MOODY'S ANALYTICS

ANALYSIS

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The Impact of Electronic Payments on Economic Growth

Introduction

Greater worldwide card use raises a number of questions. Foremost, do electronic payments bring macroeconomic benefits?

Moody's Analytics attempted to answer this question by analyzing macroeconomic data for 70 countries/regions between 2011 and 2015. By calculating the impact of card usage on per capita consumption, Moody's Analytics was able to extrapolate the effect that the increase in spending on goods and services had on consumption and thereby GDP.

Specifically, Moody's Analytics estimated that higher card usage contributed an additional $296 billion to consumption between 2011 and 2015, or a 0.1% cumulative increase in global GDP during the sample time period. That equals about a $74 billion contribution to GDP each year. Real consumption grew at an average of 2.3% in the same period, of which 0.01 percentage point is attributable to increased card penetration. This implies that card usage accounted for about 0.4% of growth in consumption, as well as an average increase of 2.6 million jobs over 2011-2015.

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Executive Summary

Rising Card Payments Drive Economic Growth

Payment cards are not just convenient but also play a crucial role in stimulating economic growth in countries/regions around the world.

Over the last 50 years, the rapid proliferation of electronic payments—in particular credit, debit and prepaid cards—has changed how consumers pay for goods and services, how merchants manage their businesses, and how governments make and collect all sorts of payments. Electronic payments provide consumers with convenient and secure access to their funds, reduce cash and check handling for merchants, and expand the pool of customers who are guaranteed to pay. Importantly, they also promote greater financial inclusion, giving those without access to the formal banking system an introduction to formal financial services. Electronic payments also give governments a greater ability to collect additional tax revenue by reducing the number of unreported transactions in the gray economy.

All of this reduces friction in the overall economy and leads to increased spending on goods and services. That, in turn, creates a virtuous economic cycle whereby increased consumption translates into increased production, more jobs, higher incomes and greater economic prosperity.

But just how much has the expansion of electronic payments contributed to global economic growth in recent years? What has been the impact on GDP and employment, and has this impact differed between developed countries/regions and emerging markets?

Moody's Analytics set out to answer these questions by examining the impact that the migration toward electronic payments has had on 70 countries/regions around the globe over a five-year period between 2011 and 2015.

Together, these economies make up almost 95% of world gross domestic product. Overall, Moody's Analytics found that:

» **Electronic payments added $296 billion in real (U.S.) dollars to GDP in the 70 countries/regions studied between 2011 and 2015**. That is equivalent to the creation of about 2.6 million jobs on average per year over the five-year period, or about 0.4% of total employment in the 70 countries/regions.

» **Countries/regions with the largest increases in card usage experienced the big-gest contributions to growth.** For example big increases in GDP were recorded in Hungary (0.25%), the United Arab Emirates (0.23%), Chile (0.23%), Ireland (0.2%), Poland (0.19%) and Australia (0.19%). In most countries/regions, card usage increased regardless of economic performance. Only in the case of Finland, Greece and Tunisia did card usage decline when economic performance deteriorated or other macro events affected activity. As a result, consumption was weaker than it would have been had card penetration increased or remained unchanged.

» **Increased electronic payments resulted in roughly the same percentage increase in GDP between 2011 and 2015 for emerging markets (0.11%) as for developed countries/regions (0.08%)**. However, when card usage increases by 1% across countries/regions, developed countries/regions experience a larger percentage increase in GDP (0.04%) than do emerging markets (0.02%). This suggests there is a compounding benefit for advanced countries/regions as electronic payments usage deepens.

» **The expansion of electronic payments could have a significant, positive effect on future economic growth.** Across the 70 countries/regions in the study, we found that each 1% increase in usage of electronic payments produces, on average, an annual increase of approximately $104 billion in the consumption of goods and services, or a 0.04% increase in GDP, assuming all other factors remain the same.

» **Electronic payments could also have a significant improvement on spending habits.** Given recent card penetration rates, growth rates and the additive effects, Moody's Analytics calculated that consumption was 0.4% higher between 2011 and 2015 than it would have been if electronic payments had not increased; total consumption increased on average by 2.3% over the sample period. Because consumption growth is on average faster in emerging economies, emerging economies have more to gain by increasing electronic payments usage to speed consumption growth even further. Consumption growth in both emerging economies and developed countries/regions benefits from additional card usage.

This study marks the third time that Moody's Analytics has conducted this analysis and the results suggest again that both emerging economies and developed countries/regions benefit from increasing electronic payments. However, penetration in and of itself will not necessarily spur growth. Successful penetration goes hand in hand with a well-developed financial system and a healthy economy.

This study found that developed countries had a larger dollar increase in GDP

than did emerging markets. On a cautionary note, slippage in electronic payments usage, such as that seen in Finland and Greece, is estimated to have reduced the resilience of consumer spending in these countries to the downturn in their economies.

While this study provides a comprehensive look at the impact of electronic payments on economic growth between 2011 and 2015, it does not consider as exogenous variables in our model a country's fiscal policies nor the strength of a country's financial system such as the stability of the banking sector or prevalence of financial infrastructure such as ATMs. The study also does not analyze the effects of mobile phone payments—such as payments through cell phone apps, which are not directly tied to a credit, debit or prepaid card—which through widespread usage in emerging markets could increase penetration rates. That is, if anything, for emerging markets, the positive impact of electronic payments is conservative and potentially an underestimate. Still, the findings definitively highlight the important contribu-

tion that migration to electronic payments has made on economic growth and suggest that policies that speed card adoption would benefit economic growth across the globe.

The report is structured as follows: Part I provides an introduction to the report and briefly highlights the findings. Part II will discuss the various channels in which electronic payments usage can help the macroeconomy. Part III will discuss the methodology and provide an econometric model capturing the effects of card usage. Part IV will calculate and analyze the additional consumption and GDP brought about by rising card usage. Part V will analyze labor productivity and calculate the increase in jobs due to increases in card use. Part VI poses a hypothetical question to calculate the elasticity of electronic payments usage on consumption. Part VII outlines the evolution of the methodology between this and previous versions of this study. Part VIII concludes that there are significant economic gains to increased electronic payments penetration and thus there are also policy implications for governments.

Study Methodology

This study focused on the impact of increased card penetration on real private consumption in 70 countries/regions over five years between 2011 and 2015. The results were then extrapolated to estimate the impact that increased consumption had on economic output, as measured by GDP, and on job creation.

Real private consumption was modeled as a function of real disposable income, real interest rates and card penetration, defined as spending using credit, debit and prepaid cards as a share of overall consumer expenditures. The data were pooled for all countries/regions to create a data set with over 325 observations;
a statistical technique called "pooled cross-section time series estimation" was used to estimate the model parameters.

Once the model was specified, this study calculated various measures to isolate the impact of card use on consumption, labor and GDP. To isolate the impact of usage, the change in card penetration between 2011 and 2015 was used.

Part I: Introduction: The Macroeconomic Impact of Electronic Payment Usage

Sixty years ago, most consumers used cash or checks to buy goods and services, with cash predominately used for smaller purchases and checks for more costly transactions. While cash remains the predominate form of payment in some places in the world, it has become a less common method of transaction as the advent of general purpose payment cards has allowed consumers and businesses to buy and sell with greater convenience. Today, consumers can make electronic payments with credit, debit and prepaid cards—and more recently, using all kinds of devices, from watches to mobile phones.

Greater worldwide card use raises a number of questions. Foremost, do electronic payments bring macroeconomic benefits?

Moody's Analytics attempted to answer this question by analyzing macroeconomic data for 70 countries/regions between 2011 and 2015. By calculating the impact of card us-age on per capita consumption, Moody's Analytics was able to extrapolate the ef-

fect that the increase in spending on goods and services had on consumption and thereby GDP.

Specifically, Moody's Analytics estimated that higher card usage contributed an additional $296 billion to consumption between 2011 and 2015, or a 0.1% cumulative increase in global GDP during the sample time period. That equals about a $74 billion contribution to GDP each year. Real consumption grew at an average of 2.3% in the same period, of which 0.01 percentage point is attributable to increased card penetration. This implies that card usage accounted for about 0.4% of growth in consumption, as well as an average increase of 2.6 million jobs over 2011-2015.

The impact of card usage on consumption and economic growth varied considerably across the 70 countries/regions that were studied. This reflects differing economic growth rates, penetration, and financial systems. Financial systems conducive to the growth in electronic payments include control over

inflation and the money supply, a wide network of stable and readily accessible banks, insurance companies and pension funds, the existence of markets such as stock exchanges, and the availability of such financial

infrastructure as ATMs. Card usage increased consumption the most in Russia (0.64%), the United Arab Emirates (0.52%), Qatar (0.47%), Ireland (0.42%), and Hungary (0.4%). Card penetration rates increased by over 7 percentage points in each of these countries between 2011 and 2015.

Declining card usage decreased consumption by 0.003% in Greece and 0.04% in Finland. Severe recessions in both countries during the time period in addition to higher tax rates likely led to decreased card usage.

Additionally, the report includes a hypothetical study of the impact of a 1% increase per year in the card penetration rate in each country/region. Every 1% increase in card usage across the 70 countries/regions produces an annual increase of approximately $104 billion in the consumption of goods and services, or a 0.04% increase in GDP, assuming all other factors remain the same.

The estimated GDP elasticity, or responsiveness of GDP to increases in card penetration, for developed countries/regions is higher than it is for emerging markets, because the card penetration rate is nearly three times the size for developed countries/regions, where it averages almost 42%, as it is for emerging economies, where penetration averages 16%. This is not surprising considering that developed countries/regions are places that have more established payment networks, consumers who are more comfortable using cards, and environments where cards are accepted by most merchants. By comparison, cash payments are still more prevalent in emerging economies.

Economy | Average contribution to GDP

0.10%

Part II: The Value of Electronic Payments: Less Friction, More Efficiency

Electronic Payments Benefit All Parties Involved in Many Ways

Within the electronic payments ecosystem there are two main end-parties: buyers (consumers) and sellers (merchants). The evolution to electronic payments from cash and checks has changed the behavior of, and in some cases the relationship between, consumers and merchants.

The availability of electronic payment systems leads to a virtuous economic cycle whereby increased consumption leads to increased production, more jobs, greater income, and, ultimately, stronger economic growth.

Although the study does not specifically explore the reasons for the incremental growth in GDP attributable to card usage, there are a number of plausible explanations: The advent of electronic payments has greatly aided consumers' ability to optimize consumption decisions by giving them secure and immediate access to all of their funds on deposit (debit cards) or a line of credit (credit cards). Merchants also benefit because there

is less cash and check handling in the system, and they have access to a large pool of customers with guaranteed payment. Electronic payments play a critical role in the rapidly expanding e-commerce environment where payment by cash or check is not usually an option.

Benefits to Consumers and Merchants

» **Electronic payments provide access to financial resources.** Consumers using cash or checks may be limited in the amount of funds they have for particular transactions. With cash, consumers are limited to the funds they have on hand. Merchants may be reluctant to accept checks for bigger transactions because of the risk of nonpayment. Electronic payments address both of these issues: They provide consumers with access to all available funds or lines of credit for a given transaction and they give merchants peace of mind about payment

guarantees, provided they follow appropriate payment procedures.

» **Access to credit helps calibrate periodic income with continuous consumption.** Wages and salaries are typically paid weekly, biweekly or monthly. Consumer spending, however, has no time profile. Putting food on the table or fixing a broken-down vehicle should not have to wait for the next paycheck. Credit smooths out the consumption of durable and nondurable goods by lessening the need to wait for paydays. In obtaining credit, consumers generally have three options: bank loans, store credit or credit cards. Credit cards are more convenient and offer lower consumer transaction costs, as the former two involve paperwork, hassle and a potential transaction-by-transaction waiting period.

» **Cards provide consumers the means to participate in the digital economy.** In most cases, online shoppers are

Consumption

Decline in Inventory

Increased Production

Greater Income

More Jobs

required to use cards for purchases. Cardholders thereby have a larger variety of goods and vendors to choose from and a broader international marketplace is made available to consumers. Opportunities are limited for consumers using cash. Since online shopping is also completed with "the click of a button," the economy immediately receives a jolt to consumption and GDP.

Security

» **Trust in electronic transactions further drives consumption.** With electronic payments, consumers have recourse for fraudulent transactions. The peace of mind that merchants have with guaranteed payment also extends to consumers, who feel more comfortable making purchases when they can pay with a card. This trust in the payment system eases friction, bolstering consumption and thereby GDP growth.

Convenience

» **Cards provide convenience and lower business costs.** Consumers cite the convenience of electronic payments, whether it means not having to visit the ATM to obtain cash or not having to count out the cash at the point of transaction. This convenience benefits merchants as well. For instance, when consumers use their own cards at the self-service gasoline pump or supermarket, it lowers labor costs for merchants. Each small portion of friction that electronic payments eliminate from the system contributes to higher consumption and GDP.

Transparency

» **Electronic payments reduce central bank costs in providing currency.** By reducing paper transactions, electronic payments can reduce the cost to central banks of providing notes and coins or to Treasury or Finance departments of processing paper money, thereby improving overall efficiency in commerce and the economy.

» **Electronic transactions eliminate a substantial portion of the gray economy.** Retailers who do not report some or all of their transactions to avoid paying certain taxes usually prefer cash transactions. Electronic transactions, on the other hand, are "above board" and create an audit trail that greatly reduces unreported transactions, thereby raising tax revenues.

Part III: Model Estimation

Electronic Payments, Private Consumption and GDP

The level of consumption and card usage is highly correlated. Consumers in developed countries/regions with more robust card infrastructure have the opportunity to use cards more often than in emerging markets. A natural question is: How much does greater card usage or card penetration contribute to con-sumption and GDP?

Essentially, the impact of card usage on GDP is a function of three factors:

» Card penetration as a percent of total personal consumption expenditures (PCE);

» The growth of card usage year-over-year relative to PCE; and

» The actual percentage of GDP that is represented by personal consumption.

Methodology

This study estimated the impact of in-creased card penetration on consumption in 70 countries/regions over a five-year period. Those

results were used to estimate the impact that the changes in consumption had on job creation and economic growth, as measured by GDP.

In order to find the effect of card use, card penetration (spending using cards as a per-centage of overall consumer expenditures) was included as an explanatory variable in an equation for consumption. Real private consumption (consumption adjusted for inflation) was modeled as a function of three factors: real disposable income, real interest rates, and card penetration. See the Appen-dix for the exact specification used and the results of the estimation.

The effect of card usage varies depending on the wealth of an economy. To capture this effect in the current study (as well as in previous reports), countries/regions were divided into two groups—developed and emerging—based on International Monetary Fund status. We create interaction terms between the country/region group and card usage, disposable income and interest rates,

to isolate the effect of each variable on a specific group.

By developing a model that estimates how consumption is directly affected by credit card usage, we can then construct a method to estimate the effect into the labor market and GDP.

In summary, the methodology is as follows:

» The model uses real disposable in-come and interest rates from 2011 to 2014, using an estimate for the 2015 value.

» Card penetration was reported for 2011 through 2015.

» To measure the impact of card usage on GDP, the consumption figure was multiplied by the portion of GDP that is represented by consumer spending in each country/region. The model can there-fore estimate the impact of card usage on the overall economy.

More details regarding the model can be found in the Appendix.

Part IV: Contribution of Card Usage on Consumption and GDP

Card usage plays an outsize role in driving consumption and economic growth in large part because card usage begets more card usage. As more cards are issued and more merchants accept cards, transaction volume grows. That is because consumers feel more comfortable using their cards for a larger percentage of their overall transactions once a critical mass of merchant locations is reached. At the same time, merchants want access to the growing pool of cardholders with guaranteed payment. In other words, a more robust payment ecosystem produces a multiplier effect that can result in significant increases in consumption.

Global

Electronic payments added $296 billion in real (U.S.) dollars to GDP in the 70 coun-tries/regions studied between 2011 and 2015. That is equivalent to the creation of about 2.6 mil-lion jobs on average per year over the five-year period, or about 0.4% of total employment in the 70 countries/regions. This corresponds to an average 0.18% increase in consumption per annum and a 0.1% increase in GDP per annum between 2011 and 2015.

Card usage increased around 4 percentage points on average across the 70 sampled countries/regions between 2011 and 2015, and led to the positive contribution to GDP.

Emerging Markets and Developed Countries/Regions

Both emerging markets and developed countries/regions experienced gains in consumption due to higher card usage. Increased card usage added 0.2% to consumption in emerging markets, compared with 0.14% in developed countries/regions between 2011 and 2015. The corresponding figures for GDP were 0.11% for emerging economies and 0.08% for the developed countries/regions. All figures are averages weighted by GDP over the countries/regions and the sample period.

The increase in consumption levels and GDP growth attributed to higher card usage was far closer between emerging markets and developed countries/regions than when Moody's Analytics previously conducted this analysis; however, as in the 2012 report, the impact of card usage on consumption in this report is slightly greater for emerging

markets countries/regions than for developed countries/regions.

The likely reason for the differing effects between the two groups of countries/regions is the time period of the study. Specifically, the previous Moody's Analytics study included the Great Recession and the recovery. Recessions result in a contraction in domestic consumer spending. The Great Recession was particularly severe because it enveloped much of the global economy and especially affected higher-income economics. As such, the decline in consumption was exacerbated by weakened international flows of funds and goods. The recovery period saw gener-ally lower consumption and disposable income growth than in non-recessionary periods because of the persistent debt crisis. During the period of the current study the majority of countries/regions were in recovery or expansion. Consequently, the increase in consumption due to increased card usage for developed countries/regions has a similar impact as for emerging markets.

However, the results from both studies suggest that it is not just the mature markets

Economy | Contribution to GDP growth

$295.99bn

| | 2012 | 2013 | 2014 | 2015 |
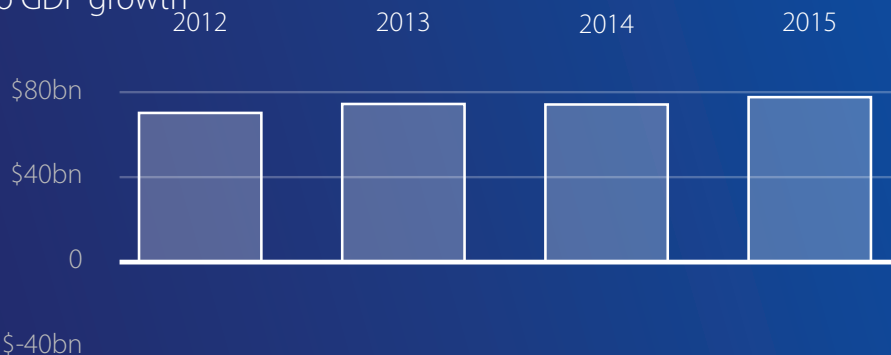
that benefit from increases in consumption due to increases in card usage. In recent years, emerging economies have reported sharp increases in card use. In developed economies, where card usage has matured, card use is increasing more slowly. The impact of the Great Recession slowed growth more among developed countries/regions than it did for emerging economies. That being the case, emerging markets can have a larger impact on GDP by further increasing their card penetration rates. This could be achieved by developing the retail payments infrastructure of emerging economies to match that of developed countries/regions, such as making electronic payments mechanisms more prevalent and available by giving merchants ways to accept electronic payments.

Regional Impacts

Results were not uniform across regions of the world. The Summary Table below gives the breakdown on average increases in con-sumption and GDP by region of the world.

South America and Oceania (Australia and New Zealand) experienced the largest gains in GDP due to increased card usage. Specifically, South America's GDP grew by an average of 0.2% per annum because of increased card usage, while Oceania experi-enced an average GDP growth of 0.12% per annum over the five-year period. Increased card usage contributed 0.12% per annum in North America and 0.1% per annum in Europe. Because of the somewhat lower pen-etration, card usage added 0.09% to GDP in the Middle East and 0.06% to GDP per annum in Asia.

As outlined, South American countries,

with an average GDP increase of 0.2 resulting from increased card usage, out-performed all other regional averages. The results for the region are supported by par-ticularly high results from a few countries. For example, there was a 0.23% weighted average increase in GDP in Chile as card us-age increased by around 7 percentage points. Improving Chilean banking services provide one likely explanation for the increased card usage. In Venezuela, which experienced a 0.3% weighted average increase in GDP, high inflation spurred more electronic pay-ment utilization ahead of the expectation of even higher prices. Electronic payments also eliminated the need to carry large amounts of cash.

Oceania had the second largest average increase in GDP due to increased card us-age of 0.12%. This was entirely due to the influence of Australia's 0.19% increase. New Zealand experienced a more modest 0.06% increase in GDP due to an increase in card usage. This region stands out because it is predominantly made up of developed coun-tries and because of its extremely high card usage rate, which, at around 60% for coun-tries included in the sample, is higher than the card usage rate in any other region.

African countries experienced on average a 0.05% increase in GDP due to increased card penetration. Many African countries are at early stages of developing their financial systems with appropriate infrastructure to support electronic payments. In coming years the increase in the use of mobile phone technologies to make payments is expected to increase electronic payments penetration. We note that South Africa, the most developed economy on the African continent, recorded an average 0.18% increase in GDP from additional card

usage, three times the regional average. This illustrates the strong benefits of electronic payments that accompany a developed financial services system.

Market-Level Results

Looking at national results for the 70 countries/regions included in the study, there are notable success stories and some markets where there is clearly room for improvement. A subset of the results can be found in Table 1B below, and more details regarding the amount of GDP added per year by country/region due to increased card penetration in relation to consumption and GDP can be found in Tables 1, 1A and 1B in the Appendix.

Russia recorded the biggest percentage rise in GDP of 0.33% as a result of increased card penetration. Card penetration rates in Russia increased by over 10 percentage points between 2011 and 2015, and led to an additional $26 billion in consumption for the country during that period. Hungary also performed well during this time period, as it experienced a 0.25% increase in GDP due to increased card penetration. The country's card usage rate rose by over 7 percentage points during the five years in the sample, and helped the country increase consump-tion by $1.4 billion over this time period. Other top performers include Australia, the United Arab Emirates, Chile, Ireland, Mexico, Peru, South Africa, Argentina, Poland and Uruguay. Of this group, it is worth not-ing that the UAE, Chile and Argentina each recorded a 0.23% increase in GDP due to increased card usage during the time period. Like the other notable markets, these three countries experienced over a 6 percentage point increase in card usage. As these results display, countries in all regions benefited from increased card usage, but it was the emerging economies primarily that had the largest increases.

Meanwhile, at the other end of the scale, declining card penetration rates re-duced consumption by 0.04% in Finland, by 0.003% in Greece, and by 0.0005% in Tunisia. These declines were also due to the very low or negative relative growth rates in these countries during the period with all three economies enduring deep downturns.

Summary Table: Average Increase in GDP from Increased Card Usage, %

Region	Average Weighted by GDP	Average Weighted by Consumption
South America	0.20	0.33
Oceania	0.12	0.22
North America	0.12	0.18
Europe	0.10	0.18
Middle East	0.09	0.23
Asia	0.06	0.12
Africa	0.05	0.08

Table 1B: Card Usage's Contribution to GDP
% average between 2011-2015 weighted by GDP

Argentina	0.23	Greece	-0.00	Netherlands	0.08	South Korea	0.04
Australia	0.19	Hong Kong	0.09	New Zealand	0.06	Spain	0.01
Austria	0.09	Hungary	0.25	Nigeria	0.03	Sri Lanka	0.04
Azerbaijan	0.03	India	0.07	Norway	0.05	Sweden	0.03
Belgium	0.04	Indonesia	0.05	Oman	0.10	Switzerland	0.06
Brazil	0.17	Ireland	0.20	Peru	0.21	Taiwan	0.09
Cambodia	0.05	Israel	0.00	Philippines	0.01	Thailand	0.19
Canada	0.10	Italy	0.12	Poland	0.19	Tunisia	-0.00
Chile	0.23	Japan	0.04	Portugal	0.09	Turkey	0.22
China Mainland	0.05	Jordan	0.03	Puerto Rico	0.09	UAE	0.23
Colombia	0.11	Kazakhstan	0.02	Qatar	0.07	UK	0.11
Czech Republic	0.11	Kenya	0.03	Russia	0.33	Ukraine	0.07
Denmark	0.14	Kuwait	0.04	Rwanda	0.02	Uruguay	0.18
Egypt	0.01	Lebanon	0.05	Saudi Arabia	0.12	USA	0.12
Finland	-0.02	Malaysia	0.04	Serbia	0.12	Venezuela	0.30
France	0.03	Mexico	0.16	Singapore	0.10	Vietnam	0.14
Germany	0.08	Morocco	0.04	Slovakia	0.11	Emerging Markets	0.11
Ghana	0.03	Myanmar	0.02	South Africa	0.18	Developed Countries	0.08

In some cases other macro events such as acute political upheaval and changes in taxation policies played a role. The decline in penetration rates exacerbated the weakness in consumption due to the economic struggles in these countries.

As the graph above shows, there is a strong correlation between larger increases in card usage and card contribution to GDP. This correlation held for both emerging markets (orange) and developed countries/regions (green). Russia, an emerging economy, appears in the top-right part of the graph, while Finland, a developed country, appears at the bottom-left part of the graph. Of note is the one emerging economy outlier, Qatar, which despite increasing card penetration by almost 10 percentage points, experienced only a 0.07% contribution to GDP from in-creased card usage. This compares to Ireland, a developed country that had almost a 10 percentage point increase in card usage but an estimated 0.2% increase in GDP due to increased card penetration. While both coun-

More card usage provides a bigger boost to GDP

Card contribution to GDP, %

Change in card penetration, %

Developed Market
Emerging Market
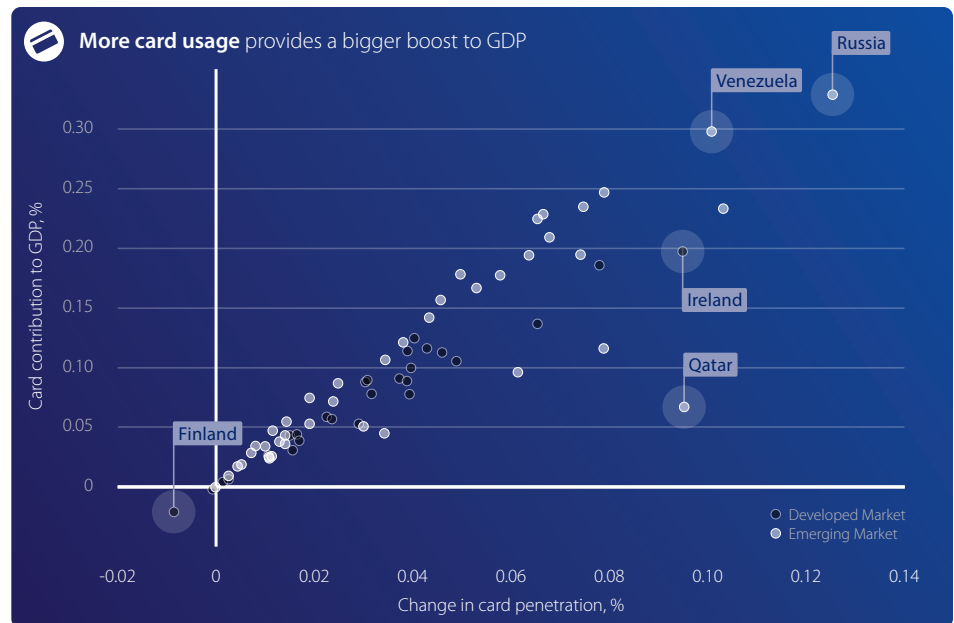
tries experienced between a 0.4% to 0.5% increase in consumption due to increased card usage, consumption makes up a much larger share of GDP in Ireland (45%) than it

does in Qatar (15%) because of Qatar's huge share of oil exports. Consequently, the boost to consumption had a larger relative impact on GDP in Ireland than it did in Qatar.

Part V: Contribution of Card Usage on Employment

As consumers spend more, firms increase hiring to accommodate the additional demand for goods and services. Consequently, we can calculate the number of jobs created as a result of the additional GDP from electronic payment usage.

Increased card usage added almost 2.6 million jobs per year across the countries/regions sampled between 2011 and 2015. That cor-responds to a 0.001% average boost to jobs per year between 2011 and 2015.

Countries with the largest number of job gains per year were also the largest countries. Notably, the two countries with the greatest average job increases were Mainland China (427,000 jobs added) and India (337,000 jobs added), which both had large gains in employment because of the combination of fast growing labor productivity and increasing card usage. Led by these emerging markets, the emerging markets group averaged a greater number of jobs added per year (43,600) than did developed countries/regions (14,800).

As was the case with GDP gains, job gains were not uniform across regions in the world. Here, North America had the highest average job gains per year (69,000), followed closely by Asia (62,000). Africa had the fewest average number of jobs added per year from increased card usage (8,000), which is not surprising given the region's low usage rates and developing financial infrastructure to allow for electronic payments to be more widely accepted. The Middle East had the second lowest average jobs added per year (9,000), but this was likely a result of the relatively smaller population than in the other regions.

Table 2 below provides a subset of our results. More details regarding job addi-

tions can be found in Table 2A and Table 2 in the Appendix.

For the majority of countries/regions, card usage drove higher consumption and in turn GDP regardless of the size of the economy, card penetration or growth rate. So while country/region size matters, countries/regions with higher card usage rates tended to outperform countries/regions with lower card usage rates.

The additional GDP accompanied increases in employment depending on the labor productivity of the country/region. Developed countries/regions tend to have higher labor productivity than emerging markets, primarily because developed countries/regions tend to be more industrialized. This includes better infrastructure, a faster rise in technological change, and a sturdier financial system

Employment | Jobs supported, 000s

2,616,430

Regional Impacts
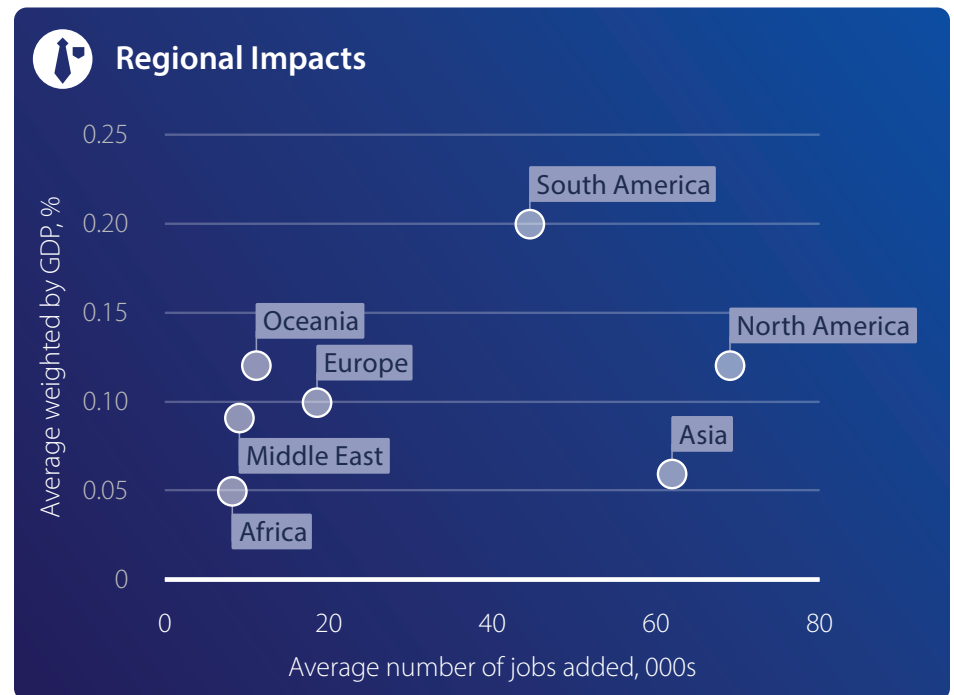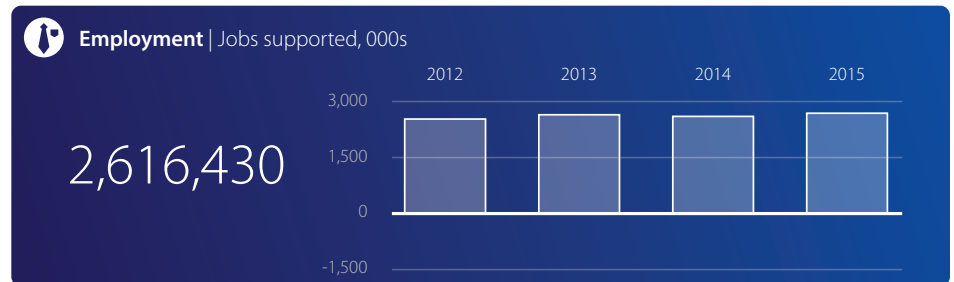
Table 2: Jobs Added Due to Increased Card Penetration

Average between 2011-2015, ths

Argentina	41.29	Greece	(0.08)	Netherlands	6.45	South Korea	10.96
Australia	21.36	Hong Kong	3.29	New Zealand	1.33	Spain	1.11
Austria	3.65	Hungary	9.86	Nigeria	16.88	Sri Lanka	3.42
Azerbaijan	1.13	India	336.93	Norway	1.39	Sweden	1.49
Belgium	1.76	Indonesia	62.96	Oman	1.90	Switzerland	2.56
Brazil	169.13	Ireland	3.74	Peru	33.49	Taiwan	9.98
Cambodia	4.73	Israel	0.14	Philippines	3.46	Thailand	75.73
Canada	17.61	Italy	25.95	Poland	30.42	Tunisia	(0.01)
Chile	18.40	Japan	27.84	Portugal	4.04	Turkey	56.62
China Mainland	427.10	Jordan	0.44	Puerto Rico	0.88	UAE	14.17
Colombia	11.02	Kazakhstan	2.08	Qatar	1.05	UK	34.51
Czech Republic	5.23	Kenya	5.33	Russia	235.05	Ukraine	13.52
Denmark	3.60	Kuwait	0.90	Rwanda	1.02	Uruguay	2.80
Egypt	2.30	Lebanon	0.72	Saudi Arabia	12.47	USA	180.85
Finland	(0.52)	Malaysia	4.75	Serbia	2.93	Venezuela	37.44
France	6.81	Mexico	77.54	Singapore	3.38	Vietnam	74.84
Germany	33.25	Morocco	4.01	Slovakia	2.66	Total	2,616.43
Ghana	2.82	Myanmar	4.92	South Africa	26.55		

made up of stable, higher capital banks. Countries/regions like the United States that have abundant access to ATMs, large and small banks that can support the financing of their cardholders, as well as steady GDP growth tend to get more out of card usage than countries/regions that do not have any of those qualifications.

Some emerging economies have also experienced notable increases in productivity. For example, increased card penetration raised GDP in Vietnam by 0.14%. Vietnamese labor productivity also rose by 18% between 2011 and 2015, resulting in a total impact of around 75,000 jobs gained per

year. Serbia, an emerging market, which had an estimated 0.12% increase in GDP due to increased card penetration, experienced a 1% decline in labor productivity between 2011 and 2015. Job gains were lower, as a result, around 3,000 on average each year.

Part VI: Ongoing Effects on GDP of Greater Card Penetration: Measuring Elasticity by Country/Region

The steady migration from paper to electronic forms of payment around the world raises another interesting question: What effect would continued growth in card penetration have on overall consumption, and ultimately, economic growth across countries/regions?

The simulation results in the following table measure consumption elasticity, or the impact that a 1% increase in card us-age rates has on private consumption and GDP, assuming that all other variables are held constant.

Overall, a 1% increase in card usage in every country/region produced:

» About a $104 billion, or 0.06%, increase in consumption between 2011 and 2015.

» This accounts for a 0.04% increase in GDP between 2011 and 2015.

For developed countries/regions, a 1% increase in card usage produced:

» About a $75 billion, or a 0.07%, increase in consumption between 2011 and 2015.

» This accounts for a 0.04% increase in GDP between 2011 and 2015.

For emerging markets, a 1% increase in card usage produced:

» About a $29 billion, or a 0.03% increase in consumption between 2011 and 2015.

» This accounts for a 0.02% increase in GDP between 2011 and 2015.

The estimated elasticity shows wide variation across countries/regions (see Table 3B below).

In general, developed countries/regions have higher elasticities than emerging markets because consumers in developed countries/regions use electronic payments much more (42%) than consumers in emerging economies (16%). This is not surprising because developed countries/regions are places that have well-established payment networks, consumers who are more comfortable using electronic payments, and environments where electronic payments are likely more readily accepted by merchants. Cash, on the other hand, is still more prevalent in emerging economies. Table 3B below provides a summary of our findings. More details regarding the estimated consumption elasticity and GDP elastic-

Table 3B: GDP Elasticity w.r.t. Card Penetration (Percent)
% increase in GDP due to a 1% increase in card usage, Weighted Average 2012-2015

Country	Value	Country	Value	Country	Value	Country	Value
Argentina	0.0263	Greece	0.0057	Netherlands	0.0346	South Korea	0.0617
Australia	0.0572	Hong Kong	0.0765	New Zealand	0.0646	Spain	0.0189
Austria	0.0195	Hungary	0.0246	Nigeria	0.0010	Sri Lanka	0.0041
Azerbaijan	0.0028	India	0.0044	Norway	0.0420	Sweden	0.0477
Belgium	0.0431	Indonesia	0.0093	Oman	0.0086	Switzerland	0.0310
Brazil	0.0407	Ireland	0.0399	Peru	0.0176	Taiwan	0.0243
Cambodia	0.0043	Israel	0.0442	Philippines	0.0135	Thailand	0.0192
Canada	0.0667	Italy	0.0197	Poland	0.0191	Tunisia	0.0022
Chile	0.0343	Japan	0.0170	Portugal	0.0487	Turkey	0.0542
China Mainland	0.0405	Jordan	0.0127	Puerto Rico	0.0207	UAE	0.0259
Colombia	0.0142	Kazakhstan	0.0031	Qatar	0.0101	UK	0.0715
Czech Republic	0.0160	Kenya	0.0047	Russia	0.0169	Ukraine	0.0097
Denmark	0.0479	Kuwait	0.0226	Rwanda	0.0007	Uruguay	0.0158
Egypt	0.0031	Lebanon	0.0091	Saudi Arabia	0.0153	USA	0.0479
Finland	0.0489	Malaysia	0.0225	Serbia	0.0124	Venezuela	0.0468
France	0.0417	Mexico	0.0184	Singapore	0.0319	Vietnam	0.0125
Germany	0.0160	Morocco	0.0050	Slovakia	0.0155	Emerging Market	0.0158
Ghana	0.0008	Myanmar	0.0004	South Africa	0.0343	Developed Country	0.0393

Experiment on GDP Elasticity Using Mexico and Vietnam as an Example

The impact of different hypothetical card penetration rates on a country's economy is measured using Mexico and Vietnam, two of the world's fastest growing emerging economies. In 2015, Mexican and Vietnamese card usage rates ranked among the bottom 25 across the 70 countries/regions in the sample. In this experiment, we examine the effect on GDP of a 1% increase in card usage. In order to do this, we replace actual card penetration rates in Mexico and Vietnam with the median and maximum card usage rates across countries for every year of the sample. All other Mexican and Vietnamese economic variables such as consumption, GDP and real disposable income per person are unchanged at their actual values. The table below shows the resulting GDP elasticity, including the results obtained using the actual card usage rates for Mexico and Vietnam for reference.

Experiment Table: Increase in GDP from a 1% Increase in Card Usage

Card penetration	Mexico		Vietnam	
	%	U.S. $bil, change	%	U.S. $bil, change
Actual	0.0184	0.9217	0.0125	0.0774
Sample Median	0.0258	1.2892	0.0246	0.1521
Sample Maximum	0.0917	4.5911	0.0875	0.5406

For instance, the second row states that if Mexico (or Vietnam) consistently had the median observed card penetration rate in each year, a 1% increase in card penetration each year would raise GDP by about 0.0258% (or 0.0246%). This corresponds to almost a $1.3 billion increase in GDP in Mexico and a $152 million increase in GDP for Vietnam over the sample period. The final row shows if instead Mexico (or Vietnam) consistently had the highest observed card penetration rate, GDP would receive a 0.0917% (or .0875%) boost were penetration to increase by a 1% each year. This translates to almost a $4.6 billion increase in GDP for Mexico over the sample period (or a $541 million increase in GDP for Vietnam). Therefore, using Mexico and Vietnam, the benefits to GDP of higher card usage are clearly illustrated.

ity can be found in Tables 3, 3A and 3B in the Appendix.

Notably, Hong Kong (0.08%), the United Kingdom (0.07%), and Canada (0.07%) recorded the three highest percent increases in GDP following a 1% increase in card penetration, and are also among the highest users of cards across the 70 countries/regions. Myanmar (0.0004%), Rwanda (0.0007%), and Ghana (0.0008%) displayed the lowest percent increase in GDP due to a 1% increase in card penetration, and were also among the least frequent card users. Such countries, mostly emerging markets, should however anticipate a steady increase to the responsiveness of GDP to card penetration as penetration

grows and deepens. That is, markets with very low card penetration rates could see sizable returns to GDP from rapid adoption of cards provided that the proper financial infrastructure were in place.

In light of this, there are significant implications for policymakers. Notably, as a country/region becomes wealthier and capital infrastructure improves, benefits from deepening card usage compound. Knowing this, policymak-ers, in close coordination with merchants, can encourage widespread use of electronic payments. Measures such as tax incentives to use electronic payments, using electronic payments for government disbursements, and government support for lower-cost card

readers that can be used with mobile phones or tablets could also play a role in increasing card usage. Such technology would reduce the need to invest in costly cash registers and the relevant software and limit financial costs associated with cash.

Consumption Growth and Card Penetration

How much increased card penetration can lift consumption growth is a key question from a growth-accounting perspective. This is calculated as the difference between the growth in observed consumption and the growth in consumption without increased card penetration. The results are presented in Table 4 in the Appendix.

While income and the proportion of income that is spent (marginal propensity to consume) are by far the main determinants of consumption, the report found that additional card penetration increased the average global annual real consumption growth rate by 0.4% in 2015. Global real consumption grew by about 2.3% per year during this time period, so card usage added an average 0.01% (=0.4%*2.3%) to consumption growth for 2015. The addition to the consumption growth rate due to increased card usage ranged tremendously across countries/regions.

Electronic payment usage, particularly credit card usage, enables consumers to spend even when cash flow may be limited and to repay over some period of time. Card penetration and usage consequently provided an important boost to global economies. Other factors that help boost consumption include the presence of affordable retail establishments, competition that drives down prices, and the availability of a developed transportation network that improves access to retail. Unlike these factors, cards help individuals track the amount they spend and somewhat dampen the impact of price increases or income changes on consumers' ability to maintain consumption patterns. Thus, electronic payment usage, especially credit card usage, can support and smooth out consumption during economic fluctuations.

Part VII: The Evolution of the Report's Methodology

Overall, the methodology to calculate the increase in consumption and GDP from increases in card usage is consistent with the methodology of earlier reports.

The 2012 report, which included 56 countries/regions, showed that payments made using credit and debit cards as a percent of total spending increased GDP by $534 billion in emerging economies and by $449 billion in developed countries/regions. This study, which included 70 countries/regions, found a $125 billion increase in emerging economies and a $171 billion increase in developed countries/regions.

Emerging markets benefited more in the 2012 report largely due to the role of Mainland China, which experienced exponential growth in card usage during the previous sample period and consequently significantly impacted the total contribution to GDP for emerging markets. Specifically, increased card usage in Mainland China correlated with an increase in GDP of an estimated $374.5 billion, which accounted for about 70% of the emerging economies' share of increase in GDP. In this study, as the Chinese market has matured significantly, it experienced a more modest benefit of a $17.8 billion increase in GDP from increased card usage. As such, Mainland China accounted for only 14% of emerging markets' total increase in GDP.

The graph above illustrates the differences between the results in the two reports for the countries/regions covered in both reports but excluding large outliers, namely Mainland China and the United States. Increases in GDP were larger during the 2012 study for the majority of countries/regions in the sample. However, countries/regions

Increase in GDP due to card usage
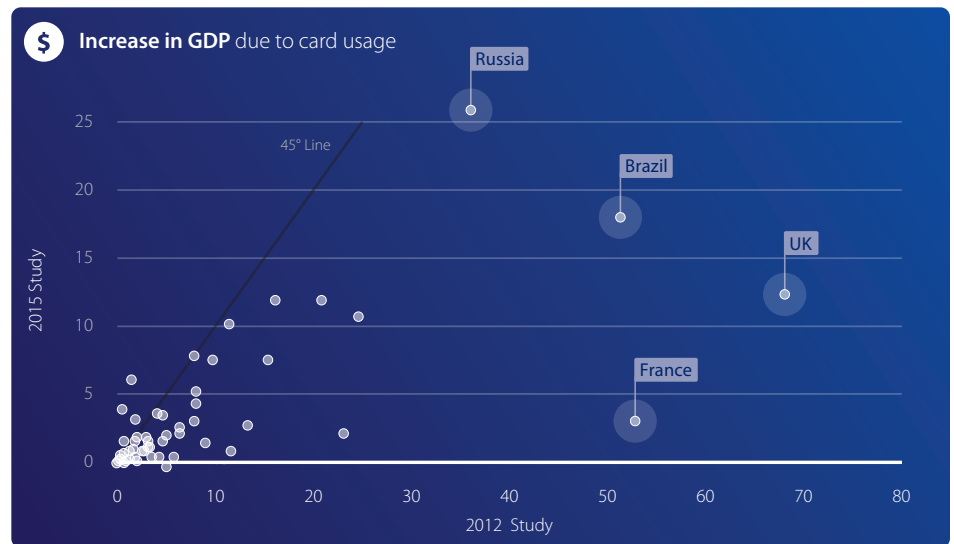
that had larger estimates for the increase in GDP from increased card usage in the 2012 study also had larger estimates for the increase in GDP from increased card usage in the current study. The difference in the relative size of the increase in GDP comes from a change in methodology. The 2012 study methodology calculated the contribution to GDP based on a country's card usage in a year relative to its minimum card usage, whereas this study looks at the contribution of card usage based on the aggregation of yearly changes in card usage.

The economic gains from higher card usage remained the same in both reports. The 2012 study found a 1% increase in card penetration increased GDP by 0.03%, and the current study estimated a 0.04% increase in GDP. A 1% increase in card usage increased consumption by 0.06% of total consumption during both the earlier report and the most recent report. Countries/regions still in recession

during the recent sample period would experience declining employment and GDP, even though, in some cases, card penetration continued to increase.

While the calculation for increases in consumption and GDP due to increases in card usage remained consistent among reports, the calculation for job creation has evolved. Building upon the methodology used for the 2012 report, which calculated the cumulative labor productivity over 2008-2012, the current study additionally assumes that labor productivity remains constant in economies during each specific year. We can then estimate the number of jobs created by calculating the ratio of the increase in GDP due to credit card usage to the country's labor productivity year by year and taking the average across the sample. Because of the change in methodology, the estimated number of jobs added in this report are not comparable to the estimates in the 2012 study.

Part VIII: Conclusion

Increasing use of electronic payments—which include credit, debit and prepaid cards in this report—boosts consumption and GDP. Moreover, the impact increases as penetration rises.

In the sample of 70 countries/regions, which make up 95% of global GDP, card usage added $296 billion cumulatively to real GDP from 2011 to 2015. This amounts to 0.1% of total GDP per year for the 70 coun-tries over this period. For all economies and markets analyzed, there is a positive corre-lation between card penetration and usage and economic growth.

Increased use of electronic payments makes the economy more efficient as well. Increased usage reduces transac-tion costs and thus improves the flow of goods and services. It helps consumers by making purchasing more convenient and efficient. Merchants in turn can manage their businesses better and benefit from higher sales.

Electronic payments usage also pro-motes consumer confidence and improves access to credit for the population. It also promotes financial inclusion for the most vulnerable by enabling those without access to the formal banking system a safe and efficient payment al-ternative to cash. Electronic payment usage also benefits governments, which can potentially collect more tax revenue thanks to a clear electronic trail and more transparent transactions that can be taxed more readily. This would be espe-cially helpful in countries/regions with a weak tax collection infrastructure.

Therefore, policy measures that promote open and market-driven electronic pay-ment solutions for consumers and a level and competitive acceptance and issuance landscape for electronic payment companies, merchants, and the banking sector could improve the economic environment at the market level. A sustainable payments system is not just about technology, but about driv-ing incentives for others to participate in it and derive value from doing so. Encouraging the growth of electronic payments gives consumers and merchants a choice and in-creases competition. When countries/regions allow for competition and a level playing field, banks and consumers benefit.

Appendix

Model

Dependent Variable: Log(Real consumption per capita)
Method: Pooled Least Squares
Sample: 2011 2015
Included observations: 5
Cross-sections included: 70
Total pool (balanced) observations: 350

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.35	0.13	2.66	0.01
Card Penetration, Developed Countries/Regions	0.18	0.19	0.93	0.35
Card Penetration, Emerging Markets	0.2	0.15	1.37	0.17
Log(Real Disposable income per capita), Developed Countries/Regions	0.64	0.1	6.26	0
Log(Real Disposable income per capita), Emerging Markets	0.77	0.03	25.2	0
Real interest rate, Developed Countries/Regions	0	0	-0.39	0.7
Real interest rate, Emerging Markets	0	0	1.08	0.28
Trend, Emerging Markets	0.01	0	4.4	0
Fixed Effects (Cross)				
Fixed Effects (Period)				

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.99961	Mean dependent var	1.9375
Adjusted R-squared	0.9995	S.D. dependent var	1.18613
S.E. of regression	0.02644	Akaike info criterion	-4.23653
Sum squared resid	0.19081	Schwarz criterion	-3.38778
Log likelihood	818.392	Hannan-Quinn criter.	-3.8987
F-statistic	9239.861	Durbin-Watson stat	1.23219
Prob(F-statistic)	0		

Tables

Table 1: Card Usage's Contribution to GDP, constant 2011 U.S. $bil

Country/Region	2012	2013	2014	2015	Total
UAE	1.44	0.73	0.88	0.64	3.70
Argentina	1.29	1.26	1.34	1.41	5.30
Australia	1.91	3.26	3.45	3.31	11.93
Austria	0.43	0.43	0.39	0.29	1.55
Azerbaijan	0.00	0.02	0.02	0.03	0.07
Belgium	0.51	0.34	0.01	-0.04	0.83
Brazil	4.50	4.26	4.63	4.64	18.04
Canada	1.43	1.16	2.41	2.50	7.50
Switzerland	0.81	0.64	0.08	0.12	1.65
Chile	0.70	1.16	0.36	0.38	2.60
China Mainland	17.46	-3.11	1.64	1.79	17.79
Colombia	0.41	0.41	0.39	0.38	1.59
Czech Republic	0.36	0.21	0.20	0.19	0.95
Germany	3.29	3.08	3.35	2.27	11.99
Denmark	0.48	0.60	0.47	0.33	1.88
Egypt	0.04	-0.00	0.03	0.02	0.10
Spain	0.04	0.68	-0.25	-0.10	0.37
Finland	0.13	0.01	-0.31	-0.06	-0.23
France	0.84	0.63	1.16	0.42	3.06
UK	-0.61	6.07	1.91	5.05	12.42
Ghana	0.02	0.00	0.01	0.01	0.05
Greece	-0.01	0.01	-0.00	-0.01	-0.02
Hong Kong	0.39	0.21	0.21	0.11	0.92
Hungary	0.63	0.29	0.25	0.23	1.41
Indonesia	1.07	0.00	0.45	0.64	2.17
India	0.97	1.30	1.65	2.16	6.08
Ireland	0.45	0.37	0.72	0.47	2.01
Israel	-0.11	0.17	-0.03	0.01	0.04
Italy	3.65	2.94	1.46	2.11	10.17
Jordan	0.01	0.01	0.01	0.01	0.04
Japan	1.88	2.94	2.49	3.43	10.74
Kazakhstan	0.03	0.06	0.05	0.06	0.21
Kenya	0.01	0.02	0.02	0.02	0.07
Cambodia	0.01	0.01	0.01	0.01	0.03
South Korea	0.61	0.24	0.77	0.62	2.23
Kuwait	-0.07	0.03	0.18	0.16	0.30
Lebanon	-0.01	0.02	0.03	0.03	0.08
Sri Lanka	0.02	0.01	0.02	0.06	0.12
Morocco	0.01	0.08	0.04	0.04	0.17
Mexico	2.49	1.58	1.91	1.86	7.84
Myanmar	0.00	0.01	0.02	0.01	0.04
Malaysia	-0.14	0.19	0.20	0.23	0.49
Nigeria	-0.00	0.16	0.20	0.27	0.64
Netherlands	0.64	0.91	0.93	0.29	2.77
Norway	0.47	-0.02	0.26	0.39	1.11
New Zealand	0.02	0.17	0.13	0.10	0.42
Oman	0.05	0.08	0.09	0.08	0.29
Peru	0.15	0.85	0.32	0.28	1.61
Philippines	0.01	0.04	0.04	0.01	0.10
Poland	0.66	0.85	1.28	1.51	4.30
Puerto Rico	0.31	-0.18	0.10	0.12	0.35
Portugal	0.17	0.25	0.25	0.17	0.84

Country/Region	2012	2013	2014	2015	Total
Qatar	0.24	0.03	0.12	0.12	0.51
Russia	6.71	7.35	6.51	5.36	25.93
Rwanda	0.00	0.00	0.00	0.00	0.01
Saudi Arabia	2.23	-0.40	0.85	0.74	3.43
Singapore	0.25	0.35	0.33	0.23	1.17
Serbia	0.05	0.07	0.05	0.05	0.23
Slovakia	0.16	0.07	0.25	-0.01	0.46
Sweden	1.01	0.06	-0.09	-0.26	0.71
Thailand	1.10	0.67	0.71	0.71	3.18
Tunisia	0.00	-0.00	0.00	0.00	-0.00
Turkey	5.10	1.79	-0.24	0.86	7.51
Taiwan	0.24	0.59	0.60	0.44	1.87
Ukraine	0.24	0.13	0.07	0.02	0.46
Uruguay	0.03	-0.01	0.07	0.29	0.38
USA	0.17	25.60	27.13	28.65	81.55
Venezuela	1.48	1.49	0.50	0.47	3.93
Vietnam	0.23	0.19	0.23	0.23	0.88
South Africa	0.96	0.91	0.69	0.56	3.11
Total	70.09	74.31	74.06	77.52	295.99

Table 1A: Card Usage's Contribution to Consumption, %

Country/Region	2012	2013	2014	2015	Average weighted by Consumption, %	Country/Region	2012	2013	2014	2015	Average weighted by Consumption, %
UAE	0.87	0.42	0.48	0.34	0.52	Saudi Arabia	1.10	-0.19	0.39	0.32	0.40
Argentina	0.34	0.32	0.34	0.36	0.34	Singapore	0.25	0.34	0.31	0.21	0.27
Australia	0.23	0.39	0.40	0.37	0.35	Serbia	0.17	0.22	0.19	0.19	0.19
Austria	0.19	0.19	0.18	0.13	0.17	Slovakia	0.28	0.12	0.43	-0.02	0.20
Azerbaijan	0.01	0.06	0.07	0.07	0.06	Sweden	0.38	0.02	-0.03	-0.09	0.07
Belgium	0.19	0.12	0.00	-0.01	0.07	Thailand	0.53	0.32	0.34	0.33	0.38
Brazil	0.28	0.25	0.27	0.28	0.27	Tunisia	0.01	-0.01	0.00	0.00	-0.00
Canada	0.14	0.11	0.23	0.23	0.18	Turkey	0.93	0.31	-0.04	0.14	0.32
Switzerland	0.21	0.16	0.02	0.03	0.10	Taiwan	0.09	0.21	0.21	0.15	0.17
Chile	0.43	0.68	0.21	0.21	0.38	Ukraine	0.20	0.10	0.06	0.02	0.10
China Mainland	0.62	-0.10	0.05	0.05	0.14	Uruguay	0.10	-0.04	0.19	0.77	0.26
Colombia	0.19	0.19	0.17	0.16	0.17	USA	0.00	0.23	0.24	0.25	0.18
Czech Republic	0.34	0.19	0.18	0.17	0.22	Venezuela	0.78	0.75	0.26	0.27	0.52
Germany	0.16	0.15	0.16	0.10	0.14	Vietnam	0.25	0.20	0.23	0.21	0.22
Denmark	0.30	0.37	0.29	0.20	0.29	South Africa	0.38	0.34	0.26	0.20	0.29
Egypt	0.02	-0.00	0.02	0.01	0.01						
Spain	0.00	0.08	-0.03	-0.01	0.01						
Finland	0.09	0.01	-0.21	-0.04	-0.04	Total	0.18	0.19	0.18	0.19	0.18
France	0.05	0.04	0.07	0.03	0.05						
UK	-0.04	0.35	0.11	0.27	0.18						
Ghana	0.08	0.01	0.06	0.08	0.06						
Greece	-0.01	0.01	-0.00	-0.01	-0.00						
Hong Kong	0.24	0.12	0.12	0.06	0.13						
Hungary	0.73	0.34	0.29	0.26	0.40						
Indonesia	0.21	0.00	0.08	0.10	0.10						
India	0.09	0.11	0.13	0.16	0.12						
Ireland	0.39	0.32	0.61	0.38	0.42						
Israel	-0.07	0.11	-0.02	0.01	0.01						
Italy	0.27	0.22	0.11	0.16	0.19						
Jordan	0.05	0.03	0.03	0.03	0.04						
Japan	0.05	0.08	0.07	0.09	0.07						
Kazakhstan	0.04	0.06	0.06	0.07	0.06						
Kenya	0.02	0.05	0.05	0.04	0.04						
Cambodia	0.10	0.09	0.05	0.05	0.07						
South Korea	0.08	0.03	0.09	0.07	0.07						
Kuwait	-0.16	0.06	0.42	0.38	0.18						
Lebanon	-0.02	0.06	0.10	0.09	0.06						
Sri Lanka	0.06	0.03	0.05	0.15	0.07						
Morocco	0.01	0.12	0.06	0.07	0.07						
Mexico	0.31	0.19	0.22	0.21	0.23						
Myanmar	0.00	0.03	0.05	0.01	0.02						
Malaysia	-0.09	0.12	0.12	0.13	0.07						
Nigeria	-0.00	0.05	0.07	0.09	0.05						
Netherlands	0.16	0.23	0.24	0.07	0.17						
Norway	0.23	-0.01	0.12	0.18	0.13						
New Zealand	0.02	0.16	0.13	0.09	0.10						
Oman	0.21	0.34	0.39	0.32	0.32						
Peru	0.14	0.74	0.27	0.23	0.35						
Philippines	0.00	0.02	0.02	0.01	0.01						
Poland	0.21	0.26	0.39	0.44	0.33						
Puerto Rico	0.45	-0.25	0.14	0.17	0.13						
Portugal	0.11	0.17	0.16	0.11	0.14						
Qatar	1.02	0.10	0.43	0.41	0.47						
Russia	0.67	0.70	0.61	0.57	0.64						
Rwanda	0.01	0.03	0.03	0.04	0.03						

Table 1B: Card Usage's Contribution to GDP, %

Country/Region	2012	2013	2014	2015	Average Weighted by GDP, %	Country/Region	2012	2013	2014	2015	Average Weighted by GDP, %
UAE	0.39	0.19	0.22	0.15	0.23	Saudi Arabia	0.32	-0.06	0.11	0.10	0.12
Argentina	0.23	0.22	0.23	0.24	0.23	Singapore	0.09	0.12	0.11	0.07	0.10
Australia	0.12	0.21	0.21	0.20	0.19	Serbia	0.11	0.14	0.12	0.12	0.12
Austria	0.10	0.10	0.09	0.07	0.09	Slovakia	0.16	0.07	0.24	-0.01	0.11
Azerbaijan	0.00	0.03	0.03	0.03	0.03	Sweden	0.18	0.01	-0.02	-0.04	0.03
Belgium	0.10	0.06	0.00	-0.01	0.04	Thailand	0.28	0.16	0.17	0.17	0.19
Brazil	0.17	0.16	0.17	0.17	0.17	Tunisia	0.00	-0.01	0.00	0.00	-0.00
Canada	0.08	0.06	0.13	0.13	0.10	Turkey	0.64	0.22	-0.03	0.10	0.22
Switzerland	0.12	0.09	0.01	0.02	0.06	Taiwan	0.05	0.12	0.11	0.08	0.09
Chile	0.26	0.42	0.13	0.13	0.23	Ukraine	0.15	0.08	0.05	0.01	0.07
China Mainland	0.22	-0.04	0.02	0.02	0.05	Uruguay	0.07	-0.02	0.13	0.52	0.18
Colombia	0.12	0.11	0.10	0.10	0.11	USA	0.00	0.16	0.16	0.17	0.12
Czech Republic	0.16	0.09	0.09	0.08	0.11	Venezuela	0.44	0.43	0.15	0.15	0.30
Germany	0.09	0.08	0.09	0.06	0.08	Vietnam	0.16	0.13	0.15	0.14	0.14
Denmark	0.14	0.18	0.14	0.09	0.14	South Africa	0.23	0.21	0.16	0.12	0.18
Egypt	0.02	-0.00	0.01	0.01	0.01						
Spain	0.00	0.05	-0.02	-0.01	0.01	Total	0.10	0.10	0.10	0.10	0.10
Finland	0.05	0.00	-0.12	-0.02	-0.02						
France	0.03	0.02	0.04	0.01	0.03						
UK	-0.02	0.23	0.07	0.18	0.11						
Ghana	0.04	0.01	0.02	0.03	0.03						
Greece	-0.01	0.00	-0.00	-0.01	-0.00						
Hong Kong	0.16	0.08	0.08	0.04	0.09						
Hungary	0.46	0.21	0.17	0.16	0.25						
Indonesia	0.11	0.00	0.04	0.06	0.05						
India	0.05	0.06	0.08	0.09	0.07						
Ireland	0.19	0.15	0.28	0.17	0.20						
Israel	-0.04	0.06	-0.01	0.00	0.00						
Italy	0.16	0.14	0.07	0.10	0.12						
Jordan	0.04	0.03	0.03	0.02	0.03						
Japan	0.03	0.05	0.04	0.06	0.04						
Kazakhstan	0.02	0.03	0.02	0.03	0.02						
Kenya	0.02	0.05	0.04	0.03	0.03						
Cambodia	0.08	0.07	0.04	0.04	0.05						
South Korea	0.05	0.02	0.06	0.05	0.04						
Kuwait	-0.04	0.02	0.11	0.10	0.04						
Lebanon	-0.01	0.05	0.08	0.07	0.05						
Sri Lanka	0.04	0.02	0.03	0.08	0.04						
Morocco	0.01	0.07	0.03	0.04	0.04						
Mexico	0.21	0.13	0.15	0.14	0.16						
Myanmar	0.00	0.02	0.04	0.01	0.02						
Malaysia	-0.04	0.06	0.06	0.06	0.04						
Nigeria	-0.00	0.04	0.04	0.05	0.03						
Netherlands	0.07	0.10	0.10	0.03	0.08						
Norway	0.09	-0.00	0.05	0.07	0.05						
New Zealand	0.01	0.10	0.07	0.05	0.06						
Oman	0.06	0.10	0.12	0.10	0.10						
Peru	0.08	0.45	0.16	0.14	0.21						
Philippines	0.00	0.01	0.01	0.00	0.01						
Poland	0.12	0.16	0.23	0.26	0.19						
Puerto Rico	0.31	-0.17	0.10	0.12	0.09						
Portugal	0.07	0.11	0.11	0.07	0.09						
Qatar	0.13	0.01	0.06	0.06	0.07						
Russia	0.34	0.37	0.33	0.28	0.33						
Rwanda	0.00	0.02	0.02	0.03	0.02						

Table 2A: Labor Productivity, Constant 2011 U.S. $bil per worker

Country/Region	2011	2012	2013	2014	2015
UAE	60,918.69	63,269.42	64,825.69	66,892.19	67,999.30
Argentina	32,080.36	31,892.79	32,166.65	31,873.37	32,328.41
Australia	134,192.28	137,323.11	138,845.12	141,472.19	139,913.65
Austria	106,053.95	105,997.57	105,760.41	106,052.95	106,580.31
Azerbaijan	14,909.73	15,040.41	15,599.89	15,766.36	16,132.76
Belgium	117,278.92	117,274.39	117,565.08	118,430.93	119,681.88
Brazil	26,640.60	26,569.06	26,951.31	26,878.67	26,291.75
Canada	103,921.44	104,399.34	105,257.98	107,190.45	107,695.01
Switzerland	159,973.58	160,226.76	161,165.30	161,516.14	160,683.07
Chile	33,626.23	34,758.17	35,506.30	35,599.62	35,878.19
China Mainland	9,527.22	10,226.25	10,971.59	11,724.93	12,449.82
Colombia	34,766.33	34,976.30	35,984.41	36,512.46	37,000.43
Czech Republic	45,861.80	45,319.02	44,644.37	45,195.97	46,580.95
Germany	90,361.01	89,870.19	89,664.92	90,282.10	91,020.92
Denmark	129,443.09	130,432.93	130,090.22	130,871.38	131,556.08
Egypt	10,089.07	10,247.76	10,429.80	10,621.91	11,032.79
Spain	81,256.47	82,670.05	83,614.65	83,744.99	84,018.06
Finland	110,818.41	108,790.97	108,746.22	108,711.99	109,254.73
France	111,028.95	111,129.72	112,173.55	112,196.73	113,537.93
UK	88,304.33	88,381.94	89,249.45	89,832.07	90,715.87
Ghana	3,952.75	4,109.27	4,219.54	4,296.94	4,356.93
Greece	71,113.69	72,302.89	73,684.98	73,735.68	72,490.39
Hong Kong	69,570.36	69,199.39	69,991.54	71,248.19	71,920.83
Hungary	37,217.88	35,999.02	35,985.76	35,362.23	35,553.86
Indonesia	8,064.74	8,290.56	8,658.16	8,918.73	8,942.28
India	4,019.72	4,185.36	4,362.88	4,560.60	4,746.24
Ireland	130,924.77	131,921.75	130,744.98	135,197.58	139,118.60
Israel	81,056.75	80,223.57	80,650.92	80,365.18	80,051.47
Italy	101,048.46	98,225.82	98,081.63	97,563.02	97,535.40
Jordan	20,132.07	20,286.97	20,283.49	19,925.95	19,572.24
Japan	94,221.18	96,151.70	96,823.00	96,116.14	96,455.55
Kazakhstan	22,701.96	23,209.41	24,393.38	25,231.58	25,400.15
Kenya	2,905.45	2,939.14	3,005.51	3,072.85	3,179.43
Cambodia	1,591.94	1,668.47	1,754.80	1,840.89	1,930.98
South Korea	49,659.01	49,895.59	50,552.96	51,134.55	51,800.87
Kuwait	95,037.58	95,893.23	90,960.06	86,595.56	83,497.59
Lebanon	27,179.38	27,465.07	27,661.20	27,880.78	28,105.99
Sri Lanka	7,201.92	7,830.77	8,354.91	8,917.24	9,438.04
Morocco	9,623.68	9,926.51	10,277.88	10,469.94	10,921.07
Mexico	24,852.48	24,965.76	25,101.53	25,541.05	25,548.56
Myanmar	2,006.00	1,960.00	1,969.86	2,160.69	2,217.90
Malaysia	24,383.86	25,051.58	24,646.00	25,648.41	26,374.63
Nigeria	8,858.86	8,976.51	9,181.72	9,483.70	9,586.52
Netherlands	107,902.42	106,108.51	106,471.00	108,257.77	109,774.35
Norway	195,566.70	197,091.77	197,756.84	199,897.91	203,673.61
New Zealand	74,526.60	76,307.54	78,183.94	77,812.71	78,113.42
Oman	49,149.22	44,688.84	40,736.91	37,535.75	35,453.39
Peru	11,037.40	11,454.89	11,928.11	12,129.00	12,394.43
Philippines	6,019.34	6,350.39	6,894.68	7,121.96	7,390.86
Poland	33,753.64	34,281.43	34,763.36	35,276.81	36,100.97
Puerto Rico	98,650.54	98,101.12	100,516.07	102,692.09	101,699.30
Portugal	50,715.02	50,795.67	52,550.11	52,196.24	52,489.46
Qatar	120,371.88	119,689.78	120,450.22	121,866.67	124,242.60
Russia	26,825.35	27,478.73	27,885.68	28,002.60	26,800.06
Rwanda	1,229.89	1,303.41	1,325.73	1,378.72	1,428.59

Table 2A: Labor Productivity, Constant 2011 U.S. $bil per worker (Cont.)

Country/Region	2011	2012	2013	2014	2015
Saudi Arabia	67,385.13	68,744.39	67,814.94	68,236.60	68,688.44
Singapore	85,981.22	85,816.05	87,549.67	86,933.86	86,654.13
Serbia	19,307.81	19,313.68	19,367.23	19,018.83	19,111.23
Slovakia	42,180.23	42,605.88	43,208.06	43,617.57	43,882.59
Sweden	121,688.21	120,986.54	121,200.43	122,348.76	124,861.94
Thailand	9,542.67	10,116.92	10,398.13	10,720.09	11,023.24
Tunisia	14,635.01	14,739.08	14,653.61	14,586.17	14,345.00
Turkey	33,406.07	33,078.55	33,493.89	32,798.56	32,777.09
Taiwan	45,497.50	45,784.74	46,351.97	47,615.86	47,288.67
Ukraine	8,441.78	8,465.44	8,437.82	8,426.91	8,220.13
Uruguay	29,711.60	30,517.86	31,859.92	32,897.25	34,028.12
USA	110,936.19	111,345.24	111,853.54	112,712.52	113,560.75
Venezuela	26,247.07	27,252.22	26,846.87	25,145.48	23,151.08
Vietnam	2,653.53	2,740.79	2,857.22	2,988.60	3,141.78
South Africa	29,705.56	29,618.64	29,376.88	29,277.41	28,793.36
Total	27,692.57	28,084.61	28,463.76	28,853.74	29,111.63

Table 2: Jobs Added Due to Increased Card Penetration, ths

Country/Region	2012	2013	2014	2015	Average
UAE	22.84	11.21	13.16	9.47	14.17
Argentina	40.53	39.09	41.97	43.58	41.29
Australia	13.90	23.51	24.38	23.66	21.36
Austria	4.08	4.07	3.70	2.74	3.65
Azerbaijan	0.15	1.23	1.52	1.60	1.13
Belgium	4.36	2.92	0.11	(0.35)	1.76
Brazil	169.35	158.24	172.38	176.54	169.13
Canada	13.69	11.07	22.48	23.21	17.61
Switzerland	5.08	3.96	0.46	0.73	2.56
Chile	20.08	32.70	10.20	10.64	18.40
China Mainland	1,707.84	(283.86)	140.27	144.14	427.10
Colombia	11.79	11.47	10.65	10.16	11.02
Czech Republic	7.94	4.60	4.40	4.00	5.23
Germany	36.58	34.36	37.11	24.95	33.25
Denmark	3.67	4.61	3.63	2.50	3.60
Egypt	4.38	(0.06)	3.09	1.80	2.30
Spain	0.49	8.10	(2.95)	(1.22)	1.11
Finland	1.20	0.07	(2.83)	(0.53)	(0.52)
France	7.53	5.65	10.35	3.73	6.81
UK	(6.87)	67.97	21.31	55.62	34.51
Ghana	4.44	0.74	2.71	3.40	2.82
Greece	(0.19)	0.13	(0.05)	(0.21)	(0.08)
Hong Kong	5.68	3.04	2.97	1.47	3.29
Hungary	17.59	8.15	7.12	6.60	9.86
Indonesia	129.30	0.57	50.85	71.13	62.96
India	232.53	297.63	362.37	455.20	336.93
Ireland	3.43	2.83	5.34	3.36	3.74
Israel	(1.33)	2.10	(0.38)	0.16	0.14
Italy	37.20	30.02	14.97	21.63	25.95
Jordan	0.62	0.38	0.39	0.38	0.44
Japan	19.52	30.33	25.94	35.59	27.84
Kazakhstan	1.36	2.44	2.12	2.38	2.08
Kenya	2.61	6.97	6.05	5.68	5.33
Cambodia	6.70	5.78	3.30	3.14	4.73
South Korea	12.18	4.77	14.98	11.90	10.96
Kuwait	(0.68)	0.29	2.05	1.94	0.90
Lebanon	(0.20)	0.77	1.20	1.10	0.72
Sri Lanka	3.07	1.29	2.44	6.87	3.42
Morocco	0.66	7.57	3.69	4.11	4.01
Mexico	99.87	62.77	74.83	72.66	77.54
Myanmar	0.25	5.55	11.41	2.49	4.92
Malaysia	(5.50)	7.83	7.89	8.77	4.75
Nigeria	(0.16)	17.81	21.39	28.48	16.88
Netherlands	6.01	8.52	8.58	2.68	6.45
Norway	2.39	(0.08)	1.32	1.91	1.39
New Zealand	0.27	2.13	1.70	1.22	1.33
Oman	1.01	1.88	2.46	2.24	1.90
Peru	13.05	71.39	26.56	22.98	33.49
Philippines	1.12	5.33	5.47	1.93	3.46
Poland	19.22	24.43	36.21	41.84	30.42
Puerto Rico	3.14	(1.75)	0.94	1.20	0.88
Portugal	3.38	4.75	4.79	3.24	4.04
Qatar	2.01	0.21	1.01	0.99	1.05
Russia	244.06	263.49	232.59	200.07	235.05
Rwanda	0.25	1.25	0.95	1.64	1.02
Saudi Arabia	32.49	(5.97)	12.53	10.84	12.47

Country/Region	2012	2013	2014	2015	Average
Singapore	2.96	4.05	3.81	2.68	3.38
Serbia	2.58	3.44	2.85	2.84	2.93
Slovakia	3.73	1.53	5.62	(0.22)	2.66
Sweden	8.36	0.47	(0.77)	(2.08)	1.49
Thailand	108.58	63.98	66.13	64.22	75.73
Tunisia	0.11	(0.21)	0.07	0.00	(0.01)
Turkey	154.03	53.37	(7.21)	26.28	56.62
Taiwan	5.26	12.72	12.61	9.32	9.98
Ukraine	28.06	15.47	8.31	2.24	13.52
Uruguay	1.07	(0.39)	2.11	8.41	2.80
USA	1.57	228.85	240.70	252.26	180.85
Venezuela	54.26	55.52	19.71	20.25	37.44
Vietnam	82.36	67.74	76.80	72.44	74.84
South Africa	32.50	30.90	23.50	19.29	26.55
Total	2,531.07	2,645.79	2,602.07	2,686.81	2,616.43

Table 3: Change in Consumption due to 1% Increase in Card Usage Constant 2011 U.S. $bil

Country/Region	2012	2013	2014	2015	Total
UAE	0.0844	0.0953	0.1105	0.1202	0.4105
Argentina	0.1283	0.1465	0.1591	0.1751	0.6089
Australia	0.8386	0.8858	0.9445	1.0021	3.6710
Austria	0.0792	0.0835	0.0874	0.0905	0.3405
Azerbaijan	0.0014	0.0018	0.0022	0.0026	0.0080
Belgium	0.2250	0.2292	0.2315	0.2355	0.9212
Brazil	1.0121	1.0901	1.1509	1.1548	4.4080
Canada	1.1848	1.2249	1.2800	1.3306	5.0203
Switzerland	0.2131	0.2242	0.2279	0.2322	0.8974
Chile	0.0787	0.0949	0.1007	0.1063	0.3806
China Mainland	3.1686	3.3714	3.6664	3.9847	14.1911
Colombia	0.0441	0.0500	0.0560	0.0616	0.2117
Czech Republic	0.0325	0.0347	0.0372	0.0402	0.1446
Germany	0.5604	0.5955	0.6351	0.6693	2.4603
Denmark	0.1560	0.1624	0.1681	0.1752	0.6617
Egypt	0.0077	0.0075	0.0077	0.0082	0.0310
Spain	0.2749	0.2733	0.2740	0.2813	1.1034
Finland	0.1318	0.1315	0.1291	0.1302	0.5227
France	1.1831	1.1950	1.2144	1.2384	4.8309
UK	1.8108	1.9053	1.9741	2.1000	7.7902
Ghana	0.0003	0.0004	0.0004	0.0005	0.0016
Greece	0.0151	0.0148	0.0148	0.0147	0.0594
Hong Kong	0.1864	0.1971	0.2055	0.2166	0.8057
Hungary	0.0307	0.0336	0.0367	0.0399	0.1409
Indonesia	0.0843	0.0890	0.0982	0.1098	0.3812
India	0.0633	0.0796	0.1009	0.1302	0.3740
Ireland	0.0927	0.0961	0.1053	0.1133	0.4073
Israel	0.1161	0.1224	0.1266	0.1328	0.4978
Italy	0.4023	0.4211	0.4373	0.4622	1.7229
Jordan	0.0036	0.0040	0.0040	0.0042	0.0157
Japan	0.9856	1.0314	1.0464	1.0724	4.1358
Kazakhstan	0.0055	0.0071	0.0064	0.0071	0.0262
Kenya	0.0018	0.0021	0.0024	0.0027	0.0089
Cambodia	0.0005	0.0006	0.0007	0.0008	0.0026
South Korea	0.7619	0.7810	0.8046	0.8289	3.1763
Kuwait	0.0349	0.0364	0.0390	0.0411	0.1514
Lebanon	0.0035	0.0036	0.0040	0.0044	0.0155
Sri Lanka	0.0024	0.0025	0.0029	0.0038	0.0116
Morocco	0.0043	0.0053	0.0059	0.0066	0.0221
Mexico	0.1967	0.2176	0.2409	0.2665	0.9217
Myanmar	0.0000	0.0001	0.0004	0.0004	0.0009
Malaysia	0.0689	0.0744	0.0783	0.0843	0.3059
Nigeria	0.0015	0.0036	0.0056	0.0085	0.0193
Netherlands	0.2979	0.3029	0.3122	0.3215	1.2345
Norway	0.2104	0.2158	0.2222	0.2310	0.8794
New Zealand	0.1071	0.1119	0.1168	0.1211	0.4568
Oman	0.0048	0.0059	0.0072	0.0083	0.0262
Peru	0.0232	0.0329	0.0375	0.0415	0.1350
Philippines	0.0320	0.0342	0.0364	0.0389	0.1416
Poland	0.0870	0.0957	0.1109	0.1295	0.4230
Puerto Rico	0.0213	0.0196	0.0207	0.0220	0.0836
Portugal	0.1101	0.1112	0.1162	0.1211	0.4586
Qatar	0.0157	0.0179	0.0206	0.0228	0.0769
Russia	0.2339	0.3189	0.3880	0.3946	1.3353
Rwanda	0.0000	0.0000	0.0001	0.0001	0.0002
Saudi Arabia	0.1033	0.1025	0.1168	0.1283	0.4508

Country/Region	2012	2013	2014	2015	Total
Singapore	0.0867	0.0933	0.0989	0.1049	0.3838
Serbia	0.0049	0.0056	0.0059	0.0065	0.0230
Slovakia	0.0140	0.0145	0.0173	0.0175	0.0634
Sweden	0.2687	0.2743	0.2795	0.2835	1.1059
Thailand	0.0669	0.0741	0.0817	0.0906	0.3134
Tunisia	0.0011	0.0010	0.0011	0.0011	0.0042
Turkey	0.4144	0.4535	0.4575	0.4849	1.8102
Taiwan	0.1127	0.1212	0.1308	0.1374	0.5021
Ukraine	0.0144	0.0167	0.0159	0.0123	0.0593
Uruguay	0.0069	0.0071	0.0081	0.0111	0.0333
USA	7.1633	7.5410	8.0153	8.5528	31.2724
Venezuela	0.1413	0.1628	0.1617	0.1529	0.6186
Vietnam	0.0149	0.0175	0.0207	0.0243	0.0774
South Africa	0.1344	0.1474	0.1562	0.1645	0.6025
Total	23.9689	25.3260	26.7797	28.3157	104.3903

Table 3A: Consumption Elasticity w.r.t. Card Penetration, %

Country/Region	2012	2013	2014	2015	Weighted Average	Country/Region	2012	2013	2014	2015	Weighted Average
UAE	0.0510	0.0551	0.0599	0.0633	0.0576	Rwanda	0.0005	0.0008	0.0011	0.0015	0.0010
Argentina	0.0340	0.0372	0.0406	0.0441	0.0390	Saudi Arabia	0.0507	0.0488	0.0526	0.0559	0.0521
Australia	0.1014	0.1053	0.1093	0.1130	0.1074	Singapore	0.0849	0.0883	0.0913	0.0934	0.0896
Austria	0.0354	0.0374	0.0391	0.0404	0.0381	Serbia	0.0168	0.0190	0.0210	0.0229	0.0199
Azerbaijan	0.0053	0.0059	0.0067	0.0074	0.0064	Slovakia	0.0250	0.0262	0.0305	0.0304	0.0281
Belgium	0.0822	0.0834	0.0835	0.0833	0.0831	Sweden	0.1021	0.1023	0.1020	0.1010	0.1019
Brazil	0.0620	0.0645	0.0672	0.0700	0.0660	Thailand	0.0323	0.0354	0.0388	0.0421	0.0372
Canada	0.1163	0.1174	0.1196	0.1219	0.1189	Tunisia	0.0037	0.0036	0.0037	0.0037	0.0037
Switzerland	0.0551	0.0567	0.0569	0.0572	0.0565	Turkey	0.0753	0.0784	0.0780	0.0794	0.0779
Chile	0.0485	0.0552	0.0573	0.0594	0.0553	Taiwan	0.0417	0.0438	0.0459	0.0475	0.0448
China Mainland	0.1117	0.1106	0.1111	0.1116	0.1113	Ukraine	0.0122	0.0133	0.0139	0.0141	0.0133
Colombia	0.0206	0.0224	0.0241	0.0257	0.0233	Uruguay	0.0205	0.0202	0.0221	0.0297	0.0232
Czech Republic	0.0303	0.0322	0.0340	0.0356	0.0331	USA	0.0660	0.0684	0.0708	0.0732	0.0697
Germany	0.0267	0.0281	0.0297	0.0308	0.0288	Venezuela	0.0746	0.0821	0.0847	0.0874	0.0821
Denmark	0.0975	0.1012	0.1041	0.1061	0.1023	Vietnam	0.0162	0.0182	0.0204	0.0225	0.0195
Egypt	0.0040	0.0039	0.0041	0.0042	0.0041	South Africa	0.0524	0.0558	0.0584	0.0604	0.0568
Spain	0.0329	0.0337	0.0334	0.0333	0.0333						
Finland	0.0892	0.0893	0.0872	0.0868	0.0881	Total	0.0615	0.0635	0.0656	0.0679	0.0647
France	0.0743	0.0747	0.0754	0.0756	0.0750						
UK	0.1065	0.1100	0.1111	0.1138	0.1104						
Ghana	0.0013	0.0014	0.0020	0.0028	0.0018						
Greece	0.0081	0.0082	0.0082	0.0081	0.0081						
Hong Kong	0.1139	0.1151	0.1163	0.1169	0.1156						
Hungary	0.0353	0.0387	0.0415	0.0441	0.0400						
Indonesia	0.0161	0.0162	0.0169	0.0180	0.0168						
India	0.0056	0.0067	0.0080	0.0096	0.0076						
Ireland	0.0794	0.0825	0.0886	0.0924	0.0858						
Israel	0.0760	0.0771	0.0769	0.0770	0.0768						
Italy	0.0298	0.0321	0.0332	0.0348	0.0325						
Jordan	0.0155	0.0158	0.0161	0.0164	0.0160						
Japan	0.0270	0.0278	0.0285	0.0294	0.0281						
Kazakhstan	0.0062	0.0068	0.0074	0.0080	0.0071						
Kenya	0.0049	0.0055	0.0059	0.0064	0.0057						
Cambodia	0.0046	0.0055	0.0060	0.0065	0.0057						
South Korea	0.0944	0.0947	0.0956	0.0963	0.0953						
Kuwait	0.0874	0.0880	0.0922	0.0960	0.0910						
Lebanon	0.0101	0.0108	0.0118	0.0126	0.0113						
Sri Lanka	0.0062	0.0064	0.0070	0.0084	0.0070						
Morocco	0.0073	0.0086	0.0092	0.0098	0.0088						
Mexico	0.0242	0.0260	0.0283	0.0304	0.0273						
Myanmar	0.0000	0.0003	0.0008	0.0009	0.0005						
Malaysia	0.0449	0.0461	0.0473	0.0486	0.0468						
Nigeria	0.0006	0.0012	0.0018	0.0027	0.0016						
Netherlands	0.0749	0.0772	0.0796	0.0803	0.0780						
Norway	0.1013	0.1013	0.1025	0.1042	0.1024						
New Zealand	0.1088	0.1105	0.1117	0.1126	0.1110						
Oman	0.0226	0.0260	0.0299	0.0330	0.0281						
Peru	0.0213	0.0287	0.0314	0.0338	0.0290						
Philippines	0.0183	0.0185	0.0187	0.0187	0.0185						
Poland	0.0271	0.0297	0.0336	0.0380	0.0322						
Puerto Rico	0.0309	0.0284	0.0298	0.0315	0.0301						
Portugal	0.0721	0.0738	0.0754	0.0765	0.0745						
Qatar	0.0663	0.0672	0.0715	0.0756	0.0704						
Russia	0.0235	0.0304	0.0366	0.0423	0.0331						

Table 3B: GDP Elasticity w.r.t. Card Penetration, %

Country/Region	2012	2013	2014	2015	Weighted Average
UAE	0.0227	0.0245	0.0272	0.0287	0.0259
Argentina	0.0228	0.0253	0.0273	0.0295	0.0263
Australia	0.0538	0.0557	0.0579	0.0610	0.0572
Austria	0.0183	0.0192	0.0200	0.0206	0.0195
Azerbaijan	0.0022	0.0025	0.0031	0.0034	0.0028
Belgium	0.0425	0.0432	0.0431	0.0435	0.0431
Brazil	0.0379	0.0397	0.0418	0.0435	0.0407
Canada	0.0651	0.0658	0.0671	0.0689	0.0667
Switzerland	0.0302	0.0312	0.0311	0.0314	0.0310
Chile	0.0297	0.0344	0.0358	0.0370	0.0343
China Mainland	0.0404	0.0399	0.0404	0.0411	0.0405
Colombia	0.0126	0.0136	0.0146	0.0156	0.0142
Czech Republic	0.0146	0.0158	0.0166	0.0171	0.0160
Germany	0.0148	0.0157	0.0165	0.0171	0.0160
Denmark	0.0456	0.0476	0.0486	0.0498	0.0479
Egypt	0.0032	0.0030	0.0030	0.0031	0.0031
Spain	0.0189	0.0191	0.0189	0.0188	0.0189
Finland	0.0488	0.0492	0.0485	0.0489	0.0489
France	0.0412	0.0413	0.0419	0.0423	0.0417
UK	0.0690	0.0711	0.0715	0.0743	0.0715
Ghana	0.0007	0.0008	0.0008	0.0011	0.0008
Greece	0.0056	0.0057	0.0057	0.0057	0.0057
Hong Kong	0.0738	0.0757	0.0770	0.0793	0.0765
Hungary	0.0222	0.0240	0.0253	0.0267	0.0246
Indonesia	0.0089	0.0089	0.0094	0.0100	0.0093
India	0.0033	0.0039	0.0046	0.0055	0.0044
Ireland	0.0382	0.0391	0.0407	0.0415	0.0399
Israel	0.0431	0.0440	0.0443	0.0455	0.0442
Italy	0.0181	0.0193	0.0202	0.0212	0.0197
Jordan	0.0122	0.0130	0.0127	0.0130	0.0127
Japan	0.0164	0.0169	0.0171	0.0174	0.0170
Kazakhstan	0.0028	0.0034	0.0029	0.0032	0.0031
Kenya	0.0041	0.0045	0.0048	0.0052	0.0047
Cambodia	0.0036	0.0042	0.0045	0.0048	0.0043
South Korea	0.0619	0.0616	0.0615	0.0617	0.0617
Kuwait	0.0210	0.0218	0.0233	0.0243	0.0226
Lebanon	0.0085	0.0086	0.0093	0.0100	0.0091
Sri Lanka	0.0038	0.0037	0.0040	0.0049	0.0041
Morocco	0.0041	0.0049	0.0052	0.0056	0.0050
Mexico	0.0162	0.0176	0.0191	0.0206	0.0184
Myanmar	0.0000	0.0002	0.0006	0.0007	0.0004
Malaysia	0.0219	0.0226	0.0224	0.0231	0.0225
Nigeria	0.0003	0.0008	0.0011	0.0017	0.0010
Netherlands	0.0337	0.0344	0.0351	0.0353	0.0346
Norway	0.0412	0.0418	0.0421	0.0428	0.0420
New Zealand	0.0630	0.0643	0.0651	0.0659	0.0646
Oman	0.0067	0.0079	0.0093	0.0102	0.0086
Peru	0.0128	0.0172	0.0191	0.0206	0.0176
Philippines	0.0134	0.0134	0.0134	0.0136	0.0135
Poland	0.0163	0.0177	0.0198	0.0223	0.0191
Puerto Rico	0.0211	0.0194	0.0204	0.0218	0.0207
Portugal	0.0468	0.0478	0.0495	0.0508	0.0487
Qatar	0.0088	0.0096	0.0106	0.0112	0.0101
Russia	0.0119	0.0160	0.0194	0.0204	0.0169
Rwanda	0.0004	0.0006	0.0007	0.0010	0.0007

Country/Region	2012	2013	2014	2015	Weighted Average
Saudi Arabia	0.0146	0.0141	0.0156	0.0165	0.0153
Singapore	0.0304	0.0314	0.0323	0.0336	0.0319
Serbia	0.0107	0.0120	0.0128	0.0140	0.0124
Slovakia	0.0141	0.0144	0.0168	0.0165	0.0155
Sweden	0.0477	0.0481	0.0479	0.0470	0.0477
Thailand	0.0169	0.0182	0.0199	0.0214	0.0192
Tunisia	0.0023	0.0021	0.0021	0.0021	0.0022
Turkey	0.0523	0.0549	0.0538	0.0554	0.0542
Taiwan	0.0227	0.0238	0.0248	0.0259	0.0243
Ukraine	0.0088	0.0102	0.0104	0.0093	0.0097
Uruguay	0.0139	0.0137	0.0151	0.0201	0.0158
USA	0.0452	0.0468	0.0486	0.0506	0.0479
Venezuela	0.0417	0.0474	0.0487	0.0496	0.0468
Vietnam	0.0105	0.0117	0.0131	0.0144	0.0125
South Africa	0.0315	0.0337	0.0352	0.0366	0.0343
Total	0.0339	0.0350	0.0360	0.0372	0.0356

Table 4

	Consumption Without Card Contribution, Constant 2011 U.S. $bil				Relative Change in Consumption with Changes in Card Penetration vs No Change in Penetration
Country/Region	2012	2013	2014	2015	2015
UAE	164.25	172.16	183.51	189.27	0.959
Argentina	376.33	392.88	390.80	395.41	1.015
Australia	824.82	837.89	860.63	883.23	0.994
Austria	223.20	223.01	222.98	223.70	0.862
Azerbaijan	26.97	29.71	33.17	34.51	1.001
Belgium	273.23	274.33	277.22	282.65	0.990
Brazil	1,628.16	1,685.43	1,707.45	1,644.35	1.000
Canada	1,017.54	1,042.23	1,067.41	1,088.72	1.004
Switzerland	385.94	394.78	400.54	405.92	1.008
Chile	161.58	170.67	175.28	178.42	1.006
China Mainland	2,820.40	3,050.59	3,297.54	3,567.69	1.001
Colombia	214.13	222.38	232.10	239.66	0.998
Czech Republic	106.84	107.73	109.32	112.51	0.996
Germany	2,096.51	2,112.89	2,134.13	2,173.88	0.973
Denmark	159.60	159.86	160.91	164.80	0.963
Egypt	195.10	189.33	185.48	193.27	0.998
Spain	836.26	810.01	820.28	845.27	1.006
Finland	147.61	147.27	148.34	150.05	1.146
France	1,592.39	1,600.01	1,609.99	1,636.90	0.973
UK	1,700.84	1,725.95	1,775.21	1,840.06	1.048
Ghana	23.04	25.86	18.63	19.28	1.005
Greece	185.41	180.67	181.94	182.31	0.970
Hong Kong	163.32	171.06	176.53	185.23	0.988
Hungary	86.16	86.64	88.01	90.25	0.992
Indonesia	521.16	550.63	579.29	609.89	1.006
India	1,127.18	1,186.09	1,258.19	1,353.69	1.005
Ireland	116.36	116.07	118.08	122.09	0.936
Israel	152.75	158.56	164.60	172.46	1.006
Italy	1,344.36	1,309.39	1,316.02	1,326.79	1.060
Jordan	23.24	25.06	24.74	25.45	0.999
Japan	3,650.74	3,710.50	3,675.30	3,644.97	0.969
Kazakhstan	88.65	105.60	87.15	88.45	1.005
Kenya	36.31	38.40	39.77	42.36	1.000
Cambodia	10.92	11.29	11.76	12.58	1.000
South Korea	806.28	824.33	840.56	859.69	0.992
Kuwait	39.96	41.29	42.16	42.67	0.970
Lebanon	34.72	33.56	33.97	34.65	0.996
Sri Lanka	38.41	39.06	41.94	44.62	1.016
Morocco	58.60	62.24	63.95	67.06	1.002
Mexico	811.86	833.80	849.87	874.65	0.998
Myanmar	41.71	42.51	47.33	49.32	0.990
Malaysia	153.71	161.16	165.29	173.04	1.004
Nigeria	239.87	308.19	306.37	318.43	1.006
Netherlands	396.95	391.28	391.30	399.95	0.927
Norway	207.14	213.15	216.50	221.25	1.026
New Zealand	98.35	101.14	104.38	107.39	0.988
Oman	21.29	22.68	23.86	24.92	0.988
Peru	108.42	113.51	118.78	122.78	0.991
Philippines	175.41	185.25	195.33	207.70	0.998
Poland	320.34	320.95	328.90	339.08	1.023
Puerto Rico	68.59	69.32	69.44	69.82	1.068
Portugal	152.40	150.49	153.88	158.14	0.981
Qatar	23.40	26.59	28.64	29.99	1.000

Table 4 (Cont.)

Country/Region	Consumption Without Card Contribution, Constant 2011 U.S. $bil				Relative Change in Consumption with Changes in Card Penetration vs No Change in Penetration
	2012	2013	2014	2015	2015
Russia	990.34	1,039.88	1,054.38	927.33	1.009
Rwanda	5.27	5.05	5.19	5.53	1.003
Saudi Arabia	201.39	210.49	221.08	228.81	0.986
Singapore	101.79	105.31	107.96	112.14	0.976
Serbia	29.21	29.59	28.28	28.42	1.000
Slovakia	55.68	55.37	56.41	57.73	0.807
Sweden	262.15	267.98	274.19	280.78	0.975
Thailand	206.39	208.54	209.76	214.60	1.000
Tunisia	28.71	28.81	28.89	29.18	0.997
Turkey	544.88	576.38	586.51	609.56	1.048
Taiwan	270.04	276.05	284.21	289.14	0.968
Ukraine	117.29	125.50	114.24	87.44	1.002
Uruguay	33.61	35.40	36.81	37.09	1.777
USA	10,845.15	11,004.30	11,299.89	11,653.22	1.004
Venezuela	187.90	196.77	190.41	174.54	1.002
Vietnam	91.89	96.17	101.00	107.58	1.000
South Africa	255.69	263.19	266.99	271.85	0.973
Total	38,885.42	39,828.88	40,723.75	41,654.35	1.004

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