

the PYMNTS.com

Global Cash Index™

a **CARDTRONICS** collaboration

United Kingdom Analysis



Cash Usage In The United Kingdom

Cash Usage In The United Kingdom

A push for contactless Tube payments and an uptick in NFC-enabled credit cards may be some of the factors indicating the U.K.'s shift away from cash, but the numbers indicate otherwise.

Up to 48 percent of payments made by British consumers and businesses in 2014 were made in cash, according to the Payments Council.

While this would represent the first time in the history of the U.K. that electronic payments overtook cash¹, cash continues to be the most popular payment method.

In the U.K., cash is used twice as often as the second most popular payment method, debit cards, which account for 24 percent of all payments.²

The shift toward alternate forms of payment may fall into the long-held misgivings on abatement of cash, but they don't hold water, said Victoria Cleland, chief cashier at the Bank of England. "People have been predicting the end of cash pretty much since I was born ... every 10 years or so they forecast it and they are wrong."³

With economic growth comes an increase in overall spending, which is fueling the surging growth of payments, Cleland pointed out, and so there is more opportunity for all payment forms, including cash.

What's trending?

Cash continues to be the preferred form of payment with its high transaction volume. However, the average value of a cash transaction is lower than most other payment forms. For instance, the total transaction value of cash-based payments in 2015 was £216.1 billion, which was less than half of debit card-based payments at £490 billion.

Nonetheless, the total use of cash in the U.K. is projected to increase, despite cash share's continued drop in value. From 2000 to 2015 the total use of cash increased by 1.38 percent per year, and is projected to increase by 0.61 percent per year between 2015 and 2020.

Gross Domestic Product (GDP) Projection

GDP is a measure of economic activity in a country. It is highly visible and tracked by lots of local and international agencies as a measure of the economic health of a country. Projections of GDP are readily available and we use the GDP to measure the spending growth for the country.

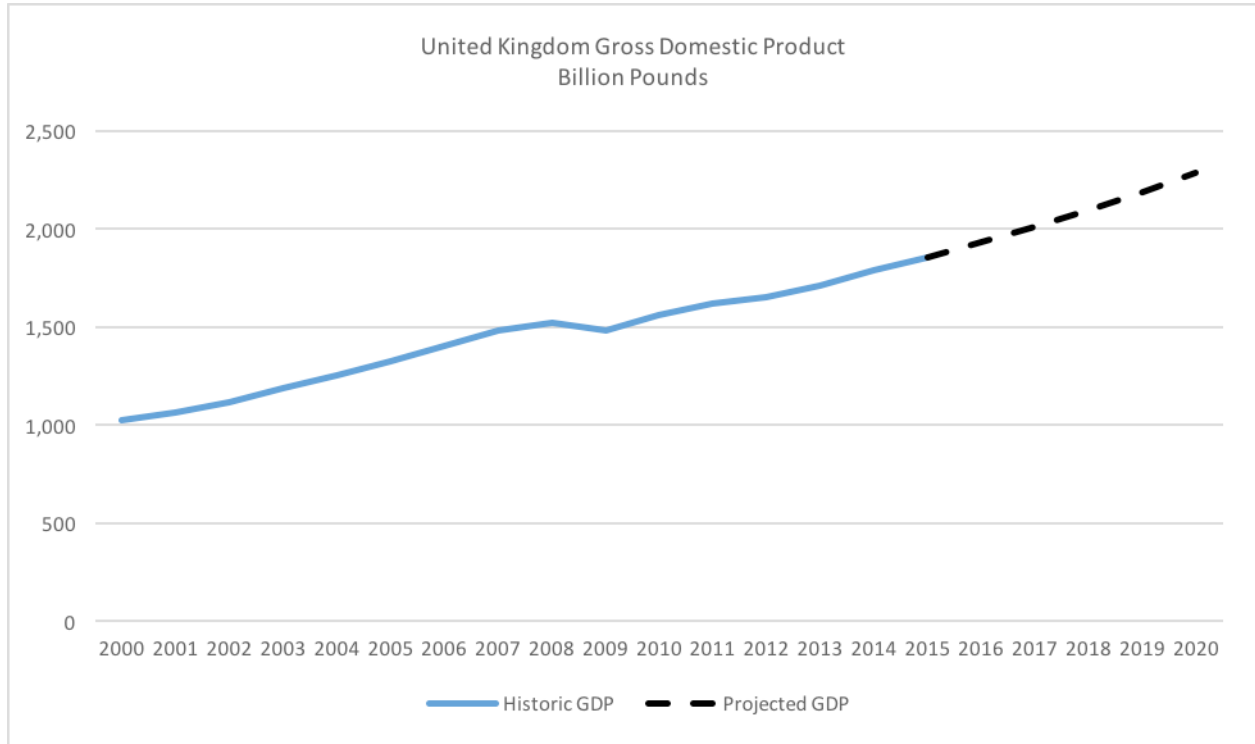
¹ A cashless society: what's in it for the UK?, February 2, 2016. <http://www.atmmarketplace.com/articles/a-cashless-society-whats-in-it-for-the-uk-2/>

² Bank of England says cash payments here to stay, June 22, 2015. <https://next.ft.com/content/5be97482-168a-11e5-b07f-00144feabdc0>

³ Ibid 2

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Figure 1: Historic and projected GDP for the United Kingdom, 2000-2020 (nominal in billion pounds)



Source: IMF, World Economic Outlook Database, April 2016.

Available at: <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>

⁴ GDP in 2015 was shown in euros in our previous report. GDP in euros for the U.K. in 2015 was 2,559 billion euros. Since Brexit we consider it makes sense to express all values for U.K. in pounds.

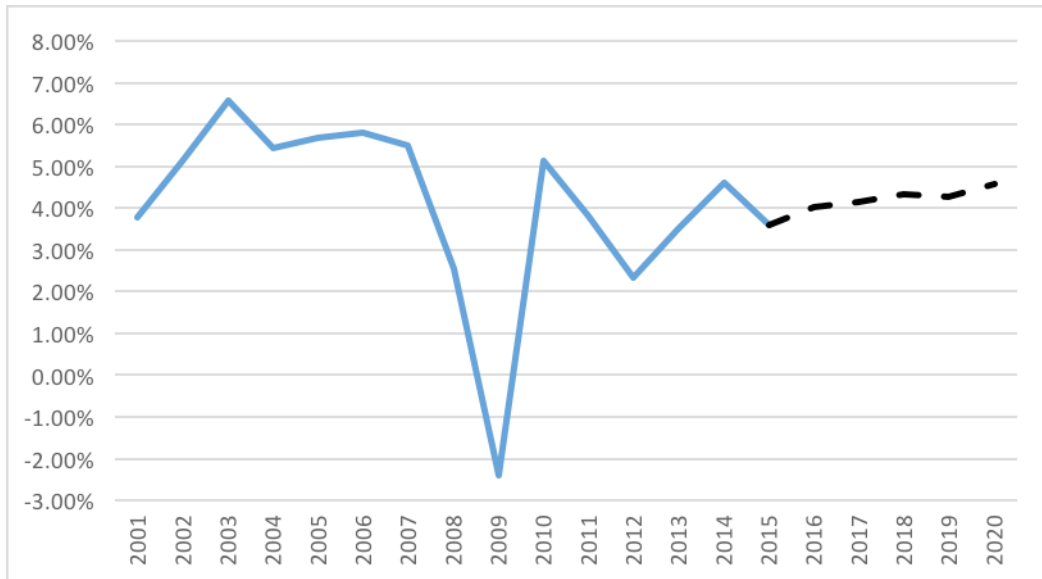
⁵ The growth projections were calculated by the IMF before Brexit.

There are currently no projections regarding how that decision will impact economic growth in the U.K.

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As Figure 2 shows, the GDP has been growing by 4 percent per year from 2010 to 2015 and is expected grow by 4.3 percent from 2015 to 2020.

Figure 2: Historic and projected GDP growth for the United Kingdom, 2000-2020



Cash Share Projection

In the U.K., the cash share is declining by about 0.51 percent per year with the slowing rates of OTC and ATM withdrawals. The total cash usage, as of 2015, stood at £216 billion, which represented 11.6 percent of total transaction volume.

OTC withdrawals have reduced from 6.2 percent of GDP in 2000 to only 1.4 percent of GDP, whereas ATM withdrawals have declined by a relatively small amount.

In 2000, ATM withdrawals represented 11 percent of GDP and in 2015, they were 10.2 percent of GDP.

Cash Usage In The United Kingdom

Table 1: GDP and Cash Usage Data for the United Kingdom, in billions of pounds⁶

Year	Nominal GDP (pounds)	Cash usage (billion pounds)			ATM share	OTC share	Cash share
		ATM	OTC	Total			
2000	1,023.5	113.0	63.0	176.0	11.0%	6.2%	17.2%
2001	1,062.3	127.4	55.0	182.4	12.0%	5.2%	17.2%
2002	1,117.2	136.4	53.0	189.4	12.2%	4.7%	17.0%
2003	1,190.5	144.1	54.0	198.1	12.1%	4.5%	16.6%
2004	1,255.2	161.3	56.0	217.3	12.8%	4.5%	17.3%
2005	1,326.7	172.0	40.0	212.0	13.0%	3.0%	16.0%
2006	1,403.7	179.8	39.0	218.8	12.8%	2.8%	15.6%
2007	1,481.0	186.2	33.0	219.2	12.6%	2.2%	14.8%
2008	1,518.7	192.2	32.0	224.2	12.7%	2.1%	14.8%
2009	1,482.1	192.8	31.0	223.8	13.0%	2.1%	15.1%
2010	1,558.4	185.8	35.0	220.8	11.9%	2.2%	14.2%
2011	1,617.7	191.3	32.0	223.3	11.8%	2.0%	13.8%
2012	1,655.4	193.6	30.0	223.6	11.7%	1.8%	13.5%
2013	1,713.1	191.8	30.0	221.8	11.2%	1.8%	12.9%
2014	1,791.9	189.4	27.0	216.4	10.6%	1.5%	12.1%
2015	1,856.4	190.0	26.1	216.1	10.2%	1.4%	11.6%

⁶ Total cash for 2000, 2005, 2010 and 2015 is expressed in euros.
The respective value for each of these years is, respectively, 288.92, 310.1, 257.58 and 296.85 billion euros.

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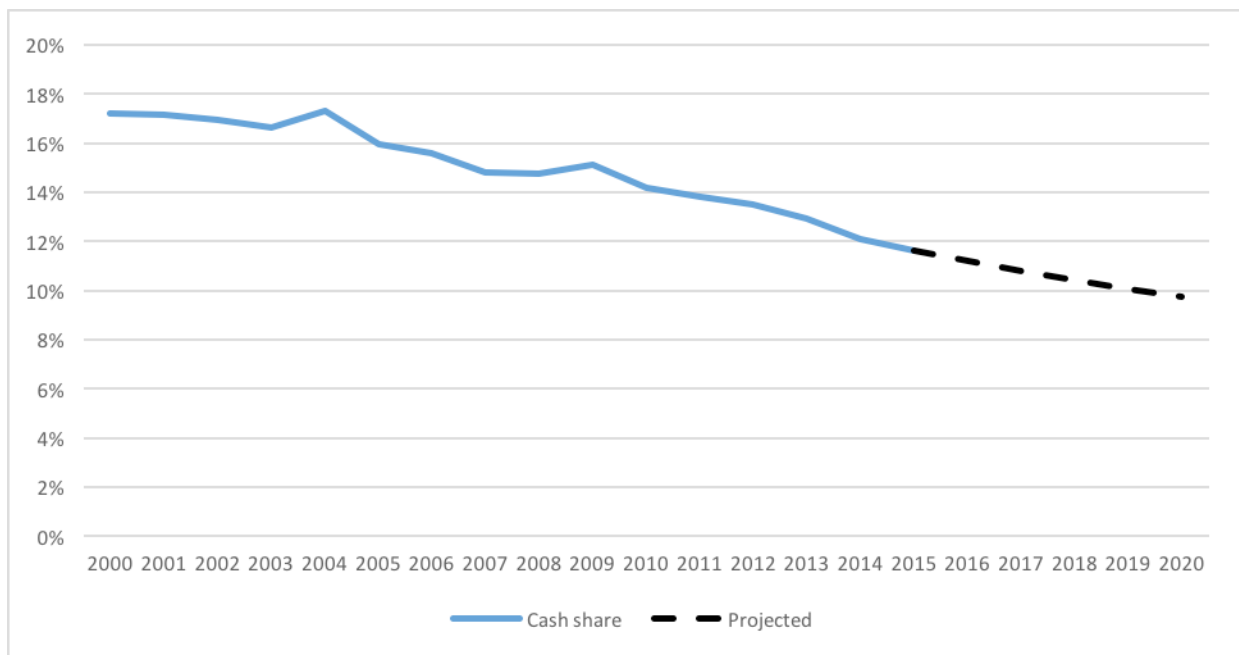
Between 2000 and 2004, cash share remained consistent with 17 percent representation of the GDP. This consistency was fueled by an increase in ATM withdrawals during that period.

Post 2004, ATM withdrawal rates remained consistent, but OTC cash withdrawals began to slow down. And with that, cash share was set off on a new trajectory in the U.K.

Since 2010, ATM withdrawals have declined from their peak of 13 percent GDP share in 2009 to 10.2 percent in 2015. OTC withdrawals, on the other hand, accounted for 1.4 percent of GDP in 2015 compared to 2.9 percent observed in 2009.

Based on the data above, we use a logarithmic trend of the data to project what the cash share is likely to be from 2015 through 2020. Figure 3 shows the base historic trends that can be expected.

Figure 3: Historic and projected cash share with logarithmic trend



As seen in Figure 3, the cash share has declined between 2010 and 2015 by 0.51 percent per year, and from 2015-2020 it is expected to decline by 0.38 percent.

Cash Usage In The United Kingdom

Role of government policy

In the United Kingdom, neither the Bank of England nor the government have a specific objective to influence the proportion of money that is held or used as cash. However, a definitive shift away from cash could be the byproduct of a wide range of potential policy changes.

Moves by the U.K. government to transition welfare payments away from cash, coupled with the rollout of basic bank accounts to address financial inclusion, will open up the possibility for a sizable minority of people to use payment cards for the first time.

Changes in the use of cash will also depend on the evolution of macroeconomic indicators, such as GDP, interest rates, exchange rates and inflation, the demand for international tourism, long-run demographic trends, and geopolitical developments such as wars or changes in government.⁷

The current developments in the United Kingdom, deciding to exit the European Union and Prime Minister David Cameron resigning his position, may change both macroeconomic conditions and the preferences of the public to use cash. As of now, it remains unclear if these would lead to more or less cash usage.

Payments 2.0 and the state of cash

In recent years, technological advancements in the U.K. have led to the growth of alternate payment methods built around use of mobile payments and digital wallets that are now seemingly gaining wider acceptance among millennials.

Much of this innovative growth has come against an increase in smartphone penetration. In 2015, about 60 percent or 39.4 million people in the U.K. had access to smartphones, compared to 21.6 million people in 2011, which represented 34 percent of the population. It is expected that by 2018, around 70 percent of population will have smartphones, including 91 percent of adults.⁸

In the U.K., consumers' preference for using cash was found to vary by the type of transaction. For regular transactions like utility bills, the most used payment methods are standing orders and direct debit, with cash representing only 10 percent of regular transactions in the U.K. in 2014. On the other hand, cash emerged as the winner among payment methods for spontaneous transactions, which are payments made for goods and services purchased at the point of sale. According to the Bank of England, cash was used in 52 percent of spontaneous transactions.⁹

In our analysis, we also looked at the availability of terminals at the point of sale, ATM machines, and other bank branches, to understand the trends in the availability of payment methods and acceptance.

⁷ Tom Fish and Roy Whymark (2015) "How has cash usage evolved in recent decades? What might drive demand in the future?," Bank of England, Quarterly Bulletin 2015 Q3, Vol. 55, No. 3, pp- 216-222, available at: <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2015/q3.pdf>

⁸ Statista, "Number of Smartphones Users in the United Kingdom (UK) from 2011 to 2018 (in millions), available at: <http://www.statista.com/statistics/270821/smartphone-user-in-the-united-kingdom-uk/>

⁹ Tom Fish and Roy Whymark (2015) "How has cash usage evolved in recent decades? What might drive demand in the future?," Bank of England, Quarterly Bulletin 2015 Q3, Vol. 55, No. 3, pp- 216-222, available at: <http://www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2015/q3.pdf>

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Between the year 2000 and 2014, the number of ATM and POS terminals more than doubled with 33,000 ATM terminals reported in 2000 and 69,000 reported in 2014. POS terminals, on the other hand, marked a growth of 131 percent with 735,000 available in 2000 and 1,701,000 available in 2014.

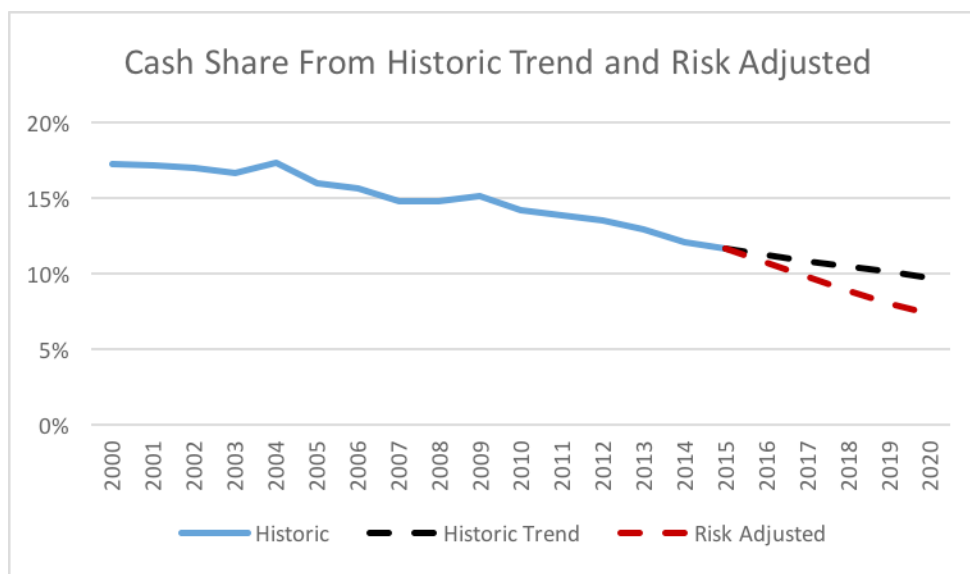
The increase in the number of ATMs came at a time when the number of bank branches began sharply declining after 2000. There were 15,000 bank branches in 2000 and 10,000 in 2014, a decrease of 33.3 percent.

While the number of terminals or branches does not directly say anything about transaction values, it does say something about availability. During this period, POS terminals have been increasing faster than ATM terminals, meaning that it has become relatively easier to use cards than to use cash.

These facts are consistent with our data. Total use of cash has increased from £176 billion in 2000 to £216 billion in 2015 – a 22-percent increase. On the other hand, total use of cards has increased from £173 billion in 2000 to £643 billion in 2015, marking a 271-percent increase.

Based on the increase in usage of cards and other alternative payment methods, the reduction of cash usage could be accelerated by 50 percent among 19-24 year olds, 30 percent among 25-34 year olds and 15 percent among 35-44 year olds. Assuming that these accelerated reductions are realized over a five-year time period, the “risk-adjusted” cash share could be realized; we made an estimate depicted in figure 4.

Figure 4: Risk Adjusted Cash Projection



Cash Usage In The United Kingdom

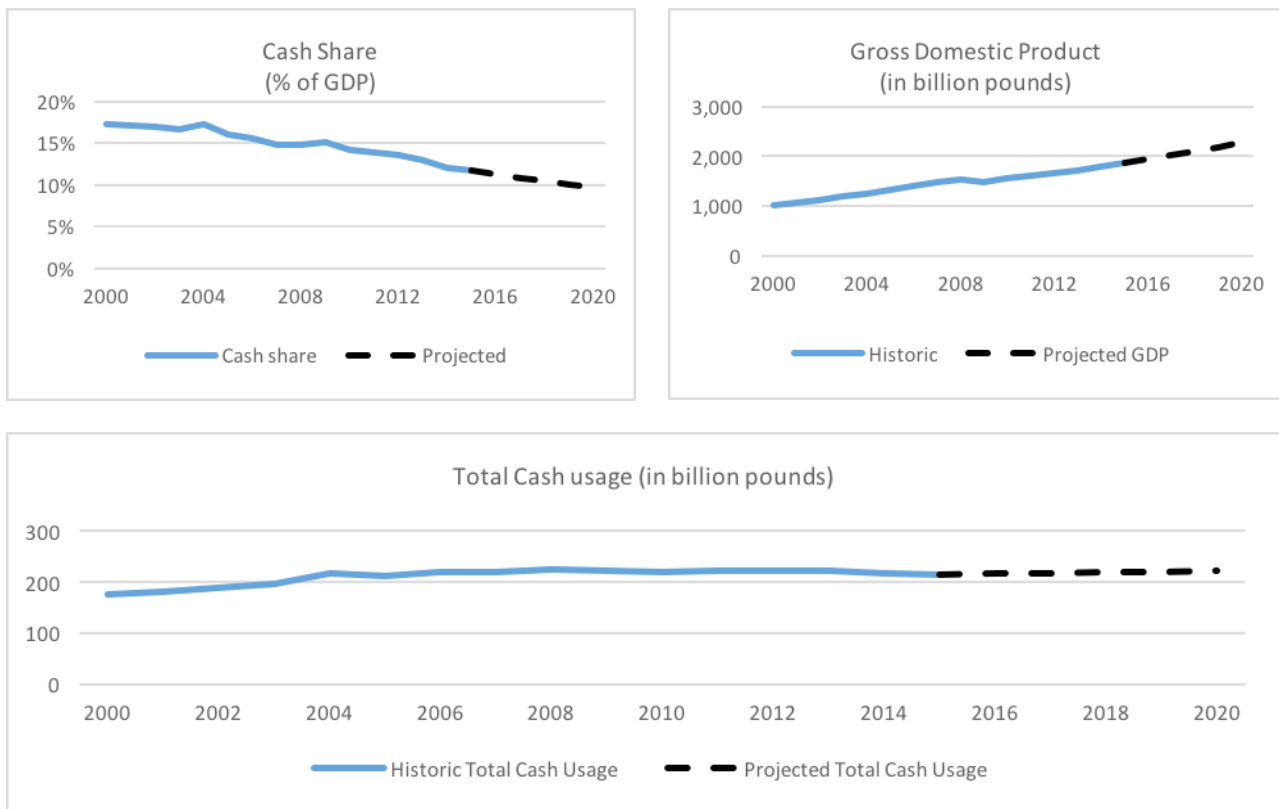
Total Cash Usage

When we combine the projected cash share and GDP, we see that the total use of cash in the United Kingdom is increasing, but at a rate that is less than the GDP. Table 2 shows the decrease in cash share, offsetting increase in GDP, and the net increase in total cash usage.

Table 2: Cash share, GDP and Total cash usage

	Cash usage (billion pounds)					Compounded annual growth	
	2000	2005	2010	2015	2020	2010-2015	2015-2020
Cash share	17.2%	16.0%	14.2%	11.6%	9.7%	-0.48%	-0.45%
GDP	1,023.5	1,326.7	1,558.4	1,856.4	2,288.2	3.56%	4.27%
Total cash usage	176.0	212.0	220.8	216.1	222.8	-0.43%	0.61%

Figure 5 below shows the data and projection.



Cash Usage In The United Kingdom

Methodology and Data

The PYMNTS.com Global Cash Index™, in collaboration with Cardtronics, analyzes the level of overall cash usage and projected trends over the next five years for 40 countries around the world that provide sufficient data to make estimates on cash usage.

Total cash usage is the combination of two overall factors.

- The first is cash share, or the amount of total purchases that are made with cash. We measure cash share as the total amount of cash used by a country, divided by the annual GDP of the country. Total cash used by citizens of the country is assumed to be equal to the total amount of cash withdrawn at ATM machines, plus the total amount of cash withdrawn over the counter (OTC) at bank branches in the country.
- The second is how the overall economy is growing. Total cash usage is estimated as the total cash share, multiplied by the GDP of the country. As a country's economy develops and grows, more overall spending occurs, which means more cash spending occurs.

What we find is that the total cash share is decreasing in most countries but because the population and GDP are growing, total cash usage is still growing (albeit at rates lower than GDP). In order to calculate the results in this report, we do the following for each country:

- Gather historic and projected data
- Estimate OTC cash withdrawals for countries that do not report this data
- Calculate historic cash share
- Estimate the cash share for 2015 forward
- Estimate the total cash usage for 2015 forward

Gather historic and projected data

For each country, we collect historic data from 2000 through 2014 on the total population, the GDP, cash withdrawals from ATMs and OTC, total card spending data, and data on payment infrastructures, including the number of POS machines, the number of ATMs, and the number of bank branches. We also gather data to project cash usage including projected GDP and projected population by age group. We gather data from 2000 through 2014 and use as much as is available. We have data on population and GDP for all years and data on cash withdrawals and payments infrastructure for many but not all years. For each country, we collect projections for the GDP and for population by age group. This data comes from the IMF and World Bank, respectively, and is from the same source as the historic data. Population projections are available for every five years, and we use a linear interpolation for the years that are not reported. GDP projections are by year and if we need time periods beyond the last projected data point, we assume that final GDP growth rate will be consistent over time.

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Estimate OTC cash withdrawals for countries that do not report this data

As described above, cash share is denoted as the total cash withdrawals from ATMs plus total over-the-counter cash withdrawals. We have selected the 40 countries in our analysis based on the availability of sufficient cash withdrawal data. The 40 included countries produce at least some data on the level of ATM withdrawals each year. If ATM withdrawals are not available, the country is excluded from our analysis.

While all 40 countries provide ATM data, only 12 provide data on OTC cash withdrawals. This means that for the other 28 countries, we have to estimate the level of OTC withdrawals. We do this by looking at each of our 28 target countries (the ones for which we need to estimate OTC withdrawals) and selecting a comparable country from the 12 countries that do provide data (we refer to these as our potential comparable countries).

The estimation procedure is done in the following four steps:

One: Calculate the OTC to ATM ratio for each of the 12 potential countries that do provide OTC data. These are all potentially comparable countries. This is a simple calculation of dividing the level of OTC withdrawals by the level of ATM withdrawals for each year where data is available.

Two: Estimate the logarithm trend of the OTC to ATM ratio from 2000 through 2014 for each of the potentially comparable countries.

$$\overline{\left(\frac{OTC}{ATM}\right)_{Year}} = \alpha + \beta \times LN(Year) + \varepsilon$$

We do this to remove any data jumps or movements due to factors specific to the country. This provides a long-term estimate of the OTC to ATM ratio for each year from 2000 through 2014.

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Three: Select the Potential Comparable Country

For each country that does not have OTC data (target country), we select the most comparable country from those that do provide OTC data. The comparable country is selected by comparing the trends and levels in five different variables:

- ATM withdrawals as a percentage of GDP
- Card Spending as a % of GDP
- Bank Branches per 1,000 people
- ATM terminals per 1,000 people
- POS terminals per 1,000 people

For each potential comparable country, we calculate a Difference in Levels and a Difference in Changes over an eight-year period from 2006 to 2014. These are calculated as follows:

$$\text{Difference in levels} = \sqrt{\sum_{i=2006}^{2014} (\text{Variable}_{\text{Comparable}/i} - \text{Variable}_{\text{Target}/i})^2}$$

$$\text{Difference in changes} = \sqrt{\sum_{i=2006}^{2014} \left(\frac{\text{Variable}_{\text{Comparable}/i}}{\text{Variable}_{\text{Comparable}/i-1}} - \frac{\text{Variable}_{\text{Target}/i}}{\text{Variable}_{\text{Target}/i-1}} \right)^2}$$

In the formula above, *i* is the year and “Variable” refers to each of the five variables listed above. We perform this calculation for each of the 28 target countries against each of the 12 potential comparable countries. This provides a difference in levels and a difference in changes for each of the five variables for each combination of a target country and a comparable comparison country. We then assign a weight of 2/3rd to the difference in levels and 1/3rd difference in changes and for each target and comparable country, we calculate a Weighted Average Difference:

$$\begin{aligned} \text{Weighted Average Difference}_{ij} \\ = 0.667 * \text{Avg difference in levels} + 0.333 * \text{Avg difference in changes} \end{aligned}$$

Where *i* is the target country and *j* is the comparable country.

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Four: Calculate the historic cash share

The cash share is denoted as the total cash spending divided by the GDP. In this sense, cash usage is relative to the overall size of the economy. Total cash spending is denoted as ATM withdrawals plus OTC withdrawals. Total cash share is calculated as follows:

$$\text{Cash Share}_{\text{Year}} = \frac{\text{ATM Withdrawals}_{\text{Year}} + \text{OTC Withdrawals}_{\text{Year}}}{\text{GDP}_{\text{Year}}}$$

Estimate cash share for 2015 forward

The cash share is estimated as a logarithm trend of the historic data. We use this estimated trend line and adjust it such that it lines up with the historic data for 2014. This creates a naïve historic cash share trend starting at the historic cash share for 2014, rolling forward for five or 10 years.

We then adjust this naïve cash share based on the demographic trends in the country and the likelihood that younger demographics would be more prone to shift away from cash and to new payment methods such as mobile wallets or other new technologies that are becoming available. This adjustment analyzes the proportion of the population that is younger and accounts for the relative amount of spending (because younger people generally earn less and spend less than older people). This analysis suggests that the actual cash share is likely to be lower than the naïve cash share estimated above once we take these factors into account.

This analysis results in a projected cash share that is less than the cash share projected using the naïve analysis described above.

Estimate the total cash usage for 2015 forward

The total cash usage is calculated by multiplying the adjusted cash share by the projected GDP for each year, 2015 through 2020.

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