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Plastic Money: The Credit Card Industry's Contribution to the U.K. Economy

prepared for



APACS

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Executive Summary

Plastic money. Nearly every Briton has a credit card, if not several, and in most cases from a variety of providers. How many, however, would stop to consider in depth the benefits of credit cards to the cardholder and to the U.K. economy as whole?

If asked, many would mention the advantages of being able to *buy now, pay later* and the flexibility to borrow whether planned or at short notice. Others would point out the interest-free period on purchases and that credit cards are cheaper and safer than most other forms of payment—both for the customer and the shopkeeper. Some would think of being able to use their cards with relative ease all over the world, making for peace of mind while on holiday, or perhaps of the benefits accrued through affinity cards. Still others might highlight internet shopping and the fact that the growing e-commerce industry would very likely not exist but for credit cards. And a few would no doubt cite the financial advantages of moving money between zero percent balance transfer offers on different cards.

Economy.com has been commissioned by APACS, the U.K. payments association, to undertake a study of the economic contribution to the U.K. made by the credit card industry. The objective of the study is to make a realistic assessment of the value of this contribution, to assess where in the economy this contribution is felt and in which regions its effects extend.

This report examines the range of benefits that the credit card industry contributes to the U.K. economy. Many of these benefits are straightforward, such as the tens of thousands of Britons employed by the credit card industry, the wages the industry pays to its employees, and the money it invests in other businesses. At the other end of the scale, there are the less obvious benefits, such as the money the industry donates to charity, the smoothing of the progress of consumption, and the implications of a world without credit cards, where millions of households would either go back to spending directly out of disposable income or would rely on more time-consuming and costly sources of credit.

This is not to say credit cards exist in some vacuum of benefit—as with any financial product there are costs if plastic cards are misrepresented by card companies or misused by customers. The economic burdens of over-indebtedness and credit card fraud are not insignificant and cannot be ignored. It is our belief, however, that the myriad benefits outweigh the costs and that the breadth and depth of these benefits should not be overlooked or marginalized in the ongoing credit card debate.

THE NUMBERS:

We have found that the credit card industry directly contributes to the British economy in the following ways:

- By directly employing over 30,000 people, the major credit card issuers pay roughly £1.15 billion a year in wages. This translates to over £3 billion if the indirect or imputed effects of this spending are considered.
- Private financial institutions, of which the credit card sector is a significant part, have booked average earnings of £19.9 billion a year over the last decade.
- Together private taxpayers employed by the industry and the lenders themselves contribute about £8.2 billion a year to the government's bottom line.

- The income and consumption smoothing effect of consumer credit can be shown by modeling an economic environment where such credit is restricted. This would reduce real GDP gains by nearly £22 billion over three years if all borrowing was affected or by £1.1 billion if only credit card borrowing was constrained.
- Credit cards deliver a cost savings of approximately £5.5 billion per year through substitution of more expensive paper-based payments methods.
- In providing the interest-free period on purchases, card issuers forego about £1.2 billion per annum in interest payments (at current rates). These represent direct savings for consumers.
- The infrastructure upgrade for chip & PIN has led to an investment of more than £1.1 billion by the credit card and retail industries.

Following a brief introduction to the U.K. credit card industry, this report will break down the benefits accruing to the economy from credit cards into the following segments and explore each in turn:

- 1) the **direct contribution** through employment, investment, and taxes
- 2) the **macroeconomic contribution** of smoothing of the economic cycle and easing households' access to credit
- 3) the **transactional contribution** through the reduction of transaction costs and the facilitation of exchange between consumers and businesses.

The report will conclude with a brief summation and several appendices outlining further avenues of research and sources.

HIGHLIGHTS:

- The credit card industry directly and indirectly employs over 111,000 people in the U.K., providing jobs in communities around the country. It is a major contributor to aggregate GDP growth, whether via wages disbursed, productive business investment undertaken, or government taxes paid.
- Credit cards help smooth the boom-and-bust swings in the economy by spreading out income gains and private consumption over time. This is true of all forms of credit, but plastic cards are the most liquid and therefore convenient form of borrowing.
- The liquidity and availability of credit provided by credit cards in the U.K. are worth £22 billion of projected GDP growth over three years. Tightening up credit constraints would weigh disproportionately on lower income households and on those with limited access to credit.
- Credit cards reduce transaction and cash handling costs to both merchants and cardholders, while at the same time offering convenience, security, dependability, and customizability. These features are either non-existent for other payment types, or are better realized in credit cards.
- Two case studies, tourism and e-commerce, demonstrate industries where these qualitative benefits are most obviously realized. Both have been revolutionized by the creation and widespread adoption of credit cards.

Introduction

What is a Credit Card?

A credit card is perhaps the most flexible form of lending available. A cardholder is provided with available funds up to an agreed limit by the credit provider, which can be used to purchase items or services or to borrow cash. The holder has the option to meet the entirety of the monthly payment or some minimum amount, or anything in between. Not paying the minimum results in an overdue fee and will affect the individual's credit rating, while interest is charged on the remaining balance. The range of product types within the U.K. is large, including differing interest rates, varying interest-free periods, cash-back and affinity schemes, insurance, and a wide range of possible credit limits.

Credit cards evolved out of the ancient barter system, which led from actual goods used as the medium of exchange, to money, to increasingly complex financial products. The first charge card was introduced by Western Union in the United States in 1914, but this was only an in-store card. It was in 1958 that the Bank of America introduced what would become today's universal *plastic money*, though the first general purpose "credit card" did not appear until 1966. In the mid-1970s, the process went global with the creation of a member-driven association that would ultimately be called VISA. Its purpose was to create a system of approval, clearing, operating codes, and dispute resolution that was based on commonly-held rules and operated the same in every country. Credit cards now could be used all over the world with a degree of security, convenience, and confidence that would be impossible for cash or cheque, or even the subsequent debit cards, as these can directly access a client's current account.

The progressive freeing-up of markets has, through better sharing of information and increased competition, broadened the use of credit, particularly for those with limited previous history of such access, while at the same time decreasing its cost. The changes to the market have enabled lenders to better tailor products to borrowers' needs, to speed approval and credit decisions, and to ease the securitization of similar products, thus reducing risk by spreading it across a larger number of carriers. Innovation has reduced costs and improved efficiency across financial markets, including for credit cards. The decrease in credit rationing following financial deregulation in the late 1980s, coupled with a sustained decrease in interest rates as inflation has come off the boil, has led to an upswing in household borrowing across a broad range of products, both in absolute terms and in relation to household income, both in the U.K. and in other industrialized countries.

British Overview

There are over 60 issuers of credit cards in the U.K. market, including high street banks, foreign banks, building societies, stores, and other finance providers. There are also the acquirers—the merchant services providers who act on behalf of the store-keeper who accepts credit cards. The following table lists the major credit card lenders (those with over half-a-million cards in issue) and all eight of Britain's acquirers.

List of lenders with 500,000+ cards in issue	List of acquirers
American Express	A&L/Euroconnex
Barclays Bank	AIB
Capital One Bank	Barclays Bank
CitiGroup	BOI/Euroconnex
Cooperative Bank	HBOS
Egg Banking PLC	HSBC Bank plc
GE Capital Bank	LloydsTSB Bank plc
HBOS (inc. Sainsburys)	Royal Bank of Scotland
HSBC Bank plc (inc. M&S Money, HFC, and First Direct)	
LloydsTSB Bank plc	
MBNA Europe Bank Ltd	
Morgan Stanley	
National Australia Group (inc. Clydesdale & Yorkshire Bank)	
Nationwide B S	
Royal Bank of Scotland (inc. Tesco)	
<i>Source: APACS</i>	

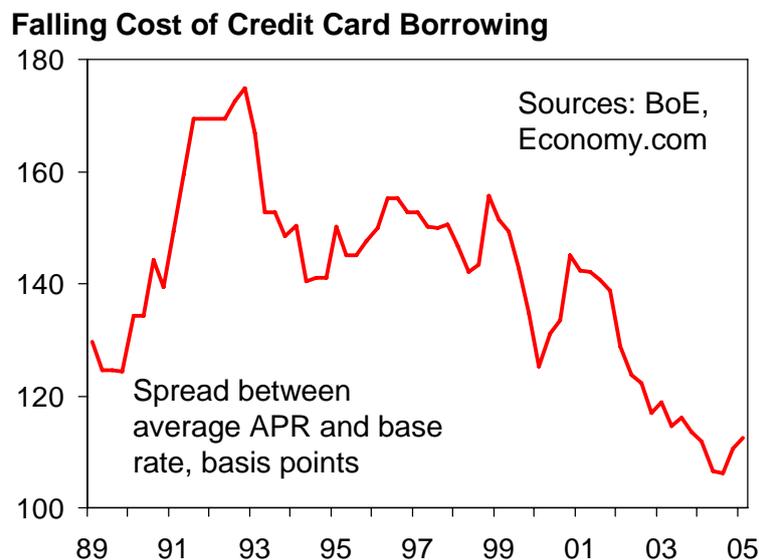
Total outstanding credit card debt has risen fourfold over the last decade, jumping from just over £13 billion at the end of 1995 to nearly £59 billion¹ at the close of last year. In the same timeframe, the number of cardholders has gone from just under 18 million to almost 31 million, while the number of cards in issue has soared from 28.2 million to nearly 70 million, or an average of over two cards per cardholder.

THE U.K. CREDIT CARD MARKET (at end 2004):

- 69.9 million credit cards in circulation.
- 30.6 million credit card holders in the U.K.
- 1.7 billion purchase transactions in the U.K., worth £99.4 billion.
- 143 million transactions by U.K.-issued cards overseas worth £10.5 billion.
- 57 million cash withdrawals in the U.K. worth £7.8 billion.

¹ This figure includes £6 billion of securitisations, funds that do not appear in the Bank of England headline data. These are packages of credit card debt that have been sold in the secondary market, and though they are still owed by cardholders, have been removed by bank balance sheets; thus, excluding these balances in fact *raises* the total amount of credit outstanding.

Total household credit crossed the headline-grabbing £1 trillion mark in June of last year, implying an outstanding balance of over £21,000 per adult—of this, approximately 17% is consumer, or unsecured debt. Credit card debt accounts for a third of the unsecured share, or 5%, up from just under 3% in 1995. The headline increase partially disguises the growth of the actual credit card market, as the balances do not include cards paid off in full, nor those consolidated into secured lending through an increasingly sophisticated personal lending market. According to Economy.com calculations, outstanding credit card debt's share of disposable income has risen, from just under 5% five years ago to almost 7% today; however, the cost of servicing those balances has barely changed thanks to historically low prevailing interest rates. The average quarterly repayment on credit card debt (interest and principal) has hovered around 1% of disposable income for the duration. This has happened at a time when interest rates in general have decreased; however, thanks to competition and market innovation the borrowing cost of credit cards has in fact fallen more rapidly than in the economy at large. This is best expressed by showing the narrowing spread, in basis points², between the average credit card interest rate (APR) and the Bank of England's base rate:



The participation rate, i.e. those borrowing on their cards, did not change much between 1995 and 2003, thus there is not a larger share of the total population owing money. As discussed in detail later, this disguises a shift in the breakdown by income group—this fact is important in understanding how credit cards have helped broaden and deepen the impact of Britain's decade-long economic growth spurt. The penetration rate for credit cards is still relatively low; with 30.5 million cardholders and roughly 48 million adults in the U.K., a participation rate of 63% is well below the 80% plus rate in the U.S.³

² There are 100 basis points in 1%.

³ The BHPS (British Household Panel Survey) and the FACS (Family and Children Survey) report even lower rates of penetration at 57.9% and 57.6% in 2000 and 2001, respectively. Last year, PricewaterhouseCoopers was more bullish, citing a 73% rate.

The credit card industry has come under increasing scrutiny, both in the European Union and around the world. The eyes of the regulators in the United States (2001), Australia (2002), the European Union (2002), and the U.K. (2003) have fallen heavily on the industry's rules and business practices, including interchange fees between acquirer and issuer, non-discrimination rules, and competition between service providers. In some cases, these measures could constrict the market unnecessarily, in others, it has led to improved information sharing and more easily understandable rules and regulations for consumers. Neither should be cause for complacency, as over-regulation would pass unnecessary costs on to the average household, while a totally unregulated market leads to welfare losses through monopolistic behaviour and an inefficient allocation of resources.

With the market set to grow both in terms of the number of cards and cardholders and their total usage, credit cards will continue to provide the many benefits that have accrued to the economy since their inception. The number of lenders and the jobs they provide within the U.K. will continue to expand along with the growth of the market, while the very existence of credit will go on smoothing out the business cycle. Finally, the convenience, affordability, security, and reliability of electronic payments, credit cards among these, will only increase as internet usage expands, global networks become more secure and intertwined, and *plastic money* becomes common currency to more and more parts of the world.

It is worth noting that we are explicitly leaving charge cards—cards whose balance must be fully paid off at the end of the month—out of this analysis. Charge cards provide many of the same benefits and carry some of the same costs as credit cards, but the relative size of the market makes them less influential than credit cards; there were 4.4 million charge cards in use last year in Britain, versus almost 70 million credit cards.

Section One

Pay Cheques and Pence: The Direct Contribution

The financial intermediation sector—the banks, building societies, and investment houses—last year employed almost six million people in the U.K., accounted for about 5½% of nominal GDP, and paid roughly £8 billion in taxes to the government. Within that larger whole, retail banking employed about 335,000 people and of those just over 30,000 were *directly* accounted for by the major credit card issuers. The impact of the industry is broadened if one takes in its ancillary services—the marketing boutiques, the technical maintenance providers, the credit reference bureaus, the direct mail companies, even the stationary suppliers and delivery firms, some of whom depend in whole and others in part on the credit card industry. In sum, these firms employ many tens of thousands of British taxpayers; putting money into their pockets that is then recycled into both consumption and savings. These firms, like their employees, pay taxes that contribute directly to government coffers, they both donate to charity, and spend in their local communities. While the knock-on benefits are enormous and often intangible, the explicit returns that can be expressed in pounds and payroll numbers are significant and can be relatively easily demonstrated.

KEY POINTS:

- The largest credit card issuers *directly* employ over 30,000 people in the U.K. and indirectly provide jobs for over 80,000 more in affiliated and dependent firms. This implies an annual wage contribution of over £1.1 billion.
- The industry contributes to aggregate GDP growth most significantly through private consumption and fixed capital formation by boosting employment (hence paying wages) and through business investment expenditure.
- Individual firms and private employees of those firms both contribute to the government's bottom line through tax payments, worth over £8 billion per annum in recent years.
- We have identified five regions where the credit card industry *directly* employs more than two of every 100 employees; these are Chester, Cumbernauld, Northampton, Nottingham, and Southend.
- There are a further five regions where the industry *directly* accounts for one in every hundred jobs; namely, Crawley, Derby, Dunfermline, Manchester, and Middlesbrough.

The economic contribution of a sector can be explained through its importance in the economy as an employer, provider of products and services, purchaser, investor, and key partner to other sectors. In this section of the report, we aim to assess the directly quantifiable benefit that the credit card industry puts into the British economy. These are factors that can be measured straightforwardly and unequivocally; the number of people employed, their earnings, the cash flow such income brings into a certain area, etc. We aim to attribute these as accurately as possible, both in terms of value and location; however, for most firms—in particular the industry's secondary suppliers—disentangling its credit card business from its other concerns may prove difficult, if not impossible.

These direct benefits can be broken into four distinct categories. Moreover, each of these categories is dynamic and broadly influences each of the other groups:

- i. *Employment.* The top eleven credit card issuers (accounting for 94% of the market⁴) *directly* employ over 30,000 people across the country; most of whom work for the credit card divisions of the nation's numerous financial services firms. As a headline number, this may seem small but it is important to remember that the financial services industry is highly automated and thus as a sector has a relatively low labour intensity. Moreover, this total does not include the industry's suppliers and ancillary businesses, nor the many who work in the large financial institutions but whose jobs are not *directly* dependent on credit cards but only tangentially so, whether in marketing, legal services, or the branch network. Using a simple employment multiplier, this boosts the direct, indirect, and induced employment of the credit card industry to over 110,000 individuals. These jobs are spread across the country, providing benefits to the local community and to the economy as a whole. The lenders are not tied to any one factor of production or any specific location and can thus set up in any area with an available workforce. This can be of great benefit to areas that have been hit by the loss of a previous industry. It is also important to note that the industry is an important creator of highly skilled and high value added jobs. The wages paid to those employed flow back into the economy through disposable income (ii) and taxes (iv).
- ii. *Private earnings.* If we use the New Earnings Survey 2002's average gross annual pay figures for the financial intermediation sector, we can calculate an approximate direct wage contribution of £1.15 billion per annum by the credit card industry. Thereafter, gross income is divided between consumption, taxes, savings, and expenses (which can also technically be classified as consumption). The exact distribution of an individual's post-tax income is determined by their requirements (debt repayment, family support, etc.) and preferences (saving versus spending). Ultimately, the earnings paid to an employee of the credit card industry flow back into the economy either through private spending (via outlays on housing, durable and nondurable goods, leisure, charitable donations, etc.), investment (via savings), or government outlays (via taxes).
- iii. *Corporate earnings.* On average over the last decade, the private financial sector, of which the credit cards lenders are a significant part, has booked a total annual income of £19.9 billion, as calculated in the national accounts. This has risen substantially in recent years to £33.4 billion in 2004. Much like an individual's wages, a firm's profits are redistributed in ways that provide broad-based benefits to the economy as a whole. In addition to paying their employees' wages (ii) and their corporate taxes (iv), firms also make charitable donations and engage in productive investment by expanding operations, upgrading capital stock, building new premises or renovating old ones, and/or by contributing to equity, pension, and fixed income markets.

⁴ Market share data from PricewaterhouseCoopers (2004)

- iv. *Government taxes.* Finally, the credit card industry contributes directly to the government's bottom line through the taxes paid by both the corporations themselves and by the individuals they employ. This helps the administration fund its current spending plans and invest in the future. Robust tax revenues ensure the uninterrupted provision of public services, while at the same time helping to meet the administration's self-imposed fiscal rules governing borrowing and investment. It is important to note that taxpayers, both individual and corporate, are both contributors to and beneficiaries of these common, government goods. In recent years, private taxpayers employed directly by the credit card industry together with the lenders themselves have contributed roughly £8.2 billion per annum to the government's bottom line.

Another way of thinking about the contribution made by credit cards firms is in pure economic terms: aggregate output of goods and services in an economy, gross domestic product (GDP), equals the sum of consumption (or private spending) plus investment, plus public outlays (or government spending) plus net foreign trade (that is exports minus imports). In this section, we will demonstrate that the credit card industry contributes directly to three of these components—consumption, investment, and government spending—thus lifting overall national production/income. It is likely that the industry also contributes indirectly to net exports, but the causal link is harder to disentangle.

First, we will explore in detail each of the four main groupings outlined above—what benefit does it provide to the broader economy, how can it be quantified, what provisos exist. Second, we will look separately at the key suppliers to the credit card industry. Many of these firms have contracts spread across a range of products, and thus their direct contribution to and the benefit derived from credit cards would be difficult to attribute. These firms all provide the same directly quantifiable benefits to the U.K. economy, but it is more diluted. Finally, at the end of this section, we will examine the communities that benefit most obviously from the credit card industry; how many jobs are provided? What does this mean for the local economy? What would happen if these firms were to relocate? This case study is made possible thanks to information supplied by the various lenders; however, the exact details will be dealt with anonymously and aggregated by region, not explored in terms of individual financial institution.

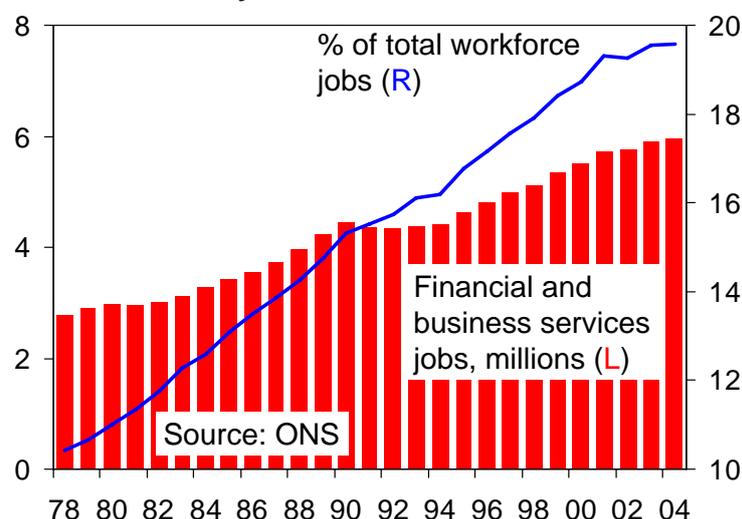
All in all, this section will demonstrate that above and beyond the broad macroeconomic benefits credit cards provide to the British economy (Section Two) and the distinct opportunities, savings, and convenience they create for individuals and businesses (Section Three), credit card companies most importantly create jobs, put money in people's pockets, pay taxes, and provide cash for investment elsewhere and for charitable causes, thus directly injecting liquidity into the economy and boosting overall prosperity. Moreover, the financial industry, like other services firms, is non-polluting and consumes fewer natural resources, leading to significantly less environmental degradation. The following sections will show how the main contributions are made, both generally and, in some cases, specifically by the credit card industry itself.

I. Employment

The financial intermediation sector as a whole, which includes banking, finance, and insurance, employed almost six million people in 2004, according to the Office for National Statistics (ONS). This accounted for a quarter of all service sector positions and just under a fifth of the total number of workforce jobs in Britain. That ratio has risen steadily from 10.4% in 1978 and the total number employed in the sector has more than doubled over the last 25 years, while the total number of jobs has risen by only 14%.

Retail banking more specifically employed 334,500 people in 2003, according to the British Bankers' Association (BBA)⁵. A survey carried out by Economy.com with the nation's major credit card providers found that more than 30,000 of those retail banking jobs are dependent on the credit card industry, amounting to over 9% of the total. Comparable historical data do not exist but the boom in lending in the late 1990s coupled with the entry of new lenders to the market, implies that this total has grown sharply over the last decade. Moreover, the sum underestimates the actual number of jobs supported as it does not include any of those employed in ancillary industries such as technical support, stationary provision, marketing, or other business-to-business services linked to credit cards, nor does it include anyone working for the various lenders whose position is indirectly linked to the industry, whether in head office, marketing, legal services, or elsewhere. As one lender pointed out in the survey, credit cards are often sold and/or managed through branches and call centres that may not be directly linked to the company's credit card operations. Thus, the entire chain of employment affiliated either intrinsically or by association to the sector is likely to be very much larger.

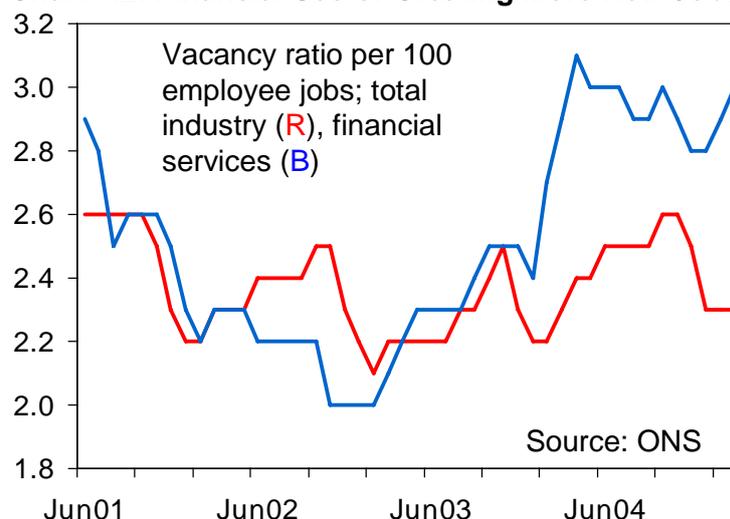
Chart 1.1: Steady Growth in Financial Sector Jobs



⁵ This figure includes nearly all the credit card related employees of the nation's issuers. The only significant card issuer who is not a member of the BBA is GE Capital.

In addition to being a major contributor to employment growth in the past, the financial intermediation industry will likely, insofar as indicated by vacancies, remain a key source of labour demand going forward. Over the past four years, the only period for which sector-by-sector job offerings data are available, the vacancy ratio per 100 employee jobs in the financial sector has averaged 2.5, modestly above the 2.4 ratio for the economy as a whole. However, while the ratio for all industries (excluding agriculture and fishing) is falling, that for the financial services remains near the upper end of its historical range.

Chart 1.2: Financial Sector Creating More New Jobs



Moving forward, the financial services industry is one of those liable to offshore certain functions; call centres in particular are often touted as facing the threat of imminent relocation to India, for example. Britain has more call centres than anywhere else in Europe, and though some of these jobs may be lost overseas as we move forward, it is important to remember that Britain has also been a key beneficiary of offshoring, once again principally through the relocation of call centres. As developing countries like India become wealthier, the focus should not be on unilaterally preventing future offshoring, but rather on raising the productivity of businesses and retraining workers where job losses do occur.

The positive impact that employment has on an economy, whether locally, regionally, or nationally, is simple and easy to demonstrate. An employed individual adds value to the production chain through his or her labour. This allows for the more efficient use of an economy's resources, both human and capital. Employment puts money into people's hands through wage payments. As this is spent, it contributes to other people's earnings, the creation of more jobs, and so on. The higher the level of employment, to the point that it does not generate undue inflation through pay demands, the more robust this virtuous circle. Such a self-reinforcing trend contributes to overall GDP growth, and thus to per capita GDP gains. In effect, this lifts living standards both for the economy as a whole and for the individual communities where those jobs are located.

In contrast, unemployment can create substantial burdens for households by separating them from their income stream. This also reduces the efficiency and productivity of the economy and detracts from the aforementioned virtuous circle. Resources are no longer being used as efficiently and assets both human and capital lie idle, pushing aggregate gains further below potential. The inefficient use of labour factors generates economic waste, whereas the efficient use of assets promotes growth and productivity increases.

Progressive waves of deregulation and competition in the financial services industry ever since the 1970s have led to the expansion of existing operations and the entry of foreign competitors. This is particularly evident when one considers that three decades ago there was a single credit card lender in the U.K. and today there are over 60 issuers, including high street banks, foreign banks, building societies, stores, and other finance providers. In particular, the entry of foreign competitors into the market has generated significant employment gains; of the major credit card lenders in Britain, four (MBNA, Capital One, Morgan Stanley, and Citigroup) are relatively new market entrants. These directly employ a total of over 9,500 people in the U.K. in their credit card businesses, and many more in other operations. Notably, while some of these jobs were generated through acquisition, the vast majority are placements that would not have existed otherwise.

As an additional note, the productive capacity of an economy depends on both the size *and* the quality of its labour force. In this respect, the financial services industry is an important contributor of higher-skilled and high value added jobs. By creating new skilled positions and promoting training within the context of existing jobs, firms boost the potential output of the economy as a whole. The last *Learning and Training at Work* survey was carried out by the Department for Education and Skills (DfES) in 2002, and it covered the broad industry categories; at the time, 89% of financial and business sector employers provided on-the-job training of some type. This is higher than in the previous year, but on par with the average of the preceding three years. The sector was in the middle in terms of provision, underperforming the public administration and manufacturing sectors, but ahead of the consumer and distribution industries and construction.

TABLE 1.1				
<i>% of firms offering training</i>	1999	2000	2001	2002
Finance & Business Services	92%	90%	86%	89%
Agriculture, Mining, Utilities, Construction	81%	86%	84%	83%
Distribution & Consumer Services	90%	94%	88%	87%
Manufacturing	83%	85%	85%	90%
Transport, Public Administration, Other Services	90%	95%	92%	96%

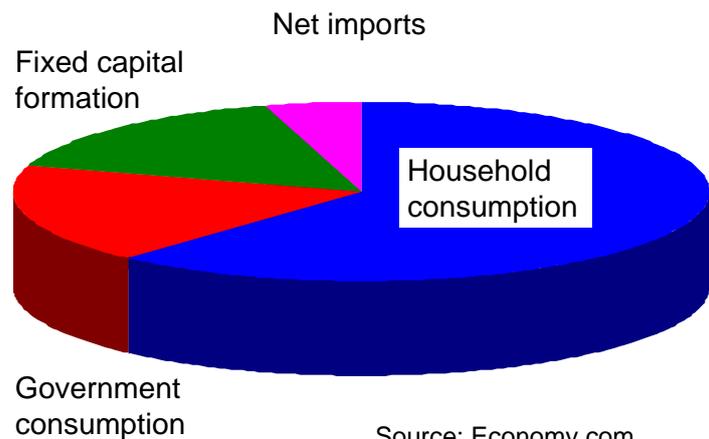
Source: DfES

In order to assess this component, we will look at the number of jobs generated by the credit card industry in certain key communities and regions (namely: Chester, Cumbernauld, Northampton, Nottingham, and Southend). In turn, this will be compared to the total number of financial services work places and the sum of jobs in that area. This will give a rough estimate of both the industry's contribution in the absolute sense, the gross numbers, and the relative sense, in comparison to the rest of its industry and the local labour market as a whole.

II. Private Earnings

While the adage that *a pay cheque burns a hole in one's pocket* is not entirely true, it is indeed accurate to say that private spending on the back of a robust housing and labour market has kept the U.K. economy growing at or near potential for the past few years. Household consumption is far and away the largest contributor to headline economic growth, accounting for approximately 63% of real GDP, on average, over the last ten years. Moreover, that share has risen over the period, from just under 61% in 1995 to over 64% last year. If one includes the non-profit sector that serves households, that share of real GDP rises to 67½%, up from just over 63% a decade ago. In addition, for the last two years, private spending has accounted for the lion's share of real GDP growth, in addition to providing the bulk of gross domestic product itself.

Chart 1.3: Private Consumption Dominates GDP



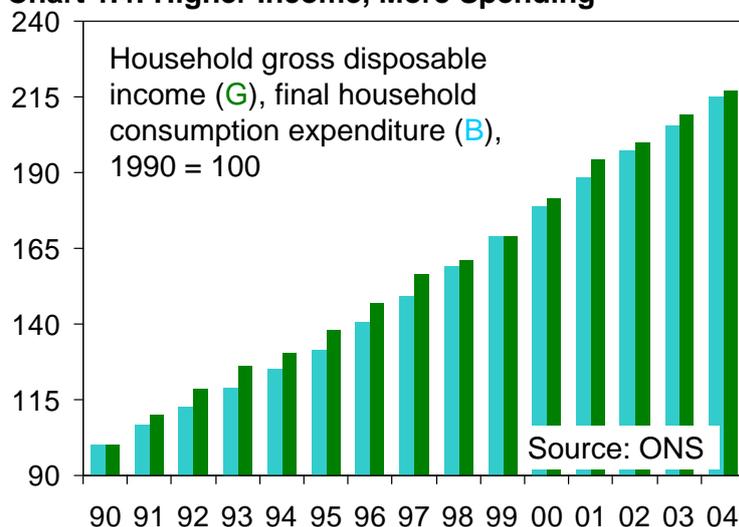
Source: Economy.com
calculation on 2004 ONS data

Once taxes have been paid, the remainder of an individual's earnings, dubbed disposable income, is free to be spent or saved according to the consumer's whim and preference. In either scenario, that money is recycled back into the economy, whether through consumption (via spending) or investment (via savings). We will examine each of these channels in turn before turning to look at how to measure the credit card industry's contribution to economic growth via private earnings.

Prior to starting, it is important to differentiate between (i) the private spending of individuals employed *by* the credit card lenders and (ii) private spending *using* credit cards. In this chapter, we are dealing with topic (i) in an effort to gauge the direct contribution the industry has made to the economy. Topic (ii) will be dealt with in detail in Sections Two and Three of this report.

Spending: Households consume a range of goods and services, whether it is on essential expenses such as rent, utilities, and food; on health and education services; on goods such as TVs, automobiles, and sofas (durables) or clothing and toiletries (non-durables); on leisure, entertainment, and tourism; and so forth. Abstracting from economic arguments over definitions, consumption for the purposes of this document is viewed as the acquisition by households of goods and services for their own use.

Chart 1.4: Higher Income, More Spending

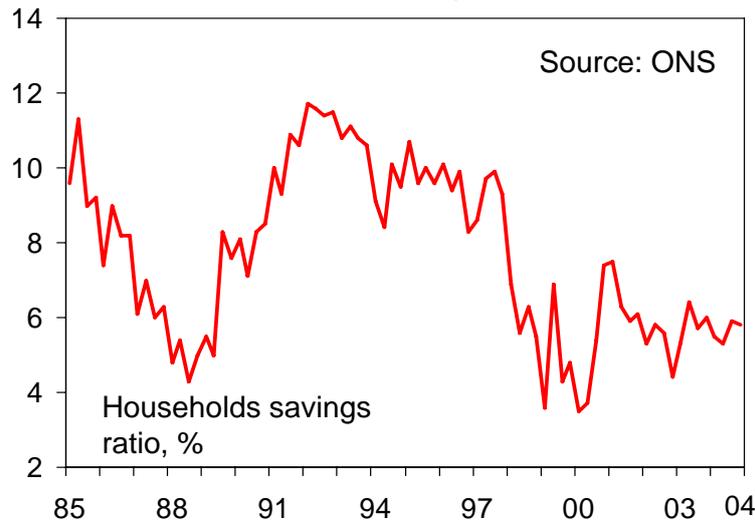


It is perhaps trite to say that the more we earn, the more we spend. As household income has risen, whether by gross (i.e. pre-tax) or net (after tax) measures, so too has household spending. In fact, private consumption has climbed almost step-for-step along with gains in disposable income over the 1990 to 2004 period. Wages and salaries are unsurprisingly the key determinant in income growth, accounting for some 60% of the total resources available to households, although income from other sources—property, social contributions, and investments—is also a factor.

In the absence of credit (more on this in Section Two), variations in income translate almost directly to changes in consumption. If an individual is separated from their income stream, due to redundancy, illness, or other reason, all else being equal, consumption would decrease by a commensurate amount and thus overall GDP growth would suffer. Conversely, as demonstrated in the chart above, as disposable income rises (in line with wage gains, changes in tax policies, etc.) so too does spending.

Savings: Whatever households do not pay to the government in taxes or spend themselves is saved, whether in bank accounts, in investment vehicles such as stocks and bonds, or through more complex products. As long as a household's savings are not kept under the mattress, they are made available as funds for investment to other private sector actors. These can then be used to purchase residential property, improve the capital stock, buy plant space or equipment, or expand inventories—all measures that not only boost GDP but by-and-large also increase growth potential for the future. Savings are a smaller contributor to growth than consumption—as illustrated by the slide in the household savings ratio over the last two decades. This will have implications later on in Section Two, when assessing the impact of a negative credit shock.

Chart 1.5: Ratio Falls From Early 1990s Peak



All else being equal, an increase in wages and salaries makes more money potentially available for savings and thus for investment, though it would be determined by each and every family whether more priority was given to consumption or savings.

The direct benefit to individual economies in the form of earnings and thus either spending or saving is multiplied throughout the economy. This ‘multiplier effect’ reflects the additional benefits that echo down through various iterations thanks to the initial spend. For example, the expenditure of a credit card industry employee in his community is a direct effect. This adds to the retailer’s and distributor’s earnings; this is then used to buy further inventory, which benefits producers, other employees in other firms through their wages, and so on. These are called the indirect and induced effects and the ripple, like a wave in a pond, gradually diminishes over time. Estimates of this multiplier by industry vary considerably; however, income multipliers of 2.5 (Type I - indirect) and 2.8 (Type II – induced) were recently calculated for the ‘other financial services’ industry in Scotland⁶. If we take the total annual gross wage payments to the credit card industry calculated on page 10 (£1.15 billion) and apply these multipliers, it still implies a £3.22 billion total input from wages to the broader economy. This effect would be much greater if one included the indirect and ancillary employees of the industry.

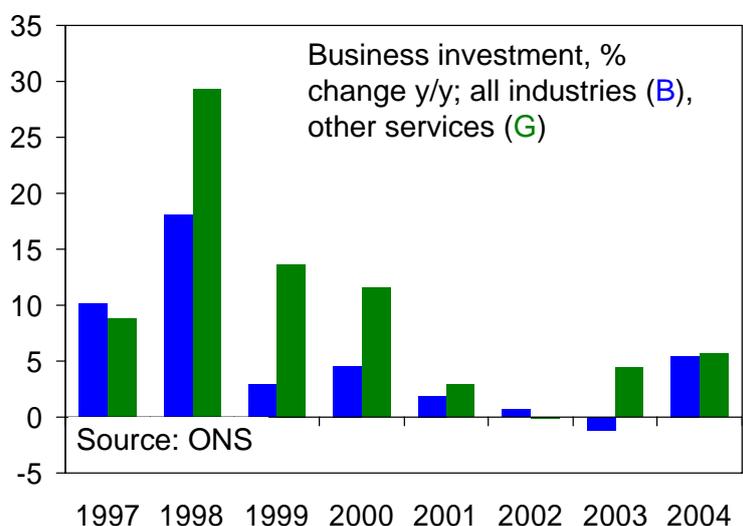
We will look at wage and salary earnings in the key targeted areas. These cannot always be directly attributed to the credit card industry; however, with an exact number of employees in each region, and an estimate of earnings by employment category, we can make a robust assumption as to the impact these businesses have on their communities.

⁶ <http://www.scotland.gov.uk/Topics/Statistics/14713/484>

III. Corporate Earnings

It is the credit card companies that pay the personal wages and salaries of their workers, but that is not all they do with the income generated by their business. The card issuers earn revenue through a variety of channels, be it interest payments, annual fees, financing charges in some cases, merchant rates, or other charges, including cash-advance fees. In addition to paying their own share of taxes (see section iv), corporations spend on a vast array of subsidiary and affiliated businesses; engage in productive investment through research and development, training, and capital outlays; contribute to charity and local community activities; are major players in investment funds and equity and fixed income markets. In this section, we will take a broad look at the many benefits corporate activity brings to the economy, and look at a few specific examples where credit card companies play a significant role.

Chart 1.6: Financial Services Among High Spenders



Business investment, the main method through which reinvested corporate earnings are recycled into the economy, accounted for just under 11% of real GDP in 2004. The component's average contribution over the last ten years comes in at about 10½%. The contribution made by business investment to aggregate growth is more volatile than household spending, as it expands and contracts along with the ebb and flow of the business cycle. In 2004, business investment grew nearly 5½%, but this followed on the heels of three years of lacklustre growth or outright contraction. In contrast, in the late-1990s boom, investment advanced at an average rate of 14% per annum in 1997-1998.

Business investment not only boosts current growth, but also lifts potential as companies improve their capital stock (thus boosting productivity) or expand their productive capacity by adding floor space or expanding their workforce. As noted in chart 1.6, the financial services sector is among the largest corporate investors, 'other services' (which includes financial intermediation) has consistently outperformed the norm over the last few years. A significant example is the massive investment undertaken by the industry to roll out chip and PIN in order to improve the security of credit card payments. This initiative has, since 2000, led to industry investment by banks and retailers of £1.1 billion (2000 prices) in the U.K.

Another way of looking at this is through the lens of the national income accounts. The data are not so specific as to directly identify the gross value added of the credit card industry; however, the financial services industry excluding insurance and pensions (and thus the closest one can get to the credit card industry alone) experienced a seasonally adjusted increase in value added of over 20% between 2000 and 2004. The gross value added index calculated by the ONS, which is calculated such that an industry's contribution in 2000 equals 100, came to 120.9 last year, versus 109.6 for all services sector industries and 106.8 for the economy as a whole. This suggests that not only is the financial services sector a major contributor to the value added by the economy, it is outperforming other sectors by a substantial margin.

A final, broad channel through which corporate earnings re-enter the economy is through sponsorships and charity. The ubiquitous presence of corporate sponsors in sporting, social, cultural, and other events has been both praised and criticized; irrespective of this, few dispute that financial contributions, and substantial ones, have been made. Estimates of actual outlays vary and are often difficult to attribute *within* a given firm, but perhaps the most evident example in the U.K. is the £57 million Premiership football league deal in 2004. Other examples include a theatre academy, relationships with local football clubs, or corporate partnerships with charities, to name but a few.

With respect to charitable donations, timely data are sometimes hard to come by; moreover, most financial institutions do not break down charitable contributions by business stream. As headline numbers, the altruistic spending of the principal financial intermediaries reads rather well: the largest high street banks, which also have the biggest share of the credit card market, have all spent over £20 million a year in the recent past. It is not possible to say, however, how much of that was generated by their credit card unit.

As a final note, credit cards can also be used to make donations to nearly all charities, major and minor, whether through the organisation's website, as a regular payment, or a one-off disbursement. The major lenders voluntarily waive the merchant service charge for donations to major appeals such as the tsunami assistance fund and Comic Relief, eliminating the 1% to 2% (or even higher) charge levied on merchants and making sure the entire donation goes toward the cause specified.

In the first four months of 2005, a record £373.7 million was made in charitable donations on plastic cards (both credit and debit), according to APACS figures. The vast majority of this was through two appeals; central Disasters Emergency Committee following the tsunami in Asia and Comic Relief's Red Nose Day. As has happened in the past, all related fees were waived, resulting in transaction costs of about £5.6 million that were borne by the lenders themselves.

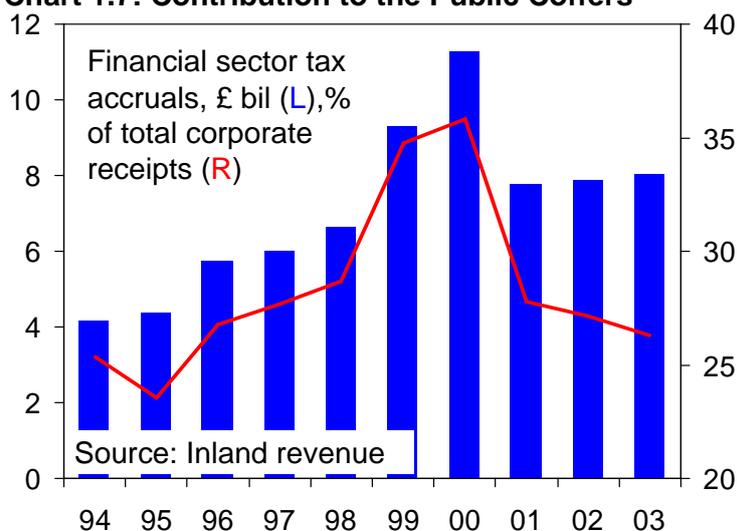
IV. Government Taxes

The government provides public goods that cannot be delivered either efficiently, equitably, or profitably by the private sector. Without delving into the argument as to what the state should and should not provide—which is well beyond the ken of this study—suffice to say that the British government is engaged in a broad range of social programs that offer widespread public benefits; healthcare and education are the two most obvious examples of this, but income redistribution, social assistance, cultural programs, subsidised housing, defence, and others should also all be considered as providing significant beneficial input to the economy.

As should be obvious, funding for these programs is obtained either through public revenues—principally taxes—or borrowing. As public borrowing, or at least the interest thereon, must ultimately be repaid, taxpayers whether individual or corporate are the financial backbone of the broad range of merit and social goods produced by the government. If one goes back to the basic gross domestic income equation, public consumption is one of the key factors driving national economic growth. In Britain, the public sector accounts for a much reduced share of total real GDP than was the case decades ago. Nevertheless, it has averaged a take of about 20% over the last decade; moreover, that share has been rising ever since 2000.

In fiscal year 2004/2005, Inland Revenue collected a provisional total of £171.8 billion in taxes, of which £33.5 billion was in the form of corporation tax and £122.8 billion was income tax. The financial sector (including insurance) is made up of about 27,000 individual tax paying corporations and in recent years has paid between £7 and £8 billion per annum in corporate tax accruals, or roughly one-quarter of total corporation tax revenues. The various standalone credit card companies, together with the credit card divisions of the larger financial institutions, account for a not-insignificant proportion of these tax revenues, though unravelling the exact flows is beyond the scope of this report.

Chart 1.7: Contribution to the Public Coffers



On the income tax side: there are roughly 30.5 million taxpayers in the country, of which roughly 30,000 (only 0.1%) are *direct* employees of the credit card industry. It is not as simple as saying they account for a similar share of income tax revenue, as there is no exact breakdown within the industry by income band, nor can we estimate what other sources of income an individual may have, and thus be taxed on. Nevertheless, the employees of the credit card industry account for something in the vicinity of £123 million annually in income tax revenue for the government. We can safely say that this underestimates the actual intake, as it does not include auxiliary services to the industry, nor does it account for variations in income within the sector.

Thus, the employees of the industry and the lenders themselves together account for just over £8.2 billion in tax revenues per year for the government—this represents 4³/₄% of the total annual tax intake.

V. Suppliers and Ancillary Industries

There is a vast array of businesses that in one way or another, in part or in whole, depend on the credit card industry. Some of these companies—for example the outsourced maintenance firms for point-of-sale terminals—almost exclusively service the card industry, while for others—chip manufacturers or marketing firms—it forms a relatively small part of their business. Many of these enterprises have contracts spread across a range of products, and thus their direct contribution to and the benefit derived from credit cards would be difficult to attribute. Take Toshiba, to cite an obvious example, which manufactures silicon chips for a vast swathe of home electronics as well as for point-of-sale terminals. Once again, many of these are highly-skilled and high value added positions that increase the economy's growth potential. As only an incredibly detailed and time consuming survey could accurately break down the different streams of business for these firms, we have decided to treat them as a whole for the purposes of this study, while highlighting that their activities, insofar as they are related to the industry in question, serve to magnify and broaden the direct benefits highlighted elsewhere.

We will quickly run over the various types of suppliers and offer some specific estimates for their contribution to the British economy. Thereafter, we will take a detailed look at a particular industry that benefits greatly from the credit card industry, namely advertising.

Many of the firms that supply the industry, whether those who manufacture the POS terminals, the stationary those terminals use, or even the producers of the plastic cards themselves, are global in nature, operating with a multinational workforce only some of whom have their headquarters in the U.K. and a fraction of whom are dedicated to credit card operations; if indeed the company's business can be so clearly delineated. To return to our example of Toshiba, it employs 162,000 people worldwide and had a turnover of US\$53 billion in 2004, but only a portion of this is related to its plastic card business. Another is Thales, the French defence group that produces POS terminals, among other things; it employs 11,000 people in Britain and in 2003 had a turnover of £1.2 billion. Those businesses that actually produce the plastic cards are presumably more closely interrelated with the fortunes of the credit card industry. Of these, the nine largest firms operating in the U.K. employ about 42,000 people worldwide, some here, but also many on the continent and in North America.

TABLE 1.2a: Hardware and Software

Companies	Workforce	Turnover	Head Office Location
<i>Cards</i>			
Oberthur	3,000 (WW)	FY04 - 450m Euros (WW)	Nanterre, France
Axalto	4,500 (WW)	FY04 - \$960m (WW)	Amsterdam, Netherlands
Gemplus	5,500 (WW)	FY04 - 865m Euros (WW)	Luxembourg
Giesecke & Devrient	6,830 (WW)	FY03 - 1bn Euros (WW)	Munich, Germany
Datacard Inc.	1,400 (WW)	FY04 - \$300m (WW)	Minnetonka, Canada
Orga	1,280 (WW)	FY04 - 200m Euros (WW)	Paderborn, Germany
Atmel	8,000+ (WW)	FY04 - \$1.6bn (WW)	San Jose, California
Sagem (Safran)	12,000 (WW)	FY04 - 3.6bn Euros (WW)	Paris, France
<i>Silicon</i>			
ST Microelectronics	50,000 (WW)	FY04 - \$8.8bn (WW)	Geneva, Switzerland
Philips	161,000 (WW)	FY04 - 30.3bn Euros (WW)	Amsterdam, Netherlands
Siemens	434,000 (WW)	FY04 - 75bn Euros (WW)	Munich, Germany
Hitachi	326,000 (WW)	FY04 - \$81bn (WW)	Tokyo, Japan
Toshiba	162,000 (WW)	FY04 - \$53bn (WW)	Tokyo, Japan
<i>Terminals</i>			
Dione (Lipman)	100 in UK prior to merger	FY04 - £40m (est.)	High Wycombe, UK
Trintech	350 (WW)	FY04 - \$43m	Dublin, Ireland / Dallas, US
Verifone	821 (WW)	FY04 - \$390m	San Jose, US
Thales	60,000 (11,000 in the UK)	FY04 - \$10.3bn Euros (WW)	Paris, France
Thyron	100 (all in UK)	FY00 - 16m Euros	Watford, UK
Ingenico Fortronic	2,000 (WW)	FY04 - 427m Euros (WW)	Paris, France
Wincor Nixdorf	6,100 (WW)	FY04 - 1.58bn Euros (WW)	Paderborn, Germany
NCR (ATMs)	28,000 (WW)	FY04 - \$6bn (WW)	Dayton, Ohio
Diebold (ATMs)	14,000 (WW)	FY04 - \$2.4bn (WW)	Canton, Ohio
Hypercom	N/A	FY04 - \$80m (WW)	Phoenix, Arizona
Coinstar	1,600 (WW)	FY04 - \$300m (WW)	Bellevue, WA
Secure Retail	N/A	N/A	Leicestershire, UK
Dionica	N/A	N/A	Milan, Italy
<i>Keyboards/Pin Pads</i>			
Cherry Keyboards	3,900 (WW)	N/A	Wisconsin, USA
Creditcall Communication Ltd	N/A	N/A	Bristol, UK
YESpay International	N/A	N/A	Hertfordshire, UK
CommsXL	N/A	N/A	Surrey, UK
<i>Card Component Manufacturers</i>			
De La Rue Holographics	6600 (group total)	FY04 - \$650m (WW)	Basingstoke, UK
De La Rue Security Print	see above	see above	see above
Applied Optical Technologies	N/A	FY04 - £25.6m (WW)	Tyne & Wear, UK
<i>Software</i>			
Smart Technology Solutions (STS)	N/A	N/A	N/A
Retail Logic	175 (all in UK)	FY03/04 - \$9.3m (UK)	Hampshire, UK
Commidea	N/A	N/A	Kent, UK
Servebase	N/A	N/A	Hertfordshire, UK
Datacash	36 (all in UK)	FY04 - £4.6m (UK)	London, UK

Sources: individual companies. This list is meant to be representative, and is not exhaustive.

The industries entirely or partly dependent on credit cards are not only big multinationals; smaller U.K.-based terminal manufacturers employ about 250 people on the outskirts of London, while a handful of software programming firms add about 500 jobs around the country. These are not inherently significant, but are rather part of a much larger whole.

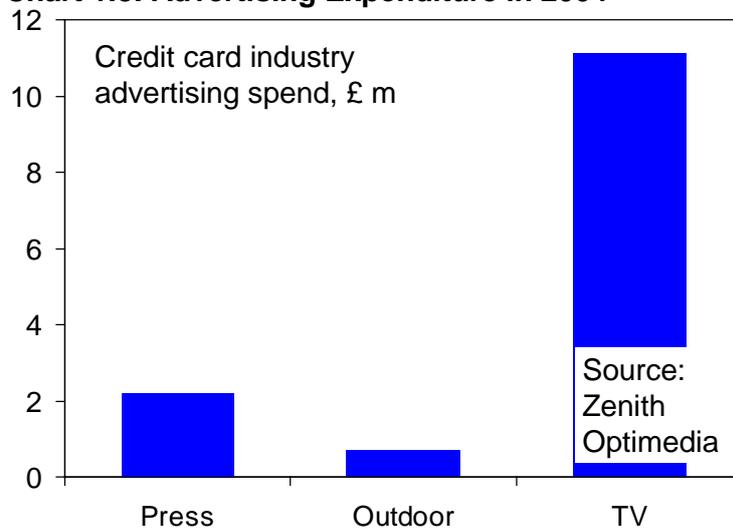
On the services side, the umbrella organizations (Visa, MasterCard, Amex, etc.) employ nearly 14,000 people worldwide—850 of whom are in the U.K. This includes Visa's regional headquarters for Europe, the Middle East, and Africa. There are also the credit reference agencies, legal and advertising firms, regulators, and trade associations, all of whose business is close to, but not directly reliant on, credit cards. More intimately linked organisations include the third party processors who supply their own POS machines, the debt recovery agencies, and the evaluative labs that test security and encryption—these employ just over 25,000 people in Britain. In some cases, take the card protection agencies as an example, these firms might not have existed but for credit cards, but have since branched out into other industries, creating new jobs and generating growth.

TABLE 1.2b: Services and Other			
Companies	Workforce	Turnover	Head Office Location
<i>3rd Party Processors</i>			
First Data (AKA FDI)	32,000 (3,600 in UK)	FY04 - \$10bn (WW)	Colorado, USA
TNS	14,000	FY04 - \$945m (WW)	London, UK
EDS	117,000 (16,000 in UK)	FY04 - \$20bn (WW)	Texas, USA
Euroconex	290	N/A	Dublin, Ireland
<i>Evaluative Labs</i>			
RFI (Global)	N/A	N/A	Basingstoke, UK
Sivert	N/A	N/A	N/A
Logica - security testing	20,000 (end 2004)	FY04 - £680m (UK)	London, UK
CESG (GCHQ)	4,500	N/A	Cheltenham, UK
<i>Legal & Consultancy Practices</i>			
Edgar Dunn	N/A	N/A	San Francisco, USA
PwC	122,000 (14,000 in UK)	FY04 - \$16.3bn (WW), £1.6bn (UK)	New York, USA
Consulthyperion	N/A	N/A	Surrey, UK
Retail Decisions	200	FY04 - £32m (UK)	Surrey, UK
Certegy	5,000	FY04 - \$1bn (WW)	Alpharetta, Georgia
Fair Isaac	3,000	FY04 - \$700m (WW)	Minneapolis, Minnesota
<i>Schemes/etc</i>			
Visa	6,000	FY04 - \$3.6bn (WW)	San Francisco, USA
Mastercard	4,000	FY04 - \$2.6bn (WW)	Waterloo Belgium
Link	N/A	FY04 - £35m (UK)	Harrogate, UK
Amex	4,000	FY04 - \$29bn (WW)	New York, New York
JCB	2,350	N/A	Tokyo, Japan
<i>Credit Reference Agencies/Consultants</i>			
CallCredit	8,000	FY04 - \$400m (WW)	Yorkshire, UK
Equifax	4,600	FY04 - \$1.3bn (WW)	Ontario, Canada
Experian	4,500	FY04 - \$1.3bn (WW)	Costa Mesa, CA
<i>Card Protection Agencies</i>			
CPP	1,500	FY04 - £150m (WW), £106m (UK)	York, UK
CIMS	1,000	N/A	Berkshire, UK
Pinnacle	750	FY03 - £250m	Hertfordshire, UK
St. Andrews	200	FY02 - £30m	Surrey, UK
<i>Paper Vouchers</i>			
De La Rue	see above	see above	see above
<i>Regulators</i>			
DTI	10,000	N/A	London, UK
OFT	678	N/A	London, UK
FSA	2,300	N/A	London, UK
Police/fraud prevention (SFO)	300 (SFO as a whole)	N/A	London, UK
<i>Trade Associations</i>			
APACS	120 (UK)	N/A	London, UK
BBA	150 (UK)	FY04 - £8m (UK)	London, UK
DCPCU	20 (UK)	N/A	London, UK

Sources: individual companies. This list is meant to be representative, and is not exhaustive.

The broad range and global reach of these companies make attributing their exact presence in the U.K. credit card industry challenging. Using an Input-Output model to determine employment multipliers can calculate the ratio of direct to indirect workers in a particular industry. Unfortunately, the most recent ONS model (1995) did not produce employment multipliers; however, a 2001 study done for Scotland found that ‘other financial services’ had a Type I (indirect) multiplier of 3.1 and a Type II (induced) multiplier of 3.7⁷. This implies that the 30,000 direct employees of the major credit card issuers translate to about 93,000 indirect jobs linked to credit cards and 111,000 total jobs. These companies create jobs, disburse salaries, and pay taxes just like the lending institutions themselves. There are two particular industries, advertising and direct mail, wherein credit cards play a significant role and whose impact can directly be measured.

Chart 1.8: Advertising Expenditure in 2004



In 2004, the top ten credit card advertisers in Britain spent a total of £14.4 million on advertising, a 14.3% increase on the previous year according to Zenith Optimedia. This figure is not large, but it should be considered an absolute minimum as it does not include direct mail campaigns (see below) or bundled advertising. This latter category covers any promotion packaged by a financial service provider along with other products and/or generic adverts that have a card emphasis. The top line figure also excludes internal advertising; for example, when a high street bank mounts a branch-only campaign to acquire card accounts with existing retail customers. Moreover, spending on promoting the chip & PIN initiative is also not included in this total. Adding this in, the total spend in 2004 jumped by an additional £10 million. This was a large one-off due to the system’s widespread introduction last year; in the present year that total is expected to drop to £600,000.

⁷ See: ONS 1995 Input-Output Analytical Tables and above.

To further muddy the waters, the international card schemes, MasterCard and Visa, also spend a large amount on advertising. In 2004, MasterCard shelled out £1.29 million in the U.K., while Visa trailed significantly with a £235,391 outlay. This dichotomy was because, until 2005, Visa had not advertised independently on television. These totals do not include the massive sponsorship deals to which both are party, including: MasterCard's investment in The Brit Awards and the Champions League and Visa's universal presence at the Olympic Games and in the sponsorship of individual athletes. This is regrettably not always an ideal arrangement, as attested to by the probe into ticket sales linked to MasterCard's exclusive £15 million sponsorship deal with the 2006 World Cup organizers in Germany.

Direct mail marketing is a frequently used advertising channel through which lenders gain access to new customers. It is more easily targeted than other forms of advertising and is significantly cheaper in bulk. According to the Nielsen Media Research, the credit card industry spent an average of £240.7 million per year on direct mailings from 2000 to 2004, including express credit card adverts, affinity products, and online plastic cards. To strictly limit the spend on credit card advertising reduces the average to £219.4 million per annum. Over the last four years, this comes to a substantial total of £1.1 billion.

The effectiveness of such advertising can be questioned as credit card mailings have the lowest take-up rate of all direct mailings; only 3.9% of those received are read and only 1% of those contacted take up the offer. Regardless, in 2004 direct mail generated almost £27 billion worth of retail sales—many of which would have been booked on credit cards. Thus the knock-on effects of the initial advertising spend, though challenging to attribute, go on to benefit turnover, employment, etc. in other sectors of the economy.

Case Study: What's in it for my community?

The benefits that accrue to the economy as a whole in the form of employment, earnings, taxes, and corporate spending are realized at the local level wherein these industries operate. These incremental gains, whether in terms of consumption, investment, or government spending then aggregate up to the economy-wide GDP growth detailed above. Nevertheless, it is important to remember throughout that it is at the community level that these impacts are first felt, and at the same level that the increase in economic welfare, in the form of per capita GDP growth, is realized.

Credit card lenders are better equipped than many other companies to locate wherever they will, as the industry is not tied to any single factor of production or to any particular location. Thus, as revealed in our survey, the various lenders have set up operations, whether call centres or underwriting departments, advertising units or otherwise, all over the country. The aforementioned economic benefits directly attributable to the credit card industry can be demonstrated on the local scale in a few communities across Britain where the lenders are among the most significant, if not the largest single employer.

Region	Local Credit Card Employees (2004)	Total Local Employment (2004)	Job Concentration (%)
City of Chester	4,592	36,000	12.76
Southend (inc. Rochford, and Southend East & West)	3,559	84,000	4.24
Northampton (inc. North & South)	3,580	107,000	3.35
Cumbernauld & Kilsyth	700	31,000	2.26
Nottingham (East, North & South)	2,200	105,000	2.10
Manchester (inc. Blackley, Gorton, Central, and Withington)	2,046	123,000	1.66
Derby (inc. North & South)	1,150	88,000	1.31
Middlesbrough (inc. South & East Cleveland)	938	73,000	1.28
Crawley	619	53,000	1.17
Dunfermline (inc. East & West)	800	70,000	1.14

Sources: *individual lenders, ONS, Economy.com*

Data gathered from a recent survey carried out by Economy.com with the top credit card lenders in the U.K. found that in five communities the industry employed more than two out of every 100 employees; in one case the ratio rose to over one in ten. In a further five communities, the industry employed more than one out of every 100. The principal results of that survey, without identifying any of the particulars of the lenders in question, are shown in table 1.3.

Although not all communities mentioned in the survey are explored here, it is important to remember that these ten communities highlighted represent almost two-thirds of the total credit card workforce nationwide. This still leaves a further 10,000 employees scattered around the country, often in larger cities like Edinburgh or London where their share of the workforce as a whole is much more diluted.

In addition, it is important to note that these results solely reflect the financial sector employees whose position is *directly* attributable to the credit card business of the major lenders. Many of the communities where such centres are located, however, would also benefit from the presence of the various dependent and ancillary businesses linked to credit cards. Moreover, the big high street banks, who operate across the country and continue to dominate the credit card trade, do much of their plastic card business through their branch network, broadening the direct, positive impact of the industry through indirect channels.

Finally, it is noteworthy that in several cases, Cumbernauld for example, these centres are located in otherwise disadvantaged communities and the decision of the credit card lender to set up there has created much-needed jobs and opportunities that would not otherwise have existed.

The Top Five: Economy.com has identified two communities where the credit card industry directly accounts for just over two employees per 100 (Nottingham and Cumbernauld); another where that ratio rises to above three per 100 (Northampton); and then, at the top of the league table, are Southend just above four per 100 and Chester where nearly 13% of the workforce is directly linked to credit cards. These local areas unquestionably benefit hugely from the presence of these operations. Most significantly, and most easy to demonstrate, this positive contribution is measured in terms of the number of people employed, the wages they earn, and the consequent impact on the local economy.

In Southend, for example, in February 2004 there were 84,000 employed individuals over the age of 16, just over 3,500 of whom were employed *directly* in the credit card industry. This equates to a ratio of just over 4.2 per 100. Notably, according to the same Nomis⁸ databank that provides local workforce numbers, 22.5% of local jobs were in the banking, finance, and insurance sector. The only employer accruing a greater share of the populace is the public sector, accounting for just over 27% of all jobs—a ratio on par with the national average.

This pattern is repeated across the top five communities we have identified. In Chester, 18.4% of workers labour for the financial sector, surpassed only by manufacturing (22%) and the public sector (27%). In addition, over half of this city's banking and finance employees work directly in credit cards; 3,750 of 7,000. In Cumbernauld, 18.5% of all employees are in the financial sector and in Northampton, 18.9%. In both cases, the share exceeds the national average and is unsurpassed by other sectors bar public services. Of our top five, it is only in Nottingham that the financial industry's share falls below the national average (at 12.2%); however, this area has a disproportionate share of jobs in the distribution, hotels, and catering field (21%).

The gains in terms of the number of people employed translate directly into earnings, which are then recycled into the local community. Although more and more Britons travel regularly, whether within the country or abroad, and some commute from neighbouring towns to work, the vast bulk of an individual's earnings is spent in the community in which he or she is employed. Whether it goes toward housing or dining out, clothing or a child's education, the pounds and pence spent in the community have a substantial multiplier effect that improves the welfare of the entire local economy.

It is not possible to say exactly how much the employees of the credit card industry earn at the community level, as our survey did not ask for a breakdown of each department. We can, however, make a decent approximation using the weekly earnings data from the Nomis databank. These data are broken down by experience grade—for example, senior management, professional, administrative, sales, etc.

Using Chester as our headline example, the average gross weekly pay (i.e. before taxes) across all experience bands is £498, implying a rough annual average gross salary of £25,896. With just over 4,590 credit card employees reported in our survey, this equates to £118.9 million pounds poured into the local economy every year. Using comparable calculations for the other top communities we find:

⁸ Nomis is a web-based database of labour market statistics run by the University of Durham on behalf of the ONS.

- Northampton; average weekly pay £490, £91.2 million annual contribution
- Southend; average weekly pay £426, £78.8 million annual contribution
- Nottingham; average weekly pay £449, £51.3 million annual contribution
- Cumbernauld; average weekly pay £685. £24.9 million annual contribution

It is important to note that Cumbernauld's figures are slightly distorted by the fact that a disproportionate share of its workforce falls into the high-earning 'Managers and Senior Officials' category, lifting the overall average in a community with a relatively small labour force (at 31,000, the smallest of our top ten local regions). The reasons for this were not immediately clear in the Nomis database.

This direct input to the local economy from the wages paid by the credit card industry is recycled in three ways: income taxes (as it is gross pay), consumer spending (or private consumption), and savings (or investment). The mechanics of these three channels have been explored in detail above, and operate the same way at the local level.

If we then apply the Type I and Type II multipliers detailed on page 16, we find that these earnings make a total contribution of:

- Chester; a total (direct, indirect, and induced) contribution of £332.8 million per year
- Northampton; a total contribution of £255.4 million per year
- Southend; a total contribution of £220.6 million per year
- Nottingham; a total contribution of £143.6 million per year
- Cumbernauld; a total contribution of £69.7 million per year

The industry further benefits the local community through its own spending, whether in the form of taxation, investment, or charitable/social outlays. Companies boost tax revenues both for the national government and the local authority, through corporate, payroll and property taxes. Business investment buttresses the present and future growth of a community not only through the money initially spent, but also by improving local premises and giving training to the local workforce. These both help lift future growth potential. Finally, companies also provide funding for initiatives in their local communities, whether by sponsoring the local football club, providing volunteers for charitable events, or working with other community bodies to improve the cultural, educational, environmental, and social milieu in which it is located. A detailed description of a lender's local community involvement can be found in the 'About Us' section of nearly all corporate websites.

In sum, the five primary communities identified clearly benefit substantially from the jobs created by the major lenders, the earnings that are then paid, and the multiplied benefits this brings to the entire local economy. Anecdotally, we know that all the headline GDP benefits already demonstrated apply fully at the local level; however, some are clearly easier to demonstrate than others. Moreover, we have only explored in detail the five communities we identified most closely linked to the credit card industry. Figures for the next five communities—where credit cards directly account for one in every 100 jobs—would be comparable in form, if not in magnitude. Finally, a fully detailed survey of all the industry's ancillary and related businesses would identify other closely linked communities that have been missed in this survey.

Section Two

The Theory of Debt: The Macroeconomic Contribution

“Neither a borrower, nor a lender be”, said Polonius when advising his son on the ways of the world in William Shakespeare’s *Hamlet*. In modern economic terms, Polonius got it all wrong for today’s international economic system turns on credit, whether in the form of equities or bonds, business loans or leasing finance, mortgage or indeed credit card borrowing. Credit greases the wheels of economic growth by moving productive assets, in the form of financial capital, from those who have it to those who need it to fund current activities. The sum borrowed is then repaid at a future date, in whole or in segments, along with an interest rate premium that ideally compensates the lender for the erosion of principal caused by inflation and for the inherent risk of the borrower.

Of course, the world rarely, if ever, works according to ideals. Market imperfections, asymmetric information, unforeseen events, or simple mismanagement can all lead to inefficiently allocated lending or to insolvency and bankruptcy. Notably, bankruptcy need not be a fault of the system and can simply result from inherent risk combined with the uncertainty of future outcomes. The economic losses engendered by such events are far outweighed by the benefits gleaned from credit in terms of increased growth potential through the efficient allocation of resources, enhanced financial stability, and the smoothing of the business cycle.

In Section One, we summarized the directly attributable benefits the credit card business brings to the British economy. Not all beneficial factors are readily quantifiable in terms of pay cheques and purchases and some, while more theoretical in nature, are easily demonstrated using simple econometric techniques. It is our intention to explore these factors in the current section.

First, a general, theoretical overview will outline how credit cards contribute to the evolution of the economic cycle. Second, we will examine liquidity constraints and the impact that being shut out of the credit market can have on a household. Therein, we will demonstrate that the increased availability of credit card financing has helped broaden and deepen the economic expansion. Finally, we will examine the impact on the broader economy of a shock to the credit market—whether through higher borrowing costs or restricted access. We will do this using Economy.com’s detailed U.K. model and thus quantify the influence this would have on borrowing, on government revenues, on disposable income, on consumption, and ultimately on headline growth.

In this scenario, we will look at a broad shock to the market, such as that which happened in the United States in the early 1980s. At that time, inflationary concerns led to the imposition of credit restraints. In hindsight, the economic dislocation these caused were a principal cause, if not *the* main factor behind the ensuing recession. This shock would affect credit cards, mortgages, and other consumer borrowing. Tighter liquidity constraints would impinge on the ability of households to borrow both to fund house purchases and through other unsecured means, restricting their ability to smooth consumption. The impact would be asymmetric, with a heavier cost falling on those marginal households in the lower income categories or with restricted access to credit due to a lack of credit history or to previous payment difficulties; these are called ‘sub-prime’ borrowers.

KEY POINTS:

- Credit cards contribute to a household's economic wellbeing by smoothing income and consumption over time.
- This contributes to macroeconomic stability by easing the swings of the business cycle and spreading out the usage of disposable income.
- The softening of hard liquidity constraints through financial deregulation and a lower cost of credit has broadened and deepened the economic boom by bringing the benefits of credit to a wider customer base.
- A negative credit shock that increased the cost of credit and/or decreased access to credit would have an immediate, appreciable, and lasting effect on economic growth.
- At its worst, this would reduced real GDP gains by £16.5 billion over the year following the shock and by a total of £21.9 billion over three years, largely through winnowed private spending.

I. General Précis on Credit Cards

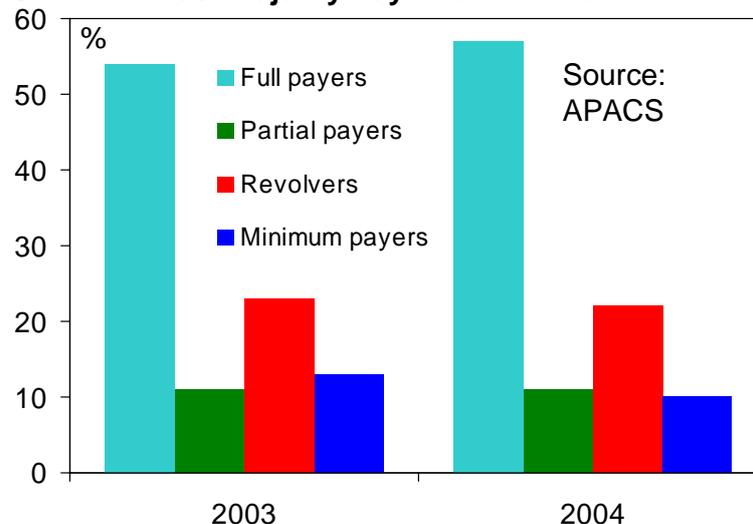
The flexibility of credit cards acts as a direct facilitator of private consumption, thus boosting overall growth. This is the most easily identifiable and certainly most significant factor through which credit cards influence headline GDP. As demonstrated in the previous section, the industry itself boosts private and public spending, as well as business investment through the provision of jobs (and thus earnings), through taxes, and through its own capital spending. In this section, we assess the contribution of credit cards themselves, or rather of the existence of this type of credit product. Its positive contribution is most preponderantly felt through the private spending channel.

Life-cycle hypothesis: The basic starting point for a theoretical evaluation of the economic contribution of credit is what is called the life cycle hypothesis of saving, modelled by Albert Ando and Franco Modigliani in 1963. This assumes that households consume a constant percentage of the present value of their lifetime income. Or, put differently, that households accumulate wealth, whether housing or otherwise, in order to smooth out consumption over the period of their entire life. This wealth can include financing and thus unsecured, or specifically, credit card debt. The relative appeal of this particular type of financing will depend on individual preference as well as on the cost of credit cards relative to other types of credit, as well as its cost compared to the return on other forms of wealth or savings. Note, however, that the rising value of other assets can actually reinforce credit card borrowing, both as individuals ‘feel’ more wealthy, and thus borrow more, but also as financial institutions view asset ownership, particularly housing, as indicative both of current and future wealth and thus are willing to lend more.

Credit cards, like other forms of borrowing, can be used to leverage future earnings to increase current consumption. This is most obviously beneficial when an individual is young and their greatest earnings potential is still ahead of them. At the time, households are faced with elevated costs, whether it be for education, setting up a home, or starting a family. Mortgage borrowing is far-and-away the most significant channel through which future earnings can be harnessed; however, credit card borrowing, though not as significant in straight value terms, is nonetheless equally effective.

Convenience users: Credit cards, by providing a revolving stream of credit, help smooth out growth cycles as consumers are better able to match expenses to revenues. This observation operates on a shorter time horizon than the long-run, life-cycle view. Put succinctly, all households face costs over the course of the month; however, the bulk of those in full-time employment—just under 74% of the workforce last year—are paid at a single, specific point in that month. Individuals in part-time and irregular pay arrangements (self-employed, contract, etc.) face even less certain pay periods and hence benefit more from the guaranteed availability of liquidity provided by a credit card.

Chart 2.1: Vast Majority Pay Their Full Debt



An APACS repayment survey in 2004 found that 68% of cardholders *say* they fully or usually repay their cards in full at the end of every month. This share of individuals accounts for 85% of all credit card spending, thus denoting a fairly large share of the card-holding population that effectively uses plastic money as an income-smoothing device. Qualitative surveys, however, should always be treated with a modicum of scepticism as they are based on borrower’s responses rather than actual repayments. According to calculations based on APACS and Bank of England data, 93% of all advances made during 2004 were repaid (not allowing for securitisations). Once again, this denotes a sustainable use of credit cards by the majority of cardholders.

II. Broadening and Deepening the Economic Boom

In the 1990s, increased competition and deregulation in the consumer credit industry sharply reduced the number of credit-constrained households, i.e. those unable to get approved for a loan. These homes are described in the literature as facing *hard liquidity constraints* as they cannot borrow, at any time, regardless of cost. The reality is likely not so cut and dry, with riskier households facing higher interest rate fees and minimizing borrowing in order to keep costs down, while only a relatively small number of people are entirely shut out of the market. Nevertheless, the pent-up demand for credit released by the wave of deregulation and competition is evidenced by the rapid growth in both the number of cardholders and total unsecured debt through to the middle of the 1990s.

Chart 2.2: Multiple Card-Holders on the Increase

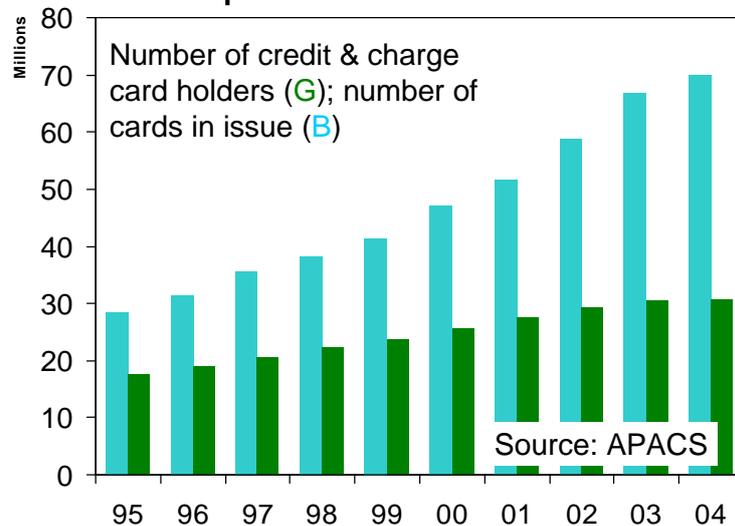
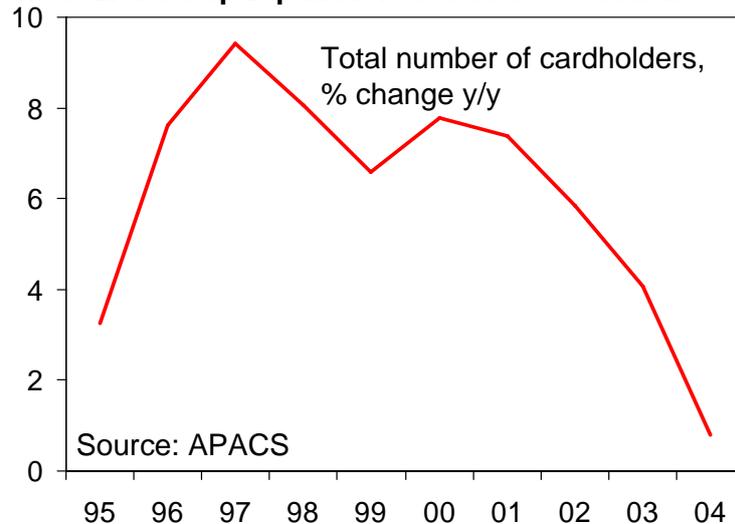


Chart 2.3: Sharp Dip in New Cardholder Growth



Liquidity constraints arise either because:

i/ an individual lacks credit history or evidence of asset ownership that would allow a credit bureau to provide a score for that individual;

or ii/ the individual is prevented from borrowing by a bad credit history due to prior missed payments or bankruptcy.

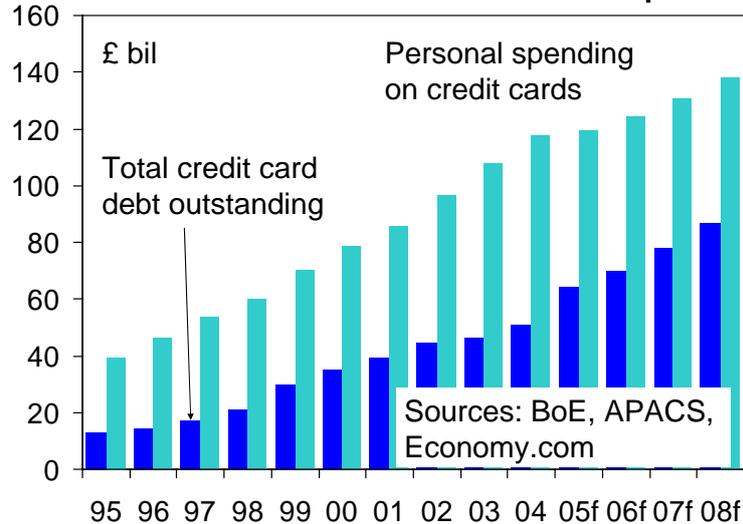
In a perfect market this would not occur as the relative risk of an individual would be fully priced into the cost of the credit, but due to imperfect markets and asymmetric information, credit scoring is needed to screen and assess potential borrowers.

Inevitably, a constrained individual will engage in precautionary saving in order to protect against potential future income loss. Not only does the lack of credit prevent the household from borrowing against future earnings in order to consume today, but it will constrict present consumption as savings are prioritized. This does boost investment through the savings channel; however, economy-wide, the dampening impact on consumption is likely to be greater. Most detailed econometric credit and consumption models use a forward-looking function that assumes the share of credit-constrained households is inversely related to financial liberalization. There is ample theoretical literature demonstrating that loosening the strictures on these individuals to borrow by increasing the availability of credit and/or decreasing its cost subsequently boosts consumption⁹.

⁹ As an example, see Fernandez-Corugedo (2000)

Consumers, then, can be divided into two categories: those who are forward-looking and base their spending decisions on the present discounted value of lifetime resources and those with no access to credit who are thus forced to consume based solely on disposable income. The exact size of these two groups is hard to determine, particularly over time; however, it is self-evident that increasing the availability of credit or decreasing its cost—both of which occurred over the course of the 1990s—would reduce the number of individuals facing hard liquidity constraints. This would then, all else being equal, boost consumption.

Chart 2.4: Sustained Growth in Credit Card Spending

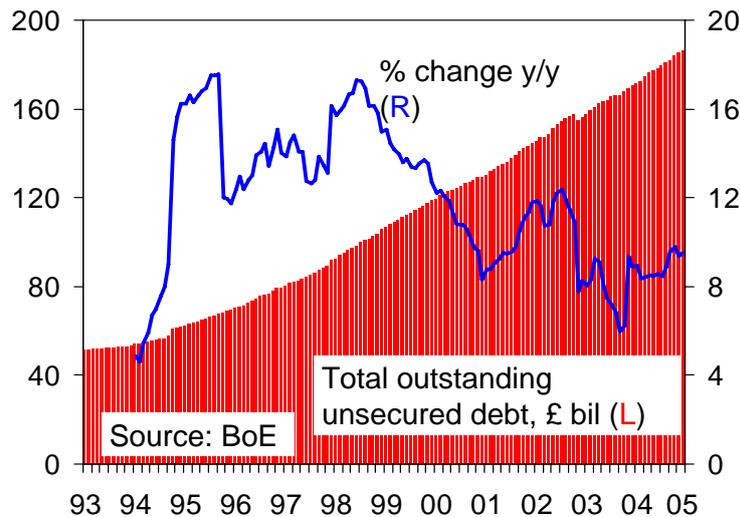


The Boom in the British Credit Card Industry

The credit card market in Britain changed rapidly over the course of the 1990s, as de-regulation and increased competition brought more and more firms into the market, including foreign operators. Increased market rivalry gave birth to a broad range of products, while at the same time forcing down the price to the consumer. The blossoming of competition is evident from the rise in the variety of types of credit cards: there was only one in 1971; reportedly over 1,300 different kinds exist today¹⁰.

¹⁰ Consumer Affairs Minister Gerry Sutcliffe, 2003, Government News Network

Chart 2.5: Late 1990s Boom in Unsecured Debt



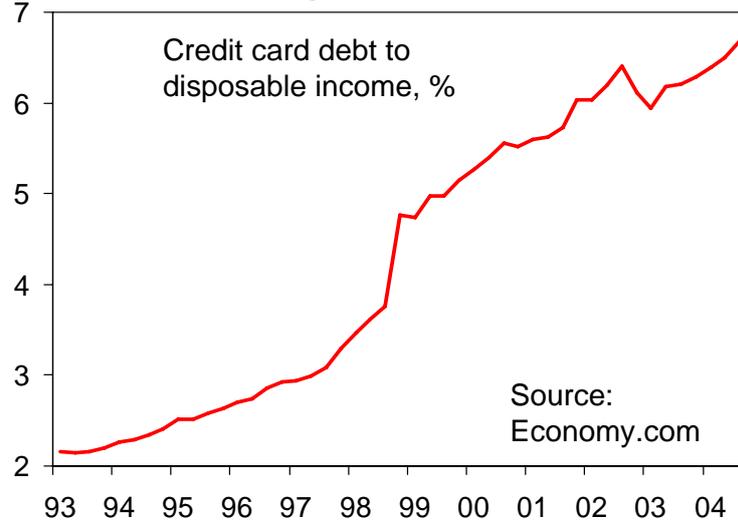
There has been a rapid increase in the ratio of unsecured debt to disposable income over the course of the last decade, and this rise was most pronounced in the late 1990s (see chart overleaf). According to the Bank of England¹¹, in 1995-2000, the expansion was unevenly spread across income groups, with the largest increase in the lowest earnings decile. This changed in 2000-2003, with higher income groups taking a larger share. In fact, after 2000, mean debt among the lower income groups fell. If one looks at the first two charts in this section, however, the most evident growth in the number of cardholders occurred in the late-1990s period and had tailed off by the turn of the millennium. This corresponds well to industry observations that new client acquisition (in the form of brand new accounts, as opposed to transfers) occurred largely outside socioeconomic groups AB, where saturation was likely reached many years ago¹². Growth in these two groups has come from population growth¹³, whereas the surge in new cardholders in the mid- to late-1990s would then have come largely from socio groups C1, C2, and DE.

¹¹ Fernandez-Corugedo and Price (2002)

¹² APACS, Payment Markets Report 2004

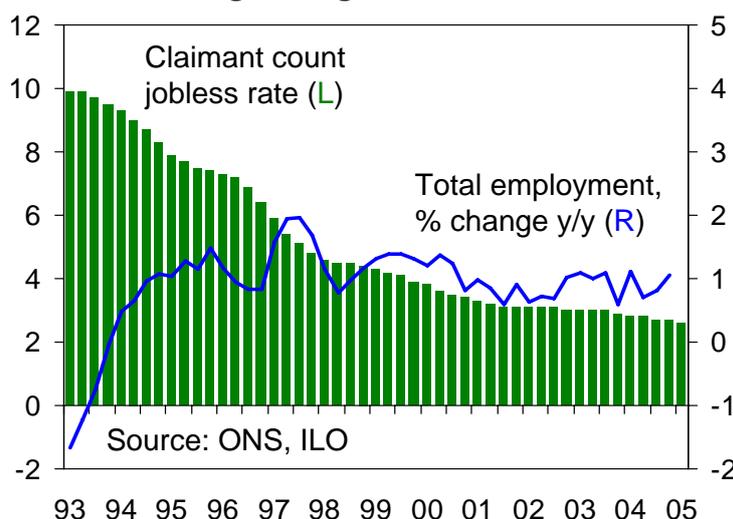
¹³ by World Bank calculation, U.K. population growth averaged 0.2% per annum in 1997-2003; ONS estimates are slightly higher, averaging 0.3%.

Chart 2.6: Debt Rising Faster Than Income



There is one proviso worthy of note: concurrent to financial liberalization and greater access to credit, there has been a steady improvement in Britain's labour market. As the economy has grown, quarter after quarter, unemployment has steadily fallen to reach levels not seen in a generation. The rapid growth in service sector employment has reached deep into the country's labour pool and drawn increasing numbers of previously inactive or low-skilled workers back into the workforce or into higher-paying positions. While such a trend reinforces the demand for and thus contribution of credit cards to the economy by expanding paid employment, it could also be the more significant determinant in boosting spending, rather than the impact of expanded credit availability. In short, the 'broadening and deepening' theme would be due to employment and not increased access to credit.

Chart 2.7: Strengthening Labour Market



In order to demonstrate that *both* of these factors had an impact, let us examine spending growth by income group versus earnings growth by income group. Unsurprisingly, new found employment or access to a higher-paying job leads to greater income growth. The improvement in labour market conditions from the mid-1990s through to the present has spread to households in the lower income deciles, raising earnings growth for these families. As demonstrated back in Section One, spending unsurprisingly tends to rise in tandem with income gains, thus if spending growth in the lower income deciles outstripped the expansion of earnings, something else must have accounted for that increase. It is not implausible to say that access to credit had a hand in that growth, given that households that previously suffered from hard liquidity constraints would now be able to borrow against their future earnings to fund present consumption.

TABLE 2.1

<i>Disposable income (avg per household, % chg y/y)</i>											
	Lowest 10	2nd decile	3rd decile	4th decile	5th decile	6th decile	7th decile	8th decile	9th decile	top 10	all
95/96	5.5	6.3	6.5	4.4	5.5	0.9	-0.1	2.5	3.1	1.1	2.6
96/97	1.5	3.1	3.7	8.3	47.6	10.4	6.0	8.0	8.4	11.0	7.6
97/98	2.7	3.2	3.8	5.6	-24.1	2.1	4.9	8.3	6.5	5.7	5.8
98/99	2.5	5.4	6.5	2.8	3.7	3.5	4.4	-0.1	1.5	9.6	4.5
99/00	-1.9	1.4	0.8	3.9	3.9	6.7	5.8	3.7	8.6	6.0	5.2
00/01	7.9	9.6	15.1	7.8	6.2	2.8	5.9	6.2	0.9	2.7	5.0
01/02	3.0	7.6	3.3	5.2	7.0	6.4	5.9	8.9	9.9	11.5	7.9
02/03	13.1	10.1	28.5	5.5	1.1	3.1	5.5	4.7	4.6	-5.9	2.4
average	4.3	5.9	8.5	5.4	6.4	4.5	4.8	5.3	5.4	5.2	5.1
average 95-00	2.1	3.9	4.2	5.0	7.3	4.7	4.2	4.5	5.6	6.7	5.1

Source: ONS

Looking at data on income by earnings decile (table 2.1), we find that over the period 1995 to 2002, a typical household's disposable income in the two lowest deciles grew, on average, by between 3.0% and 5.2% y/y, with the gains concentrated at the beginning and end of that period. If we look solely at the second half of the 1990s, when according to the Bank of England, unsecured borrowing to lower income households was growing at its most rapid rate, income growth in that period averaged only 2.1% and 3.9% per annum. And yet, turning to look at the expenditure data (table 2.2) for the 1995-2000 period, we find that average weekly spending per household in the two bottom deciles grew by between 7.9% and 5.7% y/y, outstripping the gain in income. Moreover, average income growth during that period across all households was 5.1%; lower income groups underperformed because the service sector hiring boom had yet to reach too deeply into the lower skilled echelons. Nevertheless, average weekly expenditure across all households rose 4.9% in the second half of the 1990s, while spending by the bottom two deciles rose 7.9% and 5.7%, respectively.

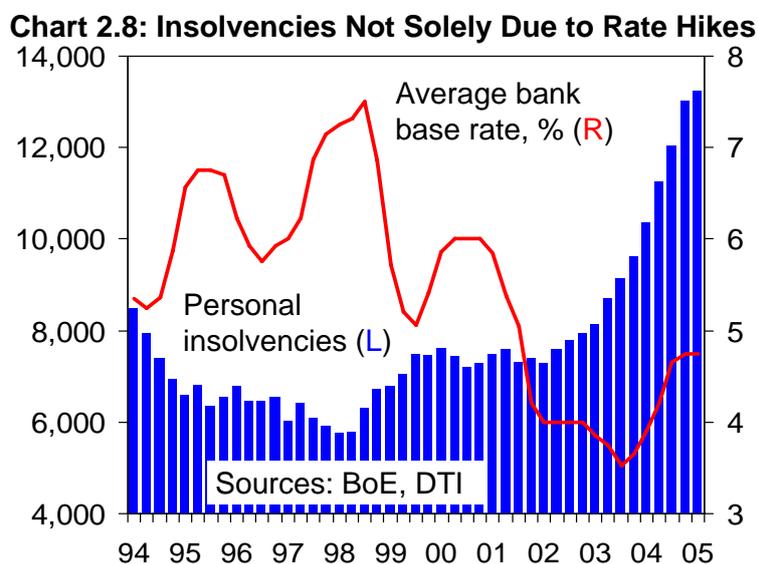
TABLE 2.2

<i>Weekly expenditure (avg per household, % chg y/y)</i>											
	Lowest 10	2nd decile	3rd decile	4th decile	5th decile	6th decile	7th decile	8th decile	9th decile	top 10	all
95/96	7.0	7.9	3.5	4.3	-0.7	5.6	1.6	4.5	0.2	-0.4	2.2
96/97	7.3	3.3	9.1	3.4	6.3	2.7	3.4	6.8	10.4	8.6	6.6
97/98	1.4	8.8	-2.8	10.8	2.2	8.8	4.9	7.3	8.1	7.0	6.4
98/99	14.2	5.3	11.5	-3.1	2.1	1.9	6.4	5.1	2.7	6.5	7.1
99/00	9.6	3.4	-4.4	7.4	10.9	7.1	5.1	4.9	4.3	1.4	2.0
00/01	5.8	4.8	20.8	8.9	9.7	2.3	8.5	3.9	5.7	8.5	7.3
01/02	1.1	11.4	1.0	4.8	-2.1	5.1	0.3	5.9	1.8	4.6	3.3
average	6.6	6.4	5.5	5.2	4.1	4.8	4.3	5.5	4.7	5.2	5.0
average 95-00	7.9	5.7	3.4	4.6	4.2	5.2	4.3	5.8	5.1	4.6	4.9

Source: ONS

The increase here is clearly concentrated in the bottom quintile (two deciles) of earners. Given the financial liberalization in the early to mid-1990s, and the boom in unsecured borrowing during that period, it is not unrealistic to link the two. Average household expenditure in the lowest quintile outperformed the national average, even as income growth underperformed. Given that at a national level, and historically, these two factors generally expand hand in hand, some other factor must have allowed lower earning families to boost spending more rapidly than income; the expanded availability of credit is a very likely source of growth.

Notably, it is very likely that mortgage lending to lower income households also increased during this period, and it would certainly have had a hand in boosting current expenditures. To thoroughly disentangle the two would require detailed historical data that break down borrowing by type and by income decile¹⁴, and not just questionnaire results as reported in the Household Panel Survey or other such qualitative studies. At present, such data do not exist.



There is justifiable concern of moral hazard in extending unwarranted credit to households on the financial margin, as improper lending could lead to an increase in over-indebtedness and thus bankruptcy. In this respect, it is important to note that these same marginal households that benefited last from the economic boom will be the first to suffer in a downturn when separated from their income stream. As the Bank of England has demonstrated¹⁵, however, mean debt among the lowest income groups fell in the early years of this decade and rose most strongly in the second half of the 1990s. Today, insolvencies are higher even as the average bank interest rate is lower than was the case six years ago. It is thus not clear that higher borrowing immediately equates to more debt management difficulties, even for lower income households.

¹⁴ for more on this topic see Tudela and Young (2003)

¹⁵ Fernandez-Corugedo and Price (2002)

II. A British Economy with Restricted Credit

In order to demonstrate a sector's beneficial contribution, it is often illustrative to look at what the world would be like without it. While it would be very difficult to go back and simulate a British economy without credit cards, largely due to the lack of good pre-unsecured borrowing data to compare against, it is possible to simulate the effects of a restricted credit atmosphere where either borrowing costs were higher and/or a greater number of households faced hard liquidity constraints.

This issue is particularly topical, given current legislative proposals both at the national and European level that lenders attest would hamper their ability to extend credit by raising acquisition costs and restricting their competitive ability. The purpose of this simulation is not to examine the impact of tightened credit in the wake of a new Consumer Credit Directive or other legislative change; that was done in detail in an earlier study¹⁶. The economic impacts would be the same, however, as financial exclusion (meaning hard liquidity constraints, see above) would increase due to lender risk aversion. Meanwhile, the increase in lender costs would ultimately be passed on to consumers in the form of higher interest rates and/or increased fees, ultimately reducing the level of supply at all prices. These two effects—a higher cost of borrowing and reduced access to credit—are the same shocks that we ran through our model in order to determine what impact a restrictive lending environment would have on our baseline economic forecast.

In order to accomplish this, we have used Economy.com's proprietary model of the British economy¹⁷ to estimate the impact on our central scenario of three different negative credit shocks. First, we will lay out our methodology, then outline the baseline and three variant scenarios, and finally examine the impact of shocks of varying magnitude on headline GDP growth, private consumption, household disposable income, general government revenues, credit card borrowing, and ultimately total household borrowing.

Transmission mechanism: Consumers make their spending decisions based on a series of factors including disposable income, wealth, the opportunity cost of spending, and the cost of borrowing (i.e. the interest rate). Thus, without credit, spending decisions would be based almost exclusively on the availability of disposable assets, whether cash, short-term deposits, or otherwise. In a scenario where income is restricted, this would lead to sharper swings in consumer spending, both on the up- and downside, as changes in disposable income would be reflected in full in spending.

Consumer credit is the most readily available means of easing this limitation. Mortgage borrowing does the same, but the transmission from equity withdrawal to consumption is more long-term than the immediate liquidity provided by credit cards; thus, as mentioned previously, credit cards allow an individual to smooth out consumption by borrowing against future, lump-sum earnings to spend in the present. Restricting the flow of credit partially disables the smoothing mechanism by obstructing the discount of future earnings, leading to more abrupt boom-and-bust swings.

¹⁶ see Oxera (2003)

¹⁷ for more information on our model, please see Appendix A

In addition, for someone who is separated from his or her income stream, a credit card provides a ready source of income support, at a cost, that obviates the need for a partial (or complete) negation of spending. Large one-off purchases could only be funded with cash, making such purchases less frequent and more concentrated. Consumer preference theory indicates that individuals, who are generally risk averse, tend to smooth their consumption over the life cycle—a feature made easier by the existence of credit. Thus, without this lever, households would consume according to disposable income flow. Such behaviour would heighten booms (with the consequent inflationary risks) and deepen busts as layoffs led to a more stringent contraction in private outlays.

In assessing the macroeconomic impact of a shock to the U.K.'s credit market, there are two ways in which the supply and demand of credit are affected—through its costs and through its availability. A shock to the system, whether positive or negative, can be either endogenous (that is, internal to the system) or exogenous (coming from outside). Endogenous shocks would include an increase in operating costs for suppliers, a change in underwriting standards, or competitive factors; while exogenous shocks include regulatory adjustments, benchmark interest rate changes, or an alteration in consumer preference vis-à-vis different types of credit.

Factors that affect the supply and demand of credit:

- i. Cost of credit: The cost to the consumer of borrowing will unavoidably influence his or her demand for credit; unsurprisingly, an increase in costs reduces demand for that product at all levels of supply. Reflected in the cost to the consumer (through interest rates and, less dramatically, through fees) is the cost to the provider of issuing that credit, which includes both the price of acquiring and of servicing the account. Unsecured credit is extremely sensitive to the interest rate charged on it¹⁸, largely due to the much higher borrowing costs demanded by providers to offset risk. Over the last five years, the weighted average interest rate on credit cards has exceeded that on secured borrowing by 900 basis points.
- ii. Availability of credit: This measures the willingness of institutions to lend and has a disproportionate effect on lower income or less well-rated households. These represent a greater credit risk and are more likely to fall foul of the underwriting process in a more risk averse, and hence more credit-restrictive, environment. Thus, an estimate of the size of the sub-prime market could be used as a proxy for the expected reduction in credit growth in the event of a negative shock. The actual number of accounts affected would likely be higher, as some prime accounts with irregular income could also be terminated. Estimates of the size of the sub-prime market vary; in 2002, MINTEL, a market research group, believed that these borrowers accounted for just 5% of the U.K. population, while last year PricewaterhouseCoopers estimated that eight million individuals fell into this category, implying a share of just under 17%. This divergence is reflected throughout the literature and is due to the lack of a widely-agreed definition of the term 'sub-prime'. For the purposes of our study, we have assumed that roughly 15% of the borrowing population would face hard liquidity constraints in a tightened credit environment. These are not necessarily *all* sub-prime borrowers.

¹⁸ see, for example, Gross and Souleles (2000)

A previous study on the effects of the Consumer Credit Directive¹⁹ demonstrated that a negative shock to the credit industry (through higher cost, lower availability, or both) would impact more heavily on unsecured lending than on secured. As lenders became more risk averse, the increase in unsecured interest rates would rise more sharply than on mortgages, simply because the latter is underpinned by a realizable asset. Keeping in mind credit card borrowing's sensitivity to interest rates in normal times and the fact that a negative shock to the market would hurt unsecured debt more than secured debt, then a curtailment of credit card lending would have an impact on spending, and hence on aggregate GDP, disproportionately large to the size of total lending.

Hereafter we will examine the results of four scenarios that aim to quantify the impact of varying degrees of negative credit shock. Our central scenario is described in detail, and then the metrics used in each of the alternate scenarios are outlined. Finally, the quantitative results will be laid out and examined.

Baseline forecast: Our outlook for the next several years is a relatively sanguine one of gradually slowing growth. The factors of growth are rebalancing, as the slide in the housing market undermines mortgage equity withdrawal, consumer sentiment, and therefore household spending and domestic demand growth²⁰.

Credit card borrowing is expected to continue to grow throughout, in line with a gradually maturing industry. The demand for unsecured debt will cool in tandem with moderating consumption, although borrowing costs are likely at or very near their peak and thus we expect no further tightening of credit conditions. We expect only a modest softening in the labour market, more due to slower job creation rather than an increase in layoffs; this will help sustain income growth despite the weaker economic conditions. The associated forecasts for our key variables are highlighted in the table below.

TABLE 2.3			
	Case One	Case Two	Case Three
Cost of Credit (interest rates)	+100-200 basis points	+250-350 basis points	+400-500 basis points
Availability of Credit (share of the at risk population shut out)	4% of credit users shut out	8% of credit users shut out	15% of credit users shut out
<i>Source: Economy.com</i>			

To this relatively sanguine outlook, we have applied three increasingly taxing credit shock scenarios. Imagine circumstances wherein a crisis in financial markets, or a collapse in confidence, led to deterioration in the functioning of secondary credit markets. Lenders depend on the securitization of existing borrowing in order to continue lending, thus a tightening of underwriting standards would ensue, entailing reduced borrowing across *all* sectors. The scenarios we modelled are:

¹⁹ see Oxera (2003)

²⁰ for the details of our baseline forecast, including figures specific to the credit card industry, see Appendix A.

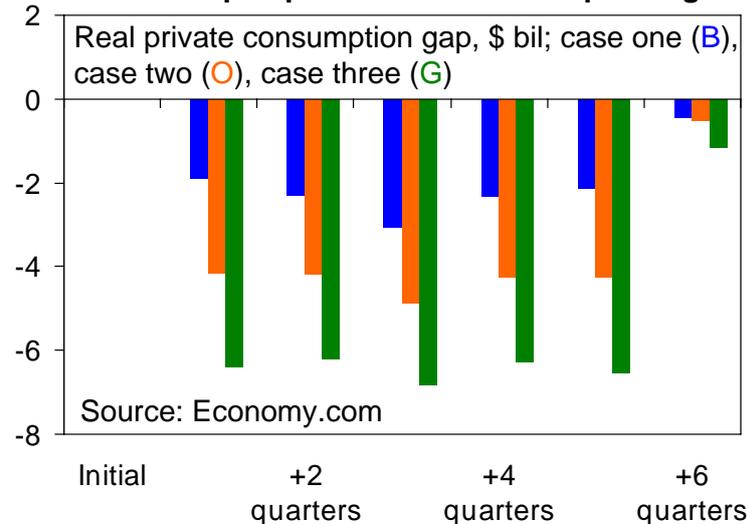
- Case One: Modest tightening; small increase in the cost of credit, one-quarter of the liquidity constrained population is cut out of the market.
- Case Two: Moderate tightening; medium increase in cost of credit, half of those facing liquidity constraints are shut out.
- Case Three: Substantial tightening; big jump in cost of credit, the entire 'at risk' population faces financial exclusion.

Assumptions: Based on a survey of the available literature, we have assumed that roughly 15% of households would face liquidity constraints in the event of a negative credit shock. As highlighted above, estimates of the size of the sub-prime population vary tremendously; however, this proxy should adequately represent the reduction in borrowing under various different scenarios where lenders become increasingly more risk averse and thus unwilling to lend to either sub-prime borrowers or marginal households that nonetheless fall into the prime category. In all three cases, the change whether in interest rates or reduced borrowing was brought in gradually over the course of four quarters, starting in the first quarter of the current year.

Results: Unequivocally and unsurprisingly, a tighter credit atmosphere is damaging for economic growth in the aggregate economy. The deepest and most durable impact of a negative credit shock is apparent in the reduction in total household borrowing. Under the most conservative scenario, total outstanding debt is £65.2 billion less than would have been the case according to our baseline forecast one year after interest rates and risk aversion start to increase. Three years out, total borrowing is £156 billion below its level in our central scenario. In the most extreme case, this discrepancy jumps to £244 billion a year out and £585 billion three years in the future. Notably, the gap is enduring and continues to widen throughout the forecast period, regardless of the depth of the shock.

The bulk of this steep contraction occurs in respect to mortgage debt, as risk aversion and/or credit restrictions cause lenders to pull wholesale out of lending to borderline households. Nevertheless, credit card borrowing, one year after the change in risk appetite, is between £2.4 billion and £9.1 billion lower than would have been the case under our central forecast. This dichotomy lasts throughout the forecast horizon, and continues to widen. To give a sense of perspective, at the end of 2004, there was £59 billion in total credit card debt outstanding (including securitised balances). The combination of higher borrowing costs and reduced access to credit has a deep and lasting impact on the credit industry. Unsurprisingly, this feeds through to the rest of the economy through the income/spending channel outlined earlier.

Chart 2.9: Sharp Impact on Household Spending

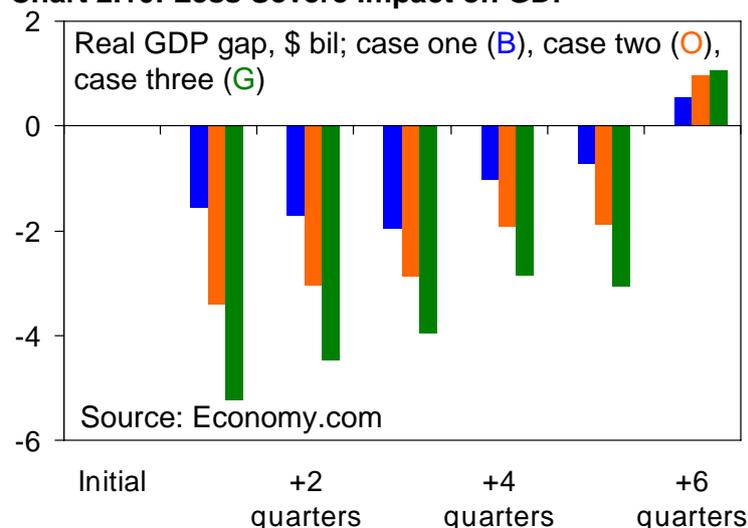


A higher cost of borrowing and constrained household liquidity will combine to reduce private consumption growth and therefore aggregate gross domestic product. Disposable income, as previously demonstrated, is the main determinant of long-run consumption growth. In turn, wage growth, and thus employment, is the principal driver of real disposable income gains. As such, changes to the supply or cost of credit does not *directly* impact disposable income, although in a second round iteration, the slowdown in the economy would engender job losses and further reduce spending, growth, and overall welfare.

In our most conservative case study, real household spending is reduced by £9.6 billion in the year following the shock, while in the worst case scenario private consumption spending is cut by just under £26 billion over the next four quarters. Moreover, in all three simulations real private consumption is still below trend by the end of 2008, pointing toward a prolonged downswing in household outlays, even under the most modest mock-up. The change in the credit environment would perforce induce higher precautionary savings, giving a fillip to investment. This accounts for the discrepancy between the reduction in private spending and the lost real GDP gains. As highlighted above, however, the beneficial impact for investment is overshadowed by the reduction in consumption.

The correction in household outlays will dent the public tax intake, reducing general government revenues by between £4.9 billion and £10.3 billion in the year immediately following the shock and by between £14.7 billion and £21.8 billion over three years as a result of reduced VAT, income tax, and corporation tax inflows. This will inevitably lead to cuts in public spending (or higher taxes) and would, in addition to pushing the government toward deeper borrowing that would have to be repaid by future generations, also reduce aggregate growth.

Chart 2.10: Less Severe Impact on GDP



In the most conservative simulation, total real gross domestic product is reduced by £6.3 billion over the year following the shock, and is only just returning to trend by the end of 2008. Under the most negative scenario, real GDP is reduced by £16.5 billion in one year and suffers aggregate losses totalling £21.9 billion over three years. In the mid-case scenario, growth is reduced by £11.3 billion in one year and £13.7 billion in three years. In nominal terms, that is, without stripping out the influence of price growth, the impact is sharper and felt over a slightly longer time frame.

In this simulation, we elected to assess the impact of a broad tightening of credit conditions, rather than attempting to purely isolate the credit card market. This is largely because, intuitively, a shock that affected a single credit product's underwriting standards is not very likely in the real world. Moreover, if that were to happen, consumers would gradually shift their income/consumption smoothing behaviour over to another product—mortgages most likely, but also private loans and leasing—thus producing a smaller economy-wide shock. For the sake of demonstration, we have summarized the results of a pure credit card shock in Appendix B, using the same outline as above.

Section Three

The Benefits of Convenience: Easing Transaction Costs

In the previous sections we have looked at the quantifiable benefits that credit cards provide to the U.K. economy, whether it is through local jobs and thus earnings, private and corporate spending, or the macroeconomic contribution of unsecured debt, specifically credit card debt, more generally. The industry unquestionably contributes to the prosperity and growth not just of the communities in which its operations are based but also of the British economy more broadly. It also plays a role in easing the swings in the business cycle, promoting economic stability, and helping lift future growth potential.

There are other, harder-to-measure and sometimes less quantifiable benefits that credit cards bring to individuals (dubbed the cardholder) and to businesses (dubbed merchants). In a broad sense, we have termed these myriad savings, whether they are a matter of money or time, as ‘transactional convenience’ and together they describe the many ways in which credit cards make financial activity easier, faster, safer, more traceable, and less frustrating for both households and companies, whether large or small. Credit cards share many of these transactional savings with other forms of electronic payment, while others are unique to this particular type of revolving credit.

KEY POINTS:

- The convenience, security, dependability, transparency, and affordability of credit cards are all features that make their use highly attractive both to individuals and businesses.
- Electronic payments in general, including credit cards, reduce transaction costs, both in monetary and timeliness terms. These savings are estimated at about £5.5 billion per year.
- For cardholders: credit cards provide access to immediate liquidity; improve cash flow management; can be used almost anywhere; have security features unavailable to other means of payment; and offer customizable advantages such as cash back or points.
- For merchants: credit cards are a secure and dependable method of payment; appear more rapidly than most other means of payment in the merchant’s current account; improve cash flow and inventory management; and open up new sales opportunities.
- The ease and accessibility of credit card use abroad have made travelling easier, more affordable, and less worrying for British tourists.
- E-commerce is an industry that depends in many ways on the credit card, and its growth will continue to revolutionize the way business is conducted. Due to their intimate links, credit cards will remain at the forefront of that growth.

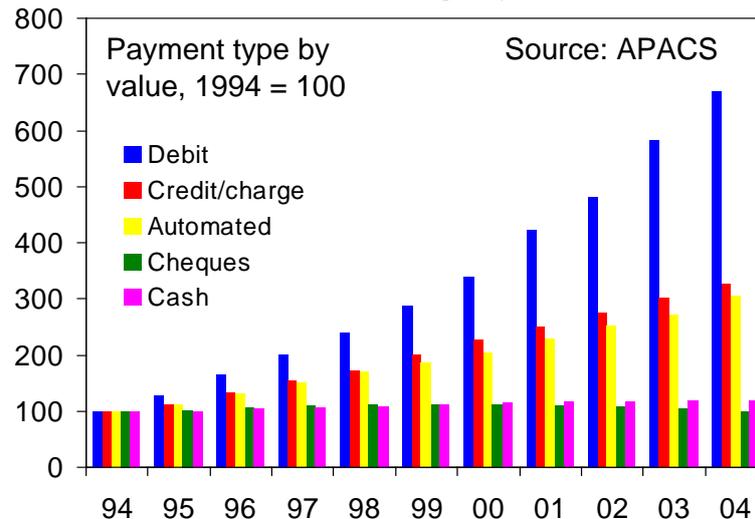
As we have mentioned already, the credit card industry, like any business, is not solely benefit without cost, and there are problems such as fraud and over-indebtedness that are very serious and must be taken into consideration. The former affects both households and businesses, adding oft-irrecoverable losses to balance sheets and leading to the inefficient allocation of resources. Over-indebtedness inflicts distress and hardship on those households who slip into it, and imposes deadweight costs on the economy as a whole if bankruptcy results. We will demonstrate that the benefits far outweigh the costs and that many of the headline-grabbing concerns about credit cards could in fact be worse in their absence.

First, some broad notes on the savings associated with credit cards and electronic payments more generally. Then, we will look at the cardholder, examining in detail, and quantifying where possible, the transactional savings and convenience afforded by credit cards as compared to other forms of payment. Third, we will look at the merchant, the card-accepting business, to highlight many of the same efficiency savings, as well as some unique to the world of commerce. Finally, two case studies, one for the individual and one for companies, will illustrate specific examples where credit cards have been of preeminent importance, namely tourism and e-commerce.

I. The Big Picture

Credit cards make life easier, sometimes too easy one might accuse after a shopping spree; however, instant access to pre-approved liquidity, whether at home or abroad, means that an individual does not need to carry as much cash, does not need to go through re-approval each and every time point of sale financing is required, can more efficiently and accurately track and manage spending, and, in foreign climes, does not need to trouble with unknown currencies and exchange rates. On the business side, credit cards increase sales by boosting the liquidity of consumers, they reduce the transfer time between sale and deposit, improve security by reducing float and pilferage, and make the entire banking and accounting process more precise and transparent. These and other factors will be explored in detail below, and quantified where possible. The incremental savings through reduced transaction costs, the potential created by higher velocity of money (thus making funds more quickly available for investment or spending), and the efficiency gains with respect to human capital all add up to a significant net positive for the economy as a whole.

Chart 3.1: Growth in Card Usage by Value...



There are substantial efficiency savings in electronic based payments; estimates vary but most studies place the cost per transaction of an electronic payment at one-half to two-thirds of its paper based alternative²¹. This is certainly true of credit cards, both on the business and consumer side: think of all the steps involved in writing, depositing, clearing, processing, and rendering payment on a cheque, versus the relatively simple electronic payment and deposit ensured by a credit card. Cash, while more liquid, is deposited no more quickly into a merchant's account than is an electronic payment. These savings are furthermore maximized by economies of scale, meaning that as volumes increase so too do the savings. Simply put, the added cost of another transaction is minimal when compared to the initial sunk costs of setting up the network. This compares favourably with cash or cheque wherein costs decline only marginally as transaction volumes rise.

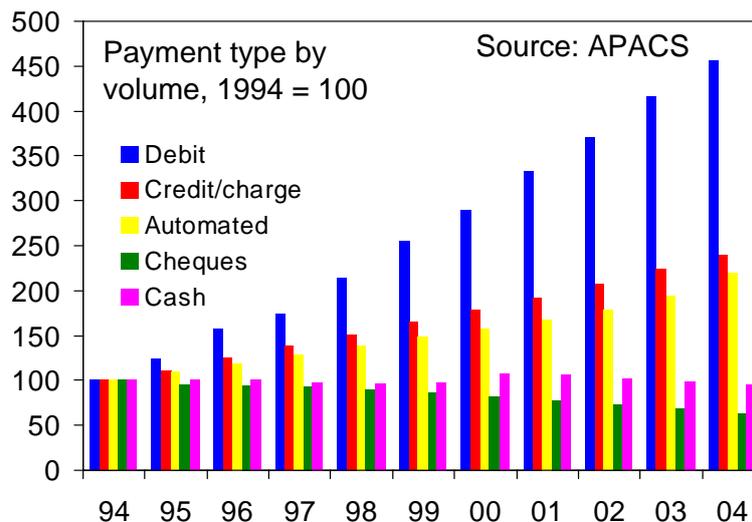
There are also substantial savings to be realized from the reduction in expenses with respect to handling, transporting, securing, and insuring cash. The liquidity of cash also makes it harder to physically secure, demanding greater expense in its protection and thus higher insurance costs; in short, armoured vans are much more costly than electronic payment transfers. And while the chance for fraud still exists, the reduced use of cash marginalizes the opportunities for pilferage.

In addition, theoretical studies²² have demonstrated that credit card services are a network, two-sided good; network because an increase in users brings net benefits to other users and two-sided because the individual's good derived from the service depends on the number of merchants who accept cards, while the merchant's utility increases according to the number of cardholders.

²¹ Flatraaker and Robinson, 1995; Wells, 1996; Humphrey, Willeson, Lindblom, and Bergendahl, 2003

²² summarized in Chakravorti, 2003

Chart 3.2: ... and Volume

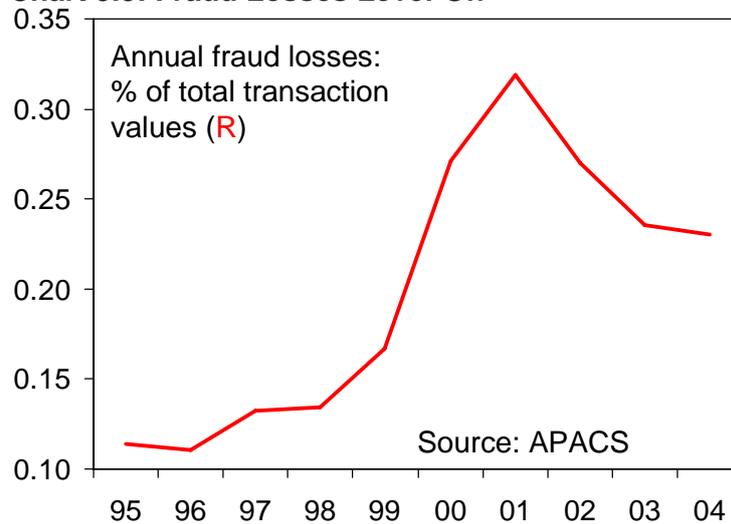


There is relatively little data on the cost of the nation's payments system; no time series of aggregate figures has been generated that could tell *exactly* how much transaction costs have changed in the economy over time. A 2003 study by Humphrey, Willeson, Lindblom, and Bergendahl related banking costs to new data on service delivery levels and channels for a number of European countries, amongst them the U.K. They found that, Europe-wide, a 10% increase in transaction volume between 1987 and 1999 was accompanied by only a 0.9% rise in allocated operating cost, implying a significant drop in the unit cost. This is not common across payment types: the cost of paper-based payments more than doubled in the period, while that of electronic payments, including credit cards, more than halved. This represents significant savings both on a per transaction basis and aggregated up economy-wide. The rising costs in paper terms are due to reverse economies of scale, while on the electronic side, a mix of technological change and those same scale savings has cut the per unit cost. The study estimated total savings of US\$32 billion over the period, or some 0.38% of the GDP of the 12 countries involved. In the U.K. alone, another study by the foursome estimated a rough savings of US\$10 billion (roughly £5.5 billion) a year in constant dollars.

There is a demonstrated link between electronic payments and growth, but the scale of the impact depends on various factors: the degree of substitution versus other forms of payment, the degree of adoption by merchants, and the efficiency, security, and dependability of the payments system. Each of these has a magnifying impact on the ultimate benefits for consumer spending and thus aggregate growth. Thus, if a government cites maximizing growth as one of its goals, which most administrations do, attacking the credit card industry seems counterintuitive as a more efficient, secure, widespread, and equitable system will maximize efficiency savings in transaction costs (thus benefiting businesses) and will have the maximum impact on consumer spending and hence growth, not to mention opening up a wealth of business possibilities for both consumer and business.

Looked at from another perspective, there is the benefit by subtraction: from a pure economic perspective, the amount of cash sitting in wallets (hence un-banked) is a net cost to the economy as it is unavailable for productive investment. Thus, electronic payments, including credit cards, free up this wealth for investment more rapidly than a simple cash or paper system would allow. Thus, the increased velocity of money also creates a net tangible, though difficult to quantify, benefit to the economy.

Chart 3.3: Fraud Losses Level-Off



Turning our attention for a minute to the economy-wide transactional costs associated with credit cards. In 2004, total fraud losses rose by 6% to £508.4 million according to APACS, of which almost a third (£150.8 million) was due to theft of card details. The second largest cause of fraud (£129.7 million in losses) was counterfeit cards, although that total was 25% below the previous year's sum. One possible reason for the jump in card detail theft may have been the roll-out of chip & PIN, as lawbreakers lifted newly-minted cards directly out of the mail. In contrast, internet scams cost £117 million to consumers. The introduction of chip & PIN should reduce fraud; a recent study in France claimed that using pin numbers cut unlawful card use by 80%²³.

II. The Cardholder

A lot of people in Britain have credit cards, in fact, many have more than one and the recent growth in the card market has largely been due to multiple card-holding and not to new customers brought into the market. At the end of 2004, there were just under 70 million credit card accounts active in the U.K., as compared to a total population of 59.8 million and a working age populace of 47.3 million, representing just under 1½ credit cards per person over the age of 18. There were 1,727 million transactions last year—about 13.5% of all non-cash exchanges (inc. cash acquisition)—amounting to over £99 billion in value.

The principal, qualitative benefits that credit cards offer to the average cardholder can be grouped into the following primary categories.

²³ source: Chip and PIN Ltd.

1. *Convenience.* They can be used anytime, anywhere, and are, at least according to the rules, accepted by any merchant without discrimination. Payment is easy and made even more so by the advent of internet banking and e-commerce. This allows detailed management as up-to-date card statements can be viewed and payments made quasi-instantly. Naturally, individuals will substitute the more expensive and/or less convenient form of payment with the easier and/or less expensive means.
2. *Cash flow management* over short time horizons, though such use denotes a certain financial sophistication that cannot always be taken for granted. According to APACS repayment data for 2004, 57% of cardholders *say* they fully repay their cards, while a further 11% *state* they usually do. Moreover, those 57% account for 77% of all credit card expenditures, while the 11% add a further 8%—denoting a fairly effective use of credit cards as cash flow management tools. These individuals are known as convenience users or full-payers. The fact that interest charges on purchases are waived for up to 60 days in effect provides liquidity to cardholders at no cost. The value of this subsidy can be calculated by estimating the interest charges foregone. In 2004, average monthly spend came to £11.2 billion, of which 77% was repaid in full. The average weighted credit card interest rate last year was 14.5%, equating to total foregone interest fees during the year of roughly £1.2 billion.
3. *Easy access to immediate liquidity* in the form of largely uncollateralized long-term debt. Instead of the lengthy and complicated process of getting a personal loan approved or obtaining point-of-sale financing on a case by case basis, the credit card is personal, revolving, and pre-approved. These transactional savings, both in cost and time, apply to borrower and lender, consumer and business.
4. *Additional security.* Stolen or misused cards and errors in transactions or payments can be easily dealt with thanks to a common international dispute resolution system. A lost card is rapidly replaceable and the insurance against lost or stolen transactions is free from most providers. The safety and security of such a network are not as readily available, if at all, for cash or cheques, while debit cards withdraw cash directly from the current account and are thus harder to secure. Certainly, fraud does happen, but as a share of transactions in 2004 it was a marginal 0.18% (by value) of total spending²⁴. Credit cards also offer protection against goods or services that are misrepresented, not delivered, or faulty. Finally, there is a substantial but unquantifiable benefit provided to cardholders through the insurance (Section 75), which exists on each and every domestic payment. To insure all such transactions would be very costly in the open market.

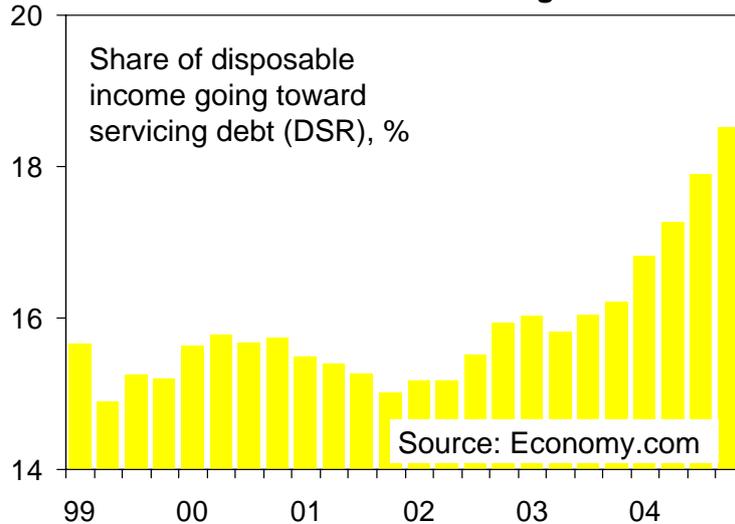
²⁴ Plastic Card Review 2005, APACS

5. *Customizable advantages*; for example affinity cards, small business cards, and/or the flexibility of different benefit schemes, repayment plans, and interest rates. This allows the creation of particular products for different groups of individuals, something that cannot easily be done, if at all, with cash or cheques. Moreover, each shares the same underlying system and benefits from the sunk set-up costs, needing relatively little additional development costs. Affinity cards provide money for charitable or social organizations, often based on the total usage of the card. There were a total of 2.6 million such cards in the U.K. in 2004, with a total transaction value of £3.4 billion over the year.
6. *Loose geographic constraints* in terms of making purchases and sourcing inputs. E-commerce and tourism are obvious examples of such benefits, but mail and telephone sales should not be ignored. This broadens any consumer's potential purchase base thus reducing costs and increasing selection. For example, homemakers in the northern reaches of Scotland are no longer limited to their local shops but can, via the internet, mail, or telephone, use their credit card to purchase a range of goods at prices and in a variety undreamt of by previous mail order suppliers. In a sense, this empowers the consumer by increasing their options while at the same time offering security and convenience.
7. *Provision for unforeseen expense or emergency*. No one can effectively plan for every contingency, whether when travelling or simply in our day-to-day lives. Unplanned difficulties (like running low on petrol on the motorway), forgotten events like birthdays or anniversaries, or even emergencies are all easier to cope with if one has a ready source of liquidity on hand. Whether it be purchasing that last minute gift, paying the taxi on the way to the airport, discharging a utilities bill, or footing the bill for medical treatment in a foreign country, an increasingly wide range of merchants accept credit cards the world over. No one can plan for any eventuality and thus have the appropriate amount of cash to hand or in a current account at any one time. Credit cards ease the need to do so.

Over-indebtedness: We cannot simply address the benefits that credit cards offer to individuals without taking into account the costs. The most frequently cited of these is the spectre of over-indebtedness defined as “those households or individuals who are in arrears on a structural basis, or are at a significant risk of getting into arrears on a structural basis”²⁵. According to Economy.com calculations, the debt service ratio (DSR)—that is, the share of disposable income that goes toward paying an individual's debts—jumped from a stable rate just below 16% in 1999-2003 to over 18½% by the end of 2004. From a debt management perspective, it is not so much the level as the rate of increase that is worrying. The sudden rise, however, is largely a function of mortgage debt; this is unsurprising given the recent housing boom.

²⁵ See Oxera report (2004)

Chart 3.4: Debt Service Ratio Climbing

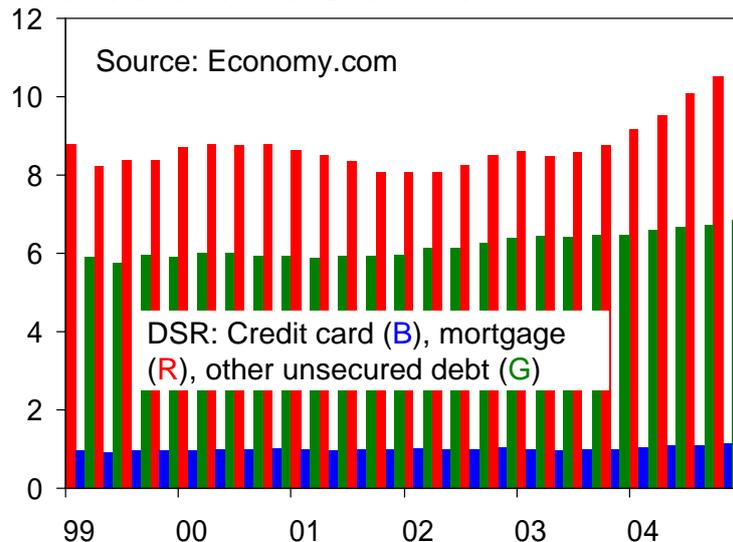


In contrast, while credit card debt as a share of disposable income has risen from under 5% in 1999 to nearly 7% by end-2004, this ratio is still below that of a more mature credit card market such as the U.S. (9% at end-2004). Moreover, credit card payments as a percentage of disposable income have risen, but only from 0.95% in early 1999 to 1.15% by December of last year, which is hardly cause for concern. Moreover, due to the ‘full payers’ (those who pay off their credit card debt in full every month) total outstanding figures are likely to overestimate the actual amount of debt carried over month to month due to difficulties in disentangling the flow from the interest-bearing stock. According to BBA data, the number of credit card accounts bearing interest in fourth quarter 2004 averaged 73%, down from 76% the previous year and from a historical average (comparable data go back to mid-1995) of 75.5%²⁶.

Delinquencies were by and large stable last year, according to Fitch, despite an upswing in insolvencies. In fact, although charge-offs rose at the start of 2004, they subsequently fell such that the Fitch Charge-Off Index was close to its average 4.2% rate by the end of the year. The MPR (Monthly Repayment Rate) worsened in December, but it is unclear whether that is due to the Christmas season or actual difficulties repaying.

²⁶ Arrears are generally due to other types of borrowing; see also Bridges, Henley, and Disney (2004).

Chart 3.5: Credit Card DSR Stable



A MORI analysis of its own Financial Services omnibus survey found that the tale of spiralling credit card debt was largely myth: the vast majority (68%) of credit card holders manage their accounts sensibly and without difficulty; these are generally older folk from socio-economic groups AB. A further 14% are smoothers who use cards as an income management device for big-ticket and emergency purchases, then pay the balance relatively quickly. The next largest group is simply bad at credit management; they carry relatively small balances and yet are still late on payment (10%). Finally, those in acute debt difficulties with debt to disposable income levels high and rising are about 5% of credit card borrowers. The smallest group, the so-called rate tarts, chase 0% financing from card to card; these represent only 3% of the market.

Nevertheless, credit card debt dominates the headlines. A recent report by the Centre for the Study of Financial Innovation²⁷ called for legislators to make it illegal for lenders to knowingly over-indebt an individual, with courts determining where this had occurred. Increased information sharing between lenders would be welcome, as would making credit limit increases only possible at the discretion of the borrower; however, moving the duty of ensuring financial wellbeing from the individual to the law courts and the creation of yet another regulatory body are the types of over-regulation that would constrict the industry and lead to the inefficient allocation of lending. In order to avoid censure, lenders would disproportionately cut risk, leading to a credit freeze for certain worthy, but borderline individuals. In a more risk-averse environment, this would hurt, for example, those without a credit history, as they would be forced to pay higher interest rates because their viability could not be properly assessed.

The myths and realities of credit card over-indebtedness do not mean there are not important issues to address. In addition to greater information sharing, the industry has to respond to the unpopular use of unsolicited credit limit increases and credit card cheques. The credit card industry may have made important contributions but that does not mean matters should be frozen *as is*; credit scoring mechanisms and marketing techniques can be addressed without impinging on a bank's ability to do business.

²⁷ Elliott (2005).

III. The Merchant

The number of businesses accepting credit card payments has expanded progressively over the last two decades such that, today, you can pay with plastic for goods and services as diverse as automobiles, holidays, designer clothes, haircuts, evening drinks, consulting, insurance, consumer electronics, etc. The list is endless and with payment technologies evolving from the old slip-based, manual imprinter to the ubiquitous point-of-sale machine, to customized online programs and wireless devices, the possibilities are truly only limited by a merchant's willingness and ability, based on pricing, to accept credit cards as a form of payment. At the end of 2004, there were 920,000 POS terminals in 752,000 outlets accepting plastic cards, compared with 610,000 terminals in 546,000 stores as recently as 1998.

Many of the benefits accruing to cardholders thanks to credit cards also apply to businesses, such as *cash flow management*, *additional security*, and *looser geographical constraints*. Moreover, many businesses are also cardholders in their own right, thanks to the existence of corporate cards. In 2004, there were 131,000 corporate credit cards in the U.K., as well as 1.58 million corporate charge (i.e. non-revolving) cards. As mentioned at the very beginning of this piece, we are not dealing here with charge cards, even though they offer many of the same advantages as their credit cousins. Corporate cards account for a relatively small number of transactions, only six million last year, for a total value of £649 million. Notably, the average transaction value per card is significantly higher than is the case for personal cards, unsurprising perhaps given business needs.

In particular, the recent U.K. Survey of SME Finances (SMEF) prepared by the Warwick Business School²⁸, revealed that credit cards are an important source of finance for small and medium enterprises (SMEs). The study found that, on average, SME owners charge £433 per month to their personal credit cards, for a total expenditure of £450 million a month, and £1,000 per month on their business credits, for a total of £1.4 billion per month. The largest shares go to raw materials and motor expenses—both features which are essential to the continued operation and expansion of a business.

As with cardholders, we can break down the principal merchant benefits into broad categories:

1. *Security and dependability*. The merchant becomes part of a sound, predictable, and increasingly secure international payments system. Transactions are authorized on the spot and though subject to error, this reduces the likelihood of fraud and illegitimate card use. In addition, merchants also benefit from the globally-agreed, rules-based dispute settlement system, which enables the resolution of disputes between the acquirer and the cardholder's bank. Credit cards can also reduce the risk of loss or theft, and cut the need for float and the possibility for pilferage all along the supply chain.

²⁸ For information on the SMEF see <http://www.wbs.ac.uk/downloads/research/sme-report-may-2005.cfm>

2. *Increased transaction velocity.* A payment moves relatively rapidly after authorization into the merchant's current account. Only cash would have a more rapid turnaround time, but without benefiting from the security of an electronic payments network. This deposit is then more rapidly available for productive uses, whether it is investment, inventory replacement, or the payment of expenses. The ongoing development of point of sale (POS) technology is further reducing this turnaround time.
3. *Strengthened audit trail.* As with cardholders, itemized receipts on a per transaction basis help increase transparency and improve money management. Such benefits are an obvious key feature in the wake of the high profile accounting scandals in recent years and the newfound emphasis on corporate probity. This applies equally to the single merchant with one POS machine and the huge department stores with multiple locations and payment stations; each one is able to track credit card deposits in a detailed, timely manner.
4. *Improved inventory management.* This is a two-pronged benefit; as alluded to in number 2 above, quicker deposits provide funds for more rapid re-stocking, thus reducing wasted time and increasing sales potential. In addition, the use of a corporate card for ordering and supply cuts the long and arduous paper trail process involving approval, cutting cheques, accounting, etc... Finally, thanks to a smoother business cycle and more evenly distributed spending patterns, the merchant is better able to anticipate inventory needs, whether for rush periods like Christmas or down-time like the mid-summer lull.
5. *Stronger bottom line.* The combination of faster payment through more efficient deposits and lower overhead thanks to reduced transaction fees acts as a direct benefit to the merchant's profit margin, irrespective of whether credit cards actually increase sales.
6. *Improved sales potential.* It is impossible to say that credit cards increase sales for all merchants, at all times, across all businesses. Nevertheless, plastic money does enable merchants to sell to temporarily illiquid customers or to those spending future income. It also stretches the company's geographic boundaries, as cards provided a secure method of payment that can be accepted at arms' length. Some businesses, e.g. internet commerce, depend entirely on this type of transaction, whereas for others it merely allows them to reach out to a new customer base that might not otherwise be available.
7. *For small business owners,* cards offer a clear separation of private and business spending, something that is often hard to do in the small and medium enterprise industry. For such businesses, it also eases cash flow by offering free credit (i.e. interest-free purchases) for a certain period of time and by freeing up company managers from the tedium of micromanaging balance sheets.

8. *Provision for unforeseen expense or emergency.* Much the same as for cardholders, but the needs are different. Whether it be sudden expenses on a business trip that are funded by the corporate card, or the emergency replacement of stock due to unforeseen demand or circumstance (flooding for example), pre-approved instant liquidity can mean the difference in a tight situation, for companies as much as for individuals.

Unlike cardholders, whose credit card usage varies but within fairly strict boundaries, businesses operate in a variety of shapes and sizes, stretching from the single-person, locally-based service operation to the massive, multiple goods-producing multinational that sources inputs from many countries and sells in many more. The broad categories of benefit alluded to above exist for merchants of all sizes, with the incremental benefits enjoyed by each department or sales unit of a bigger corporation aggregating up to substantial, company-wide benefits.

It is worth noting that merchants do not accept credit cards free of charge; a fee, called the merchant service charge, is levied by the acquirer as a percentage of total sales. The share can vary from below 1% for the largest clients to 3% or 4% or higher for higher risk industries. In Britain, merchants are allowed to levy that cost on consumers, which makes them a relatively attractive payment method for shopkeepers. In countries where that is not possible, studies²⁹ have shown that credit cards are actually more costly than cash or cheques for merchants to accept. Unfortunately, no similar study has been done in the U.K.; however, both studies conclude that the increased sales and efficiencies that cards generate may be enough to offset the higher costs.

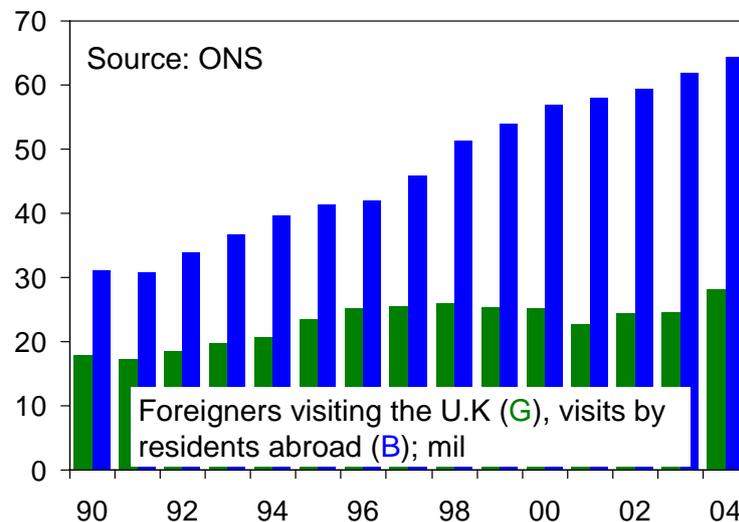
IV. Cardholder Case Study: Tourism

The advent of credit card usage throughout the U.K. has very much revolutionized the spending habits of Britons both at home and abroad. Gone now are the days where considerable forward planning was required to make the simplest of transactions whilst travelling overseas. All purchases, from buying a meal in a restaurant, to paying for fuel at the pump, to ensuring a hotel room is booked, to enabling last minute purchases; these have all been made easier with the prevalent adoption of credit card usage and the equally widespread implementation of payment facilities by an ever increasing number and array of vendors. In many instances, a vendor without credit card payment facilities is a vendor with an eroded competitive advantage. The ease and efficiency of credit card usage while abroad has quite simply dethroned the old adage that “cash is king”.

²⁹ for example by the Australian Retailers Association in 2001 and the Food Marketing Institute in 2000.

Tourism is unquestionably important both as a leisure activity for Britons and as a driver of the domestic economy. The statistics make this clear: visits abroad by U.K. residents rose by 4% in the year ending February 2005, according to the Office for National Statistics (ONS). A total of 64.2 million residents left Britain's shores in this 12 month period; visits to western Europe fell by 1% to 49.2 million, while visits to North America rose by 16% to 4.9 million, and visits to other parts of the world rose by 24% to 10.1 million. In the December 2004 to February 2005 period, there were 7.6 million visits to the U.K. by overseas residents. This equated to an increase of 8% when compared with the previous three-month period, while spending rose 4% to £3.5 billion. During this same period, spending by U.K. residents while abroad increased by 1% to £7.9 billion, though the difference between spending by U.K. residents abroad and spending by overseas residents in the U.K. resulted in a deficit to the U.K. of £4.4 billion. Nevertheless, this shortfall was £40 million smaller than in the previous three months.

Chart 3.6: Sustained Growth in Tourism



With a growing number of UK residents travelling abroad for both business and pleasure, the transactional benefits accruing to the consumer through credit cards are clear. They provide greater efficiency, ease and speed of transactions, in contrast to more traditional forms of payment. Holidaymakers often feel threatened carrying large amounts of local currency, while precious vacation time can be wasted searching for a limited number of vendors who do provide international debit facilities. Given that a typical U.K. family will spend between £2,000 and £8,000 on a holiday, according to Visa, savings on travel insurance and exchange rate costs are important considerations. Moreover, the peace of mind regarding flights and accommodation provided by credit cards, while unquantifiable, cannot seriously be disputed.

i. Greater financial flexibility while abroad

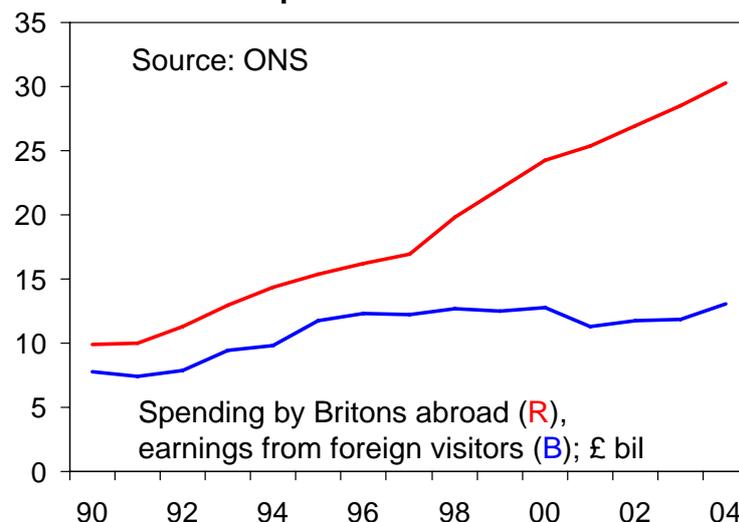
One of the most obvious benefits of credit card usage is the greater degree of financial flexibility provided. Usage of credit to extend one's finances for a 30-55 day period, depending on the conditions of a given card, can allow tourists to leverage potential earnings, particularly for those on monthly incomes. This allows individuals to take advantage of card-based credit to increase spending while abroad; doing so (hopefully!) with full prior knowledge of their ability to repay this debt upon returning to Britain. Naturally, the advent of telephone and internet banking only adds to the ease with which consumers may extend and repay credit while abroad, given that transfers to one's account can be made from any secure internet or telephone point.

Credit has become increasingly easy to access, making it an ever-more effective tool for the management of cash flow over short time horizons. According to APACS, 57% of cardholders say they fully repay their cards, while a further 11% say they usually do. These 'full payers' together account for 85% of all credit card spending, denoting a sizeable majority that use their credit cards efficiently. As these are also individuals likely to engage in foreign travel, it is quite possible to surmise that most cardholders effectively borrow from future earnings, through credit cards, to fund leisure and entertainment during their holidays.

ii. Ease of use when travelling

Credit cards are a natural substitute for more expensive or less convenient forms of payment such as cash, eliminating the need to carry travellers' cheques or anticipate the range and amount of foreign currencies required while travelling overseas. Moreover, travellers' cheques have to be bought and paid for in advance of the voyage, necessitating a pre-estimate of costs, and they are often inconvenient to use and can be subject to a surcharge.

Chart 3.7: British Spend More and More Overseas



Convenience has very much become king. Credit cards are a safe and secure form of payment when used properly and can be accessed anytime, anywhere. A three-hour stopover in an airport no longer requires the withdrawal of funds to make small purchases while travelling. Most major airports will accept credit cards as an easy payment, allowing the cardholder to keep a detailed trail of all expenditure while on the road. The management of purchases will not only be itemized on a monthly statement mailed to the credit card holder, but with the advent of the internet and more so, internet banking, travellers can monitor spending throughout their trip and actively and quasi-instantly ensure illegal purchases or overcharges are not being run up on their account. The added technological benefits here are clear given that in the past cardholders relied on monthly statements alone, received after as much as a four week delay, to consolidate and manage spending.

- **Global access to cash machines.** Technological advances in the financial services and credit industry have increased the ease with which credit card holders can access foreign currencies while abroad. International formats such as PLUS, Maestro, and CIRRUS have made this easier. If their credit card is linked to the PLUS or CIRRUS networks, U.K. cardholders have the option of using them to withdraw cash in over 135 countries worldwide. The CIRRUS Network currently has over 780,000 ATMs worldwide; and the VISA/PLUS network has over 750,000. Many of these machines are co-badged, however, so these figures should not be taken to imply there are 1.5 million cash machines worldwide.

The biggest advantage of such linked networks, in addition to convenience, is that all cash withdrawals, regardless of size, are exchanged based on the wholesale exchange rate which is usually reserved only for very large inter-bank exchanges. This rate is often 2% to 5% better than what a cardholder could get from exchanging travellers' cheques at a local exchange counter.

- **Cost savings.** Cardholders must choose their card carefully for travel purposes given the costs associated with using credit cards for cash withdrawals and advances when overseas. Most U.K. credit cards levy a fee of 2.75% on payments and cash withdrawals with Visa or MasterCard—this is called 'foreign usage loading'. Some cards only charge 2.25%. For cash withdrawals, fees of up to 2% with minimum charges are applied, while charges can be as high as £5, although most providers will not demand such high amounts. While these costs can add up, the ease and flexibility with which cards can be used, if used wisely, outweighs the added transaction (i.e. time) costs associated with using more traditional forms of payment while overseas or paying hefty hidden fees to exchange bureaus.

There are some lenders who do not charge U.K. cardholders commission on purchases overseas. Moreover, cash can be withdrawn abroad in the same manner, and at the same cost as at home. Other lenders charge a cash advance fee of around 2.0% in addition to a commission charge of up to 2.75%.

- **Benefits at home.** Halifax Credit Cards recently conducted a study which revealed that 11.4% of the value of all credit card transactions in 2004 was motoring related³⁰. This equates to just under £440³¹ a year on consumers' credit cards. Given many Britons use motor vehicles to commute throughout Europe during their holidays, the amount spent and ease with which, for example, credit cards can be used to pay for car rental, toll charges and petrol at the pump, again reduces the need to carry local currency when travelling and provides further time saving benefit to the UK tourist abroad.
- **Safety.** If cash is stolen, it is gone for good. If a credit card goes missing, it can be cancelled immediately and replaced relatively quickly. Moreover, as highlighted above, credit cards provide security against fraudulent purchases through an internationally-agreed dispute resolution system. This can set a traveller's mind at ease, knowing that there is a formal system between providers to settle problems should anything go awry.
- **Cash transfers which are not only safe, they are guaranteed.** Both major card schemes (Visa and MasterCard) have products which enable a cardholder to send money to any other cardholder within Europe, thus ensuring efficient person-to-person transfers that do not go through the relatively onerous process of a money order. Funds can be effectively and safely transferred directly on to a cardholder's account, whether sending money home while working abroad, offering financial assistance to a relative living or working in Europe, or simply guaranteeing the deposit on a much-desired holiday villa.

Recipients can receive funds straight to their own card, in all major currencies, and can spend it immediately. For example, when booking the aforementioned holiday villa, a customer can be assured that the villa will be available, and will not have to wait several days for down payments or total amounts to be cleared in the recipient's account. In addition, the holidaymaker can use their card to withdraw cash through part of the global network of cash dispensers. Again, the added speed, ease, security, and time benefits of such a system make payment for travel a breeze while again providing cardholders with the knowledge that their transaction has been securely undertaken.

iii. Pay for travel while in the U.K. and save

In terms of booking a holiday, significant cost saving can be realized in respect to travel insurance when purchasing a holiday in whole or in part, with some cards. This not only provides peace of mind but also saves consumers money. Depending on the card, all the consumer need do is purchase 50% or more of prepaid travel costs (including the cost of a spouse and any dependent children travelling with card holder) prior to the commencement of the journey, then all associated parties are covered as soon as they commence their overseas trip until they return to the U.K.; provided the trip is for no more than a specific period of time—around 90 consecutive days as an example. British cardholders can in most cases use this cover for an unlimited number of trips per year.

³⁰ Source: <http://www.hbosplc.com/media/pressreleases/articles/halifax/2005-02-28-00.asp>

³¹ APACS data for 2004 show that the average monthly spend per cardholder was £321, equating to an annual spend of about £3,850 (11.4% of this is £438.90)

In addition, if the cardholder is also a member of, or participant in, an associated rewards program, as a feature of some insurance policies, the cardholder will be eligible for complimentary insurance by redeeming their rewards program points to make up 50% or more of the prepaid travel costs. Cardholders can even use a combination of rewards program points and their card to reach the required 50% (as an example) or more of their prepaid travel costs.

Complimentary travel insurance provides cover for such events as travel cancellation, overseas medical expenses, lost luggage or travel documents, accidental death and disability, missed connection, personal liability, collision damage waiver, hijack and detention, and kidnap and ransom. Policies and cover do however vary, though most cards will offer some form of complimentary insurance for U.K. tourists when travelling abroad. As such, the amount of cover given depends on the card, but varies between £50,000 and £250,000. Given comprehensive travel insurance in Europe for a 90-day period can cost around £250³², this is a significant cost saving to the cardholder.

Other variations include cost savings on limited insurance and/or cash back on purchases made in the first three months of card ownership, thus giving customers a cost advantage when booking their travel with the new card. Other commonly available cards provide lost or delayed luggage insurance and/or delay insurance.

iv. Rewards/Affinity Programs

Apart from travel insurance and cash back, various card affinity benefits can be gleaned from rewards schemes, such as frequent flyer miles which also offer travelling Britons an added advantage. Not only does spending while abroad tend to increase, but cards attached to such programs will ensure that extra spending while overseas contributes in point form to perhaps an additional trip or further savings of some sort. U.K. residents made a record 61.4 million foreign visits in 2003—up three times on the figure 20 years before, and spent a record £28.6 billion while on holiday. The longer U.K. residents stayed abroad on trips in 2003, the more money they spent, with visits lasting 14 to 27 nights accounting for 23% of visits but 34% of spending according to the ONS. This equates to a lot of program points for consumers using their credit cards to spend while abroad.

Most cards provide consumers with many travel specific rewards. One particular lender offers direct booking advantages with a variety of tour, flying, cruise, and ferry operators, covering a multitude of destinations. This includes discounts on tour operator prices and, if the transaction is paid on their card, the lender will waive applicable booking fees. Others offer similar incentives or joint programs/promotions.

Modern credit card usage also extends to rewards of a very different nature. Using an Affinity credit card while travelling abroad, or shopping at home, provides a secure and socially rewarding means of donating funds to your chosen, participating charity. *Customers Who Care* is a credit card linked program where 1.25p is donated to deserving causes for every £100 an individual spends, at no extra cost to the cardholder.

³² www.travelinsurance.co.uk

v. Eases access to immediate liquidity.

Apart from the ease of use, possessing a credit card provides the holder with an immediate and readily accessible source of extended credit. Having this line of credit also provides cardholders with a credit rating and credit history, whereby this can be used by the provider to grant further access to bank loans in a timely and efficient manner. These efficiency savings accrue on the side of both the borrower and the lender.

One lender, for example, offers a personal loan facility which gives applicants the opportunity to apply for between £1,000 and £15,000—giving the applicant the extra financial flexibility needed. This may include an extension of credit for taking a holiday overseas. The system is very easy to use once the applicant is already an approved customer. The lender offers a secure online application system and advertises that the entire application process should take no longer than ten minutes. Once the completed forms have been received, the loan funds could be in applicant's bank account within as little as four working days. The interest rate an applicant receives will be based on their personal circumstances and the amount they choose to borrow.

vi. Empowering travelling consumers.

Apart from providing travellers with ready cash for any unforeseen emergencies, expenses or that last minute forgotten gift, U.K. credit card providers have created more options for consumers offering them greater choice, more competitive interest rates, and added security in terms of payments.

Internet banking allows you to pay your credit card bill instantly, transfer funds from another linked account into your credit card account, check your current account balance, access your transaction history—at anytime, from anywhere in the world, any day of the week. This improves cash flow management and can reduce the time it takes to catch a doubtful or fraudulent transaction.

Lost card cover is a registration service offered for some cards by (more often than not) third party companies which keep a confidential list of cardholders registered credit cards, or any other cards they would normally keep in their wallet that they would want to replace urgently if they are lost or stolen. This also provides insurance against goods or services that are misrepresented, not delivered, or faulty. The insurance against lost or stolen cards is free from some providers—while such security is unavailable with cash and of limited availability for cheques.

When the unfortunate happens, these card alert services will notify all of the individual's card issuers. All the individual need do is contact the third party; these services will even notify an individual's mobile service provider if a mobile phone is lost or stolen. Participation in such programs ensures that the cardholder has helped protect themselves against the fraudulent use of any of their credit cards. Travelling is always exciting but can also be a stressful time when an individual finds him or herself outside of their comfort zone, where language barriers exist and criminals seek to take advantage of unfamiliarity and hence vulnerability. Having such assurances attached to your chosen form of payment, possible with a credit card but almost impossible with cash, essentially buys peace of mind. This adds a great deal to any travelling experience.

Increased efficiency, cost benefits, timeliness, and peace of mind are but a few of the benefits associated with the increased availability and use of credit card facilities while abroad. While security issues and fraudulent card use are often the focus of attention when discussing credit cards in general, the benefits of making ‘fantastic plastic’ a regular travel companion warrant closer attention. Card providers are becoming increasingly savvy at and committed to keeping ahead of the fraudsters’ game, thus ensuring that the facilities they provide are technologically advanced and easy to use. While credit card lenders offer a suite of savings and programs, increased competition among issuers is actually making card usage abroad one of the more cost efficient means of payment for British tourists. Time is a precious commodity. As Britons spend more time at work, time away from the office is becoming ever more important. Thus, the ability to cut down on visits to the bureau de change or the bank while on holiday, where both hours kept and language can be problematic, allows greater freedom and financial flexibility, not to mention more time in the café, at the museum, or lying on the beach.

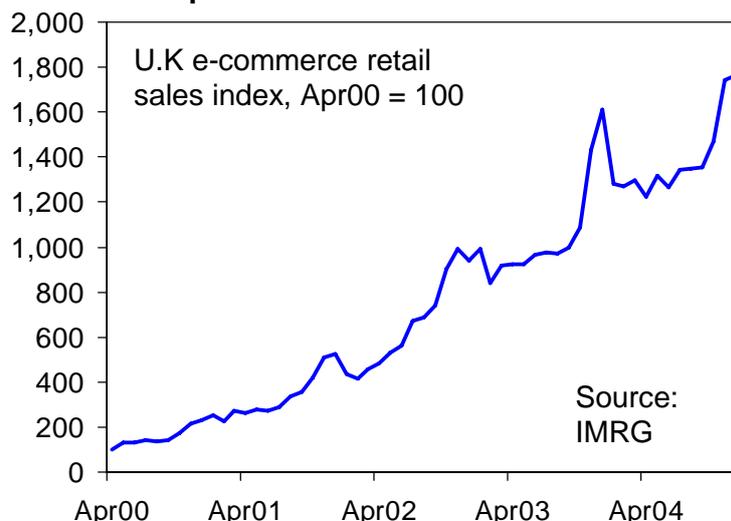
V. Merchant Case Study: E-commerce

Introduction

In the ten years since its conception e-commerce activity has shot up, generating in the last two years average sales of £1 billion per month in the U.K. and accounting for about 6% of total retail sales. According to Organisation for Economic Co-operation and Development (OECD) data, the information and computer technology (ICT) sector accounts for roughly 3.3% of total employment in Britain, or just under 940,000 jobs in 2004—many of these would be directly or indirectly linked to e-commerce. Online credit card usage, which accounts for 85% of all purchases made via the internet, has been key in driving the industry’s development. This case study looks at the benefits of credit cards for e-commerce and the resultant indirect benefits for the British economy. It will also discuss the primary deterrent to potential growth within this sector, credit card fraud, as well as delving into the possible solutions and concluding with an outline of the future prospects.

The OECD defines e-commerce as “the sale or purchase of goods and services, where agreement between buyer and seller to transfer ownership occurs over a computer-mediated network”. In the 1998 Department of Trade and Industry (DTI) white paper entitled, “Our Competitive Future: Building the Knowledge-Driven Economy”, the British government announced its intention of making, “the U.K. the best environment in the world for e-commerce”. Since then, the U.K. has excelled in promoting this particular sector of the economy with the number of firms undertaking business online increasing by 25% between 2002 and 2003 alone. The internet is now considered as a legitimate mainstream commercial and sales medium with revenue of £14.5 billion generated in the U.K. during 2004. As the result of its increasing popularity, web-based shopping grew 26 times faster than on the high street last year, causing the Interactive Media in Retail Group (IMRG) online retail sales index to reach an all-time high in the last month of 2004.

Chart 3.8: Explosive Growth in Online Sales

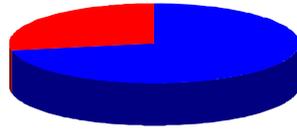


Furthermore, the value of online transactions made in Britain is second only to that reported in the United States, as more and more consumers switch from the high street to cyberspace. Half of the adult population in the U.K. either purchases or banks online and two-thirds of all internet users had bought online by mid-2004, compared to only one in five in 2000. All sectors and all sizes of business with online sales capabilities have seen increased customer activity over the years, although the book, CD and DVD sector, one of the first to take off on the internet, has maintained its status as an industry leader alongside the rapid growth areas of travel and financial services. Until recently, the most prolific online spenders tended to be males between the ages of 24 and 65, although such patterns are beginning to change with online purchasing becoming increasingly popular among females, whilst the number of 'silver surfers', those internet users of retirement age, doubled between 2002 and 2004.

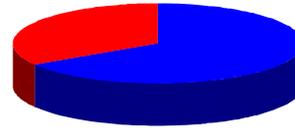
The majority of online payments are made using plastic cards, primarily due to their security and convenience. In contrast to the norm on the high street, credit cards are more popular than debit cards as a result of the added security they provide to the consumer. Although most web-based retailers do allow for the more traditional payment methods such as cheque or bank draft, these have proven much less attractive to online shoppers than the ability to immediately input payment details over the web. The transaction process surrounding these alternative forms tends to result in a lengthy purchasing procedure, defeating the primary benefits of internet based shopping; namely, speed and simplicity. In 2003, online payments accounted for 9% of all credit card transactions. This figure is likely to grow significantly as the credit card industry expands over the coming years.

Chart 3.9: Credit Cards Dominant on the Net

Sales by value:
credit 72%
debit 28%



Sales by volume:
credit 66%
debit 34%



Source: APACS (2004 data)

The Benefits

i. How credit cards benefit e-commerce

Without credit cards e-commerce would have struggled to take-off, and they continue to remain key to the development and growth of web-based commercial activity. Credit cards ensure greater business-to-consumer and business-to-business online interaction. The acceptance of credit cards as a primary method of payment in the e-commerce sector facilitates spending through their ease of utilisation and evidence has shown that they significantly increase sales. Credit cards have worldwide recognition thus making them easily allied to e-commerce activity which also operates in the international arena. Revenue is bolstered via the global reach of firms trading online, whilst through the international reach that the internet provides, the visibility and accessibility of a firm's product is increased. In general, the acceptance of credit cards by internet companies encourages higher sales through impulse buying, whilst a firm's familiarity with credit cards often legitimises an otherwise unknown company. The presence of a big name credit card company on a firm's website clearly signals to consumers the security and reliability of the company and its goods. Furthermore, customers often feel greater security is available when paying by credit card rather than a debit card through which direct access to a customer's bank account is possible. The fact that legislation ensures that the burden of fraudulent credit card usage does not fall on the consumer is another important positive feature. Psychological tests of shoppers, undertaken by David Lewis Consultancy, show consumers find online shopping the least stressful retail experience, whilst the high street proves the most unattractive choice. The web provides customers instantly with what they are looking for, satisfying immediate customer desires and lowering search costs. Credit cards fit neatly with the idea of being able to undertake swift transactions, as well as peoples' broader perceptions of e-commerce and the internet.

For business, the ease of trading in the e-commerce environment is often underpinned by the sector's close connection to credit cards due to the speed of transactions compared to traditional methods and the concomitant reduction in transaction costs. According to the ONS, business to business sales conducted via the internet grew 113% in 2003 alone, whilst many online companies believe they could lose up to 80% of their sales if they had to rely on conventional ordering approaches. The ability to accept payment by this particular form of plastic card works to improve cash flow, increases auditing transparency and helps in inventory management. Credit cards are quicker to use than cheques or bank drafts, which would require a lengthy approval and mailing process. This also cuts down on the paper burden associated with these other forms of payment. Increased transaction velocity and clearer account management enables funds to be made rapidly available for productive purposes, thus increasing sales potential and strengthening profit margins. Credit cards are also the primary universal medium of exchange that can be transmitted electronically and can easily handle currency exchanges for international transactions.

The availability of 24-7 trading is extremely important in an increasingly global market place and hectic individual environment. Longer working hours for individuals mean that alternative shopping facilities being open when the high street is closed are very attractive. For cash-rich, time-poor consumers purchasing by credit card over the internet is the ideal way to maximise precious leisure time. The ability of many e-businesses to personalise their service to the needs of the consumer, via customer profiling, enables more interactive marketing and is another strong selling point. As is the range of choice in terms of brands and suppliers available to the consumer through the worldwide web. The avoidance of having to repeatedly enter private details, including credit card details, is often a key spur in completing a sale. The added extras of detailed product information, cost calculators and delivery options increase the attractiveness of web-based purchases. Furthermore, online shopping has important implications for both people in isolated areas and the less mobile or older generation. Those areas in which it would not be cost effective for firms to set up shop in are now provided with goods and services by the click of a button. E-commerce has the clear possibility to be the key shopping vehicle of the future.

ii. How e-commerce benefits the economy

Credit cards can be regarded as indirectly providing significant positive benefits to the British economy via e-commerce activity. Credit cards help boost private spending and domestic consumption within the e-business sector and overall in the U.K. Furthermore, while adding to national expenditure e-commerce also works to raise investment in the private and public spheres as well as in both physical and human capital terms. Although the U.K. is one of the most advanced countries in Europe regarding internet provision, only 50% of homes have access to this important medium. As such, pressure from business is encouraging government to undertake long-term investment decisions both in the provision of infrastructure but also regarding skills development.

The flexibility that e-commerce provides for businesses results in cost reductions, in the form of overhead and often staff requirements, particularly sales personnel. This enables time and money to be focused on other areas of the business, improving efficiency and productivity. High levels of competition within the e-business sector and the possible ease of entry into the market by competitors helps to keep prices low, ensuring benefits for both the consumer and the wider economy. Freed-up time also enables companies to focus on customer service, providing welfare-improving advantages for the whole community as the provision of information enables utility maximization. Both domestic and international demand help drive growth in the industry, in turn this means that as well as raising domestic consumption e-commerce boosts export activity. The rapid development of the industry within the U.K. creates considerable potential for the country to gain competitive and comparative advantages both regionally and globally, thus further strengthening the country's trading position.

Furthermore, technological and innovative developments within the sector will provide important positive spillover effects for the rest of the economy, whilst the particular form of business model that e-commerce generates works to create the advancement of new management and marketing strategies and ideas. In part, e-commerce has spurred the development of wireless and mobile-commerce (m-commerce), transactions conducted electronically by mobile phone, while web-based banking and e-businesses have helped to improve the web's security. This benefits all online communities and computer software-based companies. To support these ICT (information and computing technology) innovations public policymaking has evolved to highlight the significance of e-commerce to the local economy; for example, information technology is an increasingly important part of education and learning. Finally, web-based firms and their affiliates have generated significant employment opportunities and have given rise to new prospects for expansion and development in existing sectors, not least the travel and property industry. E-commerce looks set to become a significant contributor to British economic growth.

The Risks

There are a number of threats to the e-business industry's outlook. For example, reputation is an increasingly important factor for web-based firms, implying market entry difficulties for non-branded goods. Patented processes and proprietary software can also create barriers to entry for smaller companies. While the possibilities to differentiate between customers due to low cost and highly effective information gathering can result in price discrimination and thus work to deter competition within the sector. These complications clearly challenge e-commerce's potential for expansion. Interestingly, the industry's most intractable worry, namely fraud, is, like the birth of e-commerce itself, intimately linked to credit cards. The key risk facing the e-commerce sector is fraudulent credit card activity, both in terms of a real burden and its impact on the perceived stability and security of the medium.

Evidence shows that online businesses are no more at risk than high street retailers from credit cards scams, and that consumers are equally at risk from fraud when undertaking web-based transactions as when making purchases in-person. Internet-originated plastic card scams amounted to £12 million in fraudulent transactions in 2004 in the U.K., accounting for just over 2% of all card fraud during the year, whilst over 90% of web surfers use a network browser capable of SSL (Secure Sockets Layer) security. Nevertheless, e-commerce is a relatively new form of business model, and widespread scaremongering in the media leaves the industry very much vulnerable to misconceptions. Currently, many potential customers perceive the risks of using a credit card for online transactions to be greater than the benefits of this new purchasing medium. Consumer surveys regarding internet usage and online shopping suggest that people are most concerned by the threat of credit card hackers, fraud and personal information theft.

Credit cards scams are not only the concern of customers but businesses as well. Being liable for fraudulent transaction costs has left online businesses in a particular quandary, as e-commerce transactions are 15 to 20 times more likely to be disputed than transactions undertaken face to face, whilst the opportunities for card-not-present fraud are significantly greater than for brick-and-mortar businesses. Although things have clearly improved from the early days of e-commerce, when Expedia.com announced a loss of between \$4 and \$6 million due to fraudulent credit card purchases during the period November 1999 to February 2000, equalling 12% to 18% of sales, such costs remain a real threat to business survival in this extremely liquid and competitive market.

While ever-more inventive ways to pay online are established, the credit card looks set to remain the key player in the future development of e-commerce. Second generation e-payment methods such as Paypal, CyberCash, and other forms of e-wallet are a growing industry, aiming to attract those sceptical of handing over their credit cards' details online and more importantly in a bid to capture the large group of potential customers without access to a credit card or those undertaking small value transactions, in particular teenagers.

Although some forms of e-payment are growing in usage, many have failed. So far the alternative payment mechanisms available have been unable to wrestle market share away from the credit card industry where the major brands are themselves finding similar ways to target groups who do not use credit cards. For example, American Express, MasterCard, and Visa all have prepaid card options for younger shoppers. Trustmarks and other independent verifications, such as ISIS (Internet Shopping Is Safe), are an important part of developing e-confidence and ensuring consumer protection. To ease business concerns, credit card companies are introducing authentication arrangements in which firms are no longer liable for the vast majority of chargebacks, such as Verified by Visa or MasterCard SecureCode, whilst most U.K. banks use the WorldPay or NetBanx payment system which will hopefully be extended into the worldwide e-commerce arena.

Consumers are reluctant, however, to use new web payment methods if they are not widely accepted online and merchants are hesitant to adopt alternative systems until customers are comfortable using them, particularly in light of high set-up costs. Credit cards remain easy to use and understand, and are highly familiar to people, thus making them a market leader in the non-cash payment industry. The emergence of greater internet and credit card security will undoubtedly result in a new wave of online commerce as consumer confidence grows and people's perceptions of e-commerce as a safe, reliable, easy, and convenient way of shopping gradually strengthen.

The Future

E-commerce is a thriving sector of the U.K. economy with much growth potential. Far from having reached a plateau in expansion e-commerce has a plethora of opportunities available to it. Within a decade, online shopping is forecast to account for a staggering 30% of retail sales³³. Government pledges to ensure complete broadband coverage for the whole of Britain by 2008, as well as other infrastructural measures to facilitate the industry, will open online purchasing capabilities to a widespread set of consumers currently outside the system. The number of internet users in the U.K. is set to increase significantly. From this, all sectors of the online business community are set to benefit. The e-commerce boom will be driven not only by new households coming online but also from existing cyberspace shoppers. Growth in categories currently not market leaders is set to take off as consumers become increasingly confident with the technology and security surrounding the internet. As credit cards are intimately linked to the development of e-commerce, the sector's growth will both benefit and be made easier by increased credit card availability and as consumer confidence in the protection of their credit card data grows. As the number of credit cards in the U.K. continues to grow there is an even greater opportunity for an online shopping revolution and the attainment of its related benefits.

³³ Source: IMRG

Conclusion

Credit cards—like any other form of financial instrument—will continue to have their advocates and their detractors, but they are unquestionably an intrinsic and indispensable part of the British financial landscape. They are the most flexible and liquid form of credit in widespread use and without the existence of credit, as we have demonstrated, households would be forced to consume directly out of disposable income. This would aggravate the boom and bust cycle and reduce potential growth.

The industry is also a notable employer, in several cases in areas that have lost out through the dissolution or diminution of some other industry. We have identified ten communities where the credit card industry directly accounts for at least one in every 100 labour force jobs, and this does not include the 110,000-plus people employed in the industry's ancillary and subsidiary companies. The earnings and taxes paid by these corporations add to the bottom line of both households and government, at the local and national level. By investing in human and physical capital, these companies also boost economic growth, now and in the future.

Finally, individual cardholders and merchants reap the rewards of a range of time- and money-saving features, some of which are common to other types of payment, electronic or otherwise, and some of which are unique to credit cards. These include convenience, security, and flexibility, to name just a few.

This is not to say that cards do not have their costs—whether in the form of fraud or over-indebtedness. Moreover, there is room for improvement in the communication and marketing of credit card products and the sharing of credit information amongst lenders; this would help reduce the incidence of irresponsible borrowing and negligent lending, to the betterment of both creditors and borrowers. It is our belief, however, that the myriad benefits outweigh the costs and that the breadth and depth of these benefits should not be overlooked or marginalized in the ongoing credit card debate.

Appendices

Appendix A

Economy.com's U.K. Model

United Kingdom - Forecast Table

Last updated on: 7/29/2005

Quarterly Indicators	Units	History					Forecast				Averages (%)	
		04Q2	04Q3	04Q4	05Q1	05Q2	05Q3	05Q4	06Q1	99-04	05-09	
National Accounts												
Gross Domestic Product	Bil. 00 GBP	277.1	278.1	279.6	280.7	282.6	283.8	285.4	285.3	2.8	2.5	
<i>change</i>	%YA	3.7	3.1	2.7	2.1	2.0	2.1	2.1	1.7			
Private Consumption	Bil. 00 GBP	184.0	185.0	186.1	186.3	187.5	188.2	189.6	190.4	3.4	2.5	
<i>change</i>	%YA	3.5	3.6	3.8	2.5	1.9	1.7	1.9	2.2			
Fixed Investment	Bil. 00 GBP	49.3	50.1	49.9	51.0	50.9	51.4	50.7	51.9	3.3	3.6	
<i>change</i>	%YA	6.9	8.9	3.8	5.2	3.3	2.6	1.6	1.8			
Changes in Inventories	Bil. 00 GBP	1.0	0.9	1.9	1.8	1.3	2.3	3.5	1.7	na	na	
<i>% of GDP</i>	%	0.4	0.3	0.7	0.7	0.5	0.8	1.2	0.6			
Total Investment	Bil. 00 GBP	50.3	51.0	51.9	52.8	52.2	53.7	54.2	53.6	3.1	3.0	
<i>change</i>	%YA	9.8	5.6	2.5	6.2	3.8	5.2	4.5	1.5			
Government Expenditures	Bil. 00 GBP	56.7	56.8	57.0	57.4	58.7	58.6	58.9	59.3	3.5	3.0	
<i>change</i>	%YA	3.9	2.5	1.1	1.5	3.5	3.1	3.2	3.2			
Domestic Demand	Bil. 00 GBP	291.0	292.9	295.0	296.6	298.4	300.4	302.6	303.3	3.4	2.7	
<i>change</i>	%YA	4.6	3.8	3.0	3.0	2.5	2.6	2.6	2.3			
Exports	Bil. 00 GBP	71.9	72.1	72.9	72.3	75.0	74.5	75.5	74.5	3.3	4.9	
<i>change</i>	%YA	4.6	5.3	4.8	2.0	4.3	3.4	3.5	3.0			
Imports	Bil. 00 GBP	81.7	82.7	84.2	83.1	85.7	86.1	87.7	87.5	5.1	5.1	
<i>change</i>	%YA	7.0	6.8	5.8	3.7	4.8	4.1	4.1	5.2			
Net Exports	Bil. 00 GBP	-9.9	-10.6	-11.3	-10.9	-10.8	-11.6	-12.2	-13.0	na	na	
Trade												
Current Account	Bil. GBP	-5.0	-8.9	-4.1	-5.8	-6.3	-5.9	-6.3	-6.5			
<i>% of GDP</i>	%	-1.7	-3.1	-1.4	-1.9	-2.1	-2.0	-2.0	-2.1			
Prices												
CPI	1996=100	111.2	111.2	112.0	112.3	113.4	113.6	114.3	114.8			
<i>change</i>	%YA	1.4	1.2	1.4	1.7	2.0	2.2	2.1	2.2			
PPI	1995=100	98.2	100.7	103.2	106.1	107.9	104.9	106.4	108.9			
<i>change</i>	%YA	3.9	5.6	6.7	10.5	9.9	4.2	3.1	2.7			
GDP Deflator	1995=100	104.5	105.2	106.2	106.4	105.9	106.6	107.5	108.2			
<i>change</i>	%YA	1.8	1.7	2.4	2.4	1.4	1.4	1.2	1.7			
Export Deflator	1995=100	100.0	100.8	102.6	102.7	101.7	102.6	104.1	104.1			
<i>change</i>	%YA	-1.6	-1.3	1.6	3.1	1.7	1.7	1.5	1.3			
Import Deflator	1995=100	99.3	100.4	101.2	101.7	101.1	102.0	103.5	104.1			
<i>change</i>	%YA	-1.1	-0.3	0.8	3.3	1.8	1.5	2.3	2.3			
Labor Markets												
Unemployment Rate	%	2.8	2.7	2.7	2.6	2.7	2.9	2.9	2.9			
Production												
Total Production	2002=100	100.9	99.9	100.0	99.2	98.8	99.7	100.2	100.1			
<i>change</i>	%YA	1.8	0.4	-0.1	-1.0	-2.1	-0.2	0.2	0.9			
Financial Markets												
Money Supply	Bil. GBP	1,115	1,141	1,165	1,200	1,212	1,226	1,239	1,297			
<i>change</i>	%YA	7.9	9.3	9.2	9.7	8.7	7.4	6.3	8.1			
Monetary Policy Rate	%	4.21	4.65	4.75	4.75	4.75	4.50	4.50	4.25			
Treasury Bill Rate	%	5.04	4.95	4.62	4.59	4.59	4.52	4.32	3.90			
US Dollar per British Pound	USD/GBP	1.81	1.82	1.87	1.89	1.86	1.75	1.74	1.75			
<i>change</i>	%YA	11.7	13.0	9.4	2.7	2.8	-3.8	-7.0	-7.4			
British Pound per Euro	GBP/EUR	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7			
<i>change</i>	%YA	-4.7	-4.0	-0.7	2.1	2.0	11.6	6.9	6.2			
Stock Market-FTSE 100	Index	4,483	4,437	4,715	4,928	4,956	4,832	5,084	5,280			
<i>change</i>	%YA	12.4	6.6	8.5	10.6	10.6	8.9	7.8	7.2			
Conversions												
Nominal GDP	Bil. GBP	289.4	292.5	297.0	298.5	299.4	302.6	306.8	308.7			
<i>change</i>	%YA	5.6	4.9	5.2	4.6	3.5	3.4	3.3	3.4			
Real GDP in Dollar terms	Bil. 00 USD	420.0	421.5	423.9	425.4	428.5	430.2	432.7	432.5			
<i>change</i>	%YA	3.7	3.1	2.7	2.1	2.0	2.1	2.1	1.7			
Nominal GDP in Dollar terms	Bil. USD	522.6	532.2	554.1	564.3	557.0	529.7	533.9	540.6			
<i>change</i>	%YA	17.8	18.4	15.0	7.4	6.6	-0.5	-3.7	-4.2			

Economy.com has developed and currently maintains econometric models for the U.K., euro zone, and 43 other countries. Based on its models, Economy.com provides ongoing forecasts and detailed analysis on each of these countries. This project's simulation uses a detailed econometric model that includes all the national income components, financial capital flows, domestic consumer credit activities, the labour market, the housing market, exports and imports of goods and services, business investment, and such indirect links as global exchange rates, energy and other commodity prices, and economic growth in the rest of the world. The model has a quarterly periodicity and a five-year forecast horizon.

In the broadest sense, aggregate economic activity is determined by the intersection of the aggregate demand and supply functions. In the short run, fluctuations in economic activity are primarily determined by shifts in aggregate demand. The level of resources and technology available for production are taken as given. Prices and wages adjust slowly to equate aggregate demand and supply. In the longer term, changes in aggregate supply determine the economy's growth potential. The rate of expansion of the resource and technology base of the economy is the principal determinant of economic growth.

The aggregate demand schedule is disaggregated into consumption, investment, government expenditures, and international trade. Real consumption is modelled as a function of real disposable income, real wealth and the real interest rate. While real disposable income and real wealth are the long-term determinants of consumption, changes in real interest rates account for short-run fluctuation in real consumption.

Gross domestic investment is divided into private and government investment. On the demand side, investment is a critical determinant of the business cycle because it responds to, and therefore amplifies, shifts in output. Investment influences the supply side of the economy since it is the principal determinant of potential output and labour productivity.

Government policies are treated as partially exogenous since legislative and administrative decisions are not predictable responses to macroeconomic conditions. Total government receipts are the sum of personal tax receipts, social insurance contributions, corporate profits tax receipts, and indirect tax receipts. Personal taxes account for the bulk of tax collections.

With respect to international trade, the key determinants of export volumes are relative prices and a weighted average of the GDP growth rate of trading partners, while real imports are determined by specific domestic spending categories and relative prices. The local currency/dollar exchange rates are determined endogenously. The external sector model is significantly more detailed but is dealt with briefly here, as it has little relevance to the simulation in question.

The supply side of the country model describes the economy's capabilities for producing output. In the model, aggregate supply, or potential GDP, is estimated by a function that combines factor input growth and improvements in total labour productivity. Factor inputs include labour and business fixed capital. Factor supplies are defined by an estimate of the full-employment labour force and capital stock. Total factor productivity depends upon the stock of R&D capital, the age of the effective capital stock, full-employment weekly hours, and trend technological change.

The growth of aggregate supply is the fundamental constraint on the long-term growth of aggregate demand. Inflation created by demand that approaches or surpasses potential GDP raises credit costs and weakens consumer confidence, thus constraining aggregate demand when the economy is overheating. Conversely, lower inflation and easier credit stimulate demand when economic conditions are slack. An increase in government spending, for example, narrows the gap between aggregate demand and aggregate supply, driving up output prices and lowering the unemployment rate. Higher prices and a tighter labour market then force up wage rates further igniting inflation, although this effect is partially offset by an increase in labour productivity. Higher inflation and a stronger real economy drive up interest rates and reduce real income gains. The net effect is a dampening of aggregate demand to bring it back in line with aggregate supply.

The financial sector of the model is composed of equations for money demand, bank reserves, and short- and long-term interest rates. The money demand equations are derived from portfolio theory: the demand for cash depends on the level of income, the expected level of transactions, and the opportunity cost of holding liquid assets as opposed to other interest-earning instruments. Money is not a single asset, but rather a group of asset categories with varying degrees of liquidity. At one extreme is currency, which can be exchanged directly for assets; money also includes savings and time accounts, and, at the other extreme, certificates of deposit.

The key short-term interest rate in the model is the central bank's policy rate, which is based on a reaction function. This is consistent with most central banks in the world. Monetary policy in the model is primarily guided by economic conditions, the prospects of inflation, the exchange rate, money supply growth, the direction of fiscal policy, and the health of the financial system.

While the income side of the national accounts is not as carefully followed as the demand side of the accounts, it is the income sector that makes macroeconomic models truly general equilibrium models. One household's spending is income to another household, while income generated by production is a constraint on final demand. Moreover, the distribution of income among households, businesses, and government has significant effects on the composition of output and on the dynamics of the business cycle.

National income is defined as the sum of the value added by the domestic economy, including wages, profits, and taxes, and net factor income and transfers from abroad. The difference between national income and consumption is the amount of savings generated by the economy. These savings may or may not suffice to meet the investment requirement of the economy. If savings are greater than investment demand, then the excess savings leave the economy as a capital outflow for countries experiencing deficit in net savings. In the reverse case—when savings are less than investment demand—capital inflow from countries with surplus savings fills the gap.

Appendix B

Credit Card Market Shock

Under the most conservative scenario, **total outstanding credit card debt** is still £2.5 billion less than would have been the case according to our baseline forecast one year after interest rates and risk aversion start to increase. Three years out, total borrowing is still £3.5 billion below its level in our central scenario. **In the most extreme case, this discrepancy jumps to £9.45 billion a year out and £13 billion three years in the future.** The gap continues to widen throughout the forecast period in each and every scenario, and this reduction in borrowing feeds through to the rest of the economy through its impact on private expenditures.

Disposable income is the main determinant of long-run consumption growth. In turn, wage growth and thus employment is the principal driver of real disposable income gains. As such, **changes to the supply or cost of credit do not directly impact on disposable income.** Nevertheless, **real household spending** is reduced by £350 million pounds in the year following the shock even under the most conservative case study, while in the **worst case scenario private consumption spending is cut by just over £1 billion over the next four quarters.** Moreover, in all three simulations it takes until 2008 for the economy to return to trend, pointing toward a prolonged downswing in private consumption growth, even under the most modest shock. As with our main simulation, higher savings would give modest buoyancy to investment, accounting for the gap between the reduction in private spending and the lost real GDP gains.

The reduction in household outlays will dent the public tax intake, **reducing general government revenues by £120 million and £380 million in the year immediately following the shock** and by between £240 million and £870 million over three years.

In the most conservative simulation, **total real gross domestic product** is reduced by £210 million over the year following the shock, but returns to trend fairly quickly. Under the **most negative scenario real GDP is reduced by £710 million in one year and does not return to trend until the second quarter of 2008, totalling lost growth of £1.1 billion.** In the medium scenario, growth is reduced by £450 million and returns to trend in the first quarter of 2008. In nominal terms, i.e. without stripping out the influence of price growth, the impact is sharper and fell over a slightly longer time frame.

In sum, the impact on the aggregate economy is relatively small; a loss of £1.1 billion in inflation-adjusted output is not statistically significant to an economy which in 2004 had a real GDP of £922 billion. Even in the worst case scenario, real GDP growth is only reduced by a tenth of a percentage point in the quarters immediately following the shock. This is because, as highlighted in the main body of the text, by only restricting credit card interest rates and access to this type of credit, households substitute other forms of debt and the model quickly returns to trend. It is important to note that the distribution of the welfare loss would be asymmetric with those households facing hard liquidity constraints bearing a disproportionate share of the adjustment, if not absorbing the entire reduction in potential private spending growth.

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