Competition among banks and mobile money providers*

Ryan Hawthorne† Zubair Patel

2024-07-31

Abstract

We estimate a discrete choice model of demand for banking and mobile money services for Botswana, Eswatini, Lesotho, and South Africa. Our results suggest that mobile money services are highly price inelastic, while bank services are more price elastic. This suggests that mobile money providers are able to charge higher mark-ups over costs than banks are. There is some evidence that bank and mobile money services are substitutes in at least Lesotho. However, the degree of substitution is weakened particularly for younger consumers and consumers in rural areas, who are likely not in a position to use banking services as readily as a substitute. Our counterfactual simulations show that while reductions in monthly bills will increase uptake of banking services to a small degree, the uptake of mobile services would not increase substantially. Introducing a new fintech entrant that is cheaper than banking services would likely attract a small but significant market share and may help expand the uptake of financial services. This is especially the case in Botswana and South Africa. Indeed, we have observed successful entry by TymeBank in South Africa, which has attracted large numbers of customers in a relatively short space of time.

1 Introduction

Financial sector development facilitates economic growth (Levine (2005)), including by means of the expansion of digital financial services (Khera, Ogawa, and Sahay (2021)). However, an important barrier to the uptake of financial services is affordability, which is driven by pricing and availability of appropriate services. Affordability and availability may, in turn, be driven by competition between financial services providers. In many developing countries, competition may be increasing over time, improving the affordability and availability of services, due to the expansion of low-cost mobile money services offered by mobile network operators in competition with banks and microfinance institutions. These firms may increasingly be competing for the same consumers, resulting in lower prices, higher quality, and more innovation, helping to drive financial inclusion and economic growth. We contribute to the literature on financial inclusion by studying the extent to which banks and mobile money providers compete for customers in developing countries. To address this question, we estimate a model of demand for bank and mobile money accounts, using a unique supply-side product-level pricing dataset on bank charges in a number of African countries collected by the UNCDF, together with demand-side representative livelihoods surveys of usage of accounts by individuals for particular countries.

Our model provides for choices of bundles of products, that might include a bank service, a mobile money service, or both services together. We estimate a multinomial logit model. The model allows us to predict the impact of changes in prices on the demand for bank and mobile money services, and to simulate the impact of entry of new providers on the market.

*The study was commissioned by UNCDF's Making Access Possible (MAP) programme. We are grateful to MAP staff Christian Loots and Kameshnee Naidoo for comments, and to Luca Benatti for comments. We are also grateful to Megan Friday for research assistance. Note that FinScope South Africa is a syndicated survey and the most recent datasets are therefore not publicly available. For the data used in this study, it should be noted that FinMark Trust is not liable for any analysis or interpretations.

†Acacia Economics and Monssa Digital Transformation Research Unit, School of Economics, University of Cape Town

This paper is structured as follows. First, the econometric model is explained, followed by a description of the data. Results are then presented, and our conclusions are discussed.

2 Econometric model

Our overall approach is to estimate a discrete choice model of demand for banking and mobile money services for the four countries described above.

We follow the approach proposed by Croissant et al. (2012).

We specify the deterministic component of consumer i's stand-alone utility (V_{ij}) from a bank or mobile money service (j) as follows, as follows:

$$V_{ij} = \alpha_j + \beta x_{ij} + \gamma_j z_i + \delta_j w_{ij}$$

Where:

- x_{ij} denotes alternative specific variables (such as bank or mobile service) that have a generic coefficient β.
- z_i refers to individual characteristics (such as age, income).
- w_{ij} refers to alternative specific variables (such as monthly bills) that have an alternative specific coefficient.

In respect of Eswatini and Lesotho, we are able to assess whether bank and mobile money products are substitutes, complements, or independent of each other, following the approach in Gentzkow (2007). Utility derived by consumer i from each choice bundle r is as follows:

$$u_{ir} = \varepsilon_{ir} \text{ if } j = 0 \text{ and } k = 0$$

$$u_{ir} = V_{ij} + \varepsilon_{ir} \text{ if } j \neq 0 \text{ and } k = 0$$

$$u_{ir} = V_{ik} + \varepsilon_{ir} \text{ if } j = 0 \text{ and } k \neq 0$$

$$u_{ir} = V_{ij} + V_{ik} + \Gamma_{ir} + \varepsilon_{ir} \text{ if } j \neq 0 \text{ and } k \neq 0$$

The Γ_{ir} identify whether the bank and mobile money services are substitutes ($\Gamma_{ir}<0$), complements ($\Gamma_{ir}>0$), or independent of one another ($\Gamma_{ir}=0$).

In our setup, consumers must choose between banks (they are not permitted to have more than one bank), and between mobile operators (they cannot have more than one), and between combinations of one bank and one mobile operator. This is because of the nature of discrete choice modelling: in the end we are trying to understand why consumers take up one or another, or a combination of services.

If alternative l is preferable to alternative j, then:

$$P(\epsilon_j < V_l - V_j + \epsilon_l) = e^{-e^{-V_l - V_j + \epsilon_l}}$$

Where $P(\epsilon < V_l - V_j + \epsilon_l)$ is the probability that the deterministic component of utility (V_l) obtained from option l is greater than that obtained from all other alternatives (j). We assume that the error term for each alternative (ϵ_j) follows the Gumbel distribution and we assume that errors are identically distributed.

The main idea with the multinomial logit model is that we are interested in differences between choice alternatives, rather than the absolute utility obtained from each alternative.

We can write down the probability that alternative l is chosen following the logit probability:

$$P_l = \frac{e^{V_l}}{\sum_j e^{V_j}}$$

By changing prices, which impact on the deterministic component of utility (V), and introducing additional choice alternatives (j), we are able to simulate the impact of changes in probabilities for choosing different alternatives. We show the results of our simulations in Section @ref(counterfactual).

The number of choice alternatives (j) varies by country. For example:

- In South Africa, there are six choice alternatives: no bank, ABSA, Capitec, FNB, Nedbank, and Standard Bank.
- In Lesotho, there are nine choice alternatives: no provider, Ecocash, FNB, Mpesa, Standard Bank, FNB and Mpesa, FNB and Ecocash, Standard Bank and Ecocash, Standard Bank and Mpesa.

Using our model, which depends on prices (monthly bills) and demographic characteristics, we are able to predict which alternative is chosen by each consumer in each country.

3 Data

3.1 Overview

We use price data collected by the United Nations Capital Development Fund (UNCDF) Making Access Possible (MAP) project, and various FinScope consumer surveys collected by the FinMark Trust. We matched the pricing and survey data for Botswana (2020), Eswatini (2018), Lesotho (2021), and South Africa (2017, 2018, and 2019).[1]

The FinScope surveys are nationally representative demand side surveys developed by FinMark Trust, and funded from a range of sources, including the MAP initiative, in specific countries tied to MAP programming.[2] The resulting datasets contain demographic and livelihoods information alongside detailed financial services usage and behaviour information. In some cases, usage and choices of specific banking and mobile money products, and provided by specific providers, are also recorded.

The pricing datasets is from a research study conducted by Africa Analysis, commissioned by UNCDF's MAP programme, which involved collecting prices of various bank products and services (up to 105 fee lines are captured) in 35 countries in Africa and Asia (covering the SADC, WAEMU and ASEAN regions). The banks available in the pricing datasets are also available in the FinScope datasets for the countries that were matched for this study. The bank pricing data is from 2016 to 2022 and was collected based on bank products and services targeted at low socio-economic consumers, middle socio-economic consumers, and small businesses.

[1] In order to identify countries and years for our study, we first matched the datasets on consumer choices of bank provider with prices for bank providers and identified four matching countries: Lesotho (2021), Botswana (2020), Eswatini (2018) and South Africa (2018).

[2] FinScope South Africa is a syndicated survey. For the data used in this study, it should be noted that FinMark Trust is not liable for any analysis or interpretations.

3.2 FinScope

The FinScope data provide information on demographics and usage of various bank and mobile money (where applicable) alternatives. In respect of each FinScope survey, usage profiles were developed depending on alternatives available to consumers. Since Eswatini and Lesotho include data on mobile money providers, we comment on them separately to Botswana and South Africa.

For each country - we look at the actual reported usage of specific providers, as well as the predicted choice of provider based on our discrete choice model. For the actual reported usage - we look at the weighted sample survey results - where the results are representative of the entire adult population. However, for the discrete choice model of demand, we utilise the unweighted sample, i.e. the number of respondents to the survey.

Different demographic variables were used across different datasets as the models for each country were quite different. These demographic variables that were included for each country were based on an initial exploratory analysis, after which demographic variables for each country that resulted in non-sensical results were excluded. The gender variable is an example of this. While gender may have an impact on choices in one country, it may not in another. Furthermore, gender may interact with prices in a different way in one country compared to another, resulting in economically incoherent results. For example, adding gender in the Botswana model results in a positive coefficient on monthly bills, i.e. as bills rise for a specific alternative, so the likelihood of choosing the alternative rises. This is absurd economically, and so including gender in the model undermines the ability for the model to correctly predict consumer choices.

As explained above in Section @ref(model), consumers can choose only one bank and only one mobile provider. Thus, a consumer can choose, for example, Mpesa or Ecocash in Lesotho, or between Standard Bank and FNB. A consumer cannot choose Standard Bank and FNB, or Mpesa and Ecocash. At the same time, a consumer can choose FNB and Mpesa, denoted fnb_mpesa in the figures below, for example. This is in the nature of discrete choice modelling: we are trying to predict what FNB's market share might be, or Mpesa's, and we are trying to estimate whether Mpesa and FNB are substitutes, complements, or unrelated.

3.2.1 Lesotho and Eswatini

We used the following FinScope variables for Lesotho:

- Demographic variables: Education, rural / urban location, age, and income.
- Usage variables: payment method for different products and services were added for each of three applications: paying bills, paying merchants, and cash withdrawals.

And for Eswatini:

- Demographic variables: education, rural / urban location, gender and income.
- Usage variables: payment method for different products and services were added for each of three applications: paying bills, paying merchants, and cash withdrawals.

The FinScope income variable can be used to identify low-income and middle-income consumer segments. The FinScope dataset for Lesotho shows that by far the greatest proportion of the population (regardless of income) uses mobile money, followed by bank accounts combined with a mobile money service (Figure @ref(fig:plot-finscope-lesotho)). Mpesa as a stand-alone service (i.e. not when chosen together with a bank) is by far the most chosen option in Lesotho, with a share of 88.5% of low-income consumers and 63% of middle-income consumers (Figure @ref(fig:plot-shares-lesotho)). Postbank is the smallest, with only 25 respondents in the sample, including customers using a combination of Postbank and mobile money services. Nedbank is the second smallest (30 respondents). These sample sizes are very small indeed, and so have

been dropped from the estimation for Lesotho. While there are some stand-alone FNB and Standard Bank customers, the bulk of bank customers also have mobile money services. There is a question as to whether consumers choosing both types of service see them as complementary, substitutable, or see them as providing totally different services. We address this question by estimating Γ coefficients, as explained above in Section @ref(model).

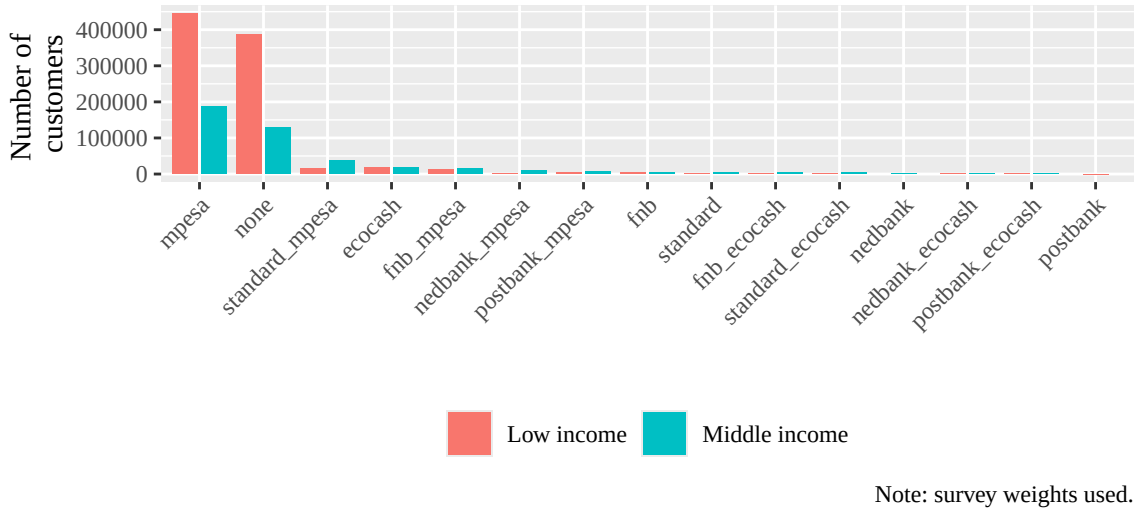


Figure 1: Lesotho (2021) - consumer choice of providers (FinScope, weighted)

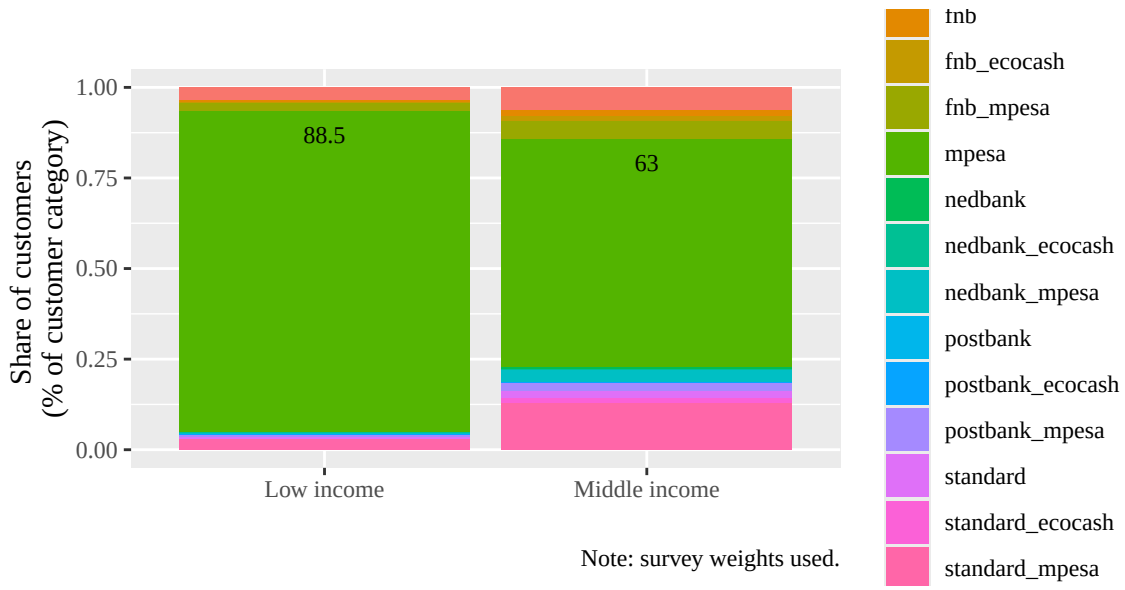


Figure 2: Lesotho (2021) - market shares (FinScope, weighted)

In Eswatini, by far the largest financial services account provider is MTN, i.e. mobile money services accounts are used by most consumers taking up any account (Figure @ref(fig:plot-finscope-eswatini)). In particular, 98.4% of low-income consumers use MTN mobile money on a stand-alone basis in Eswatini, and 88% of middle-income users do so too (Figure @ref(fig:plot-shares-eswatini)). Similar to Lesotho, while there are some FNB and Standard Bank customers, they typically also take up a mobile money service.

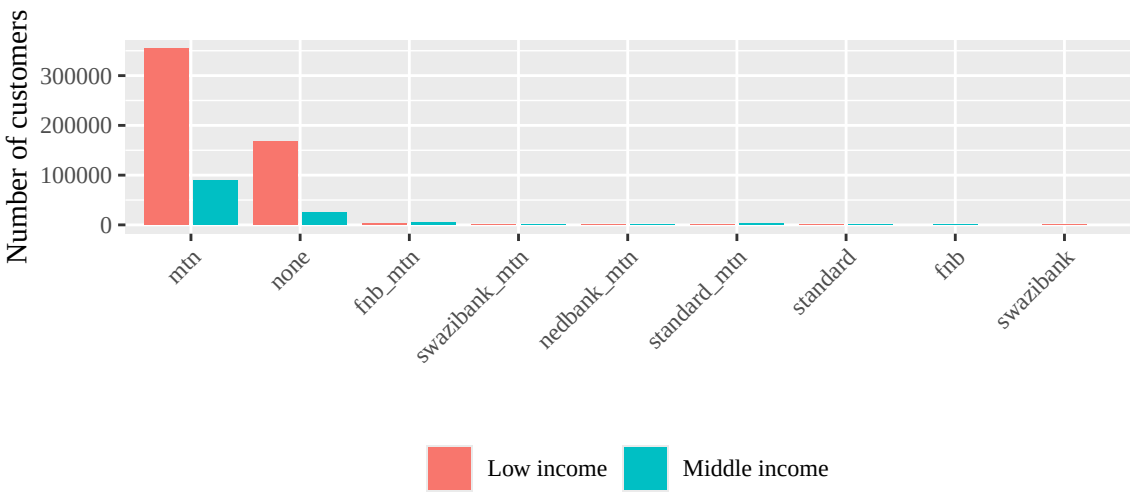


Figure 3: Eswatini (2018) - consumer choice of providers (FinScope, weighted)

Figure 4: Eswatini (2018) - market shares (FinScope, weighted)

3.2.2 Botswana and South Africa

We used the following FinScope variables for Botswana, South Africa:

- Demographic variable: income.
- Usage variables: paying bills, cash withdrawals, and paying merchants was used.

In Botswana, FNB is the largest service provider followed by ABSA (Figure @ref(fig:plot-finscope-botswana)). FNB's market share of almost 80% far exceeds ABSA's market share of approximately 16% among low-income customers, though FNB's share of middle-income customers is somewhat lower, and ABSA's somewhat higher (@ref(fig:plot-shares-botswana)). The banks with the smallest users include Baroda, Capital Bank and Bank Gaborone with sample sizes of 2, 3 and 12 observations respectively. Mobile money services provided by non-banks are not reported on in FinScope Botswana.

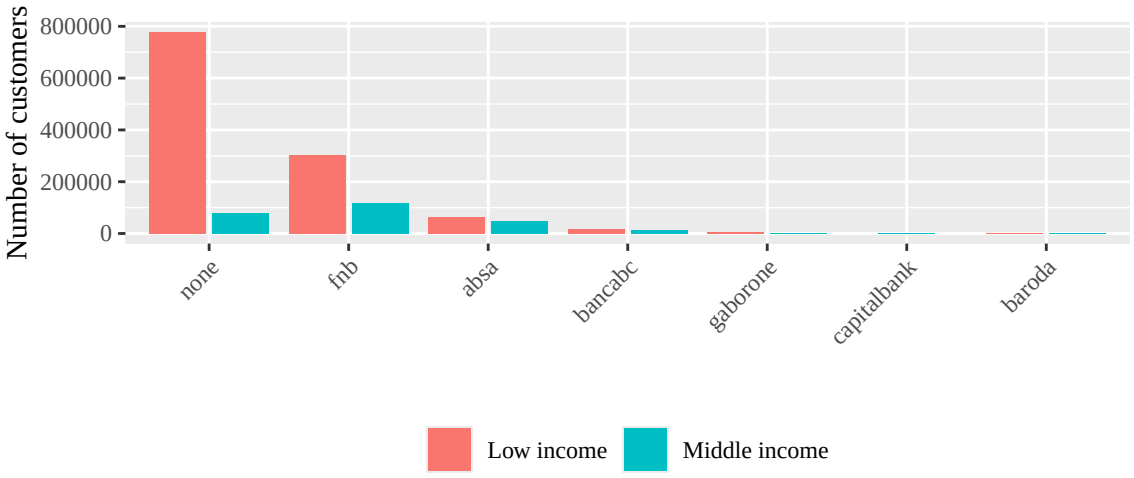


Figure 5: Botswana (2021) - Bank service usage (FinScope, weighted)

In South Africa, bank market shares have changed substantially over time. FNB was the largest bank in South Africa in 2017 and 2018 but was very quickly overtaken by Capitec Bank in 2019 (Figure @ref(fig:plot-finscope-sa19)). Capitec's market share is substantially greater among low-income consumers (more than 50%), suggesting that there are indeed banks that target low-income consumers (Figures @ref(fig:plot-shares-sa17)-@ref(fig:plot-shares-sa19)). Bank service usage in South Africa is a lot higher than in Botswana, especially among middle income groups.

3.3 Bank fees

3.3.1 Overview

A range of bank fees are collected by Africa Analysis[3], including on monthly fees, in-branch transactions, and electronic transactions such as internet banking. The fee dataset is collected for low-income consumers, middle-income consumers, and MSMEs. This dataset was augmented by mobile money fees for Eswatini and

[3]UNCDF MAP Bank pricing dataset. Lesotho (2021), Eswatini (2018), South Africa (2018), and Botswana (2021).

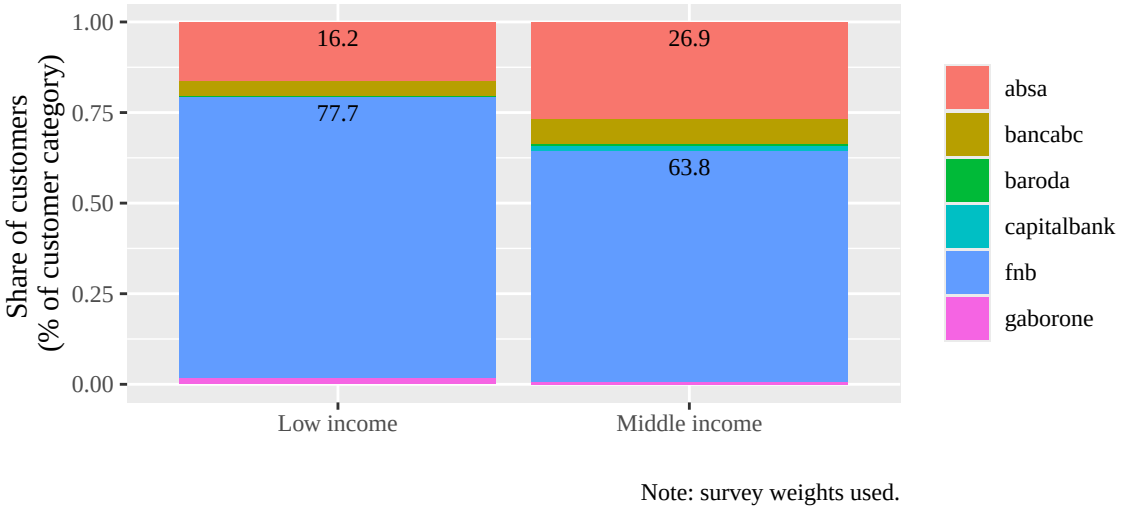


Figure 6: Botswana (2021) - market shares (FinScope, weighted)

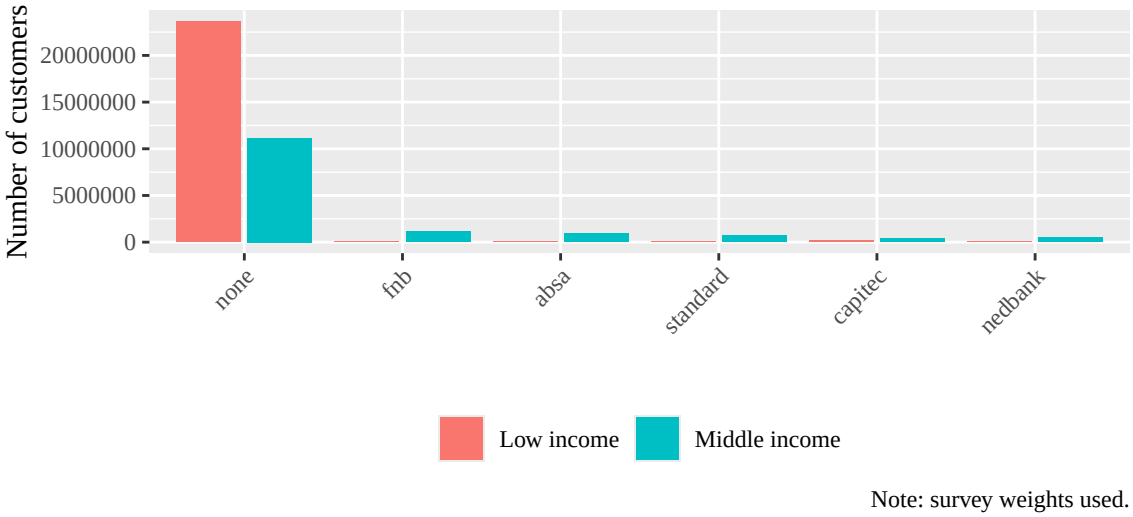


Figure 7: South Africa (2017) - Bank service usage (FinScope, weighted)

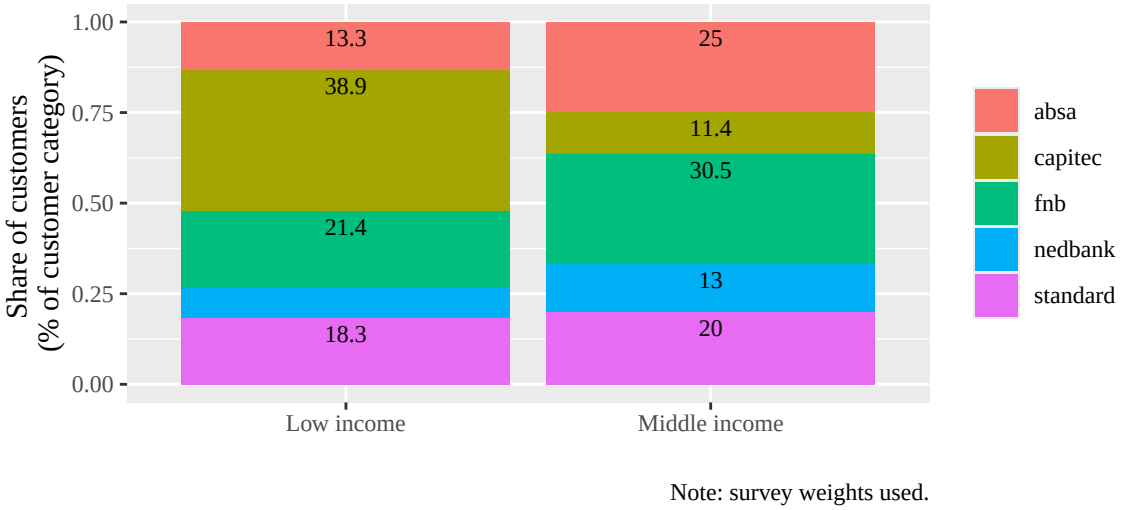


Figure 8: South Africa (2017) - market shares (FinScope, weighted)

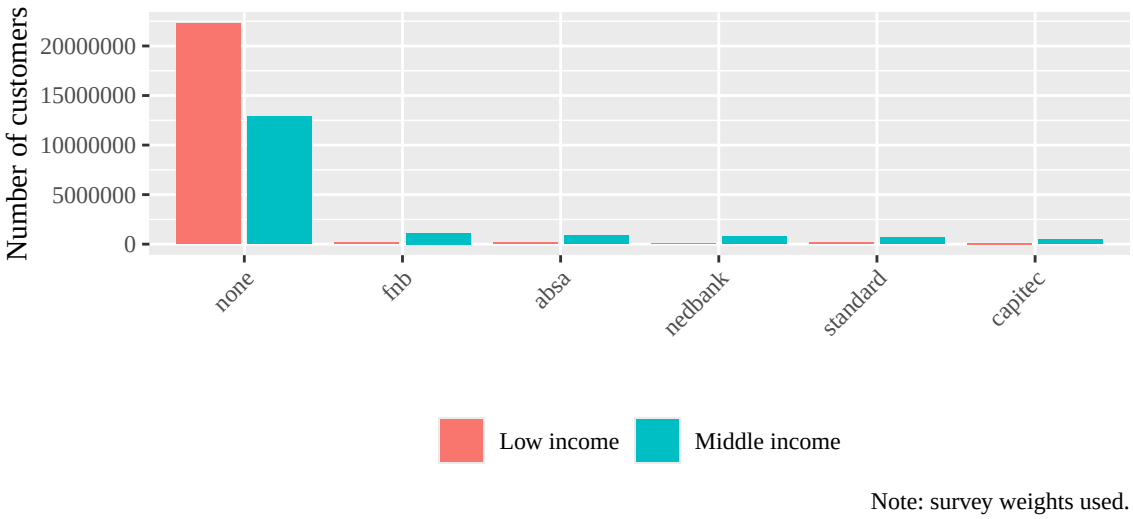


Figure 9: South Africa (2018) - Bank service usage (FinScope, weighted)

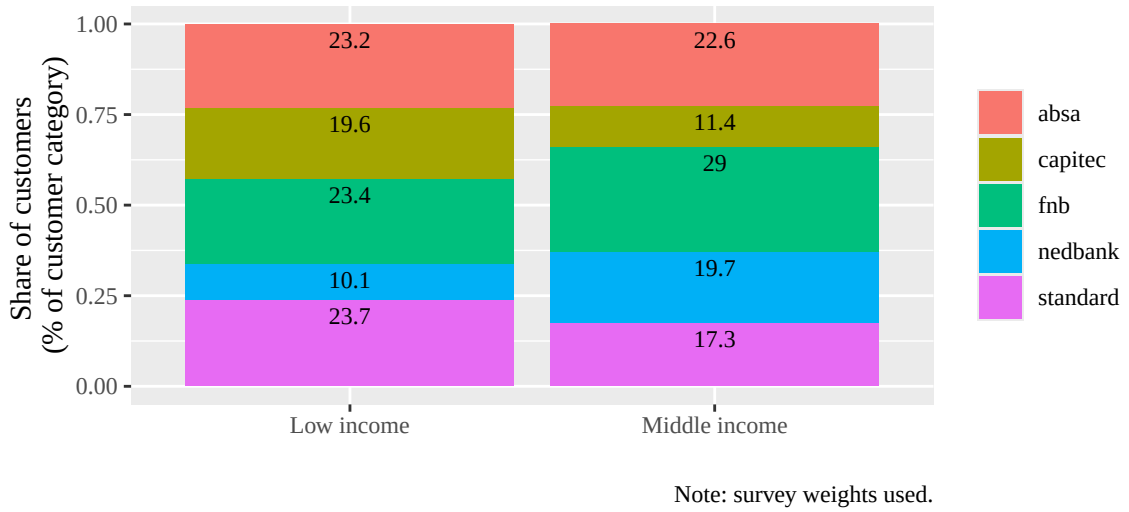


Figure 10: South Africa (2018) - market shares (FinScope, weighted)

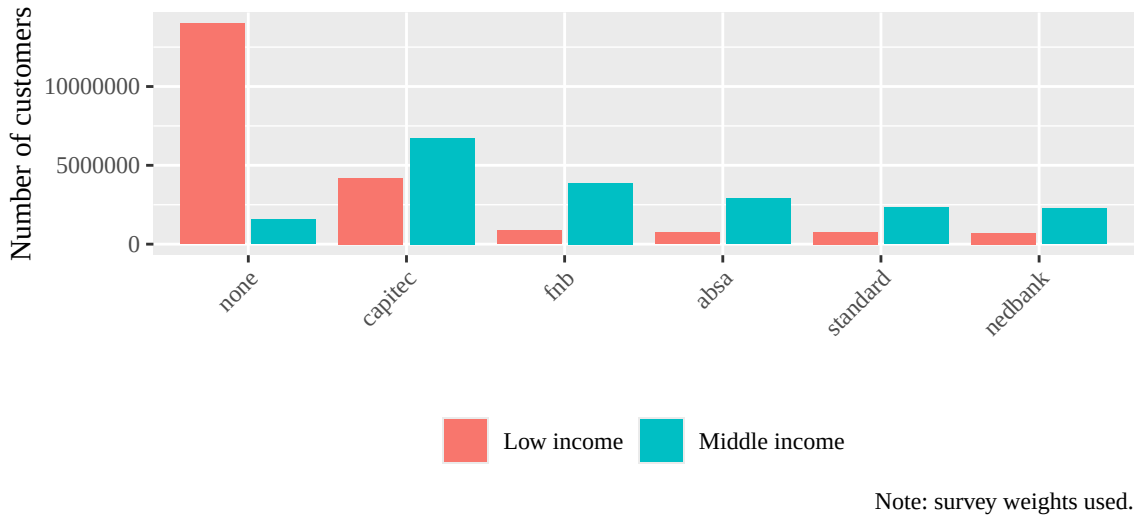


Figure 11: South Africa (2019) - Bank service usage (FinScope, weighted)

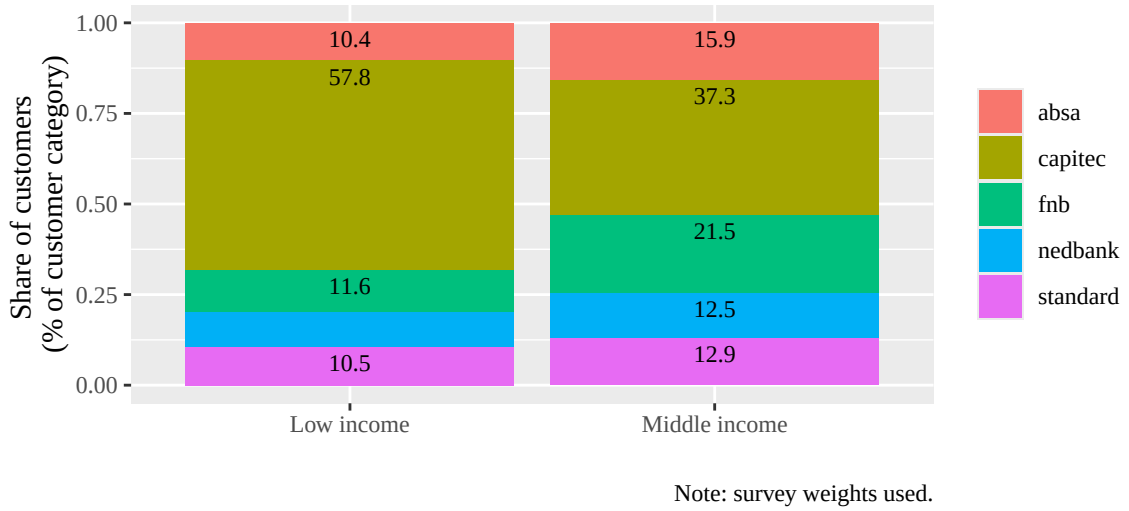


Figure 12: South Africa (2019) - market shares (FinScope, weighted)

Lesotho (mobile money is not as widely used in Botswana and South Africa). The fees dataset was matched to the FinScope dataset using low-income and middle-income group identifiers defined by the UNCDF.[4]

The FinScope survey asks a range of questions about how consumers use their bank accounts. We categorised these questions into three categories: merchant payments, cash withdrawals, and bill payments. We then identified fees in the UNCDF pricing dataset that matched these three categories.

Each consumer in each FinScope survey was given a bundle of bank and mobile money (if applicable) options to choose from. A monthly bill for each choice alternative for each consumer was calculated by multiplying the consumers transaction profile (number of merchant transactions from FinScope for instance) by the applicable price for the service available in the bundle (applicable merchant fee from the bank pricing database).

For example, in respect of merchant fees:

- The person to person sending fee was selected in the case of mobile money, or
- POS fee in the case of bank, or
- The lower of the bank and mobile money fee for a bundled bank / mobile money option.

We did not include prices on savings accounts or loans because of the possibility that consumers may choose the latter products independently of their main current / transaction service, and also because interest rates are highly likely to affect the choices of savings or loan provider, and there is no readily available information on this.

The monthly bill is constructed for each respondent since consumers may have different usage profiles. For example, some consumers might make grocery purchases using a bank or mobile money account, while others might use cash. The number of monthly transactions for each fee category (merchant, bill payment, and cash withdrawal) thus varies at the level of the individual, and thus the monthly bill varies at the level of the individual, based on their actual reported usage.

[4]See Africa Analysis, December 2022, 'Technical Report: Research and Analysis of Bank Fees in Regions of Africa and Asia - 2022', from page 26.

The FinScope datasets ask differing levels of details on account usage, and so the monthly bill is calculated separately in each country. The following bank pricing variables were used for Lesotho, Eswatini, South Africa (2019, 2018 and 2017) and Botswana (excl. cash out fee) from the UNCDF pricing dataset (prices in local currency, including VAT):

- Monthly fee: Monthly Account Fee
- Billpay fee: Internet Banking: Funds Transfer (to other banks)
- Merchant fee: POS: Point of Sale Purchases
- Cash out fee: Withdrawal (own bank ATM)/ per 100 USD

In addition, for the purposes of this study, mobile money service charges for Lesotho and Eswatini were collected based on the following transaction ranges:

- Billpay (Lesotho: M251-M500 (M-Pesa) & M201-M300 (EcoCash); Eswatini: E251-E500 (MTN MoMO)))
- Payments to merchants were assumed to be via person to person transfers (Lesotho: M251-M500 (M-Pesa) & M201-M300 (EcoCash); Eswatini: E251-E500 (MTN Momo))[5]
- Cash out (Eswatini: 20-125; Lesotho: M51-100)

While mobile money fees are collected for the UNCDF database, these are for banks only and not for mobile network operator services.

Further details on the monthly bill are shown in the appendix.

We present average monthly bills paid by consumers to their chosen provider / providers in the sections that follow, where the monthly bill was greater than zero. For instance, a consumer might have signed up for a mobile money service but might not be transacting at all. This would result in a zero monthly bill. In our multinomial logit model, all observations are included, even where the monthly bill is zero, since the latter remains a choice: for instance, a consumer could choose no service at a zero monthly bill.

3.3.2 Lesotho, Eswatini

As explained above, Lesotho and Eswatini are discussed together since both have significant uptake of mobile money services offered by mobile network operators, as well as available data at the provider level in FinScope, whereas Botswana and South Africa do not.

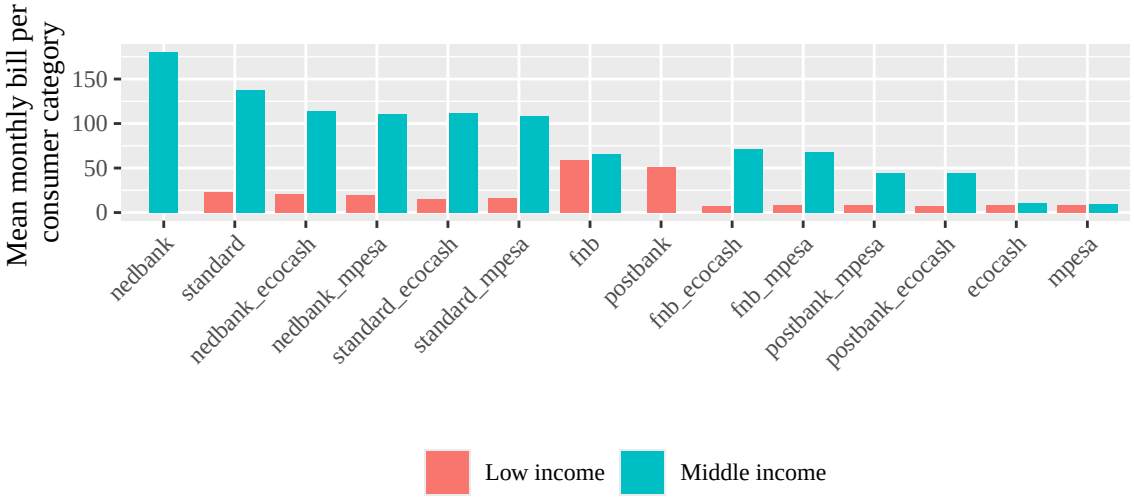
Average monthly bills in Lesotho are significantly lower for low-income consumers compared to middle-income consumers (Figure @ref(fig:plot-fees-lesotho)). Average monthly bills for consumers choosing FNB are particularly high, for both low-income and middle-income consumers.

Based on the reported income of individual respondents, we can also calculate the average affordability of service bills per consumer group. From an affordability perspective, monthly bills typically account for less than 5% of monthly incomes (Figure @ref(fig:plot-afford-lesotho)). Among low-income consumers, the combination of bank and mobile products offers relatively better affordability compared to stand-alone mobile money services.

Average bank charges in Eswatini are significantly lower than in Lesotho (Figure @ref(fig:plot-fees-eswatini)), with the exception of Swazibank. In 2023, Swazibank has significantly reduced its monthly charges, which means our results might be different applying these new prices.

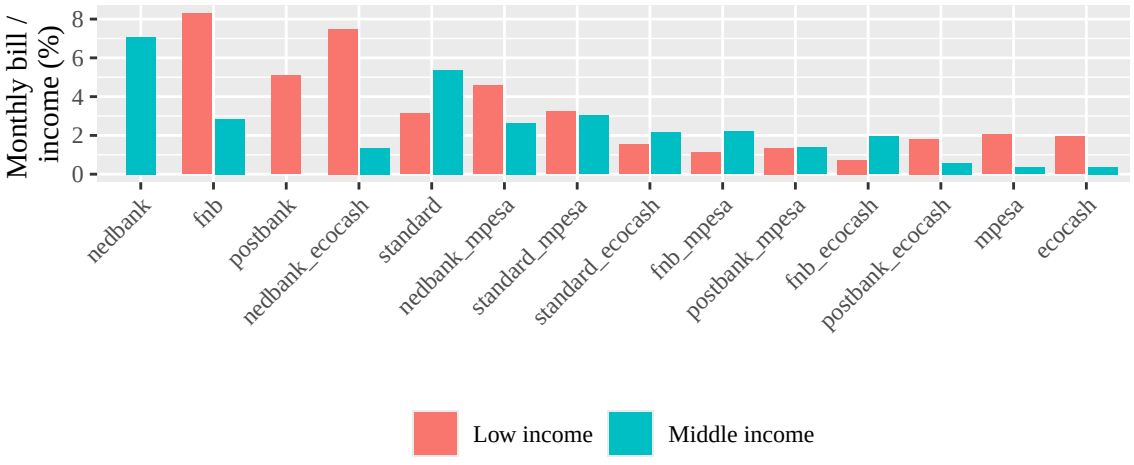
Furthermore, products from MTN, Standard Bank, Nedbank and FNB are relatively affordable, typically costing less than 2% of monthly incomes (@ref(fig:plot-afford-eswatini)).

[5]MTN Momo retail payment service charges were used.



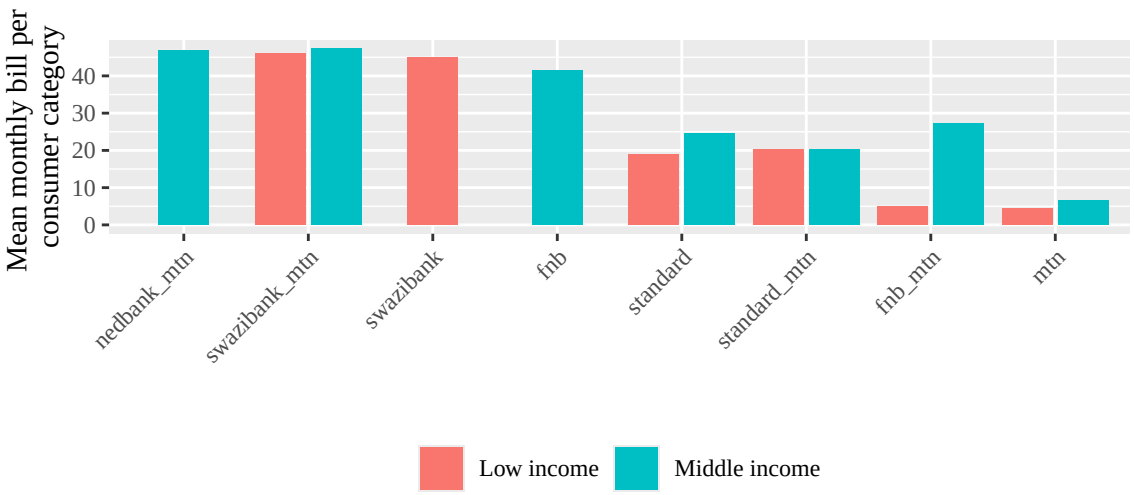
Note: monthly bills filtered for > 0. No weighting used.

Figure 13: Lesotho (2021) - Calculated average monthly service bills



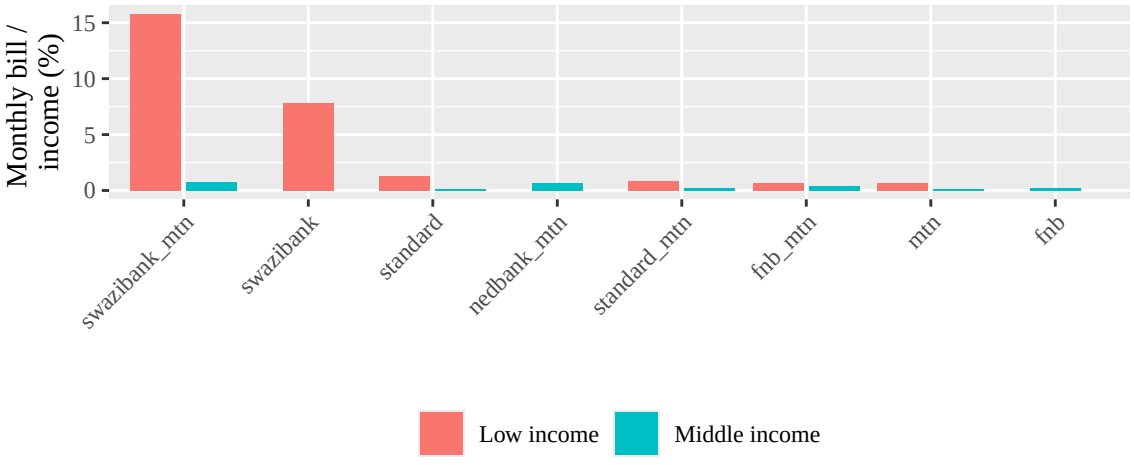
Note: incomes filtered for > 10 per month and monthly bills filtered for > 0. No weighting used.

Figure 14: Lesotho (2021) - Affordability



Note: monthly bills filtered for > 0. No weighting used.

Figure 15: Eswatini (2018) - Calculated average monthly service bills



Note: incomes filtered for > 10 per month and monthly bills > 0. No weighting used.

Figure 16: Eswatini (2018) - Affordability

3.3.3 Botswana, South Africa

The same fee variables from the bank pricing dataset were used for Botswana and South Africa as were used in Eswatini and Lesotho. Botswana has similar monthly bills to Eswatini. Gaborone Bank was the most expensive bank in Botswana, and as we would expect, has the fewest customers (discussed above).

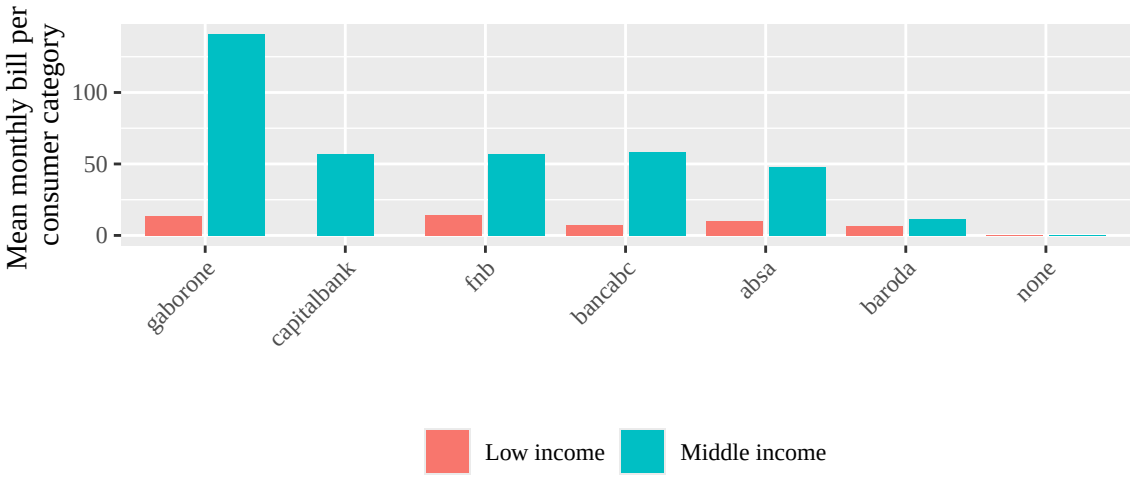


Figure 17: Botswana (2021) - Calculated average monthly service bills

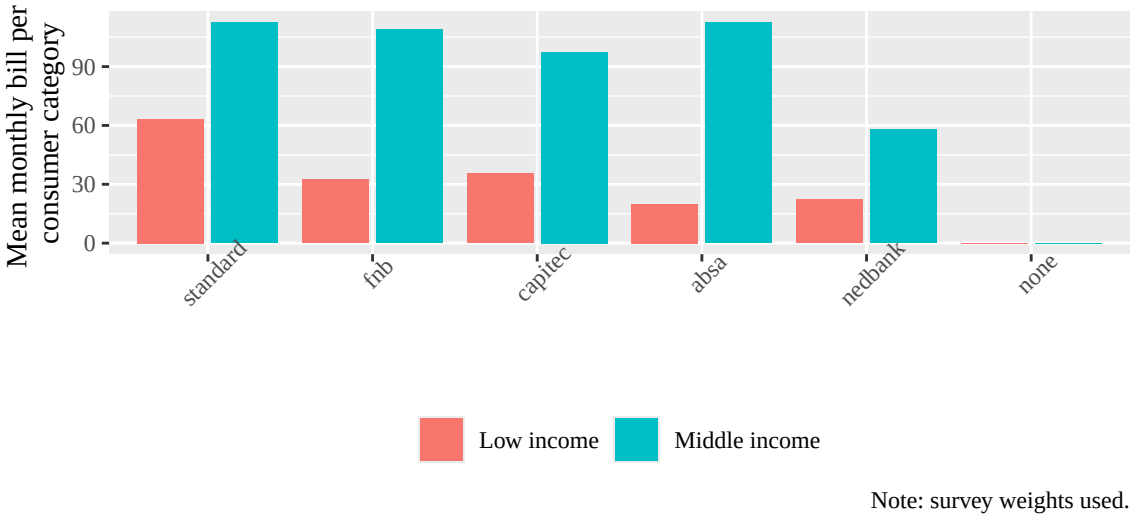


Figure 18: South Africa (2019) - Calculated average monthly service bills

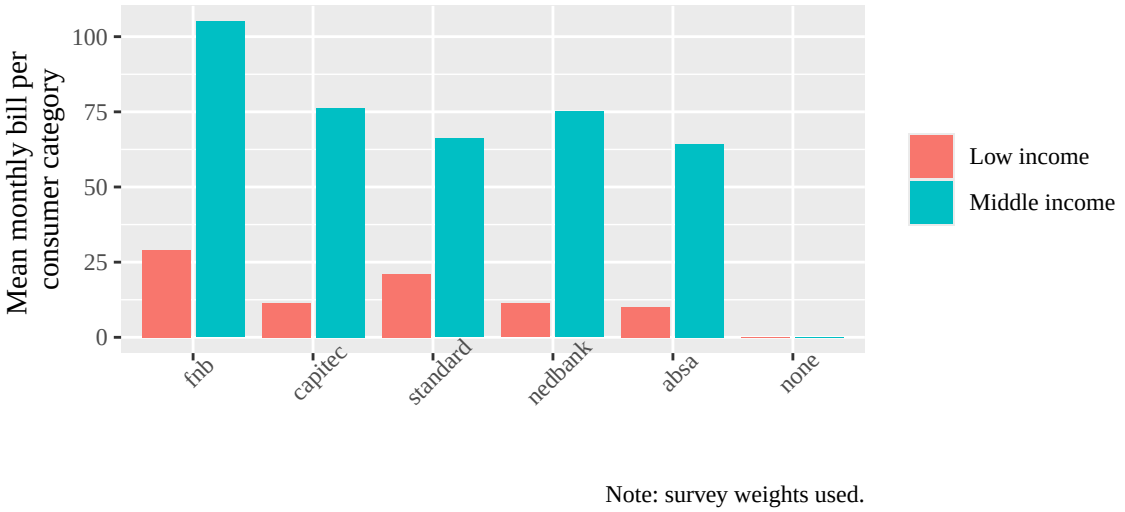


Figure 19: South Africa (2018) - Calculated average monthly service bills

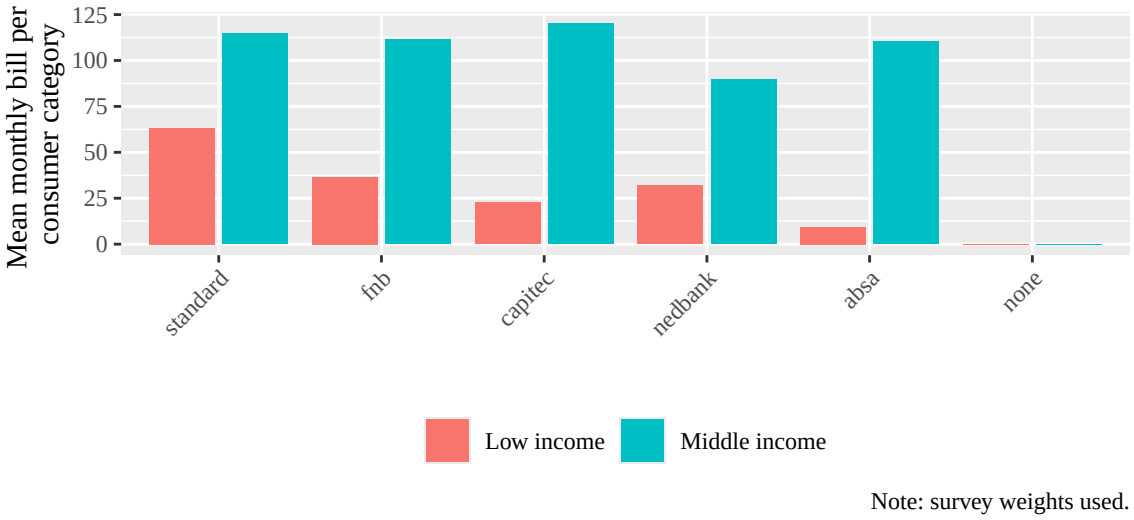


Figure 20: South Africa (2017) - Calculated average monthly service bills

4 Results

4.1 Overview

In this section, we present our multinomial logit model estimation results. The main idea, as explained above in Section @ref(model), is to understand what drives consumer choices of financial services providers. A reliable model will correctly predict actual reported consumer choices of alternatives, being (this is explained more in Section @ref(model)):

- A bank
- A mobile money provider (in the case of Eswatini and Lesotho)
- A bank and a mobile money provider (in the case of Eswatini and Lesotho)

To do so, we regress consumer choices (the dependent variable) on monthly bills, provider brands, and interactions between categories of alternatives such as banks, with demographic variables, which vary by country and year. All of these variables likely affect consumer choices.

We typically interact[6] choices alternatives such as bank or mobile service provider by demographics where possible such as age, gender and income, in order to understand whether these increase (a positive coefficient) or decrease (a negative coefficient) or have no impact on a consumer's choice of bundle ('bundle' here includes singleton bundles of just a bank, for example).

This is indicated in the results tables below as follows, using the bank category for example (the same applies for mobile money in Eswatini and Lesotho):

- bank_income: this interacts reported income with any choice alternative that includes a bank (there are several choices of bank in most countries, such as FNB and Standard Bank),
- bank_age_35_below: interaction between the variable flagging adults age 35 and below, and a bank choice alternative,
- bank_rural: interaction between the variable indicating adults in a rural area, and a bank choice alternative,
- bank_high_school: having a high-school or higher diploma interacted with a bank choice alternative.

In order to estimate substitution vs complementarity vs independence of bank and mobile in Eswatini and Lesotho, we estimate Γ coefficients, as explained in Section @ref(model). The average Γ coefficient, presented as 'bm' on the table below, indicates whether a product category, such as bank, is a substitute (negative sign), complement (positive sign), or independent of another product, such as mobile. We again interact Γ with demographic characteristics, following the same approach described above.

We show our results for each country separately. We pool the three years' worth of data for South Africa, given that choice alternatives are the same in each year.

4.2 Multinomial logit model results

4.2.1 Eswatini and Lesotho

Our multinomial logit estimation results are shown on the tables below. It appears as though income does not have an impact on uptake of services at least in the case of Lesotho. However, having a high school

[6] An interaction occurs when an independent variable has a different effect on the outcome depending on the values of another independent variable.

diploma is likely correlated with income there. Being younger than 35 years old has a decidedly strong positive impact on taking up mobile money services, and a negative impact of taking up bank services (Table @ref(tab:regression-results-lesotho)). Similarly, living in a rural area means there is a much greater chance of taking up mobile.

On average, bank and mobile money services are substitutes (average Γ, 'bm', is negative). However, a range of factors reduce this substitutability, including being below 35 years old, having a high school diploma, and living in a rural area. These results are intuitive to some degree: for instance, consumers in rural areas might not be able to substitute between bank and mobile money services as easily due to reduced access to bank branches and ATMs. Young consumers may be less likely to see banks as an alternative to mobile money.

Table 1: Estimation results - Lesotho

Term	Estimate	Standard error	Statistic	p-value
monthly_bill	-0.0013	0.0016	-0.8083	0.4189
mpesa	0.6836	0.0897	7.6209	0.0000
ecocash	-2.0281	0.1302	-15.5733	0.0000
fnb	-0.9685	0.1281	-7.5629	0.0000
bank_age_35_below	-1.6336	0.3278	-4.9836	0.0000
mobile_age_35_below	0.4308	0.0848	5.0784	0.0000
bank_rural	-3.5825	0.2689	-13.3215	0.0000
mobile_rural	-0.8092	0.0908	-8.9130	0.0000
bank_income_poor	-2.7983	0.5901	-4.7425	0.0000
mobile_income_poor	0.0036	0.0934	0.0382	0.9695
bank_income_high	-1.1461	0.3931	-2.9153	0.0036
mobile_income_high	-0.1163	0.1217	-0.9552	0.3395
bank_high_school	-2.6536	0.6092	-4.3557	0.0000
mobile_high_school	-0.3706	0.1213	-3.0556	0.0022
bm	-2.1341	0.1806	-11.8172	0.0000
bm_age_35_below	1.1381	0.3690	3.0846	0.0020
bm_high_school	3.2646	0.6354	5.1375	0.0000
bm_rural	2.6884	0.3347	8.0332	0.0000
bm_income_poor	1.3441	0.7004	1.9191	0.0550
bm_income_high	2.0976	0.4035	5.1983	0.0000

Our model provides reasonable predictions for actual choices of consumers of these different alternatives for Lesotho, as shown by the actual frequencies of choices observed in the FinScope dataset compared to the predicted probabilities of choices (see Table @ref(tab:table-prob-lesotho) below). For instance, our model predicts that 48% of consumers will take up Mpesa, when in the dataset 48% of (unweighted) survey respondents do.

Table 2: Actual and model probabilities - Lesotho

Provider	Actual	Predicted
ecocash	0.0282	0.0319
fnb	0.0048	0.0108
fnb_ecocash	0.0041	0.0011
fnb_mpesa	0.0190	0.0160
mpesa	0.4839	0.4802
none	0.4179	0.3889
standard	0.0048	0.0277
standard_ecocash	0.0034	0.0027
standard_mpesa	0.0340	0.0407

In Eswatini, being very poor (having 50% lower income than the 'poor', as defined by UNCDF) means there is less chance of taking up even a mobile service. High income consumers are more likely to take up banking services. Age has no impact on uptake of services (Table @ref(tab:regression-results-eswatini)). Being a woman means having a greater likelihood of taking up a mobile service, and a lower likelihood of taking up a banking service.

We cannot be certain that the Γ coefficients, which indicate substitutability, complementarity, or independence, are not different from zero. This suggests that the demand for banking and mobile money services may be independent in Eswatini.

Table 3: Estimation results - Eswatini

Term	Estimate	Standard error	Statistic	p-value
monthly_bill	-0.0006	0.0110	-0.0506	0.9596
mtn	0.8252	0.1018	8.1036	0.0000
fnb	-3.5208	0.7134	-4.9356	0.0000
nedbank	-5.6333	0.7745	-7.2736	0.0000
standard	-4.1305	0.7349	-5.6205	0.0000
swazibank	-5.3806	0.8596	-6.2593	0.0000
bank_age_35_below	-0.6456	0.6364	-1.0146	0.3103
mobile_age_35_below	-0.0860	0.0906	-0.9488	0.3427
bank_income_poor	-1.0086	1.1667	-0.8645	0.3873
mobile_income_poor	-0.6979	0.0953	-7.3247	0.0000
bank_income_high	1.8821	0.7733	2.4338	0.0149
mobile_income_high	-0.1030	0.1760	-0.5851	0.5584
bank_female	-2.0124	1.0575	-1.9030	0.0570
mobile_female	0.4351	0.0907	4.7999	0.0000
bank_high_school	0.5707	0.7033	0.8115	0.4171

Table 3: Estimation results - Eswatini

Term	Estimate	Standard error	Statistic	p-value
mobile_high_school	0.8568	0.1056	8.1168	0.0000
bm	-0.3369	0.7720	-0.4364	0.6625
bm_age_35_below	0.9983	0.6815	1.4650	0.1429
bm_female	1.9649	1.0849	1.8112	0.0701
bm_high_school	0.2338	0.7744	0.3019	0.7627
bm_income_poor	-0.0322	1.2490	-0.0257	0.9795
bm_income_high	-0.8380	0.8119	-1.0322	0.3020

Similar to Lesotho, the model works reasonably well for Eswatini, except for predicting Standard Bank's share. This is surprising, since we control for Standard Bank in the regression. There are likely unobserved features affecting the Standard Bank product choices or interactions with demographics that we are not able to control for at this stage.

Table 4: Actual and model probabilities - Eswatini

Provider	Actual	Predicted
fnb	0.0014	0.0019
fnb_mtn	0.0110	0.0106
mtn	0.6991	0.6991
nedbank_mtn	0.0039	0.0006
none	0.2729	0.0033
standard	0.0021	0.2729
standard_mtn	0.0046	0.0010
swazibank	0.0007	0.0057
swazibank_mtn	0.0043	0.0008
nedbank	0.0000	0.0042

4.2.2 Botswana and South Africa

In Botswana, there is almost no impact of income on consumer choices of whether to take up banking services or not, and applying other demographic interactions results in an improbable positive price coefficient. This is because it is unlikely that consumers would choose the more expensive option. There is likely unobserved heterogeneity among consumer choices that we have not been able to account for either in respect of product characteristics, or demographics.

Table 5: Estimation results - Botswana

Term	Estimate	Standard error	Statistic	p-value
monthly_bill	-0.0054	0.0016	-3.3342	0.0009
bank_income	-0.0000	0.0000	-2.5613	0.0104

However, our model for Botswana in 2019 does not provide accurate predictions for uptake of an individual service, other than for FNB (Table @ref(tab:table-prob-botswana)).

Table 6: Actual and model probabilities - Botswana

Provider	Actual	Predicted
absa	0.0767	0.2414
bancabc	0.0196	0.2397
fnb	0.2543	0.2414
none	0.6493	0.2775

In South Africa, it appears as though women are less likely than men to take up a banking service. Income levels appear to have very little impact on consumer choices of banking services. We observe that price is negatively related to choice, which is what we expect.

Table 7: Estimation results - South Africa 2017-2019

Term	Estimate	Standard error	Statistic	p-value
monthly_bill	-0.0013	0.0004	-3.0773	0.0021
absa	-1.3423	0.0359	-37.3904	0.0000
nedbank	-1.7112	0.0417	-41.0412	0.0000
fnb	-1.1118	0.0339	-32.7767	0.0000
standard	-1.5775	0.0401	-39.2987	0.0000
bank_income	0.0000	0.0000	11.7747	0.0000
bank_female	-1.6759	0.0293	-57.1611	0.0000

Our model for South Africa[7] provides reasonable predictions for uptake of individual services, with the exception of Capitec. This result might be driven by the absence of a fixed effect for Capitec in the model, which we exclude since this again drives our price coefficient to be positive.

Table 8: Actual and model probabilities - South Africa 2017-2019

Provider	Actual	Predicted
absa	0.0628	0.0628
capitec	0.0956	0.2401

[7]These data are unweighted.

Table 8: Actual and model probabilities - South Africa 2017-2019

Provider	Actual	Predicted
fnb	0.0777	0.0777
nedbank	0.0441	0.0441
none	0.6706	0.5260
standard	0.0492	0.0492

4.3 Elasticities

We can compute price elasticities of demand from the estimated coefficients on the table below. Overall, consumers are not highly sensitive to prices for mobile money services in Eswatini and Lesotho, nor are consumers price sensitive where banks are concerned in Botswana. As can be seen on the table, the choice alternatives for mobile money are highly price inelastic for Eswatini and Lesotho, while bank prices are more elastic. This suggests that mobile money providers are able to charge higher mark-ups than banks are. At the same time, our results should be used with caution at this stage, since we cannot reject the null hypothesis that the price co-efficient for Eswatini is equal to zero at even the 10% level of significance.

In order to estimate price coefficients more reliably, we need more detailed information in future FinScope surveys on precisely what product is taken up, and what its characteristics are (including price, and other product features). We need matching information from future price collection projects, on product features that are comparable across providers, etc. It may also be possible in future research to control for product characteristics at the level of the individual, such as distance to each financial service providers nearest point of presence, such as ATM or mobile money agent.

Table 9: Elasticities - Lesotho (2021)

ecocash	fnb	fnb_ecocash	fnb_mpesa	mpesa	none	standard	standard_ecocash	standard_mpesa
-0.0064	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0001	-0.0556	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
0.0000	0.0000	-0.0293	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0003	0.0003	0.0003	-0.0294	0.0003	0.0003	0.0003	0.0003	0.0003
0.0037	0.0037	0.0037	0.0037	-0.0034	0.0037	0.0037	0.0037	0.0037
0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000
0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	-0.0807	0.0004	0.0004
0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-0.0513	0.0001
0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	0.0014	-0.0505

Elasticities of demand in Eswatini are somewhat problematic in respect of FNB and Standard Bank (Table @ref(tab:elasticities-eswatini)). While it is possible that these firms charge far lower mark-ups (recall that the Lerner index is inversely related to elasticity) than MTN does, this is somewhat improbable. Again, this is linked to the insignificant price coefficient on prices in Eswatini, and the model's incorrect predictions at least for Standard Bank's market share.

Table 10: Elasticities - Eswatini (2018)

fnb	fnb_mtn	mtn	nedbank	nedbank_mtn	none	standard	standard_mtn	swazibank	swazibank_mtn
-40.6306	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	-40.6303	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0002	0.0002	-0.0001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
0.0000	0.0000	0.0000	-0.0056	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	-0.0052	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-40.6367	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-40.6364	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0257	0.0000
0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	-0.0253

Elasticities of demand for Botswana are more plausible (Table @ref(tab:elasticities-botswana)), despite the model being relatively simplistic, as explained above.

Table 11: Elasticities - Botswana (2021)

absa	bancabc	fnb	none
-0.0594	0.0185	0.0185	0.0185
0.0198	-0.0641	0.0198	0.0198
0.0185	0.0185	-0.0594	0.0185
0.0000	0.0000	0.0000	-0.0000

Elasticities of demand for South Africa are also somewhat more plausible, although, again, own-price elasticities that are greater than -1 imply negative marginal costs, which are implausible (Table @ref(tab:elasticities-sa)). Again, our model is more useful in simulating the effects of entry and price reductions, rather than price elasticities of demand.

Table 12: Elasticities - South Africa (2017-2019)

absa	capitec	fnb	nedbank	none	standard
-0.0635	0.0042	0.0042	0.0042	0.0042	0.0042
0.0166	-0.0526	0.0166	0.0166	0.0166	0.0166
0.0066	0.0066	-0.0788	0.0066	0.0066	0.0066
0.0023	0.0023	0.0023	-0.0509	0.0023	0.0023
0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000
0.0039	0.0039	0.0039	0.0039	0.0039	-0.0749

5 Counterfactual simulations

5.1 Overview

We can now consider different kinds of policy interventions, such as assessing whether a lower mobile money price would result in greater uptake of mobile money, or lower bank charges would result in greater uptake, and the like. We implement this by adjusting variables in our model, such as monthly bills, and then recomputing predicted probabilities based on the new variables. Tables @ref(tab:counterfactual-lesotho)-@ref(tab:entry-table-sa) are interpreted as follows:

- The actual FinScope survey respondent results are reported on the first column.
- The predicted probabilites of choices are shown in the second column, applying the baseline model.
- The predicted probabilities of choices after monthly bills are reduced are shown in the counterfactual model.

5.2 Lower prices

First, we simulate the impact of lowering monthly bills by 30%. Because price-elasticities of demand are so low, uptake of services does not change significantly. In reality, far greater price decreases may in fact be needed together with potentially useful product features to attract low-income consumers, due to affordability and utility of services (discussed more in Section @ref(fees)).

On the tables below, the key row to consider is the 'none' option, and whether this declines or not.

First, the probability of choosing no service in Lesotho declines from 38.89% to 38.79%, an almost negligible amount (Table @ref(tab:counterfactual-lesotho)). However, it is important to bear in mind that we could not reject the null hypoethesis that the price coefficient is zero at even the 10% level of significance for Lesotho. This means that price effects are likely to be limited in Lesotho. More work is needed particularly on the monthly bill variable for Lesotho to confirm this result.

Table 13: Counterfactual with lower prices - Lesotho (2021)

Provider	Actual	Predicted (model)	Predicted (lower price)
ecocash	0.0282	0.0319	0.0319
fnb	0.0048	0.0108	0.0109
fnb_ecocash	0.0041	0.0011	0.0011
fnb_mpesa	0.0190	0.0160	0.0162
mpesa	0.4839	0.4802	0.4796
none	0.4179	0.3889	0.3879
standard	0.0048	0.0277	0.0282
standard_ecocash	0.0034	0.0027	0.0028
standard_mpesa	0.0340	0.0407	0.0415

Similarly, there is almost no impact of a price reduction on consumer decisions to take up any service in Eswatini (Table @ref(tab:counterfactual-eswatini)). The price coefficient has the same problems, however, in Eswatini as it has in Lesotho, discussed above.

Table 14: Counterfactual with lower prices - Eswatini (2018)

Provider	Actual	Predicted (model)	Predicted (lower price)
fnb	0.0014	0.0019	0.0019
fnb_mtn	0.0110	0.0106	0.0106
mtn	0.6991	0.6991	0.6990
nedbank_mtn	0.0039	0.0006	0.0006
none	0.2729	0.0033	0.0033
standard	0.0021	0.2729	0.2729
standard_mtn	0.0046	0.0010	0.0010
swazibank	0.0007	0.0057	0.0057
swazibank_mtn	0.0043	0.0008	0.0008
nedbank	0.0000	0.0042	0.0042

In Botswana, while the price coefficient may be more reliable, it is also very close to zero, and thus price has very little impact on consumer choices (Table (Table @ref(tab:counterfactual-botswana))). Lower prices cause some consumers to take up services from banks, but not by much (the proportion taking up no services from 27.75% to 27.23%).

Table 15: Counterfactual with lower prices - Botswana (2021)

Provider	Actual	Predicted (model)	Predicted (lower price)
absa	0.0767	0.2414	0.2430
bancabc	0.0196	0.2397	0.2418
fnb	0.2543	0.2414	0.2430
none	0.6493	0.2775	0.2723

The result for South Africa is similar (Table @ref(tab:counterfactual-sa)). The proportion of consumers choosing no bank declines from 52.6% to 52.16% after a 30% price reduction.

Table 16: Counterfactual with lower prices - South Africa (2019)

Provider	Actual	Predicted (model)	Predicted (lower price)
absa	0.0628	0.0628	0.0633
capitec	0.0956	0.2401	0.2422
fnb	0.0777	0.0777	0.0788
nedbank	0.0441	0.0441	0.0443
none	0.6706	0.5260	0.5216
standard	0.0492	0.0492	0.0497

5.3 New entry

We can also consider the impact of new entry into the market (see tables below).

For example, in Lesotho, a new entrant, modelled as having prices 20% below FNB's prices, would gain a not inconsiderable share of the market (around 1%). It draws approximately 1% from each of the other alternatives, and thus gains the largest share from Mpesa. The proportion of consumers choosing no service also declines by approximately 1%.

Note that this is because substitution patterns are symmetric (not `nested') in the multinomial logit model (the` independence of irrelevant alternatives' assumption). This assumes, for example, that if a mobile money provider lowered its prices by 10%, it would draw an equal proportion of customers from each bank and each mobile money provider. In reality, we would expect such a price reduction to result in the mobile money provider winning a greater proportion of customers from other mobile money providers, rather than from banks.

In the present case, it is more likely that a new fintech entrant based on mobile services would draw a greater proportion of subscribers away from mobile operators, which might be estimated using a nested logit in future research.

In respect of Eswatini, the impact of a new entrant modelled as a bank charging lower prices would likely gain only a very small market share.

Our model for Botswana and South Africa is less reliable in predicting outcomes, as explained above. Nonetheless, entry may have a greater impact there.

Table 17: Counterfactual with lower prices - Lesotho (2021)

Provider	Actual	Predicted (model)	Predicted (lower price)	Predicted (new entry)
ecocash	0.0282	0.0319	0.0319	0.0316
fnb	0.0048	0.0108	0.0109	0.0102
fnb_ecocash	0.0041	0.0011	0.0011	0.0011
fnb_mpesa	0.0190	0.0160	0.0162	0.0158
mpesa	0.4839	0.4802	0.4796	0.4756
none	0.4179	0.3889	0.3879	0.3863
standard	0.0048	0.0277	0.0282	0.0263
standard_ecocash	0.0034	0.0027	0.0028	0.0027
standard_mpesa	0.0340	0.0407	0.0415	0.0402
fintech				0.0103

In Eswatini, a new bank entrant modelled on a traditional bank like FNB is unlikely to gain much market share (approximately 0.18%; Table (@ref(tab:entry-table-eswatini))). This is likely due to the widespread uptake of mobile money there, and so a new mobile money entrant may be more successful.

Table 18: Counterfactual with lower prices - Eswatini (2018)

Provider	Actual	Predicted (model)	Predicted (lower price)	Predicted (new entry)
fnb	0.0014	0.0019	0.0019	0.0018
fnb_mtn	0.0110	0.0106	0.0106	0.0104
mtn	0.6991	0.6991	0.6990	0.6979
nedbank_mtn	0.0039	0.0006	0.0006	0.0006
none	0.2729	0.0033	0.0033	0.0033
standard	0.0021	0.2729	0.2729	0.2726
standard_mtn	0.0046	0.0010	0.0010	0.0010
swazibank	0.0007	0.0057	0.0057	0.0057
swazibank_mtn	0.0043	0.0008	0.0008	0.0008
nedbank	0.0000	0.0042	0.0042	0.0042
fintech				0.0018

A new fintech in Botswana modelled on a bank is likely to gain a far greater market share of almost 20% (Table @ref(tab:entry-table-botswana)). This suggests that new bank entry might be promoted in Botswana.

Table 19: Counterfactual with lower prices - Botswana (2021)

Provider	Actual	Predicted (model)	Predicted (lower price)	Predicted (new entry)
absa	0.0767	0.2414	0.2430	0.1938
bancabc	0.0196	0.2397	0.2418	0.1925
fnb	0.2543	0.2414	0.2430	0.1938
none	0.6493	0.2775	0.2723	0.2235
fintech				0.1965

Similarly, a Fintech entrant would also likely gain significant traction in South Africa (Table @ref(tab:entry-table-sa)). In reality, we have observed this with the rapid market entry and customer uptake of TymeBank.

Table 20: Counterfactual with lower prices - South Africa (2017-2019)

Provider	Actual	Predicted (model)	Predicted (lower price)	Predicted (new entry)
absa	0.0628	0.0628	0.0633	0.0575
capitec	0.0956	0.2401	0.2422	0.2197
fnb	0.0777	0.0777	0.0788	0.0711

Table 20: Counterfactual with lower prices - South Africa (2017-2019)

Provider	Actual	Predicted (model)	Predicted (lower price)	Predicted (new entry)
nedbank	0.0441	0.0441	0.0443	0.0404
none	0.6706	0.5260	0.5216	0.4940
standard	0.0492	0.0492	0.0497	0.0450
fintech				0.0724

6 Conclusions

We have been able to successfully match UNCDF pricing data with FinScope data on consumer choices of fixed and mobile services. We also collected mobile money price data to complete the datasets for Eswatini and Lesotho (mobile money is not widely used in Botswana and South Africa).

We have estimated a discrete choice model of demand for banking and mobile money services for Botswana, Eswatini, Lesotho, and South Africa. Our results suggest that mobile money services are highly price inelastic, while bank services are more price elastic. This suggests that mobile money providers are able to charge higher mark-ups over costs than banks are. However, our estimates of the impact of prices on consumers are not as robust as we would like.

There is some evidence that bank and mobile money services are substitutes in at least Lesotho. However, the degree of substitution is weakened particularly for younger consumers and consumers in rural areas, who are likely not in a position to use banking services as readily as a substitute.

Our counterfactual simulations show that while reductions in monthly bills will increase uptake of banking services to a small degree, the uptake of mobile services would not increase substantially.

Introducing a new fintech entrant that is cheaper than banking services would likely attract a small but significant market share and may help expand the uptake of financial services. This is especially the case in Botswana and South Africa. Indeed, we have observed successful entry by TymeBank in South Africa, which has attracted large numbers of customers in a relatively short space of time.

In Lesotho, it is more likely that a new fintech entrant based on mobile services would draw a greater proportion of subscribers away from mobile operators. At the same time, in Eswatini, the model shows a new entrant as a bank charging lower prices would most likely only gain a very small market share.

In general, further research is needed to validate these conclusions, including by refining the usage data to arrive at a more accurate monthly bill, considering the impact of different or additional demographic variables, collecting data on mobile money services in addition to banking data, considering relaxing the IIA assumption to allow for more flexible substitution alternatives using nested logit or mixed logit.

7 References

Croissant, Yves et al. 2012. "Estimation of Multinomial Logit Models in r: The Mlogit Packages." *R Package Version 0.2-2. URL: Http://Cran. R-Project. Org/Web/Packages/Mlogit/Vignettes/Mlogit. Pdf.*

Gentzkow, Matthew. 2007. "Valuing New Goods in a Model with Complementarity: Online Newspapers." *American Economic Review* 97 (3): 713–44.

Khera, Purva, Ms Sumiko Ogawa, and Ms Ratna Sahay. 2021. *Is Digital Financial Inclusion Unlocking Growth?* International Monetary Fund.

Levine, Ross. 2005. "Finance and Growth: Theory and Evidence." *Handbook of Economic Growth* 1: 865–934.

8 Appendix

8.1 Bank and mobile money fees

8.1.1 Definitions and payment ranges

FinScope includes questions on how a person paid for an activity, such as furniture payments, groceries, and transports. The monthly bill is created by multiplying the number of activities by the fee per activity (such as per card swipe at a merchant, or for the payment of a bill). For bundled choice alternatives, where a bank account can be purchased together with a mobile money service, the transaction fee is the minimum of the bank fee and the monthly mobile money charge.

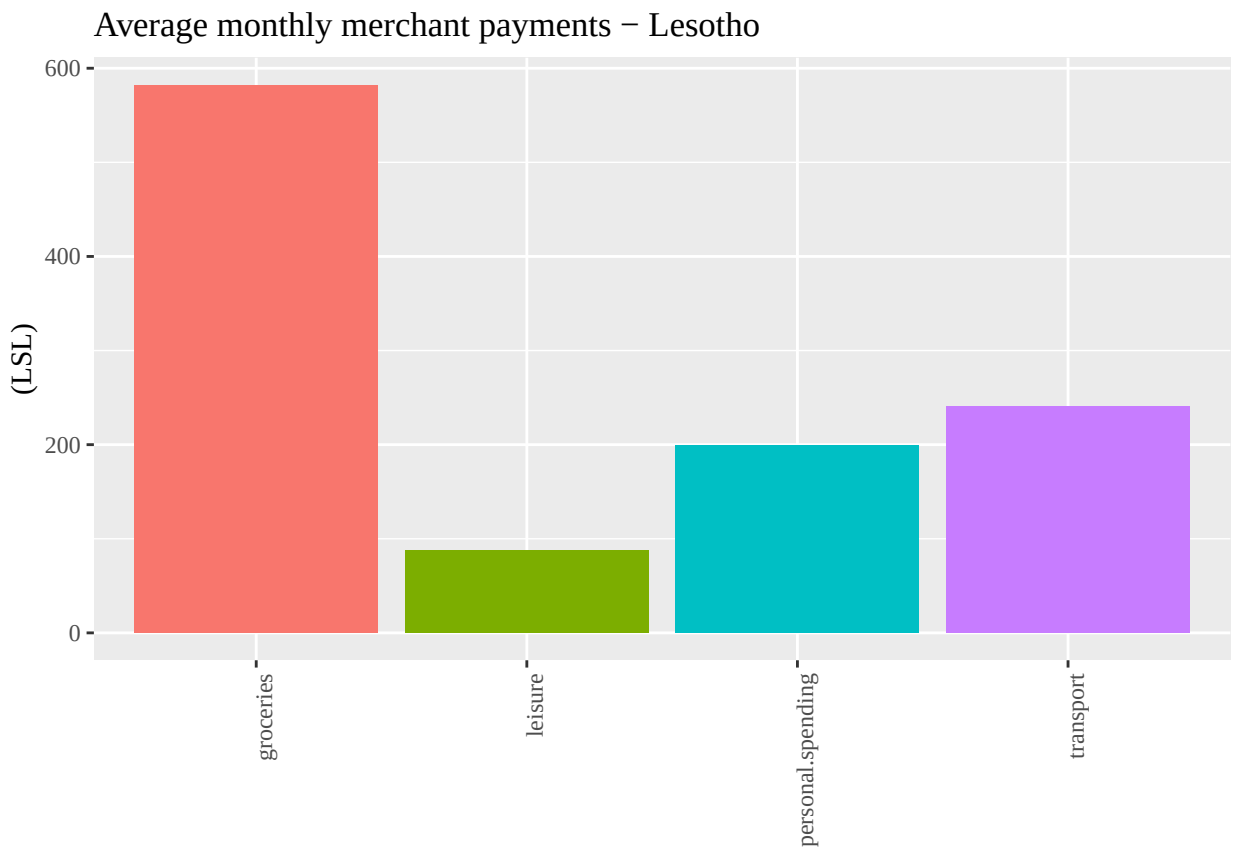
The following bank pricing variables were used for Lesotho, Eswatini, South Africa (2019, 2018 and 2017) and Botswana (excl. cash out fee) from the UNCDF pricing dataset (prices in local currency, including VAT):

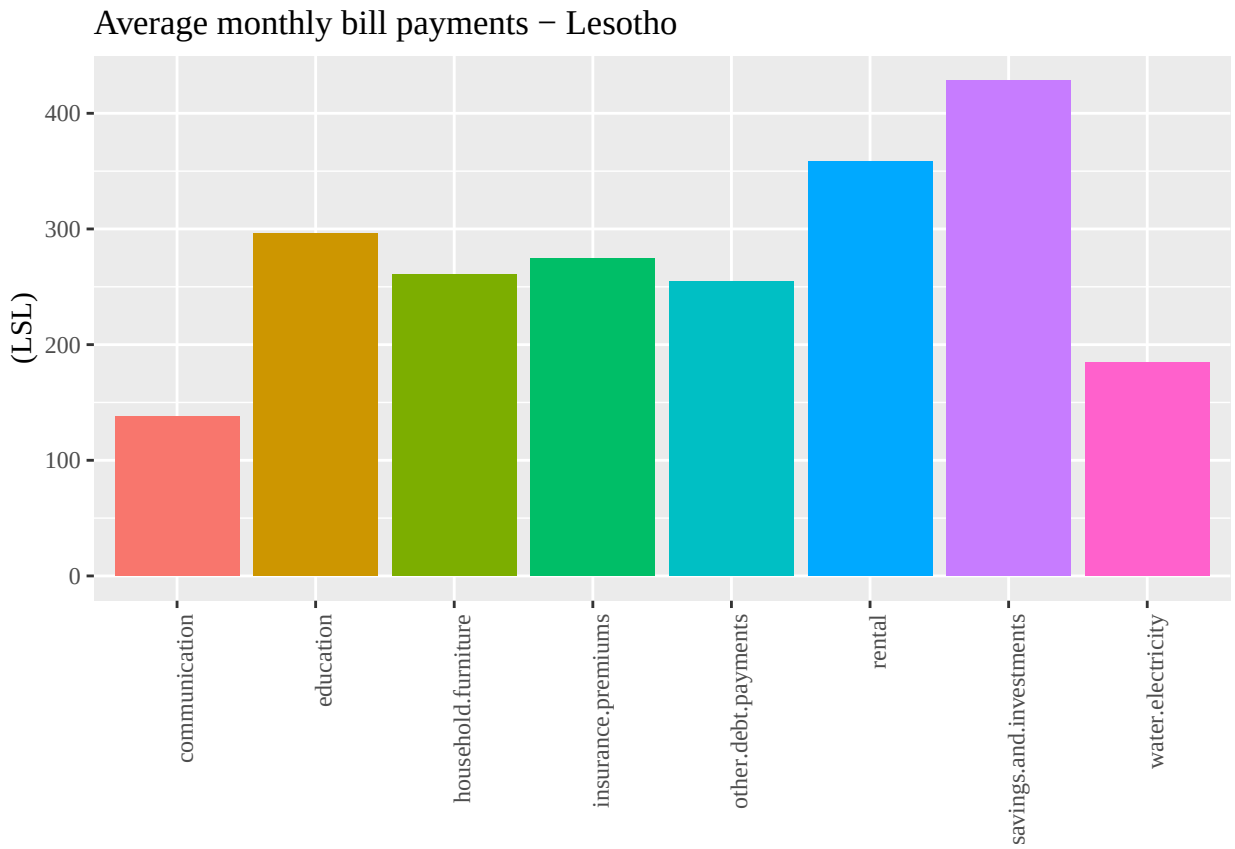
- Monthly fee: Monthly Account Fee
- Billpay fee: Internet Banking: Funds Transfer (to other banks)
- Merchant fee: POS: Point of Sale Purchases
- Cash out fee: Withdrawal (own bank ATM)/ per 100 USD

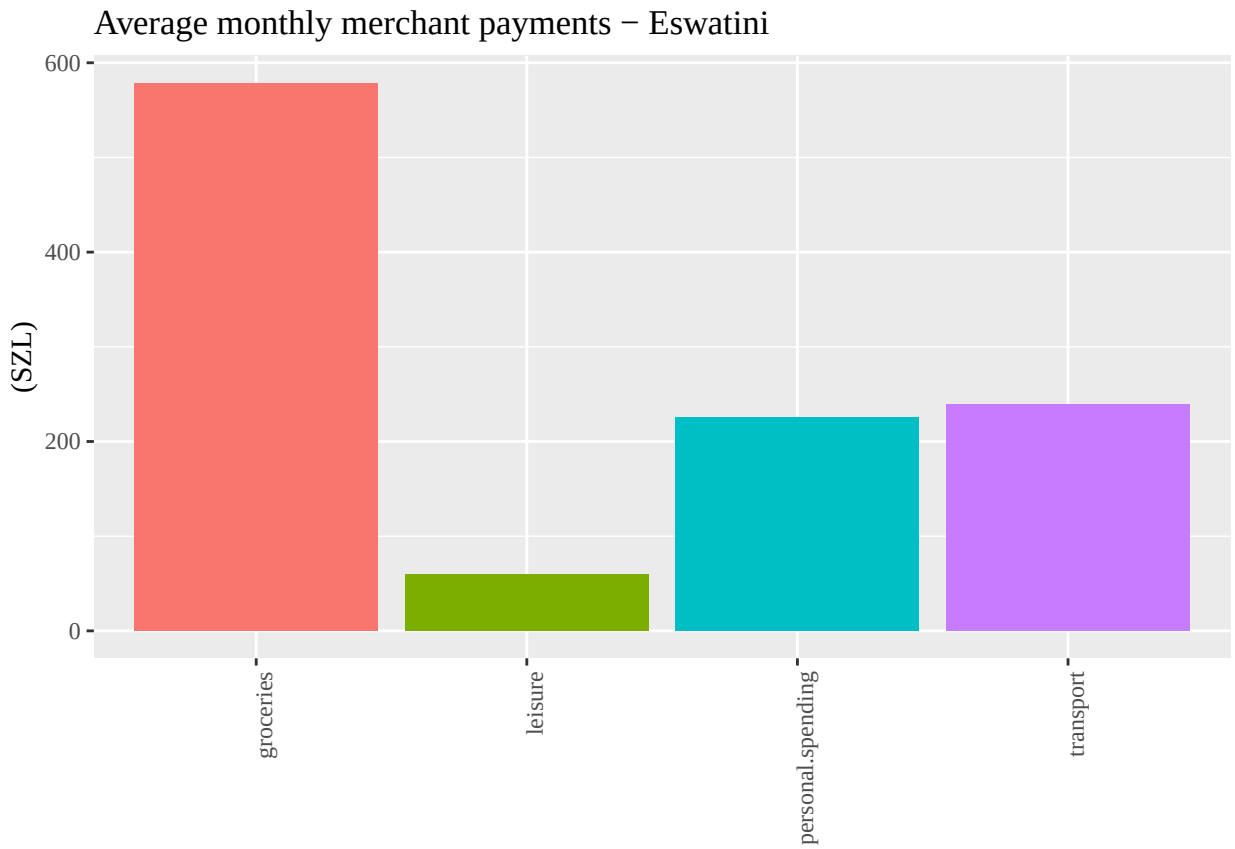
The below graphs show the average monthly expenditure on merchant payments and bill payments in Lesotho and Eswatini. Mobile money service charges for Lesotho and Eswatini were collected based on the following transaction ranges:

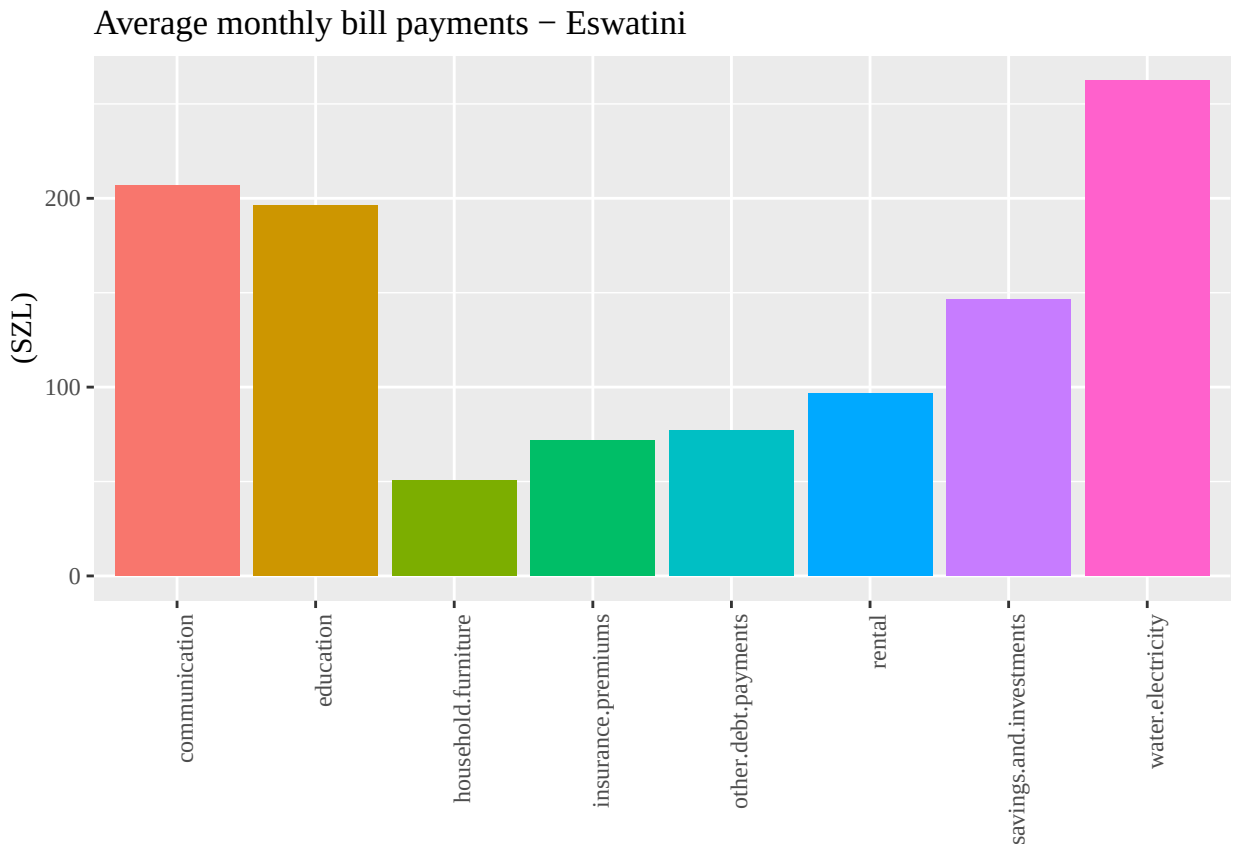
- Billpay (Lesotho: M101-M250 (M-Pesa) & M101-M200 (EcoCash); Eswatini: E126-E250 (MTN MoMO))
- Payments to merchants were assumed to be via person to person transfers (Lesotho: M101-M250 (M-Pesa) & M201-M300 (EcoCash); Eswatini: E251-E500 (MTN Momo[8])
- Cash out (Eswatini: E20-E125; Lesotho: M51-100)

[8]MTN Momo retail payment service charges were used.


Average monthly merchant payments − Lesotho
600
400
200
0
(LSL)
groceries
leisure
personal.spending
transport


Average monthly bill payments − Lesotho
(LSL)
400
300
200
100
0
communication
education
household.furniture
insurance.premiums
other.debt.payments
rental
savings.and.investments
water.electricity


Average monthly merchant payments − Eswatini
600
400
200
0
(SZL)
groceries
leisure
personal.spending
transport



8.1.2 Bank and mobile money fees

In Lesotho, Standard Bank has the highest bill payment and merchant fees, with FNB charging the most for withdrawals for low socio-economic groups. Additionally, Standard Bank is estimated to have the largest market share in Lesotho at around 50% as measured by the number of customers to the total banked population.[9]

Eswatini's banking sector is dominated by three banks, FNB, Nedbank and Standard Bank, accounting for approximately 78.4% of the market.[10] However, SwaziBank with a market share of 11.2% appears to be the most expensive overall.

Compared with mobile money operators, mobile money fees tend to be lower in both countries relative to banks, except for merchant fees in Eswatini and Lesotho (PostBank).

Banking in Botswana appears to be dominated by FNB which has an estimated market share of 65%, followed by ABSA with around 17%.[11] However, Bank of Baroda and Bank Gaborone have the highest overall fees targeted at low socio-economic groups and middle socio-economic groups, respectively.

In South African, Capitec leads the market in terms of customers, holding a market share of around 34%, followed by Standard Bank at 19%.[12] Banks in South Africa tend not to charge consumers for point of sale purchases, however in 2019 FNB and ABSA appeared to have charged customers for this service.

[9]Source: UNCDF MAP Bank pricing dataset, 2021.
[10]Source: UNCDF MAP Bank pricing dataset, 2018.
[11]Source: UNCDF MAP Bank pricing dataset, 2021.
[12]Source: UNCDF MAP Bank pricing, 2018.

Table 21: Bank and mobile money fees - Lesotho

Provider	Income category	Monthly fee	Cash out fee	Billpay fee	Merchant fee
fnb	low socio-economic group	0.00	19.50	9.00	3.50
postbank	low socio-economic group	0.00	17.00	7.00	2.00
nedbank	low socio-economic group	11.50	11.30	11.00	8.28
standard	low socio-economic group	7.68	10.50	18.60	19.33
fnb	middle socio-economic group	65.00	0.00	9.00	3.50
postbank	middle socio-economic group	31.80	17.00	7.00	2.00
nedbank	middle socio-economic group	100.00	26.83	11.00	8.28
standard	middle socio-economic group	98.00	10.50	18.60	19.33
mpesa	low socio-economic group	0.00	2.60	2.60	0.00
mpesa	middle socio-economic group	0.00	2.60	2.60	0.00
ecocash	low socio-economic group	0.00	2.41	2.41	0.00
ecocash	middle socio-economic group	0.00	2.41	2.41	0.00
fnb_ecocash	low socio-economic group	0.00	2.41	2.41	0.00
fnb_ecocash	middle socio-economic group	65.00	0.00	2.41	0.00
fnb_mpesa	low socio-economic group	0.00	2.60	2.60	0.00
fnb_mpesa	middle socio-economic group	65.00	0.00	2.60	0.00
postbank_ecocash	low socio-economic group	0.00	2.41	2.41	0.00
postbank_ecocash	middle socio-economic group	31.80	2.41	2.41	0.00
postbank_mpesa	low socio-economic group	0.00	2.60	2.60	0.00
postbank_mpesa	middle socio-economic group	31.80	2.60	2.60	0.00
nedbank_ecocash	low socio-economic group	11.50	2.41	2.41	0.00
nedbank_ecocash	middle socio-economic group	100.00	2.41	2.41	0.00
nedbank_mpesa	low socio-economic group	11.50	2.60	2.60	0.00
nedbank_mpesa	middle socio-economic group	100.00	2.60	2.60	0.00
standard_ecocash	low socio-economic group	7.68	2.41	2.41	0.00
standard_ecocash	middle socio-economic group	98.00	2.41	2.41	0.00
standard_mpesa	low socio-economic group	7.68	2.60	2.60	0.00
standard_mpesa	middle socio-economic group	98.00	2.60	2.60	0.00

Table 22: Bank and mobile money fees - Eswatini

Provider	Income category	Monthly fee	Cash out fee	Billpay fee	Merchant fee
fnb	low socio-economic group	4.25	15.60	10.00	0.00
nedbank	low socio-economic group	0.00	16.19	12.50	0.00

Table 22: Bank and mobile money fees - Eswatini

Provider	Income category	Monthly fee	Cash out fee	Billpay fee	Merchant fee
standard	low socio-economic group	19.00	6.50	11.25	0.00
swazibank	low socio-economic group	45.00	24.56	11.25	0.00
swazilandbuildingsociety	low socio-economic group	17.06	15.71	11.25	0.00
fnb	middle socio-economic group	24.00	15.60	10.00	0.00
nedbank	middle socio-economic group	45.00	16.19	12.50	0.00
standard	middle socio-economic group	19.00	6.50	11.25	0.00
swazibank	middle socio-economic group	45.00	24.56	11.25	0.00
swazilandbuildingsociety	middle socio-economic group	33.25	15.71	11.25	0.00
mtn	low socio-economic group	0.00	1.82	3.46	5.52
mtn	middle socio-economic group	0.00	1.82	3.46	5.52
fnb_mtn	low socio-economic group	4.25	1.82	3.46	0.00
fnb_mtn	middle socio-economic group	24.00	1.82	3.46	0.00
nedbank_mtn	low socio-economic group	0.00	1.82	3.46	0.00
nedbank_mtn	middle socio-economic group	45.00	1.82	3.46	0.00
standard_mtn	low socio-economic group	19.00	1.82	3.46	0.00
standard_mtn	middle socio-economic group	19.00	1.82	3.46	0.00
swazibank_mtn	low socio-economic group	45.00	1.82	3.46	0.00
swazibank_mtn	middle socio-economic group	45.00	1.82	3.46	0.00
swazilandbuildingsociety_mtn	low socio-economic group	17.06	1.82	3.46	0.00
swazilandbuildingsociety_mtn	middle socio-economic group	33.25	1.82	3.46	0.00

Table 23: Bank and mobile money fees - Botswana

Provider	Income category	Monthly fee	Bill pay fee	Merchant fee
bancabc	low socio-economic group	5.67	2.59	1.12
gaborone	low socio-economic group	0.00	3.26	3.72
baroda	low socio-economic group	6.66	3.13	2.00
absa	low socio-economic group	4.11	2.99	2.28
capitalbank	low socio-economic group	4.11	2.99	2.28
fnb	low socio-economic group	4.11	2.99	2.28
bancabc	middle socio-economic group	31.16	2.59	1.12
gaborone	middle socio-economic group	40.10	3.26	3.72
baroda	middle socio-economic group	6.66	3.13	2.00
absa	middle socio-economic group	25.97	2.99	2.28

Table 23: Bank and mobile money fees - Botswana

Provider	Income category	Monthly fee	Bill pay fee	Merchant fee
capitalbank	middle socio-economic group	25.97	2.99	2.28
fnb	middle socio-economic group	25.97	2.99	2.28

Table 24: Bank and mobile money fees - South Africa 2019

Provider	Income category	Monthly fee	Cash out fee	Billpay fee	Merchant fee
absa	low socio-economic group	5.30	6.50	2.50	0.00
capitec	low socio-economic group	5.25	12.85	1.57	0.00
fnb	low socio-economic group	4.95	12.00	0.00	50.00
nedbank	low socio-economic group	5.50	7.00	2.20	0.00
standard	low socio-economic group	5.25	25.90	1.57	0.00
absa	middle socio-economic group	48.00	25.50	0.00	4.00
capitec	middle socio-economic group	65.50	13.25	0.00	0.00
fnb	middle socio-economic group	109.00	0.00	0.00	0.00
nedbank	middle socio-economic group	58.00	0.00	0.00	0.00
standard	middle socio-economic group	47.00	27.51	0.00	0.00

Table 25: Bank and mobile money fees - South Africa 2018

Provider	Income category	Monthly fee	Cash out fee	Billpay fee	Merchant fee
absa	low socio-economic group	4.99	6.05	0.00	0.00
capitec	low socio-economic group	5.80	6.56	10.00	0.00
fnb	low socio-economic group	5.75	24.70	0.00	0.00
nedbank	low socio-economic group	5.50	6.50	0.00	0.00
standard	low socio-economic group	5.30	23.66	0.00	0.00
absa	middle socio-economic group	45.39	22.87	0.00	0.00
capitec	middle socio-economic group	62.45	17.79	0.00	0.00
fnb	middle socio-economic group	105.00	0.00	0.00	0.00
nedbank	middle socio-economic group	54.00	24.63	0.00	0.00
standard	middle socio-economic group	45.39	23.66	0.00	0.00

Table 26: Bank and mobile money fees - South Africa 2017

Provider	Income category	Monthly fee	Cash out fee	Billpay fee	Merchant fee
absa	low socio-economic group	4.95	5.00	0.00	0.00
capitec	low socio-economic group	5.50	6.00	0.75	0.00
fnb	low socio-economic group	5.25	24.05	0.00	0.00
nedbank	low socio-economic group	5.00	6.50	3.00	0.00
standard	low socio-economic group	4.99	22.40	0.00	0.00
absa	middle socio-economic group	42.00	24.75	4.00	0.00
capitec	middle socio-economic group	53.00	17.71	4.00	0.00
fnb	middle socio-economic group	105.00	0.00	4.00	0.00
nedbank	middle socio-economic group	20.00	22.70	4.00	0.00
standard	middle socio-economic group	45.00	23.40	4.00	0.00