population that is banked in 2021 and in the 2028 projected scenario



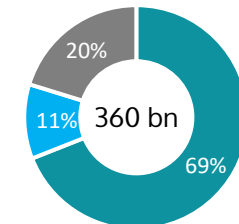
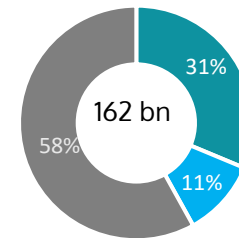
- India's payment by transaction value is expected to grow by over \$10 trillion over the next five years. This substantial growth is coincided by a significant change in the payment mix. While electronic (non-instant) payments will remain the dominant type of payment method, its share between 2021 and 2028 is expected to fall by 8 percentage points. Paper-based payments is expected to decline by 2 percentage point, while instant payments is expected to rise significantly by 10 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **1.8 percentage point**. This is equivalent to **25.5 million new account holders**.
- We estimate that the typical lifetime value of a customer to financial institutions in India is **\$963**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$24.6bn** for Indian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

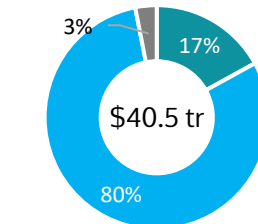
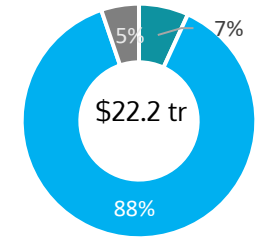


## \$24.6bn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

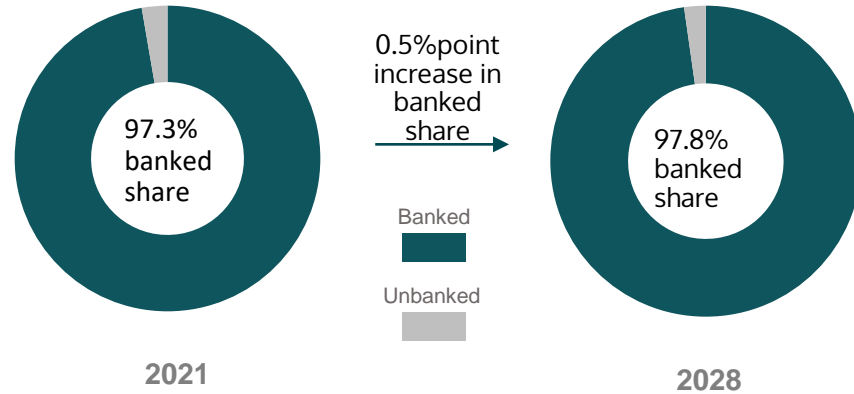


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments



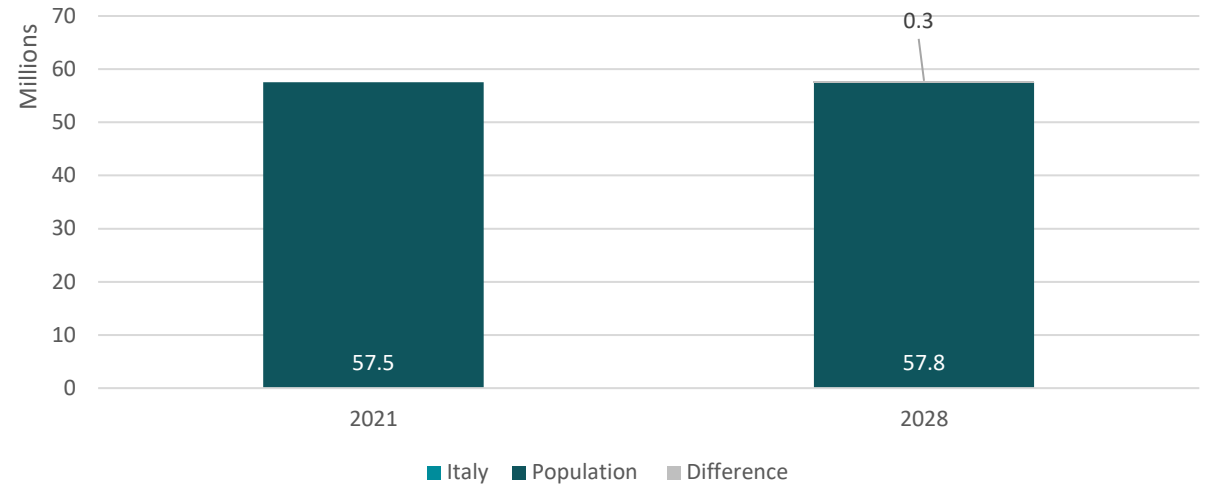
# Italy

Share of the population that is banked in 2021 and in the 2028 projected scenario



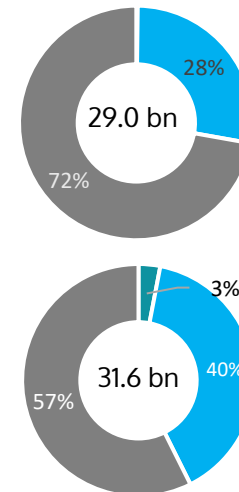
- Between 2021 and 2028, electronic (non-instant) payments fall by 3 percentage points but will remain the dominant type of payment method. Paper-based payments is also expected to decline by 4 percentage points, while instant payments is expected grow significantly by 7 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.5 percentage point. This is equivalent to about 273,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Italy is **\$2,092**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$571 mn** for Italian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

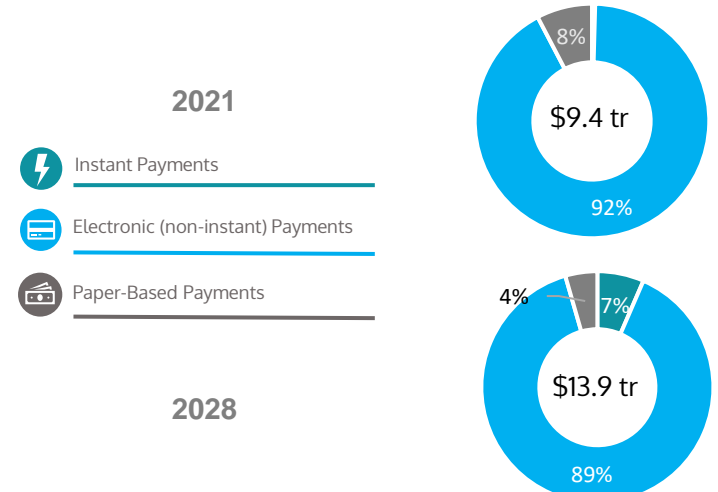


## \$571mn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



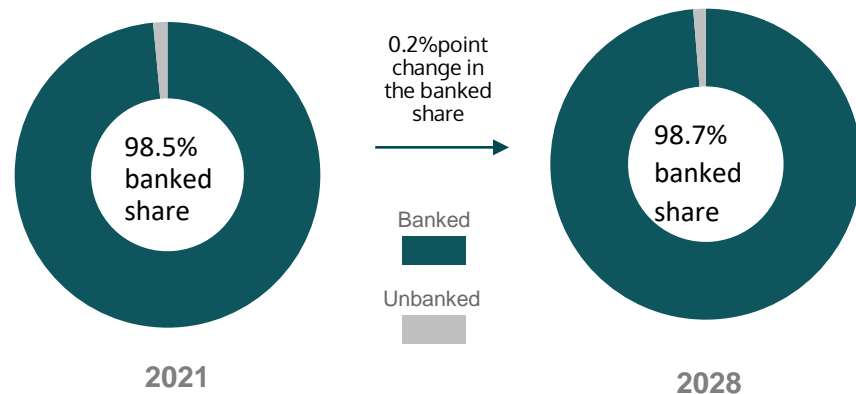
Payment Mix by Transaction Value (\$ tr)



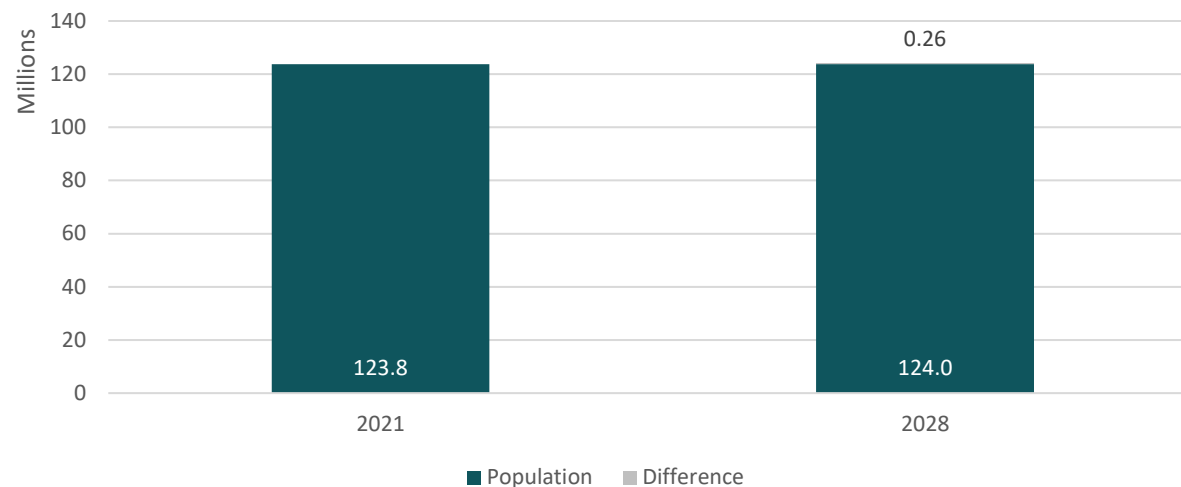


# Japan

Share of the population that is banked in 2021 and in the 2028 projected scenario



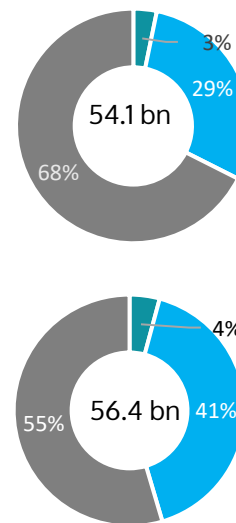
Change in the banked population, millions, 2021-28



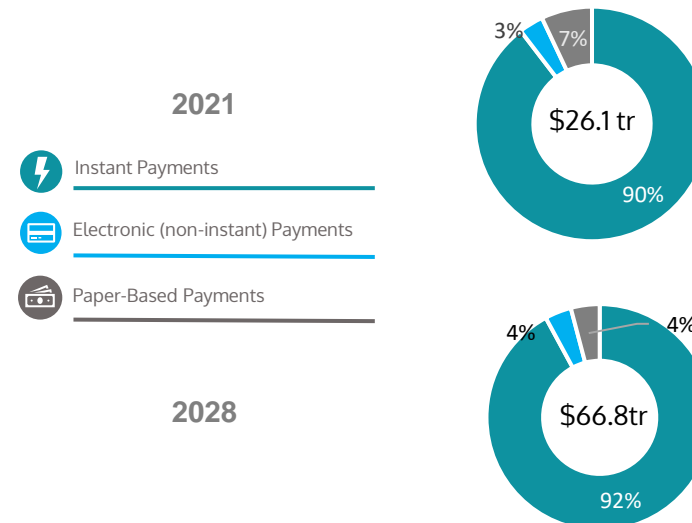
## \$631mn profit opportunity for financial institutions

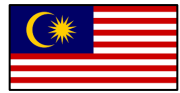
- Japan's payment transaction value is expected fall from \$49.5 trillion to \$66.8 trillion. Between 2021 and 2028, instant payments and electronic (non-instant) payments are both expected to rise by 1 percentage point as a share of total value transaction. Paper-based payments is expected to decline by 3 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.2 percentage point. This is equivalent to 264,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Japan is **\$2,387**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$631 mn** for Japanese financial institutions, due to the increased consumer base

Payment Mix by Transaction Volume (bn)



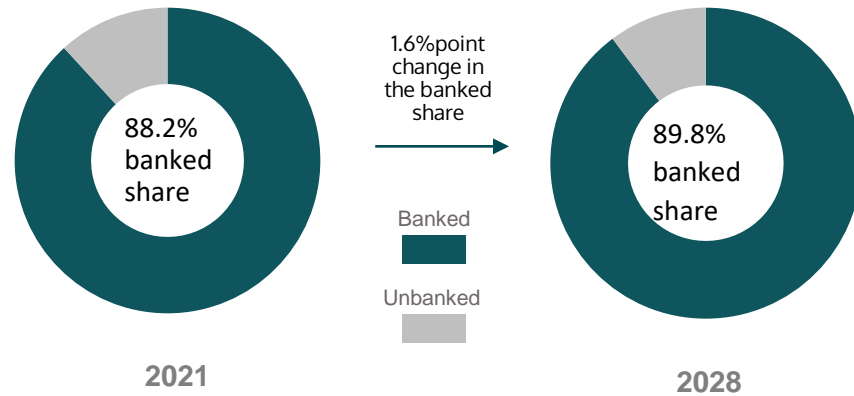
Payment Mix by Transaction Value (\$ tr)





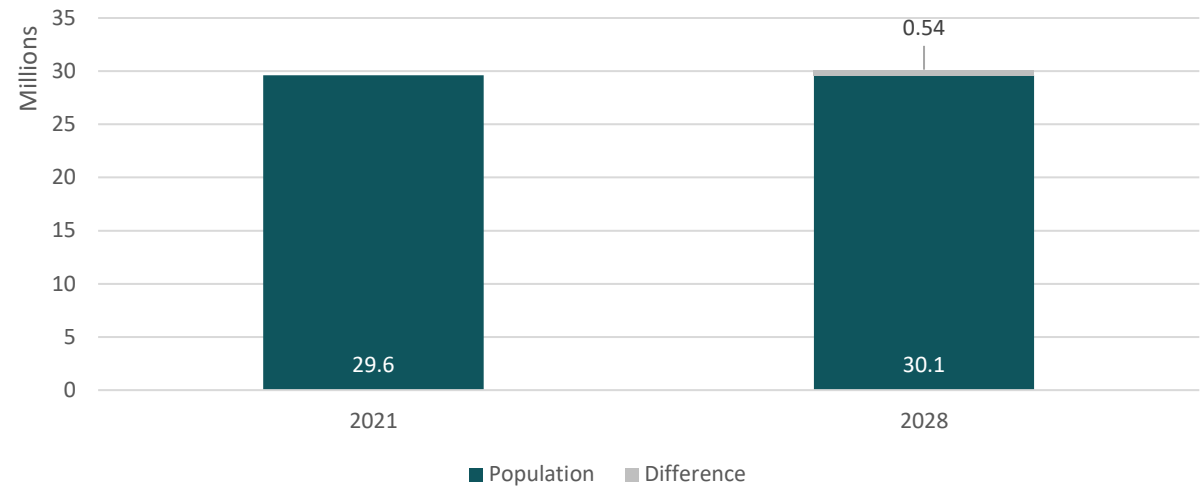
# Malaysia

Share of the population that is banked in 2021 and in the 2028 projected scenario



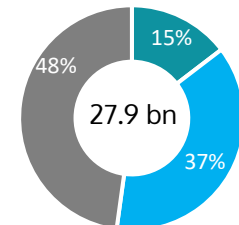
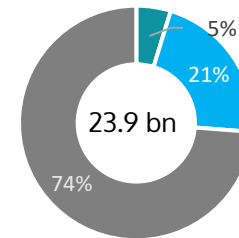
- Between 2021 and 2028, electronic (non-instant) payments will remain the dominant type of payment method in terms of value, though it will decline by 7 percentage points. Paper-based payments is also expected to decline by 5 percentage points. Instant payments are forecast to grow by 12 percentage points in the next five years.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **1.6 percentage point. This is equivalent to 537,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Malaysia is **\$1,477**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$792 mn** for Malaysian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

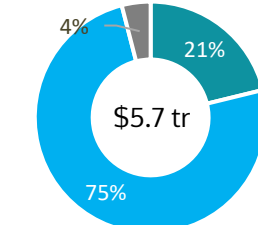
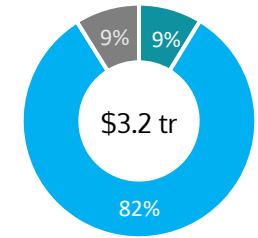


**\$792mn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)

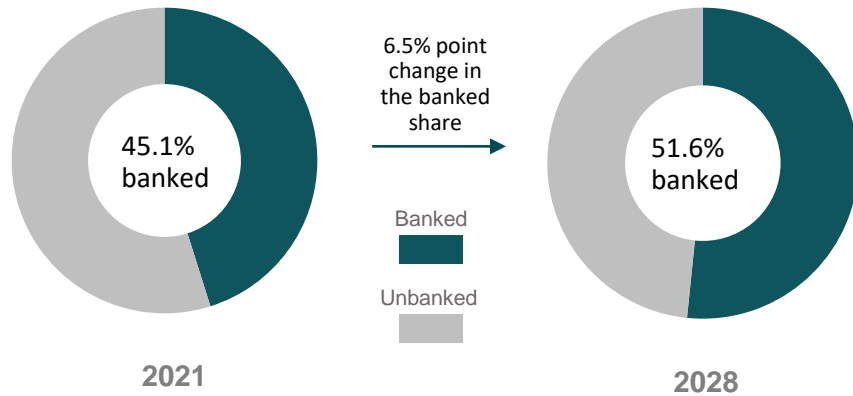


Payment Mix by Transaction Value (\$ tr)



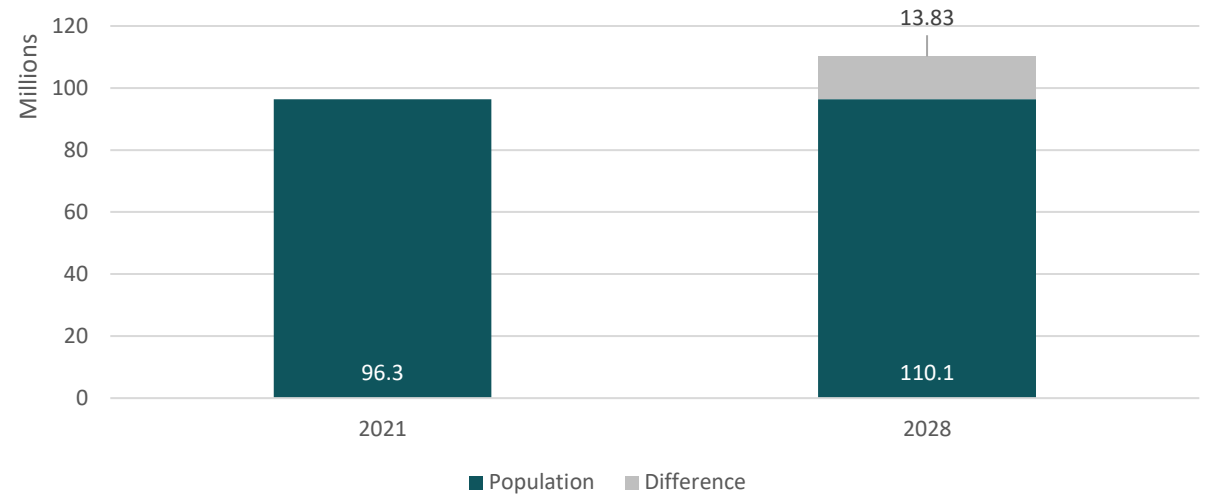
# Nigeria

Share of the population that is banked in 2021 and in the 2028 projected scenario



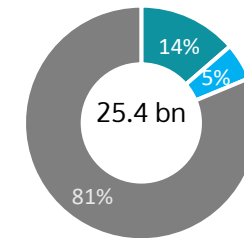
- In Nigeria, instant payments held the highest share by value of all payments at 53% in 2021, which is expected to increase to 84% in 2028. This substantial rise in this payment method has in turn driven down the share of electronic (non-instant) payments by 24 percentage points. Paper-based payments are also forecast to fall by 7 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population **by 6.5 percentage points between 2021 and 2028. This is equivalent to 13.8 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Nigeria is **\$2,923**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$40.4 bn** for Nigerian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

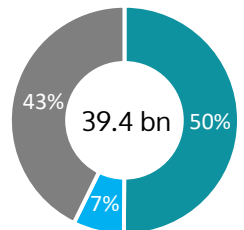


**\$40.4bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)

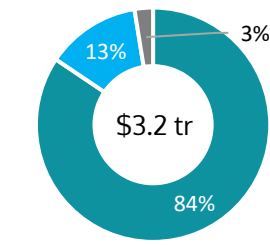
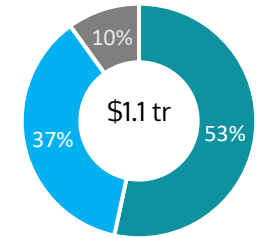


2021



2028

Payment Mix by Transaction Value (\$ tr)

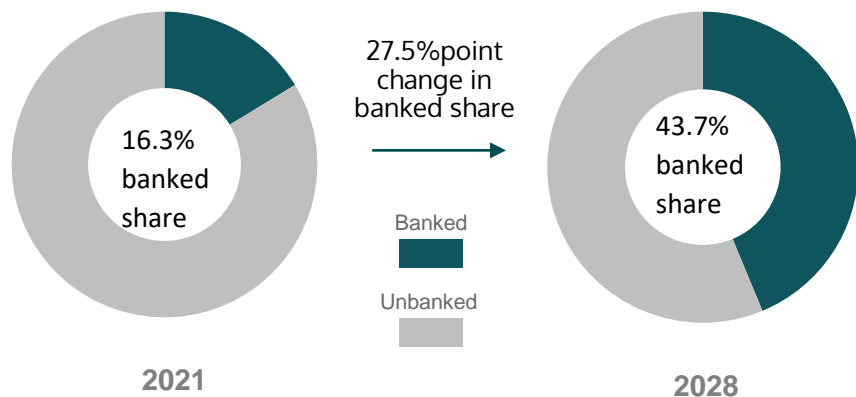






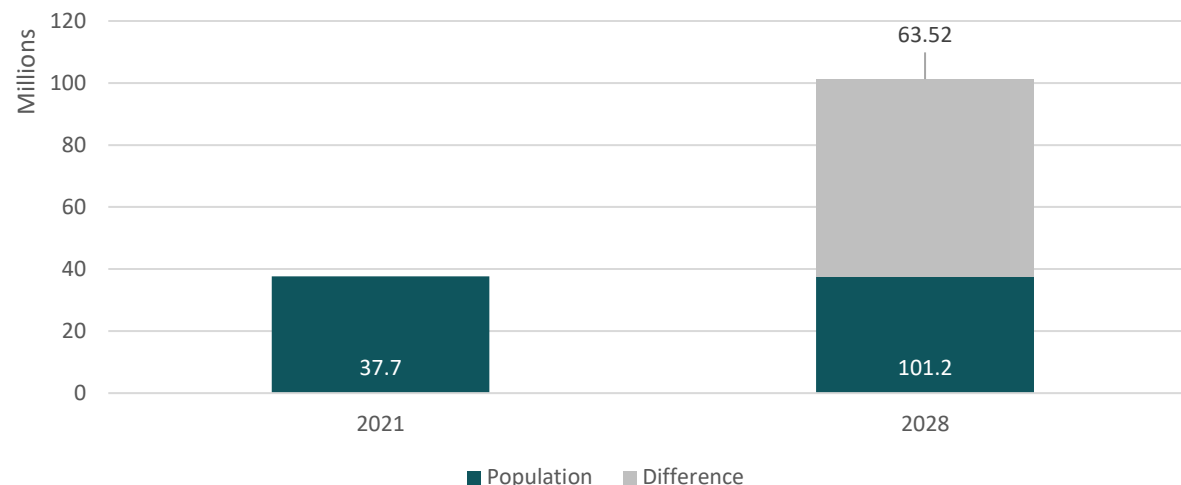
# Pakistan

Share of the population that is banked in 2021 and in the 2028 projected scenario



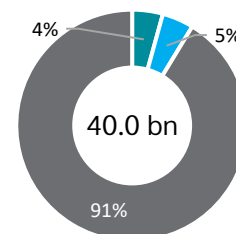
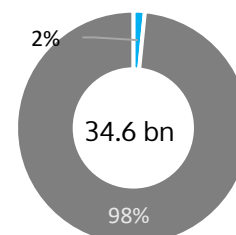
- In value terms, the payment mix in Pakistan is forecast to see considerable changes from 2021 to 2028. Electronic payments are set to rise from 12% to 37% of total transaction values, with instant payments rising from 1% to 13%.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **24.5 percentage points between 2021 and 2028. This is equivalent to 63.5 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Pakistan is **\$2,923**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$173 bn** for Pakistan financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

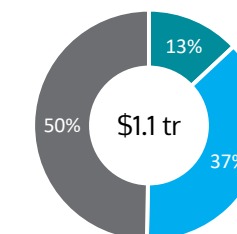
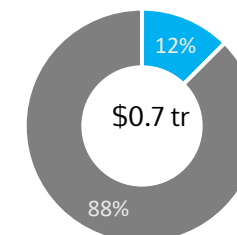


**\$173bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)

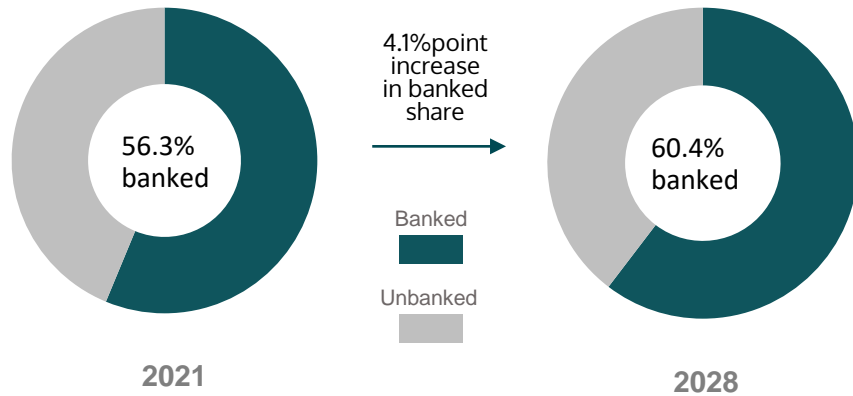


Payment Mix by Transaction Value (\$ tr)



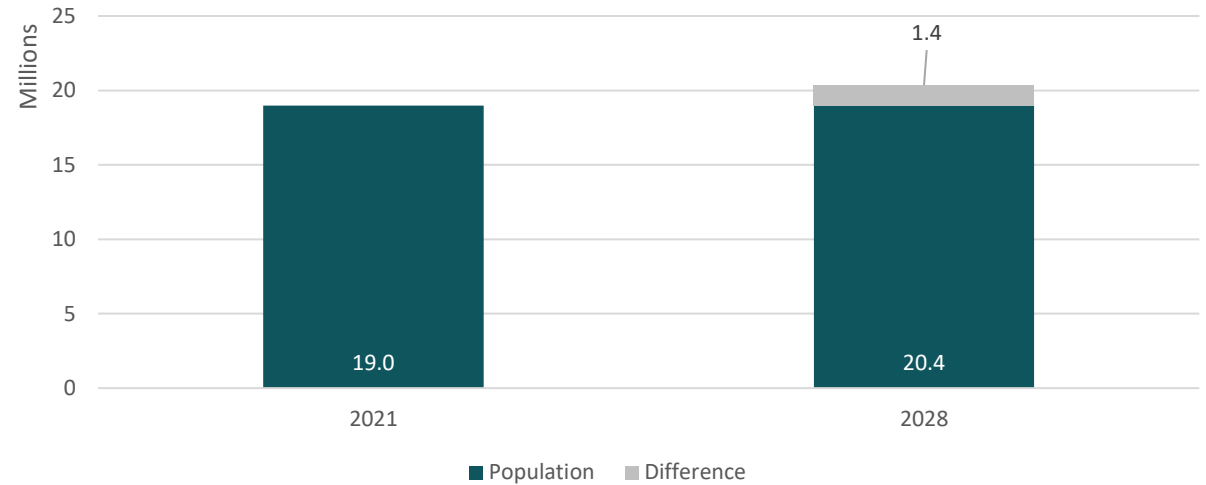
# Peru

Share of the population that is banked in 2021 and in the 2028 projected scenario



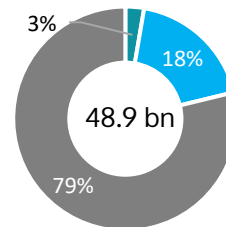
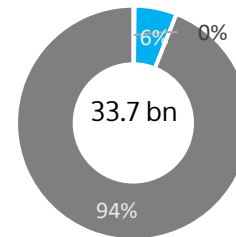
- Instant payments share by value of all payments is forecast to increase from 2% of all payments to 14%. Electronic (non-instant) payments and paper-based payments are forecast to fall by 6 percentage points and 5 percentage points, respectively.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **4.1 percentage points between 2021 and 2028. This is equivalent to 1.4 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Peru is **\$3,258**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$4.5 bn** for Peruvian financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

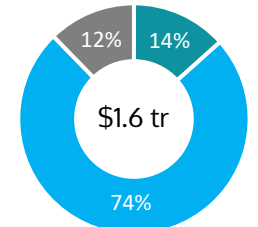
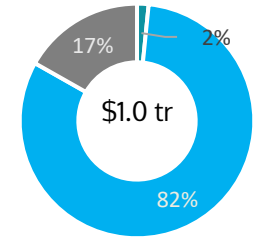


## \$4.5bn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



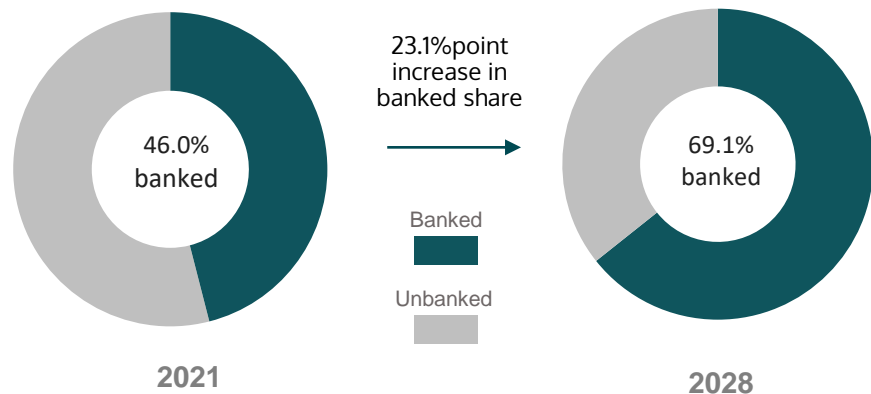
Payment Mix by Transaction Value (\$ tr)





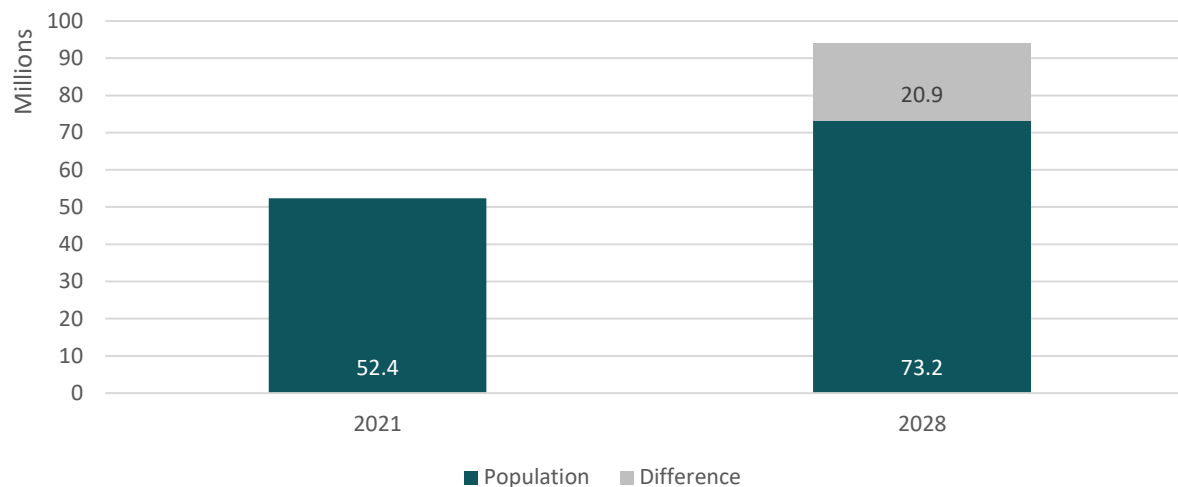
# Philippines

Share of the population that is banked in 2021 and in the 2028 projected scenario



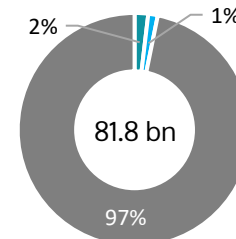
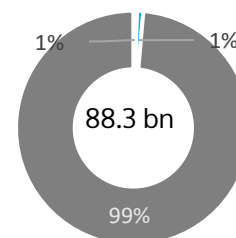
- Between 2021 and 2028, instant payments share by value of all payments is forecast to increase from 6% of all payments to 24%. Electronic (non-instant) payments are forecast to rise by 1 percentage point while, paper-based payments are forecast to fall by 21 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **23.1 percentage points between 2021 and 2028. This is equivalent to 20.9 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Philippines is **\$1,375**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$28.7 bn** for financial institutions in the Philippines, due to the increased consumer base.

Change in the banked population, millions, 2021-28

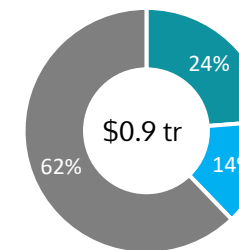
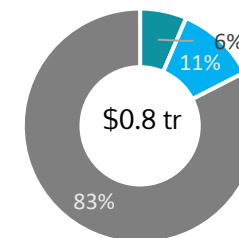


## \$28.7bn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



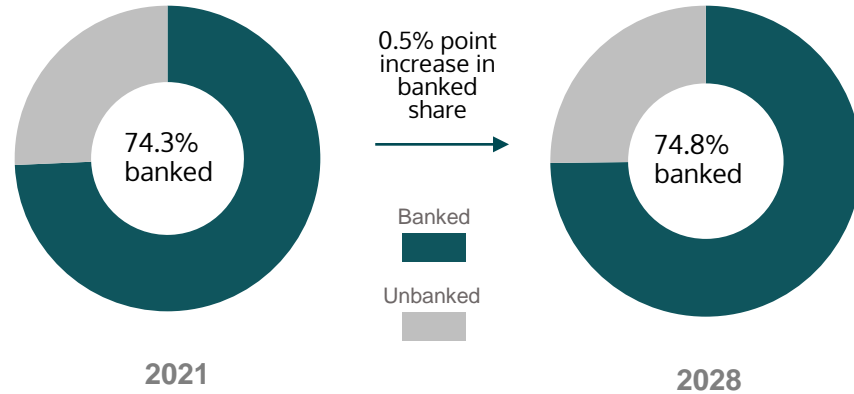
Payment Mix by Transaction Value (\$ tr)





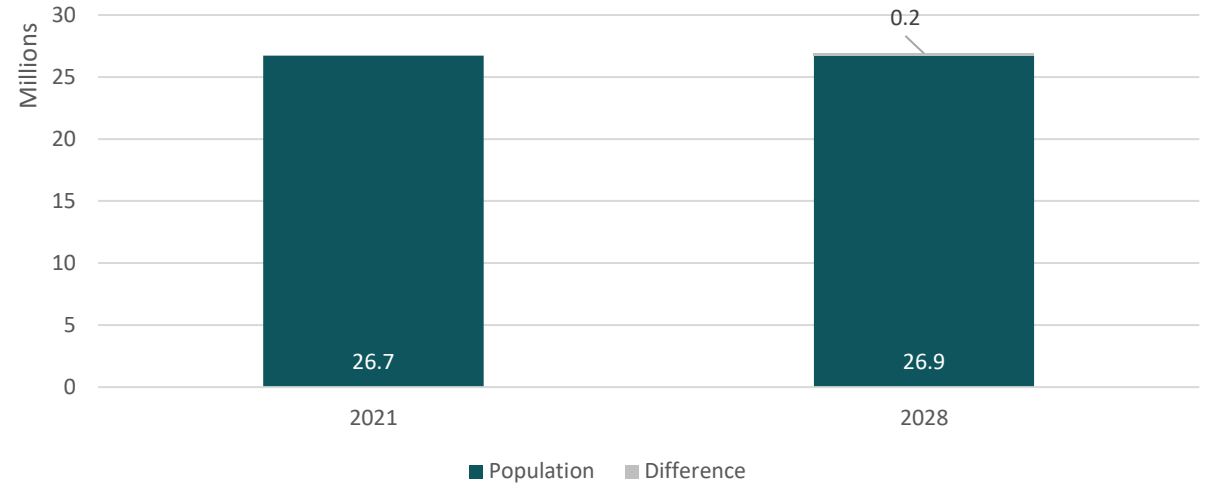
# Saudi Arabia

Share of the population that is banked in 2021 and in the 2028 projected scenario



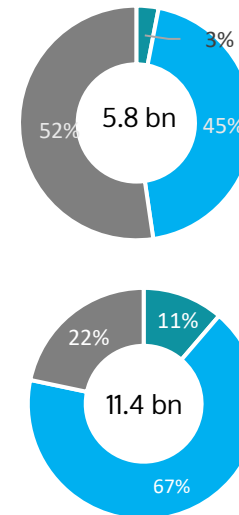
- Saudi Arabia's dominant payment method, in terms of value, of electronic (non-instant) payments along with paper-based payments are both expected to fall by 1 percentage point. Instant payments, however, are expected to grow by 2 percentage points. Their payment transaction value, however, is expected to grow significantly from \$15.9 trillion to \$21.0 trillion in five years.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.5 percentage points**. This is equivalent to **178,000 new account holders**.
- We estimate that the typical lifetime value of a customer to financial institutions in Saudi Arabia is **\$4,389**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$780mn** for Saudi financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

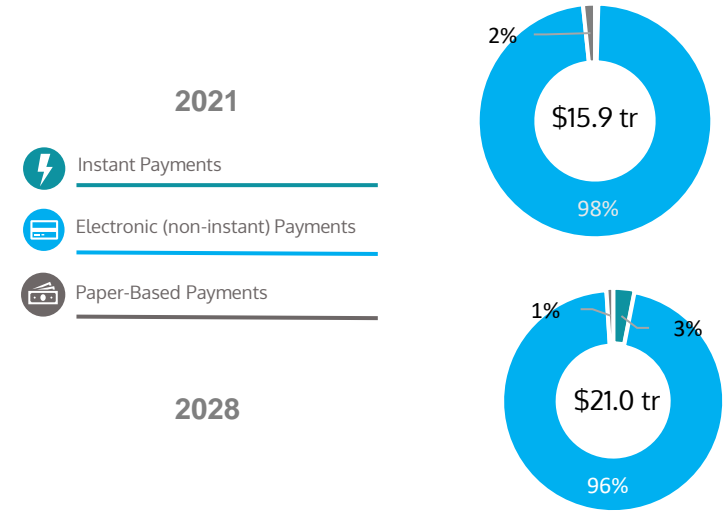


**\$780mn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



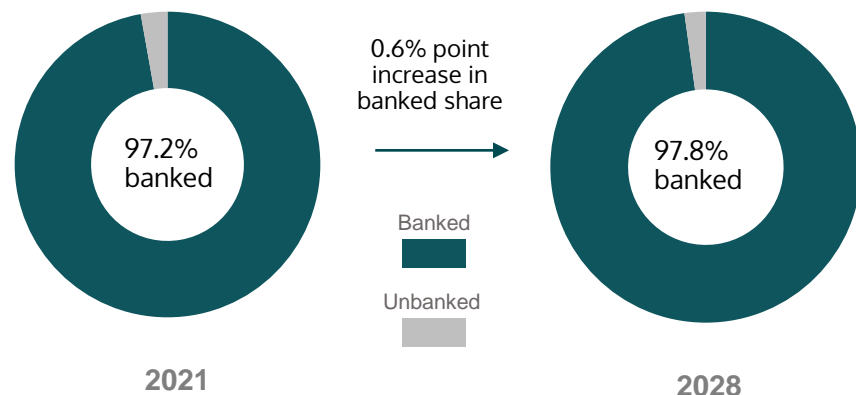
Payment Mix by Transaction Value (\$ tr)





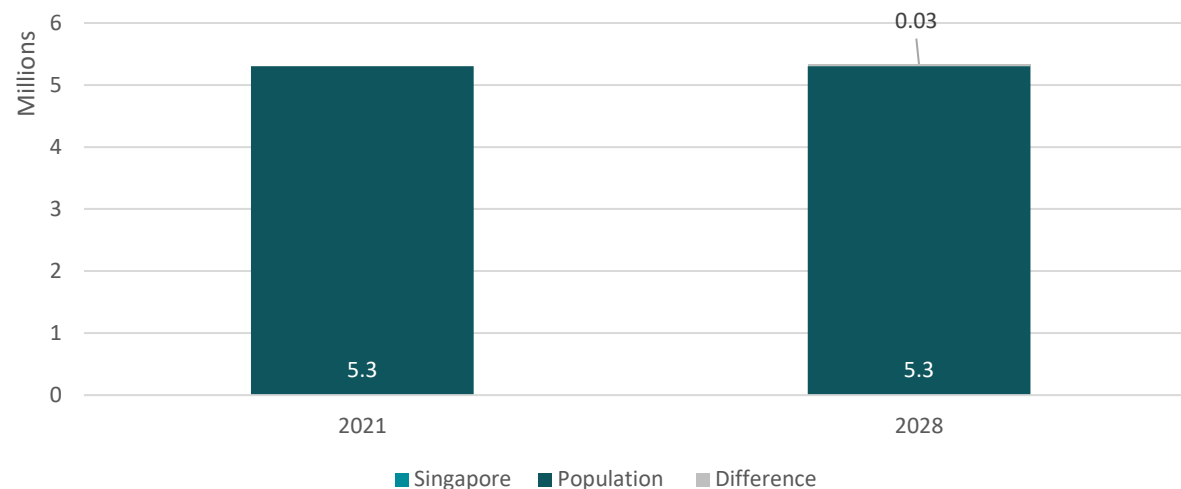
# Singapore

Share of the population that is banked in 2021 and in the 2028 projected scenario



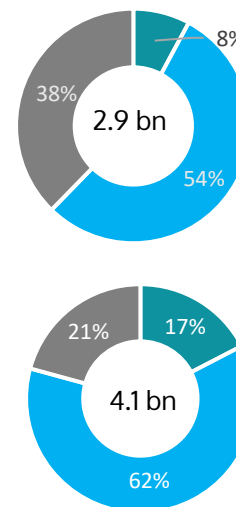
- Between 2021 and 2028, instant payments share by value of all payments is forecast to increase from 21% of all payments to 47%. Electronic (non-instant) payments is expected to no longer have the highest share by value of all payments by 2028 as its share falls by 15 percentage points. Paper-based payments are forecast to fall by 11 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a significant positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.6 percentage points between 2021 and 2028. This is equivalent to 33,500 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Singapore is **\$2,485**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$82.0 million** for Singaporean financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

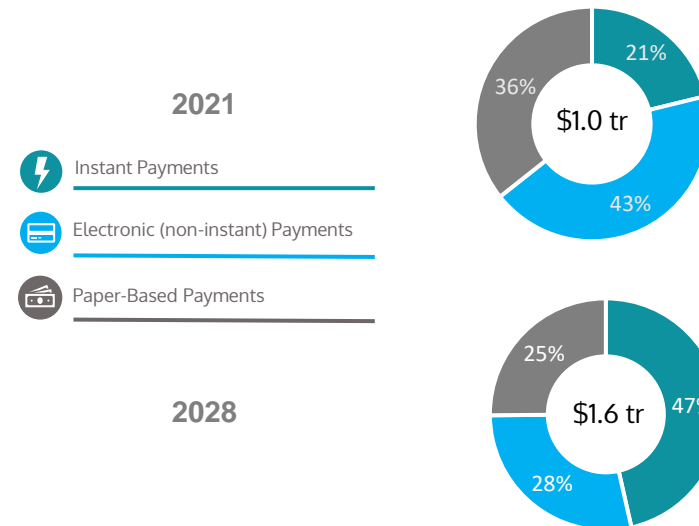


**\$82.0mn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

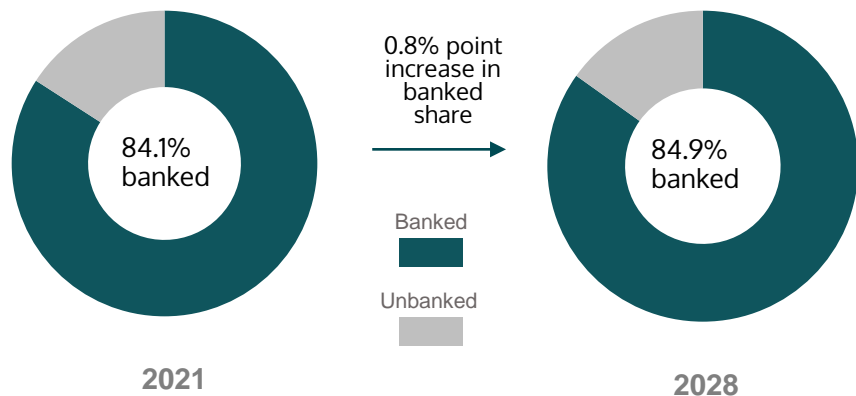


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments

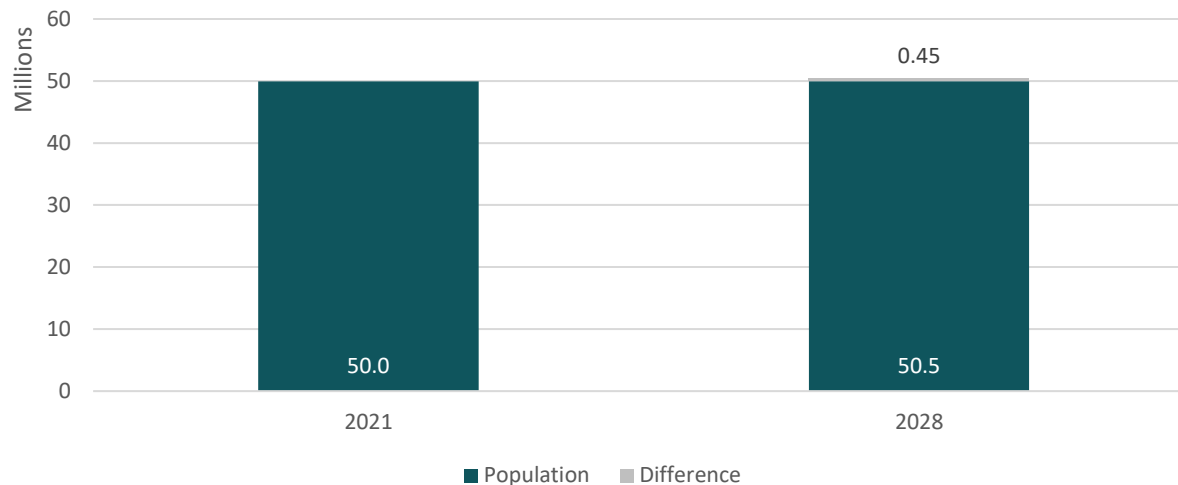


# South Africa

Share of the population that is banked in 2021 and in the 2028 projected scenario



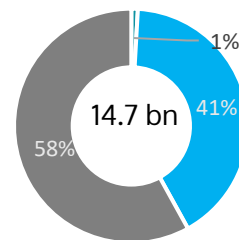
Change in the banked population, millions, 2021-28



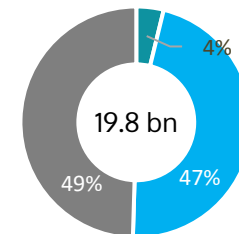
**\$899mn profit opportunity for financial institutions**

- Electronic (non-instant) payments will remain the dominant type of payment method at 95% in 2028. For paper-based payments and instant payments, their share are expected to remain unchanged at 2% and 3%, respectively.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.8 percentage point. This is equivalent to 452,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in South Africa is **\$1,990**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$899mn** for South African financial institutions, due to the increased consumer base.

Payment Mix by Transaction Volume (bn)

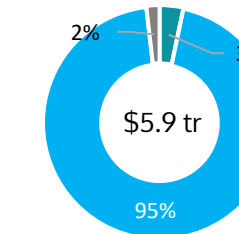
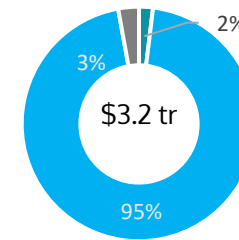


2021



2028

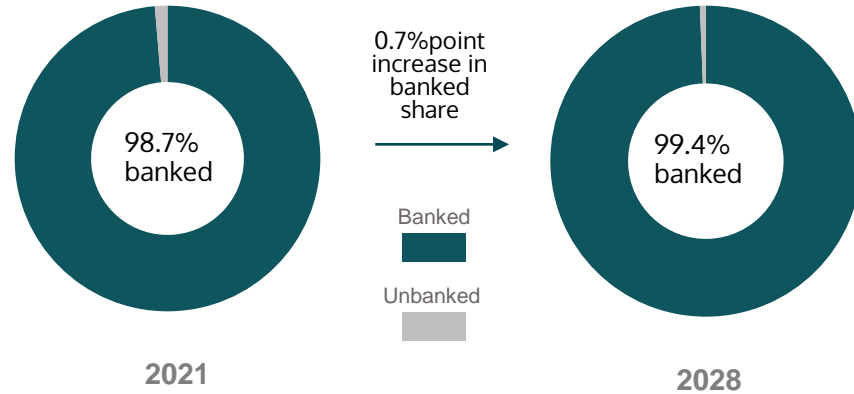
Payment Mix by Transaction Value (\$ tr)





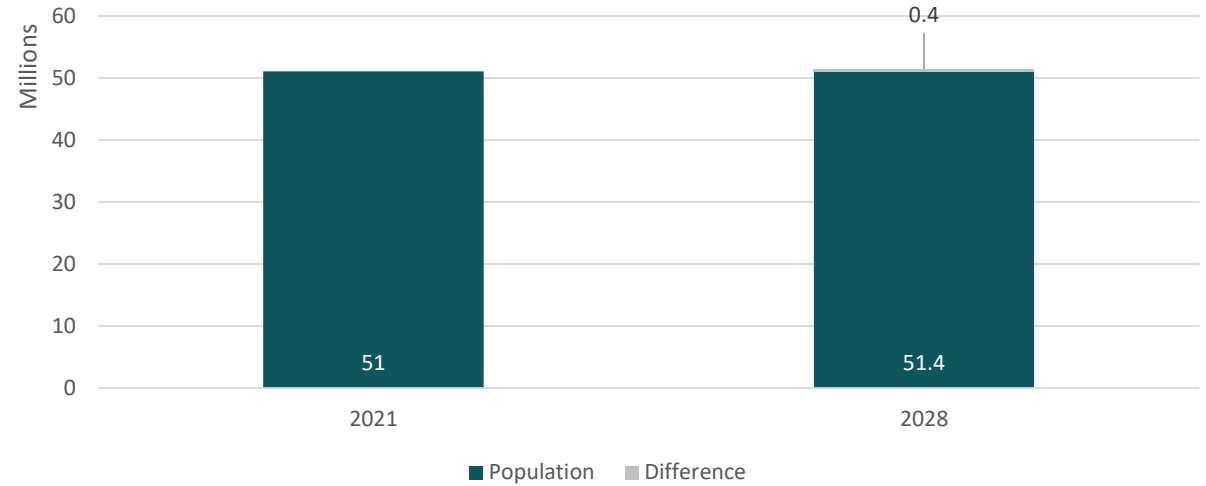
# South Korea

Share of the population that is banked in 2021 and in the 2028 projected scenario



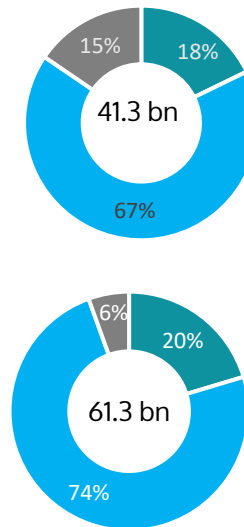
- South Korea’s payment mix is expected to change significantly over the next five years. In contrast to most other countries, South Korea’s dominant payment method in terms of value is instant payments, which is expected to grow from 79% to 86%, between 2021 and 2028. Electronic (non-instant) payments will increase from 8% to 9%. Paper-based payments are expected to fall by 8 percentage points.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.7 percentage point. This is equivalent to 371,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in South Korea is **\$3,865**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$1.4bn** for South Korean financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

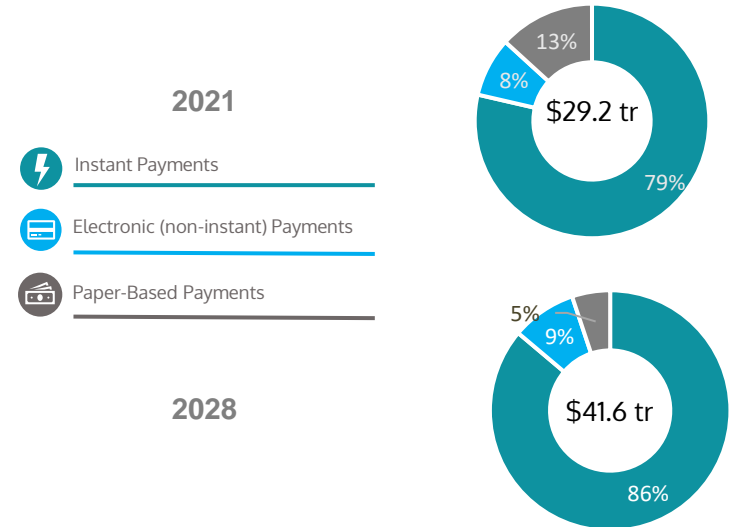


**\$1.4bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



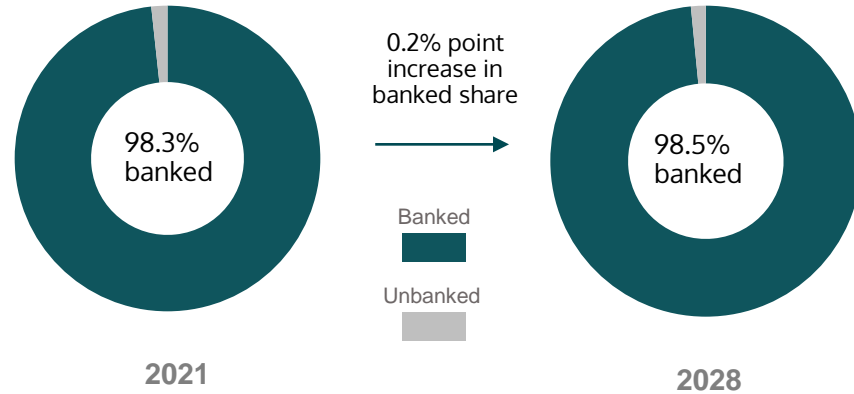
Payment Mix by Transaction Value (\$ tr)





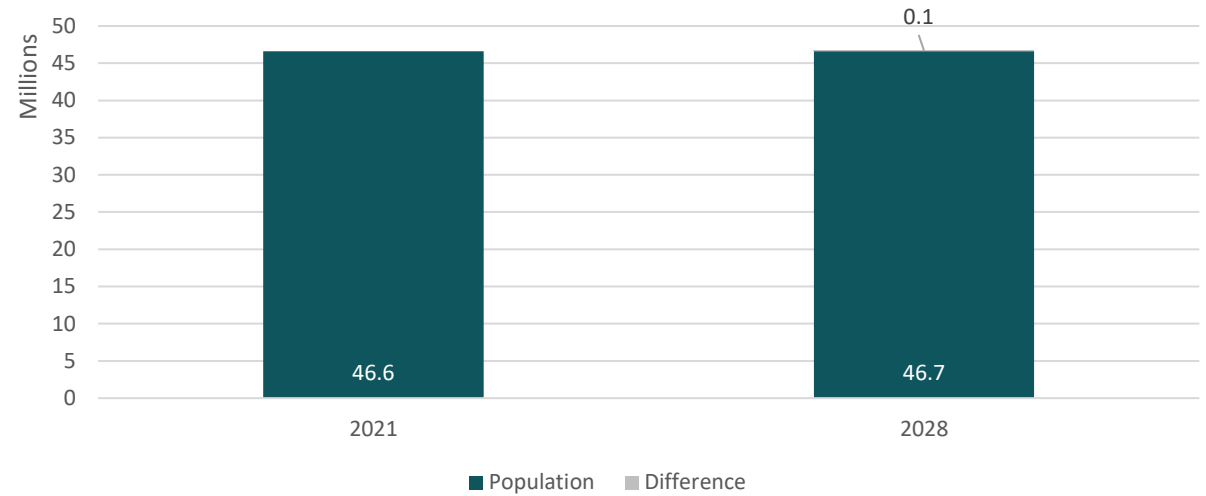
# Spain

Share of the population that is banked in 2021 and in the 2028 projected scenario



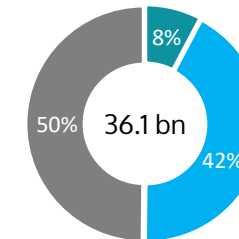
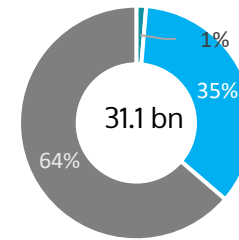
- It is forecast that, between 2021 and 2028, electronic (non-instant) payments will remain the dominant type of payment method in terms of value, but will fall by 2 percentage points. Paper-based payments are expected to decline slightly by 1 percentage point. Instant payments is expected to grow quickly from 1% to 4%.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **0.2 percentage point. This is equivalent to about 77,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Spain is **\$2,918**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$225 mn** for Spanish financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

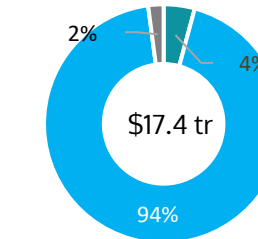
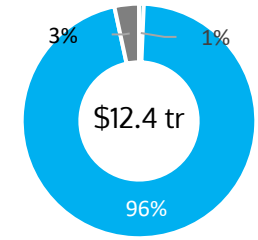


## \$225mn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)



- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments





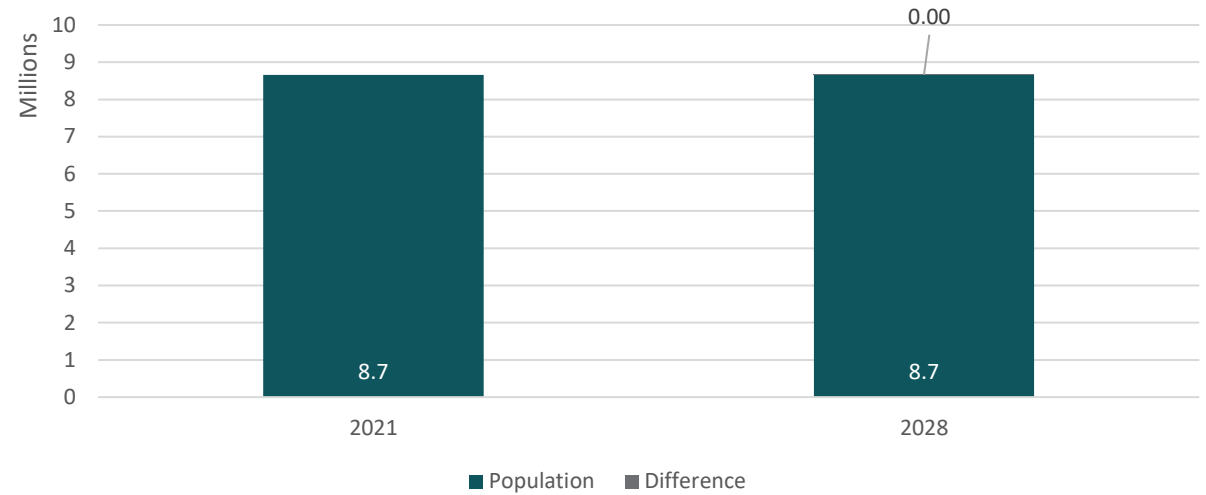
# Switzerland

Share of the population that is banked in 2021 and in the 2028 projected scenario



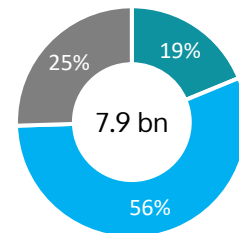
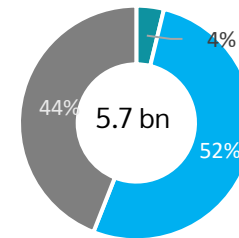
- Electronic (non-instant) payments will remain the dominant type of payment method at 99% in 2028. Paper-based payments and instant payments will see a switch in their relative importance, however both will relatively minor.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, there is **no significant change predicted in the amount of the banked population**.
- We estimate that the typical lifetime value of a customer to financial institutions in the Switzerland is **\$3,327**. Therefore, given that there is a negligible increase in the banked share of the population, this creates the small profit opportunity for Swiss financial institutions of \$8.6mn

Change in the banked population, millions, 2021-28

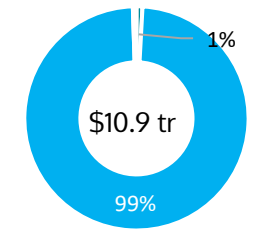
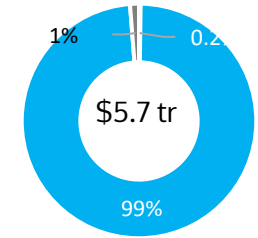


**\$8.6mn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



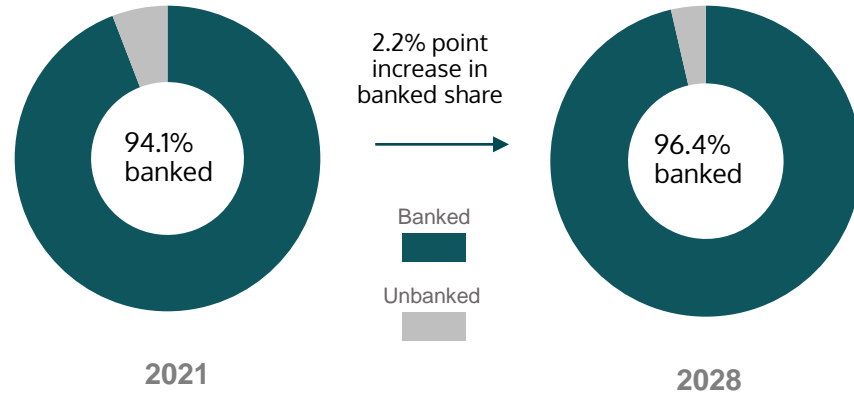
Payment Mix by Transaction Value (\$ tr)



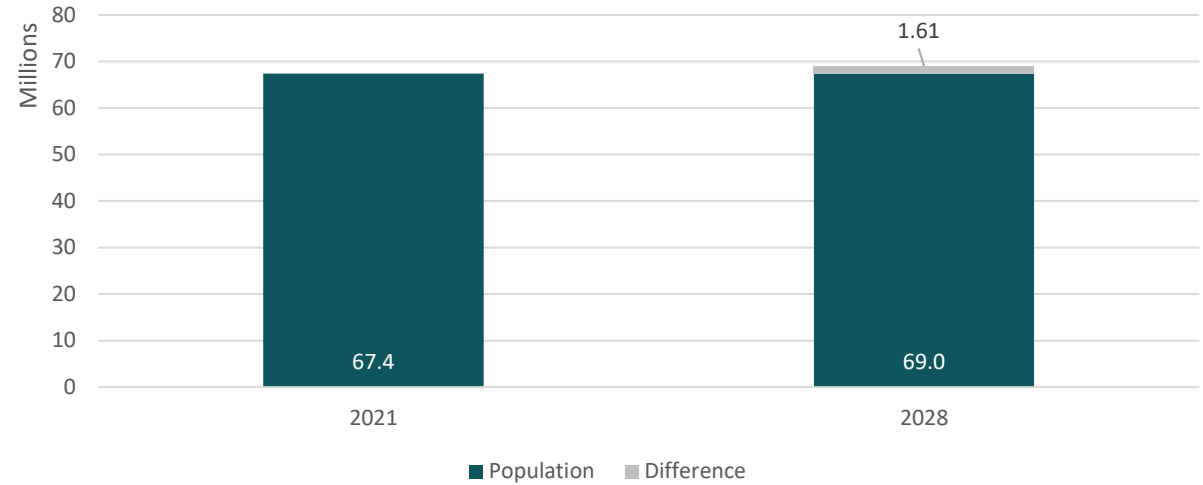


# Thailand

Share of the population that is banked in 2021 and in the 2028 projected scenario



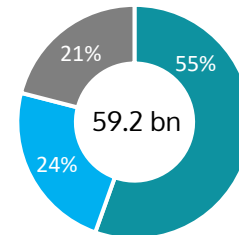
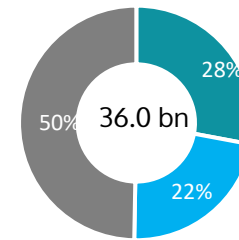
Change in the banked population, millions, 2021-28



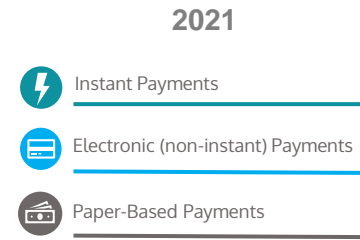
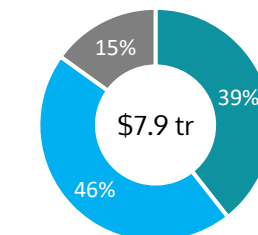
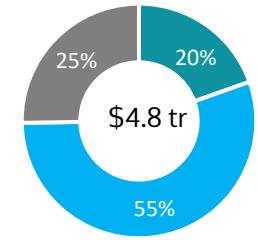
**\$3.3bn profit opportunity for financial institutions**

- Instant payments share by value of all payments is forecast to increase from 20% of all payments to 39%. Consequently, both electronic (non-instant) payments and paper-based payments are forecast to fall by 10 percentage points each. Electronic (non-instant) payments, however, is expected to continue to have the highest share by value of all payments in 2028.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **2.2 percentage points between 2021 and 2028. This is equivalent to 1.6 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Thailand is **\$2,073**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$3.3 bn** for Thai financial institutions, due to the increased consumer base.

Payment Mix by Transaction Volume (bn)



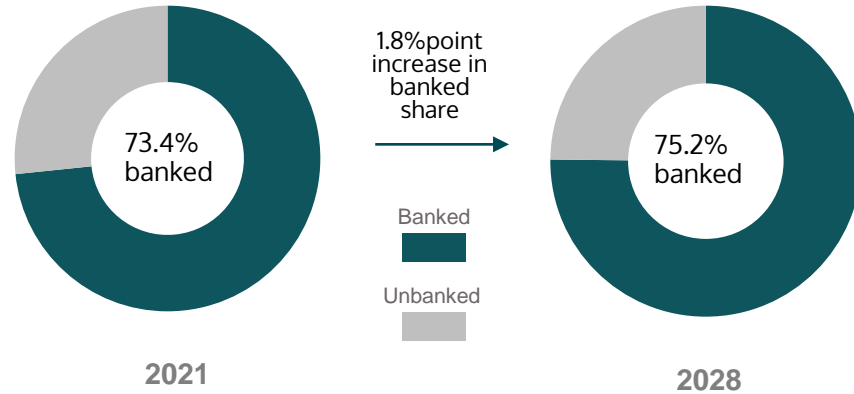
Payment Mix by Transaction Value (\$ tr)



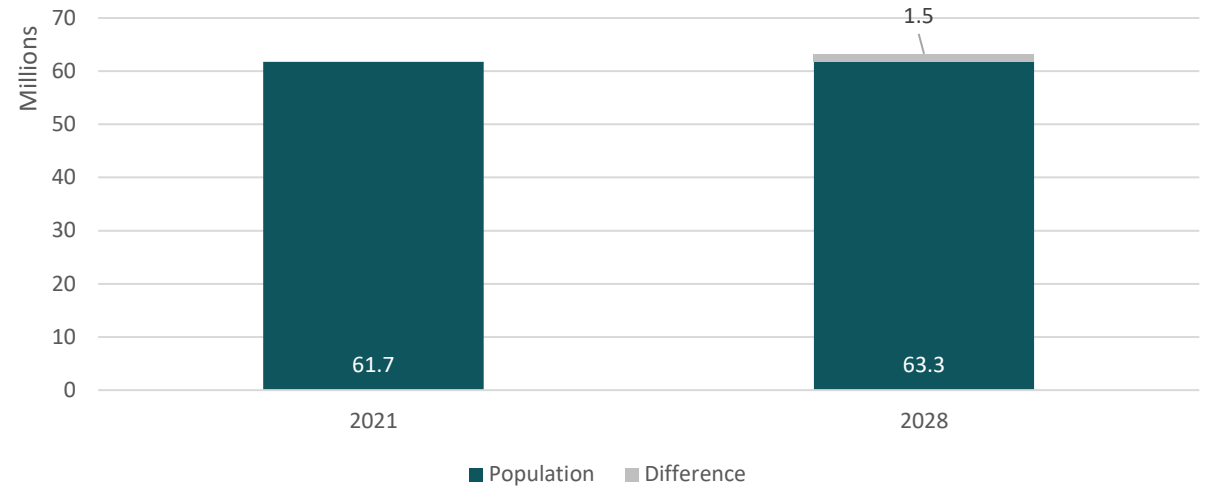


# Turkey

Share of the population that is banked in 2021 and in the 2028 projected scenario



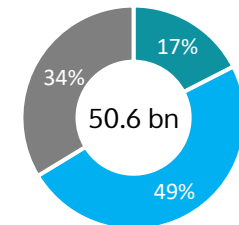
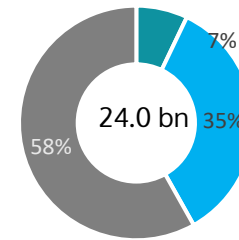
Change in the banked population, millions, 2021-28



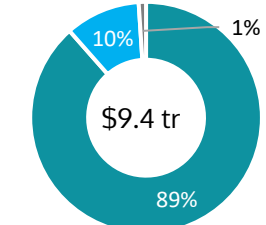
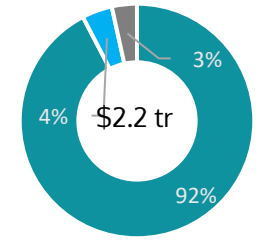
**\$2.5bn profit opportunity for financial institutions**

- Turkey's dominant payment method in terms of value is instant payments, however, in contrast to other countries, its share is falling between from 92% to 89% between 2021 and 2028. Electronic (non-instant) payments' share is rising by 6 percentage points while no change is forecasted for the value share of paper-based payments.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **1.8 percentage points. This is equivalent to 1.5 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in Turkey is **\$1,627**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$2.5bn** for Turkish financial institutions, due to the increased consumer base.

Payment Mix by Transaction Volume (bn)

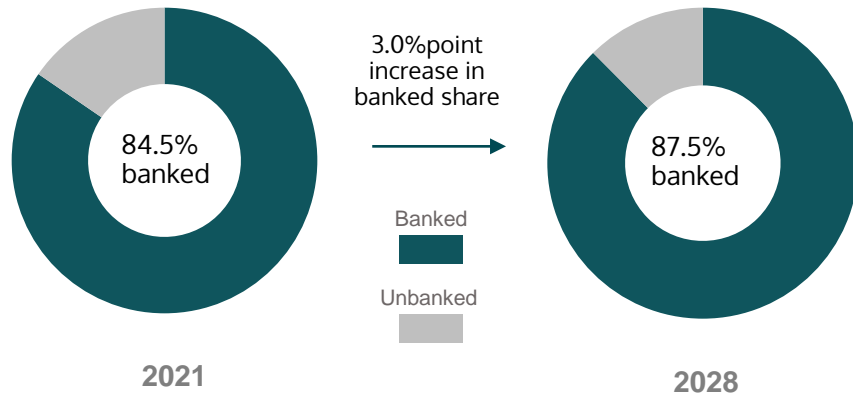


Payment Mix by Transaction Value (\$ tr)



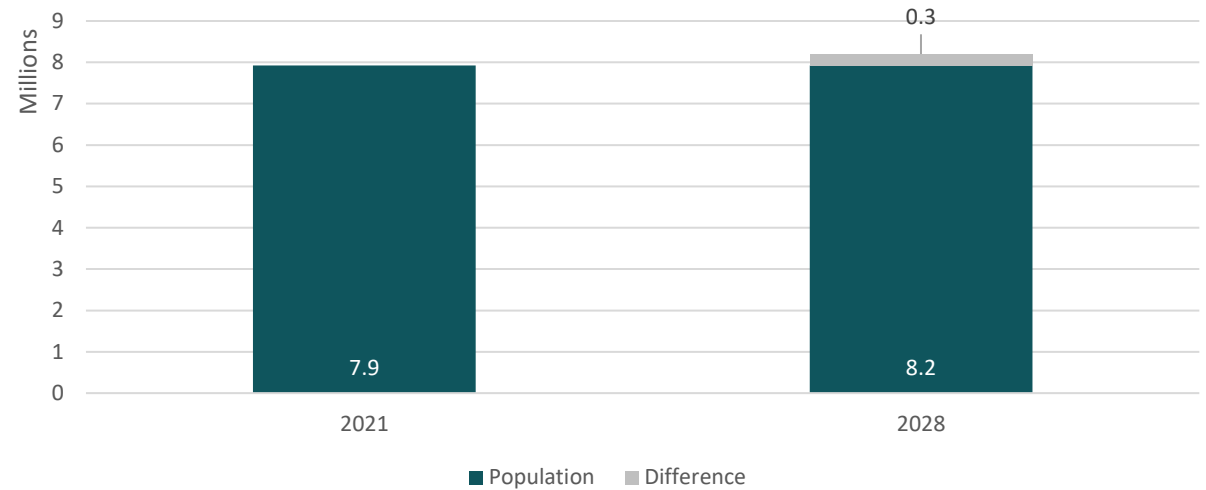


Share of the population that is banked in 2021 and in the 2028 projected scenario



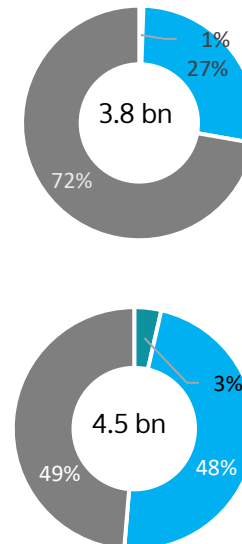
- UAE’s payment transaction value is expected to grow by \$1 trillion between 2021 and 2028. Their dominant payment method in terms of value, electronic (non-instant) payments, is expected to fall slightly by 2 percentage point with paper-based payments falling by 7 percentage points. Instant payments are expected to grow from 1% to 5% over the next five years.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **3.0 percentage point. This is equivalent to 279,000 new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in the UAE is **\$6,595**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$1.8 bn** for UAE financial institutions, due to the increased consumer base.

Change in the banked population, millions, 2021-28

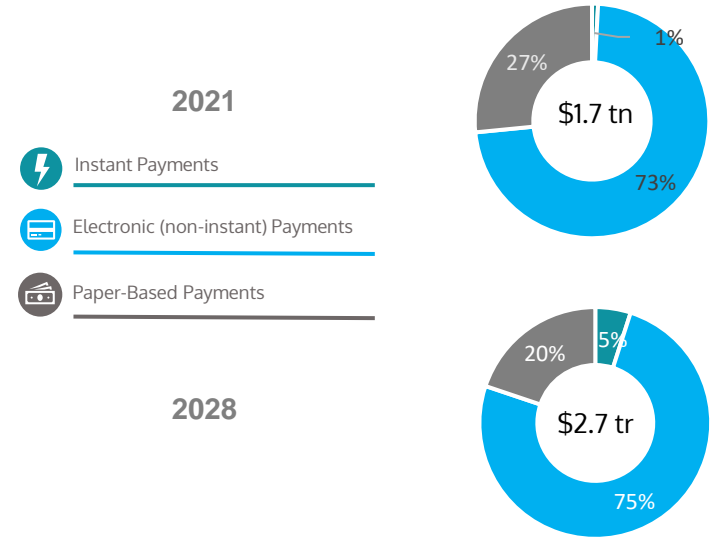


**\$1.8bn profit opportunity for financial institutions**

Payment Mix by Transaction Volume (bn)



Payment Mix by Transaction Value (\$ tr)

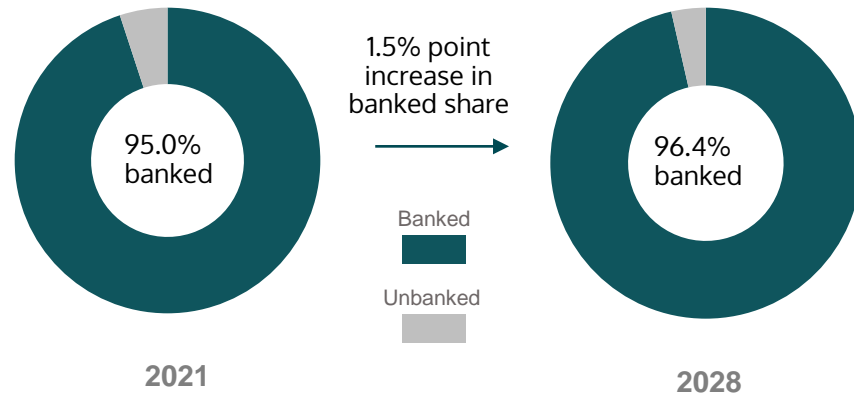


- Instant Payments
- Electronic (non-instant) Payments
- Paper-Based Payments



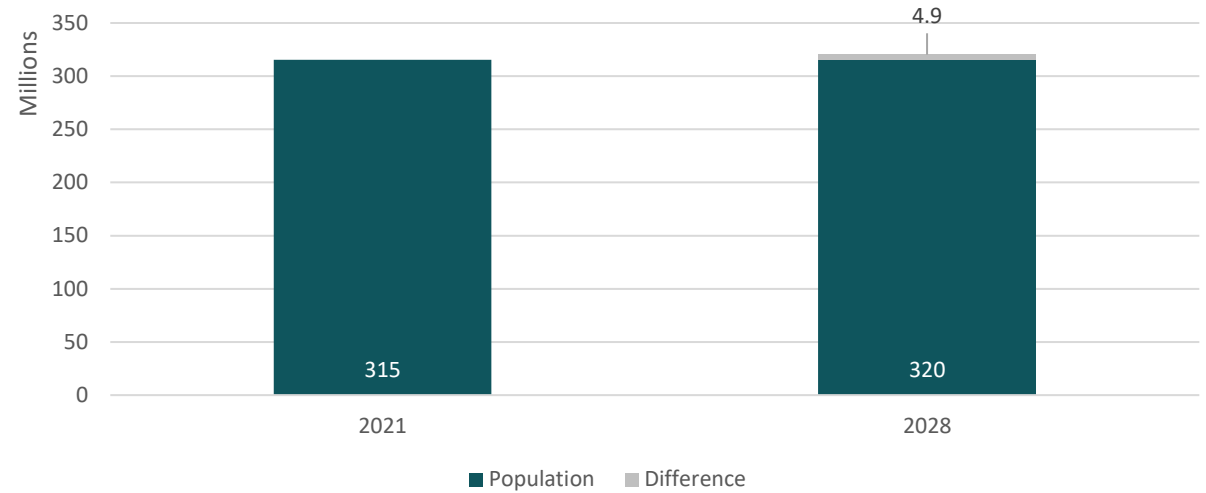
# USA

Share of the population that is banked in 2021 and in the 2028 projected scenario



- It is forecast that, between 2021 and 2028, electronic (non-instant) payments will remain the dominant type of payment method in terms of value as it rises from 78% to 85%. Paper-based payments is expected to decline by 9 percentage points, while instant payments is expected to rise from 1% to 3%. The transaction value, however, is expected to grow significantly from \$129.4 trillion to \$231.3 trillion in five years.
- Per Cebr modelling of the relationship between the payment mix and financial inclusion, this will have a positive impact on the latter. Specifically, all else equal we estimate this will increase the share of the banked population by **1.5 percentage point. This is equivalent to 4.9 million new account holders.**
- We estimate that the typical lifetime value of a customer to financial institutions in the USA is **\$3,867**. Therefore, with this increase in the banked share of the population, this creates an opportunity of **\$18.9bn** for US financial institutions, due to the increased consumer base.

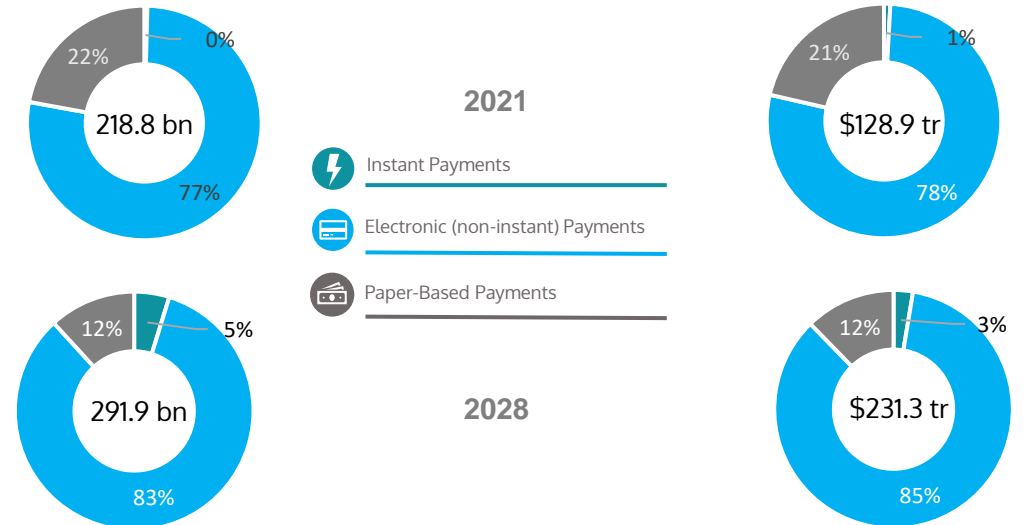
Change in the banked population, millions, 2021-28



## \$18.9bn profit opportunity for financial institutions

Payment Mix by Transaction Volume (bn)

Payment Mix by Transaction Value (\$ tr)



# Contact

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