
Market intelligence report

September 2008

The economic advantages of real-time payments



Contents

	page
Executive summary	2
Key findings	3
Background to the study	4
Methodology of the work	5
Estimating the economic impact of payment systems	6
Study one	
The economic advantages of real-time payments in Australia	8
Summary	9
Introduction – bilateral and centralised payment systems	10
Estimating the potential for real-time payments in Australia	12
Productivity improvements derived from real-time payments	14
Australia study – implications	17
Australia study – conclusion	19
Study two	
The economic advantages of real-time payments in Belgium	20
Summary	21
The current payment system in Belgium	22
Estimating the potential for real-time payments in Belgium	24
Belgium study – conclusion	31
Overall implications of the study	32

Executive summary

An efficient payments system is of fundamental importance to the prosperity of a nation. Individuals and companies expect to be paid on time, every time. Payment volumes are also a good indicator of economic wellbeing: a sustained increase in payment volumes is normally indicative of growing prosperity.

Given the fundamental importance of payment systems at the heart of an economy, it seems reasonable to believe that an efficient payment system can contribute to macroeconomic productivity improvements. To what extent can the introduction of a real-time payment system be an engine of economic growth? How are the benefits of real-time payments transmitted from the monetary side of an economy to the real side? Can these macroeconomic effects be identified and measured? These are some of the questions posed by this study. We propose some possible answers, but welcome your feedback to complete the picture.

The study considers the introduction of real-time payments to the economies of Australia and Belgium, two countries with different payments infrastructures. Australia does not operate a central payments clearing infrastructure and relies heavily on bilateral interbank clearing relationships. Conversely, Belgium operates a modern, centralised payments system, operated by a central infrastructure provider.

Key findings

Study one - Bilateral payment systems, Australia study (all figures Aus\$)

Benefits to the payments supply chain (primarily banks):

- A substantial reduction in failed payments yields potential annual savings of up to \$1.14 billion by 2020
- Savings from fraud prevention average around \$3.5 million per year throughout the period

Benefits to consumers and business:

- The gains to consumers and business equate to between \$474 million and \$531 million over the period 2010 to 2020

Benefits to the economy:

- The introduction of real-time payments generates an annual productivity boost of between 0.06% and 0.12% of GDP by 2020
- The multiplier effect generates a long-run expansion of the Australian economy of between 0.06% and 0.18% of GDP per year, according to the different scenarios.

Study two - Centralised payment system, Belgium study

Benefits to the payments supply chain (primarily banks):

- A reduction in failed payments yields potential annual savings in the range of €249 million to €373 million by 2020

Benefits to consumers and business

- Improved efficiency for consumers and business produces up to €51 million annual savings by 2020

Benefits to the economy:

- Total annual cost savings from productivity improvements on credit transfers, direct debits and debit cards are equivalent to an upper estimate of 0.12% of GDP by 2020
- Savings from the reduced costs of managing payments by switching to an efficient real-time infrastructure could boost Belgian GDP by up to 0.22% per year with a lower-bound estimate of a 0.11% boost to GDP by 2020.

The implications of the study are overwhelmingly positive: real-time payments can effectively increase the agility of an entire economy.

This preliminary report is intended to provide an impartial illustration of the economic potential for real-time payments. It will be updated with similar studies of other economies in due course.

There are some differences in the scenarios adopted, based on the individual environments of each economy. For example, the benefits of convergence between payment types are more pronounced for Belgium than Australia. As a consequence, direct comparison of current levels of efficiency within each country should not be inferred from the report.

Background to the study

VocaLink provides world-class transaction services to the international financial community. In addition to core transaction processing it provides value-added services. These help banks, financial institutions and their corporate customers become more efficient, extend their geographic reach and offer richer service propositions to their customers. VocaLink services touch the entire financial services value chain and the company's service portfolio is expanding continually.

In May 2008, the UK banking community launched the Faster Payments Service. VocaLink designed, built and implemented the real-time platform that powers this service. The service enables single immediate interbank payments to be made in real time between the customers of virtually all UK banks. The programme was arguably the most ambitious undertaking in the UK payments industry since the introduction of electronic payments.

The UK Faster Payments Service heralds a new epoch in payment processing. Why? There are obvious benefits to individuals in terms of convenience: single immediate payments can be effected by telephone, internet or through the branch network. But the benefits to banks, their business customers and the wider economy are even greater. This study identifies and quantifies these benefits in the short and long terms.

The international payments community has monitored the success of the UK Faster Payments Service closely. There has been great interest from other markets and many discussions are underway regarding the potential deployment of the VocaLink Real-Time Payments Platform in several advanced economies. VocaLink is strategically committed to further international expansion and is keen to market its services in those economies that will benefit most.

This study identifies and quantifies the macroeconomic benefits of introducing real-time payments in Australia and Belgium, two economies of different sizes and with different payment infrastructures. It is intended to be an illustrative study that will be supplemented by similar analyses performed on other economies.

Methodology of the work

It was vital that the study should be rigorous, consistent and impartial. Vocalink enlisted the help of the Centre for Economic and Business Research (cebr), an independent economics and business consultancy with a reputation for providing sound business advice, based on thorough research and insight. Among its regular assignments, cebr provides forecasts and advice to leading UK financial institutions, Government departments, local authorities and numerous blue-chip companies throughout Europe.

Transaction costs

Central to the cebr methodology is the fundamental notion that all financial transactions incur costs. These include the resources used to process a transaction, time spent processing the payment, the hardware and software needed to support the payment, and the infrastructure needed to support the payment process. These costs will vary according to the complexity of the payment and efficiency of the payment system. But making payments also involves risk. Why?

The risk/cost trade-off

An element of risk is inherent in any payment because payments involve explicit or implicit extensions of credit. Risk arises because of the time lag between a transaction occurring and settlement being resolved, so that the beneficiary receives cleared funds. For transactions involving the transfer of goods, the payee is often receiving the payment in good faith that the payer is creditworthy.

Under normal circumstances there is a trade-off between the cost of processing payments and the risk involved. However, even the most sophisticated and expensive payment system is unlikely to be able to eliminate risk completely: risk can be reduced but it cannot be removed. In a hypothetical situation, market participants would choose a payment system that matches their individual willingness to take risk. It is worth noting that perception of risk rather than actual risk is a key factor for the consumer, hence the continued use and preference for cash and cheques as payment methods. In practice, of course, all participants must use the same system, and the level of risk involved in any payment system will be determined by factors beyond the control of any individual market participant. Risk can only be controlled by establishing best practices in line with external factors such as the technology available for processing payments and the regulatory environment. This risk/cost trade-off is an inherent assumption throughout the study.

Estimating the economic impact of payment systems

A payment system is an integral part of a modern economy. Virtually all non-cash transactions require an appropriate payment infrastructure to complete. The efficiency of a payment system will therefore have a direct effect on the overall efficiency of the economy, for all economic transactions end with a payment.

Real time yields real benefits

Technological innovation has the potential to reduce the risk and cost of payments simultaneously. How? It does so by reducing the number of failed payments, the associated costs of payment exception management and customer service and ensuring that the majority of payments are 'right first time'. In addition, technology can reduce the overall degree of risk associated with fraud. But there are many more benefits that stem from a real-time system.

In this study, real-time benefits are classified into five categories, detailed below. These are believed to be the main benefits but the list is not exhaustive. Each component was fed into the cebr treasury model of the appropriate economy to produce an estimate of the potential impact on the long-run economic growth and key macroeconomic variables.

1: Reduced cost of managing payments

The introduction of real-time payments reduces the number of activities necessary to complete payments. Bank customers will inevitably choose to move to self-service as real-time payments greatly increase customer empowerment and convenience. From a processing perspective this means less resource is required to initiate, validate and reconcile payments, which offers significant savings. This compares favourably with the journey of a payment through a bilateral system, where it must pass through the processing networks of two banks, which have many potential points of failure. A real-time system links payers directly with payees and the payment is processed immediately: the unit cost of each money transfer is reduced significantly.

2: Migration to more efficient transaction types

The introduction of real-time payments will inevitably accelerate the proliferation of modern electronic payment methods as substitutes for outmoded physical payment methods such as cheques. Over time, these savings will accrue to the aggregate economy as payments are made by more efficient means.

3: Reduction in failed transactions

A failed transaction is one that does not complete successfully. Payments can fail at any stage of the payment process due to a number of factors, such as input errors. Failed transactions are a significant cost to the banking industry, as repairing failed payments

involves both payer and beneficiary banks. Actual costs vary according to the stage at which the payment fails: the earlier in the process, the lower the impact.

Real-time payments necessitate payment details being passed straight from the payer's bank, through the central infrastructure to the recipient's bank. Both parties check that the payment is error free and if not the payment is 'bounced' immediately to the payer. If it succeeds, both payer and beneficiary know immediately and the payment is made irrevocably. Real-time payments facilitate true straight-through processing: failed payments fail immediately, so real-time payments have the potential to reduce payment failures to zero.

4: Fraud reduction

Real-time payments have the potential to reduce fraud by identifying irregularities in payments earlier rather than after a time lag, which is implicit in a traditional clearing cycle. In this way, fraud can be detected earlier and action taken sooner. Any real-time payment system should include a robust security and identification system analogous to the introduction of chip and pin on credit cards.

5: Increased efficiency for users

One of the significant benefits of real-time payments is improved cash flow. The reduction in time waiting for payment to clear is of benefit to all, but is of particular benefit to small and medium-sized businesses. There are benefits for consumers too: cash is available immediately, either for consumption or saving. However, the benefits to consumers must not be exaggerated, as they do not represent a 'real' gain in productivity.

A real-time payments platform is multipurpose: it can support all different payment types. The introduction of real-time payments introduces simplicity by removing the concept of high and low-value payments and separate card transactions. This convergence allows financial institutions to rationalise connectivity and achieve economies of scale across all transaction types.

Study one

The economic advantages
of real-time payments

Australia

Summary

This study demonstrates how real-time payments could deliver significant productivity improvements to the Australian economy. Its findings are very positive and suggest that the overall boost to the economy could be in the region of 0.06% to 0.18% of GDP, depending on the level of uptake and the multiplier effect. If we assume that Australia introduces real-time payments in 2010, the following economic improvements are likely to ensue:

- A reduced cost of managing payments yields average annual savings of between \$185 million and \$216 million, depending on the uptake, in the period 2010 to 2020
- A shift in transactions to the more efficient payment systems brought about by a real-time infrastructure yields average annual cost savings of between \$315 million and \$377 million over the period 2010 to 2020
- A substantial reduction in failed payments yields potential annual savings of up to \$1.14 billion by 2020
- Savings from fraud reduction average around \$3.5 million per year throughout the period
- The gains to consumers and business equate to \$474 million and \$531 million over the period 2010 to 2020.

The above figures have been derived from economic modelling using the TRYM Treasury model. This entails making assumptions about rates of uptake in real-time payments and the rates of growth in macroeconomic variables. Notwithstanding these assumptions, there are many economic benefits that cannot be captured and it is felt that the findings represent only a proportion of the total benefits available following the adoption of real-time payments.

It is also worth noting that this study is confined to a high-level examination of the potential for real-time payments processing. The adoption of a real-time infrastructure removes the cost and risk that is inherent in a batch processing system. This in turn creates many more opportunities for the banking community in Australia not covered by this study. For example, contactless payments could be introduced as a way to increase customer convenience and improve bank profits. Real-time technology helps a channel proposition like contactless payments realise its full potential: in many ways, the introduction of contactless payments is a natural extension of real-time processing. A detailed evaluation of the benefits of contactless payments and other point-of-sale opportunities is beyond the scope of this study but the opportunity is believed to be significant.

Introduction – bilateral and centralised payment systems

Australian banks processed over 11 billion transactions in 2007. Most of these were processed through bilateral payment mechanisms whereby each participant has a link with every other participant. As the name suggests, participants pass messages to each other through a series of bilateral connections. This is workable when the number of participants is small and the market conditions static but it becomes a challenge when the number of participants is large or expanding. New entrants must establish connectivity with all existing participants and it is difficult for the payments network to evolve quickly: it will always move at the pace of the slowest. A bilateral payments network will always struggle to meet the demands of a modern economy.

A central payments infrastructure or shared utility removes the coordination problems depicted above. In this situation, each new participant needs only one connection to join the network. By adopting a central infrastructure, a payment system can innovate more quickly and collective decisions can be made to the advantage of all. A central infrastructure requires substantial coordination and investment in hardware and software. Although such a programme may displace a series of investments necessary to provide similar functionality in a bilateral system, establishing a central payments infrastructure requires an appetite for change.

The current payment system in Australia

At present, only 25% of all non-cash payments in Australia pass through a central infrastructure. These comprise credit card authorisations and electronic bill payments. Usage of the electronic bill payments system, BPAY, has grown by 100% between 2002 and 2007. Although this is a nascent system that has processed a total of only 185 million payments (by end 2007), it does suggest that Australia has a desire to adopt new, dematerialised payment methods that increase user convenience, although such a development would require significant development in new infrastructure.



Figure 1: Payment systems in Australia, percentage share of non-cash transactions

Source: Reserve Bank of Australia

The potential for real-time payments

The introduction of real-time payments in Australia requires a robust central processing infrastructure. Under this arrangement, payments could be initiated and completed in moments by mobile phone or over the internet. Both of these payment mechanisms have grown prodigiously in Australia in recent years: internet-initiated funds transfers grew by more than 500% between 2002 and 2006.

At present, payments are delivered by agents for 'next day' clearing. As well as being an inconvenience, this creates an administration backlog that inhibits commercial progress as goods cannot be released before funds have cleared. The introduction of real-time payments allows the immediate release of goods as payment is cleared the same day. In addition to improving cash flow and efficiency within the business community, real-time payments deliver productivity improvements to banks and eliminate costs associated with failed payments. How? An automated infrastructure can check the validity of payments immediately and with all interested parties (including payer, payer's bank, beneficiary, beneficiary's bank, and interested third parties). This is of obvious benefit to all.

The following sections model the productivity benefits that are likely to emanate from switching to a real-time central infrastructure for direct debit and direct credit payments.

Estimating the potential for real-time payments in Australia

A 'big bang' cutover to real-time payments is neither desirable nor achievable. In order to model possible outcomes, this analysis examines three potential scenarios:

- A base case:** real-time payments are not introduced
- Scenario one:** real-time payments are introduced and uptake is strong
- Scenario two:** a more cautious estimate of uptake is considered.

The analysis builds on each of these scenarios to establish how the introduction of real-time payments affects productivity and generates cost savings for the whole economy. All forecasts are made on the basis of recent economic trends: a GDP growth of 3.5%, and inflation levelling out to the median value of the Reserve Bank of Australia's 2-3% target range.

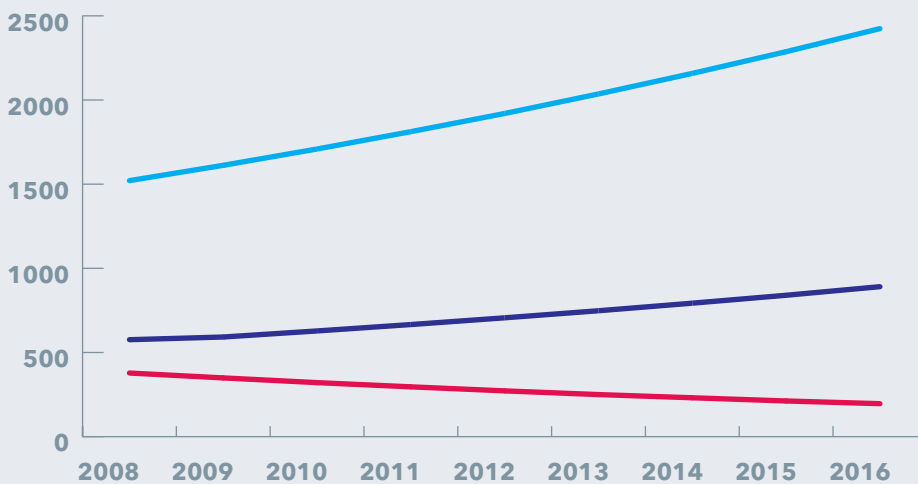
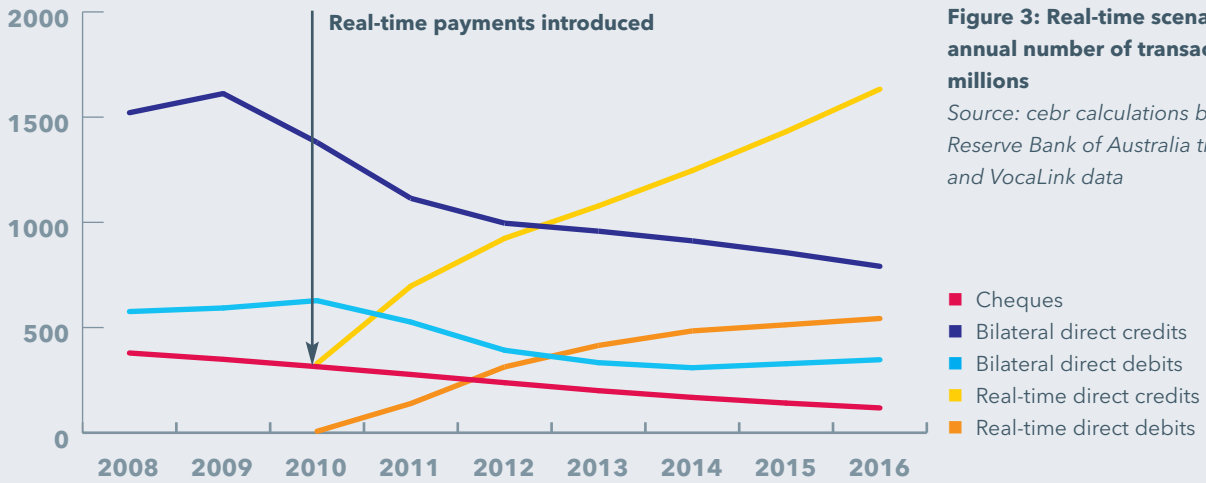
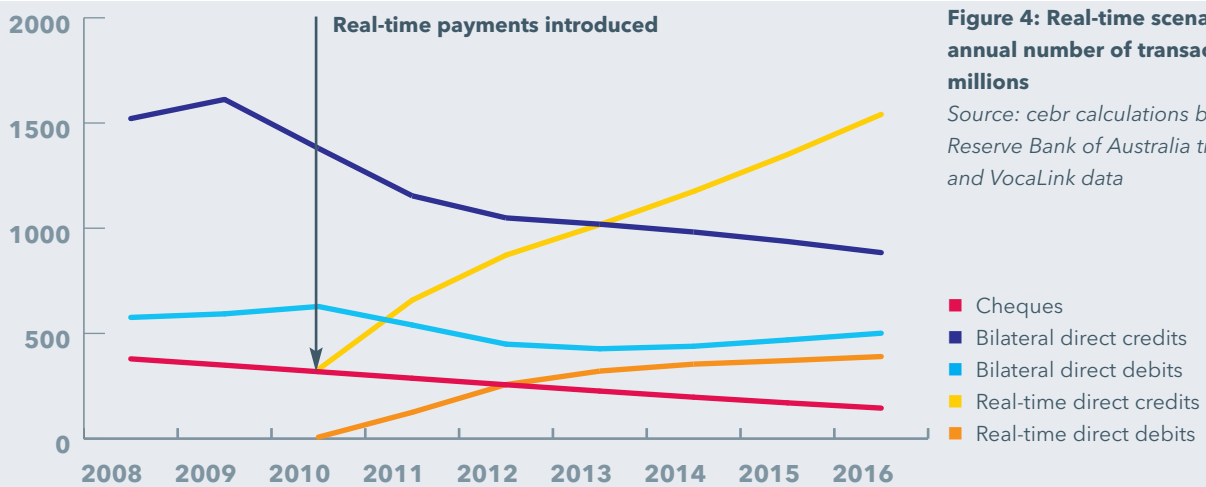


Figure 2: Base case scenario, annual number of transactions, millions
 Source: cebr calculations based on Reserve Bank of Australia trends and Vocalink data

In the base case depicted in figure 2, cheque usage declines gradually, continuing its current trend. Direct debits and direct credits continue to grow. Real-time payments are not introduced.



In scenario one, depicted in figure 3, cheque usage declines more rapidly as real-time payments are introduced in 2010. Over time, real-time payments increase their share of the credit transfer market, leading to a reduced number of bilateral payments.



In scenario two, depicted in figure 4, the impact of introducing real-time payments is more gradual. Cheque usage declines more slowly following the introduction of real-time payments in 2010. The penetration of real-time payments in the credit transfer market is also lower.

Productivity improvements derived from real-time payments

Cost of managing payments

The introduction of real-time payments reduces the administrative overhead of managing payments as the process lends itself naturally to self-service. The success of the electronic bill payment system, BPAY, aptly demonstrates the desire of the Australian market to adopt a self-service model. The introduction of real-time payments will reduce the core costs of payments across all payment types.

Table 1 shows the relative costs for financial institutions of different payment types, based on a recent Reserve Bank of Australia study. Real-time payments will offer a significant reduction in unit costs relative to direct credit and direct debit payments currently conducted bilaterally. The reduction in payment processing tasks will reduce overall unit costs to \$0.035. This is a significant reduction from the current \$0.08 and \$0.10 costs for direct credits and direct debits respectively.

Payment type	Aus\$
Cheques	4.22
EFTPOS	0.22
ATM	0.86
Direct credit	0.08
Direct debit	0.10
BPAY	0.51
Credit card	2.38

Table 1: Total cost of payments for financial institutions in 2007, weighted average, Aus\$m
Source: Reserve Bank of Australia, 2007, Payments costs in Australia

As real-time payments replace bilateral direct credit and direct debit payments substantial cost savings are achieved. Table 2 illustrates the savings available as a result of a reduced cost of managing payments. In scenario one, cost savings rise to \$125 million per year by 2015 and \$198 million by 2020. In scenario two, where real-time uptake is slower, cost savings are \$108 million in 2015 and reach \$171 million per year by 2020.

		2010	2015	2020
Base case	Direct credit	148	225	340
	Direct debit	68	103	156
Real-time scenario 1	Direct credit	132	142	206
	Direct debit	68	61	92
Real-time scenario 2	Direct credit	132	147	213
	Direct debit	68	73	112
Total cost saving	Scenario 1	16	125	198
from real time	Scenario 2	16	108	171

Table 2: Total annual cost of managing direct debit and direct credit payments for financial institutions, 2010-2020, Aus\$m
Source: Reserve Bank of Australia and cebr calculations

Shifts in payment types - the substitution effect

The Reserve Bank of Australia notes that cheques are by far the most costly payment type. Under the current bilateral arrangements, cheques cost financial institutions more than 42 times the cost of processing direct debit payments.

With the introduction of real-time payments, cheque usage will diminish; moreover, real-time payments are likely to accelerate the demise of the cheque. It seems reasonable to assume that the rate of decline in cheque usage will accelerate as users enjoy the benefits and convenience of real-time payments. For the purpose of illustration, it is assumed that cheque usage declines from an 8% annual fall in 2007 to a 16% per year fall in 2013 as real-time payments kick in under scenario one. Under scenario two, there is a more

gradual decline in cheque usage. The specific cost savings accruing to each scenario are given in table 3 below.

	2010	2015	2020
Base case	1,471.8	1,102.4	825.6
Scenario 1	1,439.6	730.6	345.7
Scenario 2	1,458.5	879.0	410.6
Scenario 1 cost saving	32.2	371.8	479.9
Scenario 2 cost saving	13.3	223.4	414.9

Table 3: Total annual costs and savings due to shift in transactions, 2010-2020, Aus\$m
Source: Reserve Bank of Australia and cebr calculations

Table 3 shows a situation where real-time payments accelerate the decline in cheque usage. Real-time payments offer substantial cost savings: under scenario one, the savings rise to \$372 million per year in 2015 reaching \$480 million in 2020. Under scenario two, the cost savings are lower but still substantial: by 2015 savings are \$223 million per year, rising to \$415 million per year by 2020.

Failed transactions

Failed transactions are a major cost and source of inconvenience to banks and their customers. One report estimates the cost of investigating failed transactions at \$97 per item.¹ Why is this so high? A payment can fail at any stage of its journey and the later the failure, the greater the cost. Payments that fail at the end of the process are the most costly and may cost up to 100 times the cost of the payment.

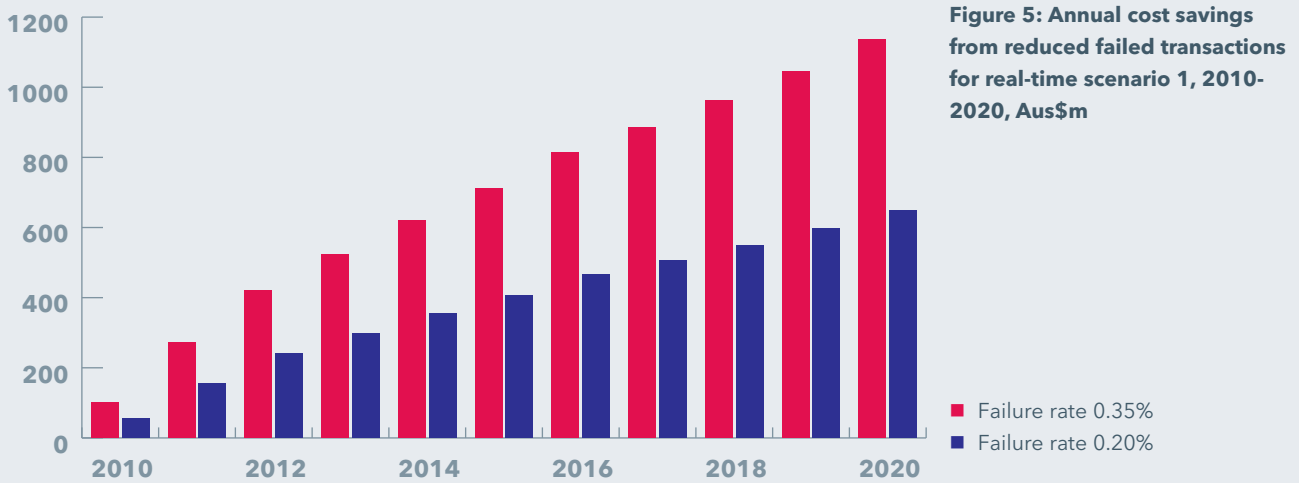
A bilateral clearing system is far more subject to payment failures than a multilateral system as there are many more potential points of failure. In addition, bilateral payments are more likely to fail at a later stage in the clearing process as there is no means of early detection. With the introduction of a central infrastructure, failure rates are reduced considerably and the potential to spot errors early is increased. The rate of payments failing at the final stage with a central infrastructure can be as low as 0.11% to 0.13%. Naturally, the introduction of real-time payments can reduce failure rates at the final stage of the process to zero.

¹ SunGard, 2004 "Payments Exceptions and Investigations"

Australia study – implications

Figure 5 considers two failure rates: a failure rate of 0.2%, and a failure rate of 0.35%. These figures are believed to be conservative: figures based on the VocaLink experience of processing Bacs payments suggest that payments failing at the final stage with a central infrastructure can be as low as 0.11% to 0.13%.

The chart shows potential annual cost savings calculated relative to the status quo where real-time is not introduced and the bilateral system remains.



Reduction in fraud

There are high levels of fraud associated with cheque usage. In the year to June 2006, the value of fraudulent transactions in Australia was \$41 million. The introduction of real-time payments does not remove the risk of fraud, but their substitution for cheques reduces it. The following table shows some conservative estimates of savings resulting from fraud reduction following the introduction of real-time payments in 2010. These draw on the experience of VocaLink in substituting electronic payments for cheques.

Real-time introduced	2010	2015	2020
Annual total cost savings	0.0	3.1	5.0

Table 4: Total annual cost savings from the reduction in fraud for 2010-2020 with real-time introduced in 2010, Aus\$m

Source: APCA and cebr calculations

User efficiency

Real-time payments offer benefits to all economic participants, but the greatest benefits accrue to consumers and small and medium-sized enterprises. These benefits increase over time as the real-time system is taken up by the Australian market.

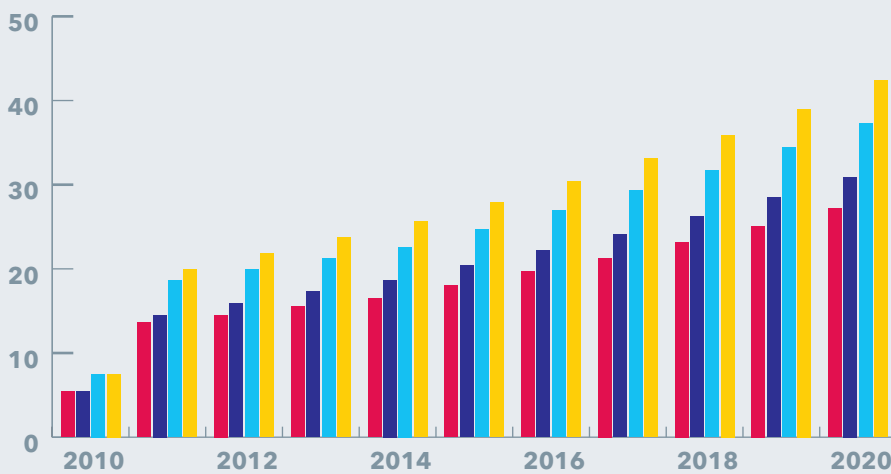


Figure 6: Annual user-efficiency benefits, 2010-2020, Aus\$m

Source: OFT BPSL Working Group report and cebr calculations

- Scenario 2 SME
- Scenario 1 SME
- Scenario 2 consumer
- Scenario 1 consumer

Australia study – conclusion

Payment failures offer the greatest opportunity for improvement in Australia. The introduction of real-time payments reduces overall failure rates but the main savings accrue to the elimination of failures at the end of the payment cycle under current bilateral arrangements. The next largest cost saving comes from the substitution of traditional physical payments such as cheques by more efficient electronic payments. User efficiency and reduced fraud are the other major benefits.

Macroeconomic impact

The microeconomic effects identified above have been used as a basis to estimate the overall macroeconomic effect of introducing real-time payments in Australia. The Australian Treasury economic model, TRYM, was used to ascertain the likely long-term multiplier effects on the Australian economy.

All the macroeconomic results are positive in the long term as supply-side developments boost productivity and output. A long-term simulation of the benefits yields an annual boost to the economy of between 0.06% and 0.18% of GDP.

Study two

The economic advantages
of real-time payments

Belgium

Summary

This study demonstrates how real-time payments could deliver significant productivity improvements to the economy of Belgium. The findings are very positive and suggest that, over the long term, the benefits from improved productivity feed through to provide a substantial boost to the economy. This could be in the region of 0.11% to 0.22% of GDP by 2020, depending on the uptake and the multiplier effect. The efficiency of the Belgian payment system compares favourably with many other advanced economies; however, efficiency gains can be made with the introduction of real-time payments.

The key findings of the report are:

- Total annual cost savings from productivity improvements following the introduction of a real-time infrastructure for credit transfers, direct debits and debit cards are equivalent to an upper estimate of 0.12% of GDP by 2020
- Real-time savings from the reduced costs of managing payments by switching to an efficient real-time infrastructure are estimated to boost Belgian GDP by up to 0.22% with a lower-bound estimate of a 0.11% boost to GDP by 2020
- Annual cost savings resulting from the switch to a more efficient real-time payments infrastructure are estimated at €83 million by 2020
- A reduction in failed payments yields potential savings in the range of €249 million to €373 million by 2020
- Improved efficiency for consumers and small to medium-sized businesses produces up to €51 million savings by 2020
- The cost savings from the substitution of real-time payments for cheques could reach €13 million by 2015.

The above figures have been derived from economic modelling. This entails making assumptions about rates of uptake in real-time payments and the rates of growth in macroeconomic variables. Notwithstanding these assumptions, there are many economic benefits that cannot be captured and it is felt that the findings represent only a proportion of the total benefits available following the adoption of real-time payments.

The current payment system in Belgium

Belgium has a centralised payment system provided by a core infrastructure provider, the Centre for Exchange and Clearing (CEC). CEC was established in 1974 and has handled all small-scale retail payments ever since. It is run as a not-for-profit division of the National Bank of Belgium. The introduction of SEPA this year has necessitated major payment infrastructure investment within Belgium.

Credit transfers are the most commonly used payment type in Belgium, representing around 42.5% of total transaction volumes. This compares favourably with an average of 15.7%, according to the Settlements Committee on Payment and Settlement Systems (CPSS).

The next largest share of payment volumes is debit cards at 35.9%. Automated payments, in the form of credit transfer and direct debits, have come to dominate the Belgian market in recent years. E-money payments have also grown strongly in recent years from 51 million payments in 2000 to 96 million in 2006. The changing composition in non-cash transactions is shown in figure 7.

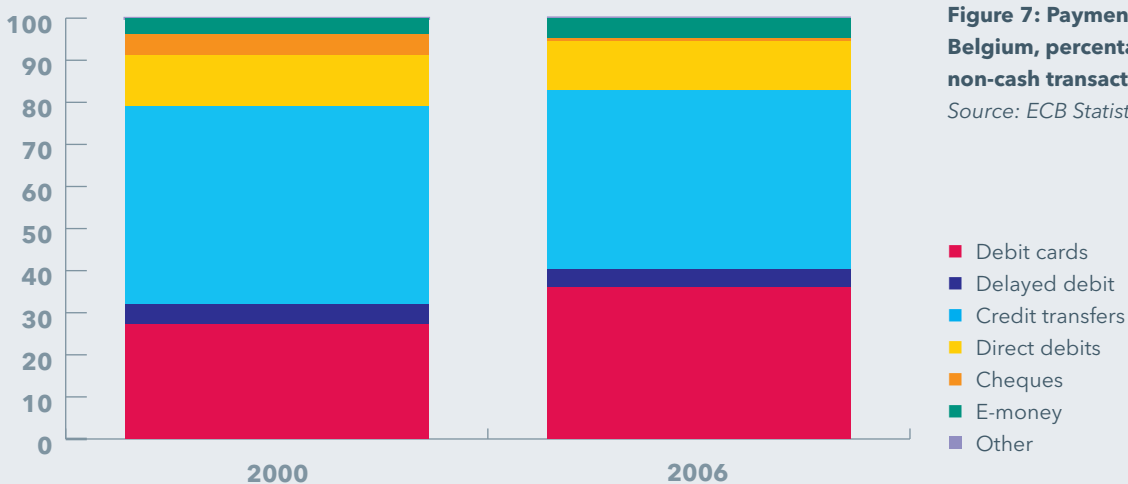


Figure 7: Payment systems in Belgium, percentage share of non-cash transactions

Source: ECB Statistical warehouse

Cheque usage has declined from 70 million transactions in 2002 to 13 million in 2006. The share of payments by cheque fell to 0.7% in 2006, compared to the CPSS average share of 23.3%. This suggests that Belgium is making good progress in modernising its payments.

Real-time payments in Belgium

Although Belgium has made great progress in making efficiency gains in its payments system, further improvements are possible. How?

Payment processing through the CEC takes up to one working day between debiting the payer's account and crediting the beneficiary's account. The introduction of SEPA is likely to drive further efficiencies but does not guarantee an optimal outcome.

It is assumed that real-time payments in Belgium will operate through a central infrastructure. The introduction of real-time technology has the potential to improve efficiency by allowing instant delivery of payments through a number of channels, including mobile phone and the internet.

Real-time payments offer efficiency gains over the current 'next day' system. But, just as importantly, next-day transactions are asynchronous in that they require effort to track the payment and, when it arrives, to identify the transaction to which it relates. Real-time payments are synchronous: validation is the product of the payer's bank authorising the payment, the central infrastructure incrementing the settlement of the banks concerned and the beneficiary bank confirming the posting to the beneficiary account. Confirmation happens within seconds and payment is either made irrevocably or rejected.

Estimating the potential for real-time payments in Belgium

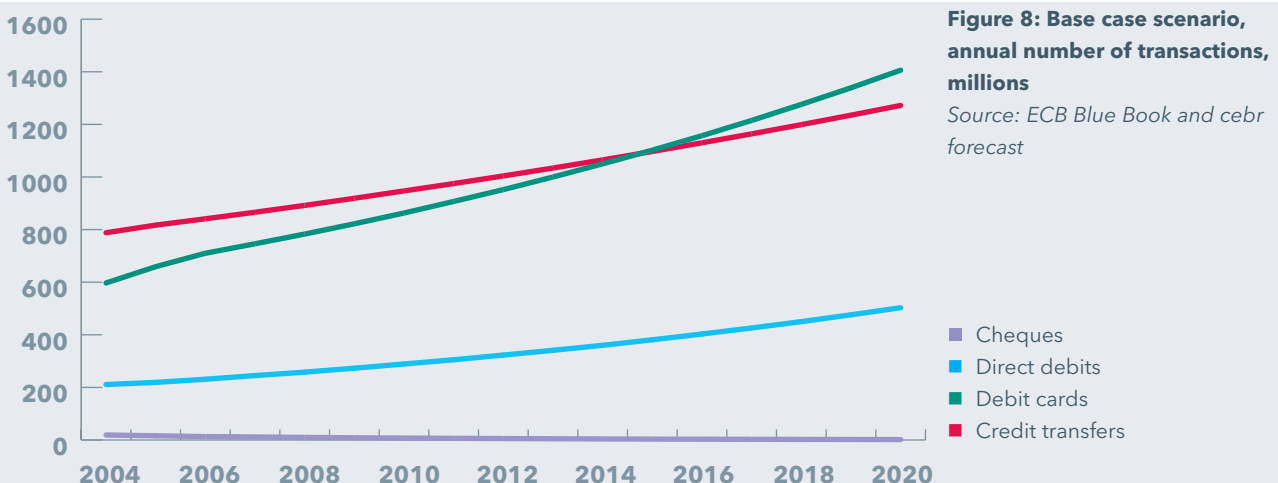
The above monetary actions have real implications: such processes allow parties to take specific actions that relate to the transaction. For example, the introduction of real-time payments will facilitate the immediate release of goods as payment is irrevocable. As mentioned earlier in this study, one of the major ways in which real-time payments deliver productivity improvements is by reducing or removing the costs associated with failed payments which are detected earlier and can usually be repaired by the payer.

The following analysis identifies and quantifies the productivity benefits that are likely to result from switching to a real-time central infrastructure for direct debit and direct credit payments.

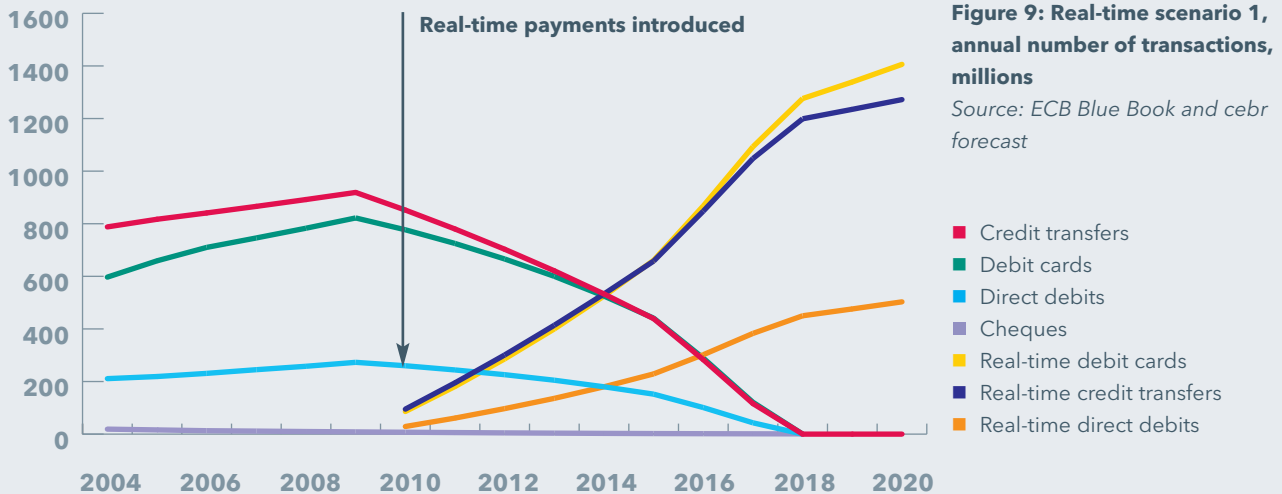
Here, three scenarios are considered for the establishment of real-time payments in Belgium. These are:

- A base case:** real-time payments are not introduced
- Scenario one:** real-time payments are introduced in 2010 and steady growth is achieved in the credit transfer, direct debit and debit card markets before a fully mandated change takes place in 2018
- Scenario two:** real-time payments are introduced in 2010 and volumes grow more quickly - by 2014 all credit transfers, direct debits and debit card payments are migrated to the real-time platform.

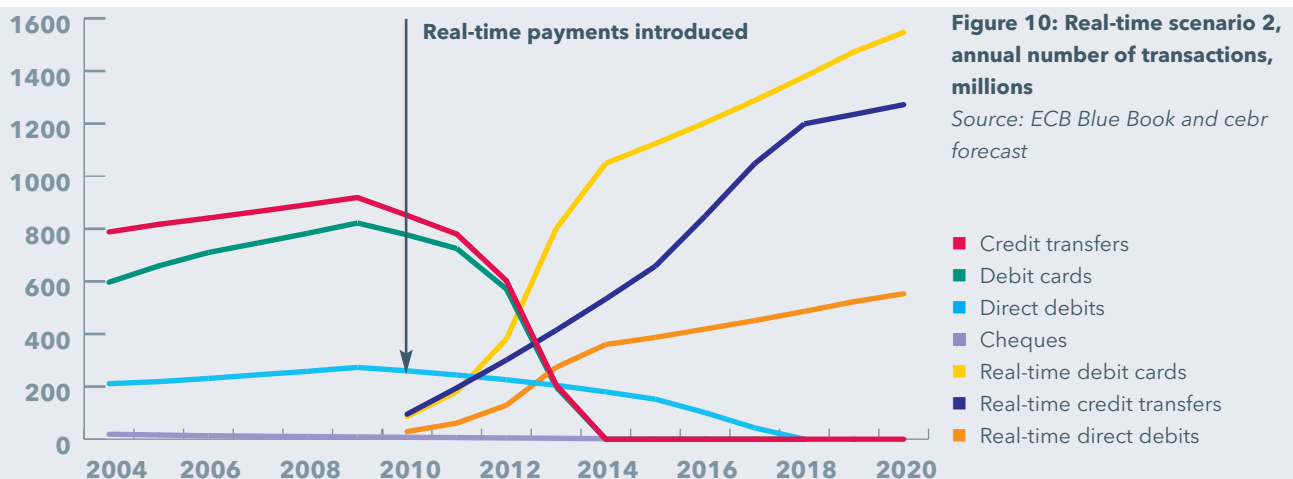
Each of these scenarios is used to model the effect of real-time payments on productivity and cost savings for the Belgian economy. All forecasts are made on the basis of recent trends. The underlying assumptions are an annual GDP growth rate of 2.1%, the trend over the last 25 years, with prices growing in line with the GDP deflator - levelling out at around 1.7%. In all cases, the impact on fraud is assumed to be negligible.



In the base case depicted in figure 8, all payment types continue to grow according to trend. Real-time payments are not introduced.



In scenario one, depicted in figure 9, real-time payments are introduced in 2010 and exist in parallel with the existing infrastructure. Over time, the real-time platform builds market share. By 2018, virtually all payments made are real time as market momentum builds. The introduction of real-time payments is assumed to accelerate the decline of the cheque.



In scenario two, depicted in figure 10, the introduction of real-time payments is assumed to occur more quickly. After a three-year migration there is wholesale migration to the real-time platform for credit transfers, direct debits and debit cards. By 2014, debit cards will also be operating fully on a real-time infrastructure. Here, the decline of the cheque is accelerated so that by 2015 cheques are eliminated as a result of the substitution of real-time payments.

Productivity improvements derived from real-time payments

The introduction of real-time payments reduces the administrative overhead of managing payments as customers will generally opt for self-service. The Belgian payment system is already one of the most efficient in the world, but the adoption of real-time technology can make further improvements.

As in most advanced economies, the most costly payment instrument is believed to be the cheque. Although there is no official data available on the unit cost of this for Belgium, the processing cost can be estimated from similar studies of comparable economies, for example Norway at €2.91. Following this, credit cards are relatively expensive with a unit cost of €2.62. Proton and debit cards cost €0.54 and €0.55 respectively (2003 prices). Credit transfers are estimated to cost €0.06 per transaction and direct debits are estimated at €0.08 per transaction.

The existing payment system requires payment preparation by both payer and beneficiary banks in the transaction. However, the introduction of real-time payments, and the associated move to self-service, has the potential to cut costs significantly for banks at either end of the process. The estimated cost per transaction for credit transfers and direct debits is reduced to €0.05. Debit card unit costs are also likely to be reduced by the real-time infrastructure, saving approximately €0.03. The model combines these cost estimates into the same price base.

Payment type	Source and cost
Cheques	Estimate derived from Norway: €2.91
Debit cards	National Bank of Belgium estimate: €0.55
Credit transfers	NBB and Industry sources: €0.06
Direct debits	NBB and Industry sources: €0.08
E-money	NBB study: €0.54
Credit cards	NBB study: €2.62

Table 5: Total cost of payments per transaction in weighted average, €

Source: National Bank of Belgium, Bank of Finland

As real-time payments increase their share of total payments, substitution occurs, which offers savings over the existing payment infrastructure. In scenario one, the uptake of real time is slow and the savings available are commensurate with this. Cost savings rise from €4 million in 2010 to €36 million in 2015, and reach €83 million in 2020 as real-time payments become ubiquitous. In scenario two, uptake is quicker and savings are available earlier, reaching €60 million by 2015.

		2010	2015	2020
Base case	Credit transfers	59	74	93
	Direct debits	22	32	46
	Debit cards	549	763	1,059
Real time scenario 1	Credit transfers	58	67	78
	Direct debits	22	26	31
	Debit cards	547	740	1,007
Real time scenario 2	Credit transfers	58	62	78
	Direct debits	22	21	31
	Debit cards	547	725	1,007
Total cost saving	Scenario 1	3	36	82
from real time	Scenario 2	3	61	82

Table 6: Total annual cost of managing direct debit and credit payments for financial institutions, 2010-2020, €m

Source: cebr calculations based on ECB, NBB and Bank of Finland data

Shifts in payment types - the substitution effect

Belgium has been an early adopter of new payment instruments. There has been a continual decline in cheque usage from 1.7% of transactions in 2002 to 0.7% in 2006. These figures are good by international standards, though some countries have even lower rates of cheque usage or have eliminated their usage.

The introduction of real-time payments will expedite the decline of cheque usage and this enables savings to be made. In scenario one, it is assumed that the decline in cheque usage gathers pace more slowly and in scenario two we assume that cheque use is eliminated in 2015. These are considered in the following table, against the base case of cheque decline continuing at its current trend.

	2010	2015	2020
Base case	25.5	13.1	6.7
Scenario 1	25.0	8.0	2.1
Scenario 2	25.0	0.0	0.0
Scenario 1 cost saving	0.5	5.1	4.3
Scenario 2 cost saving	0.5	13.1	6.7

Table 7: Total annual costs and savings due to shift in transactions 2010-2020, €m
Source: Bank of Finland, ECB and cebr calculations

Failed transactions

Failed transactions are a major cost and inconvenience to banks and their customers. One of the major benefits of the introduction of real-time payments is a significant reduction in failed transactions on credit transfers, direct debits and debit cards. One report² estimates the cost of investigating failed payments at €58.52 per item.

The present central infrastructure in Belgium ensures that many payments with errors are detected early. The rate of payments failing at the final stage when a central infrastructure is used can be as low as 0.11% to 0.13%. While this is commendable, the instantaneous and self-service nature of real-time payments has the potential to reduce the failure rate in final stage of payment to zero. This is a unique advantage of a real-time environment.

² SunGard, 2004 "Payments Exceptions and Investigations"

The graphs below consider how the introduction of real-time payments can reduce costs assuming two alternative failure-rates, and in the context of the real-time scenarios one and two. All savings are calculated relative to the base case where real-time payments are not introduced and the existing infrastructure remains.

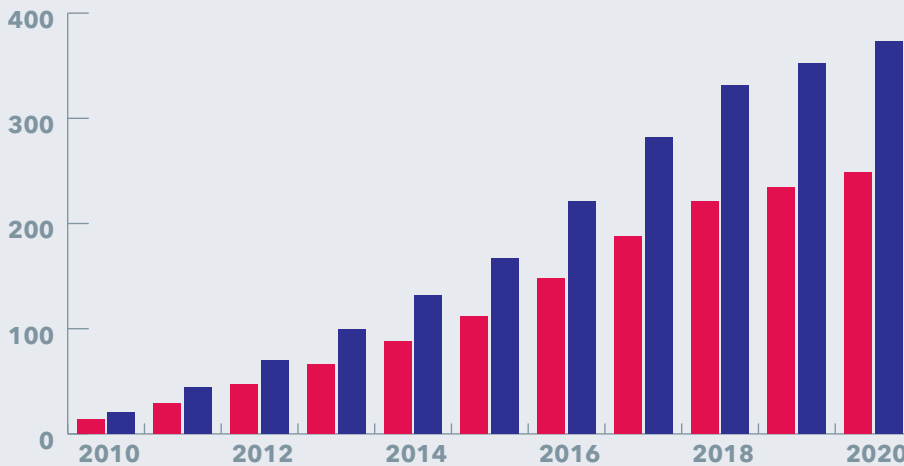


Figure 11: Annual cost savings from reduced failed transactions for real-time scenario 1, 2010-2020, €m

Source: cebr calculations, Sungard and Vocalink

■ Failure rate 0.10%
■ Failure rate 0.15%

Under scenario one, and with a low failure rate, shown in figure 11, the real-time central infrastructure can reduce the costs of failed payments to a financial institution by around €14 million in the first year of introduction. However, as momentum builds, savings increase substantially, exceeding €111 million per year by 2015 and €240 million by 2020.

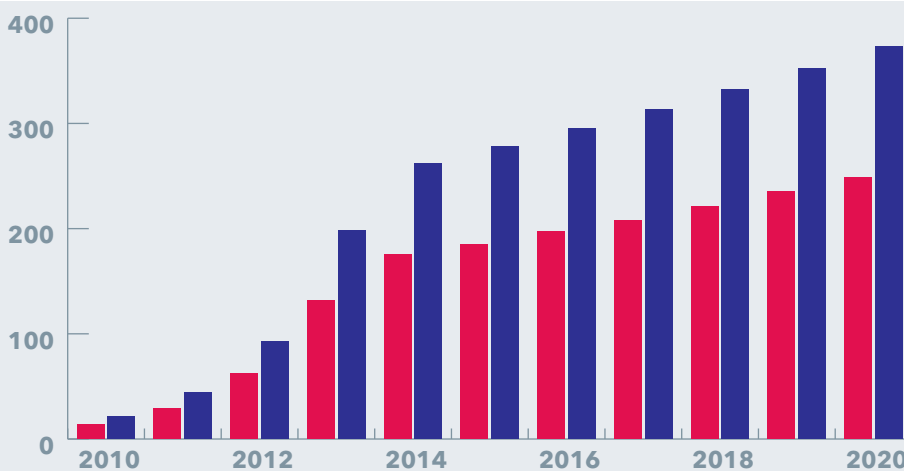


Figure 12: Annual cost savings from reduced failed transactions for real-time scenario 2, 2010-2020, €m

Source: cebr calculations, Sungard and Vocalink

■ Failure rate 0.10%
■ Failure rate 0.15%

Under scenario two, with a low failure rate, shown in figure 12, savings from reduced failed transactions on credit transfers, direct debits and debit card payments reach €185 million in 2015 and €249 million by 2020. With a higher failure rate assumed, the savings are more

substantial. Savings rise to €278 million per year in 2015 and €373 million by 2020. Scenario one catches up with the annual savings in scenario two by 2018 as both scenarios have 100% uptake of real time by then. However scenario two shows substantially greater savings over time, as shown above.

User efficiency

The introduction of real-time payments offers benefits to all parties within the payments value chain. Consumers benefit through the reduction in clearing time and increased flexibility and control over their payments. But the main benefits accrue to small and medium-sized businesses. Overall, they benefit from a greater ease of doing business and the value of the benefits increases in line with the proliferation of real-time payments.

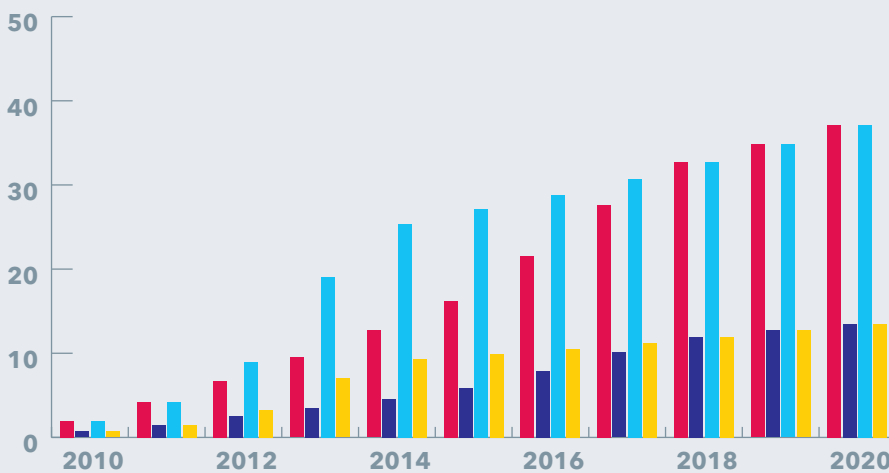


Figure 13: Annual user efficiency benefits, 2010-2020, €m

Source: OFT BPSL Working Group report and cebr calculations

Under scenario one, user efficiency benefits rise from a total of €3 million in 2010 in the first year of real time availability to €22 million in 2015, reaching €51 million in 2020 when real-time payments are mandated throughout Belgium.

Under scenario two, consumer benefits rise from €3 million in the first year of real time, 2010, to a potential €37 million per year by 2015. This is in line with the greater growth in real-time payments across the economy in scenario two, relative to scenario one.

Belgium study – conclusion

The reduction in failed transactions offers the greatest savings to the Belgian economy.

In the real-time scenario one, total savings equate to around €175 million per year, of which €111 million emanates from the reduction in failed payments due to the adoption of real time. The next highest saving comes from the reduced cost of managing payments at €36 million, while user efficiency benefits from the increased speed of transaction are significant, totalling €22 million per year.

Macroeconomic impact

The microeconomic effects identified above have been used as a basis to estimate the overall macroeconomic effect of introducing real-time benefits in Belgium. Use was made of a general macroeconomic model to measure the effect that a major improvement in technology, such as the introduction of real-time payments can have on major macroeconomic variables. The effective productivity boost is fed through the model to give the cumulative impact on GDP over time.

In the cost savings identified in scenario one, the low estimate of the boost to the Belgian GDP growth is 0.11% per year by 2020.

In scenario two, the upper-bound estimate of the boost to the productive capacity of the Belgian economy by 2020 is 0.22% of GDP.

Overall implications of the study

This report is an illustrative, independent study of the macroeconomic potential of real-time payments in Australia and Belgium. These economies have very different payments infrastructures. In both cases the results are very encouraging.

Real-time payments are not just about speed. The deployment of a real-time central infrastructure has the potential to change the way that business is done and to increase the productive capacity of an entire economy with a positive impact on GDP. The immediate beneficiaries of real-time payments are financial institutions that will enjoy increased efficiency, improved customer satisfaction and reduced risk. Real-time payments are revolutionary and offer immediate benefits to all parties.

The Faster Payments service was launched in the UK in May 2008. This is the first application of the VocaLink Real-Time Payments Platform and the world's first deployment of an end-to-end real-time payment mechanism between all major members of an advanced banking community. Volumes have exceeded all expectations: over 20 million Faster Payments have been processed with value of over £10 billion.

VocaLink has a commercial interest in deploying its Real-Time Payment Platform in other modern economies. This study will be supplemented by studies on other economies in due course.

We hope you find this initial study interesting and informative. Please contact us if you would like to discuss any aspect of the report or to receive copies of similar research.

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