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# IS IT TIME FOR A SOLAR RECEIVABLES FINCO?



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In the last ten years PayGo – the method of distribution and financing of off-grid solar home systems (SHS) – has revolutionized the effort to bring clean, renewable energy to people in Africa without access to electricity.

It is estimated that 490 million people are accessing energy through off-grid solar solutions worldwide.<sup>2</sup> In Africa, nearly 50% of these are people that would not have been able to afford solar home systems without the financing provided by PayGo.<sup>3</sup>

**This is nothing short of remarkable.**

While the achievements of the PayGo sector are a cause for celebration, the companies that employ this business model have struggled. Several notable companies have failed outright. Others have slowly wound down or continue to struggle. Most – although not all – of the remaining companies have not achieved profitability after five or more years of operations. Today, those of us working in the PayGo sector are making an effort to understand why PayGo companies have generally not achieved profitability and what can be done about it.

This paper presents our analysis of one of the key weaknesses in the PayGo industry and provides a prescription for the next stage of the industry's evolution. Our analysis centers around a central feature of PayGo companies: each PayGo company is essentially two businesses. One is a solar products retail distribution company. The other is a consumer finance company, or "Finco".



## SUMMARY OF CONCLUSIONS

We believe that the cost of capital borne by PayGo companies is squeezing their profit margins and, in most cases, preventing those companies from achieving profitability. The blended cost of borrowing for a typical PayGo company is often as high as 18% or more after including costs for currency hedges. The typical cost of borrowing for an efficient finance company is substantially below this. This high cost of borrowing contributes to low/lack of profitability of many PayGo companies. Without profits, a PayGo company cannot attract equity capital. This stifles its growth and, thus, financial and impact prospects. To remedy this, we believe that stakeholders in the PayGo sector should pool resources to create a public/private solar receivables finance company.

The Solar Receivables Finco (SRF) would purchase receivables of any qualifying PayGo company in any currency. The SRF would be funded by a combination of concessionary and private capital and would be operated at a scale that would allow it to solve many of the challenges individual PayGo companies face in financing their receivables. Not the least of these is lowering the cost of capital to finance a balance sheet of receivables, a savings that can be passed on to PayGo companies.



## PAYGO TODAY

To run a profitable PayGo business today one must keep a firm control of costs and run at a gross profit margin of around 60-65%. As we will see later in this paper, the necessary gross margin is impacted by many costs, but the most variable is the cost of capital (i.e., the cost of borrowing).

## PAYGO 1.0: THE FIRST TEN YEARS

The essence of the PayGo model is the placement (via sale, lease or hire purchase) of a solar home system and related appliances with consumers on an installment basis. In other words, the customer pays for use or ownership of the system over time, making it affordable to have access to energy. PayGo, a linguistic collapse of the notion that consumers would pay as they use their system, or “pay as you go”, spawned the sector by taking advantage of technological advances in IOT/remote control of systems and mobile money payments. PayGo revolutionized access to energy for those who previously were not able to afford it. Most PayGo customers never had electricity or access to credit before purchasing a PayGo financed solar home system.

The unit economics for a successful PayGo business would typically look something like this (Figure 1):

UNIT ECONOMICS	
	Parameter
Downpayment (excl. VAT)	25.0
Contractual monthly payment (excl. VAT)	5.0
Number of monthly installments	36.0
<b>Contract value</b>	<b>205.0</b>
Collection rate	85%
<b>Total expected revenue per unit</b>	<b>178.0</b>
Face value of receivables	180.0
Cost of debt	15%
Present value of receivables	122.6
Cost of product FOB	57.0
International shipping	5%
Import duties, customs	10%
Cost of product landed	65.6
Logistics	4%
Installation	5%
<b>Cost of product installed (excl. VAT)</b>	<b>71.4</b>
Gross margin (%)	65%
Gross margin (after adj. for collection rate, %)	60%
Gross margin (after adj. for collection rate and cost of capital, %)	52%



Here is what a Paygo company with these unit economics could look like on a monthly basis (Figure 2):

SIMPLIFIED BUSINESS MODEL			
<b>Scale</b>			
Systems sold per month			5,000
Active payplans	installments	36.0	180,000
Employees dedicated to sales (incl. HQ)	new customers per FTE	20	250
	active customers per FTE	600	300
Employees dedicated to credit management (incl. HQ)	average life portfolio	16	11,031,524
PV receivables	months of inventory	6	2,143,485
Inventory value			3,715,960
Installed asset base value			
<b>Income</b>			
Monthly cash revenue			890,000
COGS			357,248
Monthly OPEX	Salary level (annual)	6,000	275,000
Management cost	Management (annual)	250,000	20,833
Other overhead cost		7%	62,300
<b>EBIT</b>			<b>174,619</b>
Interest expense		15%	73,243
<b>EBT</b>			<b>101,376</b>
Taxes		30%	30,413
<b>Net Income</b>			<b>70,963</b>
<i>Net Income margin (%)</i>			8%
<b>Value</b>			
Company value	EBT multiple	10x	12,165,133
Debt			5,859,445
Equity value			6,305,688
Equity invested	Debt/ Equity	2	2,929,723
IRR	Years	10	8%

You'll notice that the IRR on equity is less than 10%, which is very low. Since equity has a higher risk of repayment than debt, equity should receive a higher return to be attractive to investors.

We have included this article's models in excel [here](#) so that you may download them and manipulate the product prices, gross margin, cost of debt and other variables.

As you manipulate the inputs, you can see how the key outputs (e.g. gross profit margin, net income and IRR) change. For example, reducing the collection rate from 85% to 80% results in negative return for equity investors.



In practice, only a few PayGo companies have reached scale and succeeded in achieving profitability. As previewed in our 2021 white paper on the quest for profitability in the PayGo sector,<sup>4</sup> the sector has generally underestimated how costly it is to distribute PayGo in non-urban areas. Overhead costs are also higher than originally expected, particularly for PayGo companies with large staffs in Europe or the US, or run locally by expats who generally receive higher salaries. Collection rates are painfully low for many companies and many have not been able to manage the costs of an effective collection process.<sup>5</sup> And finally, transaction costs – in management time, stock outages and layoffs, as a result of the tedious and often unsuccessful process of raising necessary capital to grow - add both financial and operating burdens to the typical PayGo company.

As a result of these challenges, many PayGo companies have pivoted or diversified away from sales of solar products. M-Kopa – an early leader in developing the PayGo model and sector – has pivoted primarily to sales of smart phones. Several other companies are launching similar initiatives. Other PayGo companies have “moved up the food chain” by selling larger systems to higher income consumers, including urban consumers seeking backup systems. Other PayGo companies have moved to a B2B model (commercial and industrial solar, clinics, schools and other non-commercial large-scale installations) and only engage in PayGo business when the business is subsidized.

While we applaud the ingenuity of companies, the fact remains that the unelectrified population is primarily the lower income population: among the 730 million unconnected people worldwide, only around 12% can afford to pay for a Tier 1 system in cash and 32% could not even afford it with customer financing.<sup>6</sup> Clearly PayGo has a critical role to play in reaching those still without access to energy.<sup>7</sup>

## PAYGO'S TWO BUSINESSES

At its core, a PayGo business is two businesses: a retail sales business and a consumer finance business. Looking at the costs of operating each of these businesses will help us understand better a key struggle for PayGo companies.

### Solar Retailer

A typical PayGo retail business has all the features of any consumer goods retail business: the company must manufacture or acquire goods/inventory and distribute the goods to end customers through its distribution network. This distribution network usually comprises stores and/or sales agents. The company finances the purchase of its inventory with either equity (from investments or retained earnings) and/or working capital debt.<sup>8</sup> Once the product is sold to the end customer, the company must provide high quality after-sales service in line with product warranties it offers to its customers.

As a pure retailer sells products, it collects payments, realizes its gross margin and uses the proceeds to fuel its business: paying costs, purchasing more inventory, servicing debt, and hopefully paying dividends to its shareholders. While this is a business with many challenges, it is relatively simple to illustrate financially.

For comparability, we will use the same assumptions as in the PayGo model earlier in this paper, where the cash price equals the downpayment plus the present value of receivables and the cost of product installed remains the same. Since the retailer sells its products only for cash, we do not need to finance the receivables and can therefore sell the product for a lower margin. For comparability, we assume that the number of employees equals the number of employees dedicated to sales in the PayGo model.

Here are the resulting unit economics of a Cash Retail Sales (only) Business (Figure 3):

UNIT ECONOMICS	
	Parameter
<b>Cash price</b>	<b>147.6</b>
Cost of product FOB	57.0
International shipping	5%
Import duties, customs	10%
Cost of product landed	65.6
Logistics	4%
Installation	5%
<b>Cost of product installed (excl. VAT)</b>	<b>71.4</b>
<b>Gross margin (%)</b>	<b>52%</b>

The monthly income statement of a Cash Retail Sales (only) Business would look something like this (Figure 4):

SIMPLIFIED BUSINESS MODEL			
<b>Scale</b>			
Systems sold per month			5,000
Employees dedicated to sales (incl. HQ)			250
Employees dedicated to credit management (incl. HQ)			-
Inventory value	months of inventory	6	2,143,485
<b>Income</b>			
Monthly cash revenue			738,004
COGS			357,248
Monthly OPEX	Salary level (annual)	6,000	125,000
Management cost	Management (annual)	250,000	20,833
Other overhead cost		7%	51,660
<b>EBIT</b>			<b>183,263</b>
Interest expense		15%	26,794
<b>EBT</b>			<b>156,470</b>
Taxes		30%	46,941
<b>Net Income</b>			<b>109,529</b>
Net Income margin (%)			15%
<b>Value</b>			
Company value	EBT multiple	10x	18,776,367
Debt			2,143,485
Equity value			16,632,882
Equity invested	Debt/ Equity	2	1,071,743
IRR	Years	10	32%

On a scaled basis, this retail business is quite attractive with a gross margin of 52% and an equity IRR of 32%.

Now, if you compare a PayGo solar business to a pure cash-based solar retailer, you can see one of two results: the cash retailer can either (1) sell its product at a much lower price than the PayGo company and maintain a similar profit to the PayGo business (as illustrated above) or (2) sell its product at the same price and make a much higher profit. This difference reflects the cost of running the finance business of the PayGo company and, primarily, the cost of borrowing.

## Consumer Finance Business

A typical consumer finance business requires development of customers to whom the company will make loans. A reliable credit underwriting process is needed to guide loan origination. After origination, loans must be serviced: collected when due or late. Customer relationships must be maintained. Defaulted loans might need to be collected by foreclosure on collateral, repossessing the solar home system purchased with the loan and reselling it, if possible.

Financing a consumer finance business is relatively straightforward. The company must borrow at a cost of capital that is less than its gross income. In other words, the finance company must secure sources of capital from shareholders and lenders that, on average, cost less than the interest income that the finance business will receive on the loans it has made to purchasers of solar home systems. The spread, less other costs financing operations, is the gross profit margin of a finance business. From this gross margin the finance business must pay its remaining operating and overhead costs and, hopefully, dividends to its shareholders.

On a unit economics basis a consumer finance company financing PayGo businesses is easy to illustrate (Figure 5):

UNIT ECONOMICS	
	Parameter
Face value of receivables	180,0
Collection rate	85%
Face value of receivables (adj. for collection)	153,0
Implied targeted interest rate per annum	15%
Purchase price	122,6
Number of monthly installments	36,0
Interest income per unit	30,4
Cost of debt for consumer finance company	5%
% of receivables financed through debt	80%
Interest expense per unit	9,0
Gross margin (%)	71%

For our analysis of the cost of debt for a typical finance company, see [Appendix A](#) hereto.

On a company basis, the income statement of the finance business might look something like this (Figure 6)<sup>9</sup>:

SIMPLIFIED BUSINESS MODEL			
Scale			
Receivables purchased per month			5.000
Active payplans	installments	36,0	180.000
Employees dedicated to sales (incl. HQ)	new customers per FTE	80	63
Employees dedicated to credit management (incl. HQ)	customers per FTE	600	300
PV receivables purchased per month			613.004
Income			
Monthly interest income (cash)			455.987
Monthly interest expense (cash)			134.349
Monthly OPEX	Salary level (annual)	6.000	181.250
Management cost	Management (annual)	250.000	20.833
Other overhead cost		7%	31.919
<b>EBIT</b>			<b>87.635</b>
Interest expense			-
<b>EBT</b>			<b>87.635</b>
Taxes		30%	26.291
<b>Net Income</b>			<b>61.345</b>
<i>Net Income margin (%)</i>			13%

There are of course variations on the finance company approach to financing consumer purchases. Perhaps the most notable is to pool consumer receivables and finance them in a securitization transaction.<sup>10</sup> Last year, for example, d.light and African Frontier Capital teamed up to create such a facility in the amount of \$238 million.<sup>11</sup>

The cost of capital to the consumer finance company is critical to determining its profitability. If its cost of capital is higher, it must secure a higher return on its financing of customers to realize its target gross margin. If the cost of capital is lower, it can pass those savings along to its borrowers, or increase its profits.

### Scale in Combining PayGo's Two Businesses

On its face it appears there are some economies of scale in running the two aspects of a PayGo business together. For example, collecting payments on loans made to customers for their solar home systems and providing warranty service overlap. Surely there are other economies in combining the touch points each aspect of the PayGo business must maintain with its customers.<sup>12</sup> And it would seem that there are some shared overhead costs in operating the two businesses under one management team, spreading the costs of accounting and finance, IT, personnel management and overall management between the retail and finance businesses.

In the end however, these economies cannot overcome the inevitability that a consumer finance company operating at scale would have a lower cost of capital than a typical PayGo business. For example, considering our sample models, the net income margin of our PayGo company would jump from 8% to 10% if its cost of debt declined from 15% to 10%. As illustrated below, this jump in margin would materially impact IRR to shareholders.

## IS IT TIME FOR A SRF?

Appendix A illustrates our analysis of the typical cost of capital for a consumer finance company operating at scale. This analysis supports the conclusion that a consumer Finco should be able to finance PayGo companies' customer receivables at a lower cost of capital than any PayGo company, other than perhaps the very largest PayGo companies with large pools of receivables. In our model, we assume 3% as the target cost of capital for a solar receivables Finco, considering that it would be financed at least partially with concessionary capital as proposed below.

Let's see what this looks like, assuming (1) that the Finco in Figure 5 purchases all of the receivables of a typical PayGo company as they are created and (2) the savings in cost of debt is passed along by the Finco to the PayGo company:

On a unit economics basis, a PayGo company selling receivables to Finco (Figure 7) will look like this:

### SRF model

UNIT ECONOMICS PAYG COMPANY SELLING TO SRF	
	Parameter
Downpayment (excl. VAT)	25.0
Contractual monthly payment (excl. VAT)	5.0
Number of monthly installments	36.0
<b>Contract value</b>	<b>205.0</b>
Face value of receivables	180
Collection rate	85%
<b>Total expected revenue per unit</b>	<b>178.0</b>
Receivables sold to SRF excl. servicing fee	131.7
Servicing fee	9.2
Cost of debt of PAYG company	5%
Cost of product FOB	57.0
International shipping	5%
Import duties, customs	10%
Cost of product landed	65.6
Logistics	4%
Installation	5%
<b>Cost of product installed (excl. VAT)</b>	<b>71.4</b>
Gross margin (%)	65%
Gross margin (after adj. for collection rate, %)	60%
Gross margin (after adj. for collection rate and cost of capital, %)	54%



In parallel, the unit economics of Finco buying the receivables from a PayGo company will look like this (Figure 8)<sup>13</sup>:

UNIT ECONOMICS SRF BUYING RECEIVABLES	
	Parameter
Face value of receivables	180.0
Collection rate	85%
Number of monthly installments	36.0
Face value of receivables (adj. for collection)	153.0
Implied targeted interest rate per annum	10%
Purchase price excl. servicing fee	131.7
Servicing fee (in % of collected receivables)	6%
Servicing fee	9.2
<b>Purchase price incl. servicing fee</b>	<b>140.9</b>
Cost of debt for consumer finance company	3%
Interest expense per unit	6.9
Income per unit	12.1
<b>Gross margin (%)</b>	<b>43%</b>



On a company basis, the income statement of the PayGo business would look something like this (Figure 9):

SIMPLIFIED BUSINESS MODEL			
<b>Scale</b>			
Systems sold per month			5,000
Active payplans	installments	36.0	180,000
Employees dedicated to sales (incl. HQ)	new customers per FTE	20	250
Employees dedicated to credit management (incl. HQ)	active customers per FTE	600	300
PV receivables	average life portfolio	16	11,031,524
Inventory value	months of inventory	6	1,966,500
Installed asset base value	Debt drops by	66%	-
<b>Income</b>			
Monthly cash revenue - DP			125,000
Monthly cash revenue - proceeds from sale of receivables			658,564
Monthly cash revenue - monthly installments			765,000
Monthly cash revenue - transfer of monthly installments to SRF			(765,000)
Monthly cash revenue - Servicing fee			45,900
COGS			(357,248)
Monthly OPEX	Salary level (annual)	6,000	(275,000)
Management cost	Management (annual)	187,500	(15,625)
Other overhead cost		7%	(58,062)
<b>EBIT</b>			<b>123,529</b>
Interest expense		5%	(8,194)
<b>EBT</b>			<b>115,335</b>
Taxes		30%	(34,601)
<b>Net Income</b>			<b>80,735</b>
Net Income margin (%)			10%
<b>Value</b>			
Company value	EBT	10x	13,840,205
Debt			1,966,500
Equity value			11,873,705
Equity invested	Debt/ Equity	2	983,250
IRR	Years	10	28%

The purchase price of the receivables is derived from the present value of the receivables, adjusted for the collection rate. For the calculation of the present value, we assume that the SRF applies an interest rate of 10%. We further assume that the SRF pays the PayGo company a servicing fee of 6% for managing collections.

Figure 9 above shows that a PayGo company that finances its receivables through the SRF realizes a slightly higher net income margin, which increases from 8% to 10%. This is mainly driven by lower interest expenses as well as lower management cost, since we assume that leadership spends less time on fundraising. **However, while the margin improvement is limited, there is tremendous improvement in the IRR on equity, which increases from 8% to 28% over a 10 year period.** This is mainly driven by a lower amount of debt, since, with SRF financing in place, the main need for debt in the PayGo company is to finance inventory, rather than both inventory and receivables. This reduces the required level of debt by 66%.

## A SOLAR RECEIVABLES FINCO

PayGo companies are struggling to finance the cost of carrying their customer receivables. The cost of capital is squeezing their profit margins. Raising prices and moving upmarket by selling more expensive systems to higher income customers has helped some companies but does not solve the energy access problem.

### IS THERE A SOLUTION?

This article demonstrates that relieving PayGo companies of the burden of financing their own customer receivables can tremendously increase their profitability. The implications of successfully executing such an endeavor are clear: **PayGo companies would become attractive targets for equity investors.** The implications for PayGo as a tool of energy access cannot be underestimated.

But a Finco that can cost effectively buy PayGo receivables does not exist. And securitization transactions – although a good solution for larger companies with large pools of receivables – are costly and inefficient transactions when done intermittently for individual mid-sized players.



WE BELIEVE THE SOLUTION IS A PUBLIC/PRIVATE SOLAR RECEIVABLES FINCO (SRF) ORGANIZED FOR THE EXPRESS PURPOSE OF PURCHASING ANY AND ALL QUALIFIED RECEIVABLES FROM PAYGO COMPANIES.

## WHY A SOLAR RECEIVABLES FINCO?

### **An SRF would have a number of advantages for the PayGo sector:**

- The SRF would establish standardized methodologies for evaluating and pricing PayGo receivables. Over time great efficiencies would be developed and the vast amount of data and customer insights would enhance the SRF's ability to assess and manage risk, giving it a greater opportunity to generate income than any individual PayGo company's finance arm.
- By taking the lead in developing standards, the SRF would effectively underwrite the cost of structuring off balance sheet receivables financing for all PayGo companies. This is far superior to each company incurring the cost of figuring out how to structure its own individual securitization transactions.
- The SRF would be large enough to enter into currency hedges and deal in multiple currencies so that it could purchase receivables of any PayGo company. Or it could be capitalized with local currency in some of the key markets. Here again, the SRF would be more cost-effective than individual companies managing their own respective currency risks.
- The SRF would give PayGo companies access to liquidity. Imagine that a PayGo company would only need to finance its inventory and not its receivables. For a typical PayGo company, this would mean that its debt levels would drop by 66%. Imagine also the transaction time and expense that would be saved by PayGo company management not having to raise large levels of debt to finance receivables.
- Perhaps most importantly, the SRF's cost of capital should be much lower than the cost of capital any PayGo company pays. The SRF would be a large, well capitalized institution that would hold consumer receivables at an industry-wide scale. As a more standardized and efficient institution, it would be a better credit risk for lenders and, like most consumer finance companies, should have a cost of capital lower than any PayGo company.<sup>14</sup> We think a public/private SRF should have a cost of capital in the range of 3-5% as a target to promote energy access.

- The SRF would be an ideal vehicle to provide industry subsidies where desired, by offering better financial terms to PayGo companies that are selling qualified receivables from lower income customers to the SRF. For example, there could be a two-tiered pricing system where PayGo sales of lower income customer SHS receivables or customers in harder to reach target markets have an effective borrowing cost of, say 3% per year, versus a market interest rate for purchases of other solar receivables by the SRF. This lower interest rate would enable a PayGo company to sell products that give rise to these receivables at a lower price and still achieve their target profit margin. This type of subsidy program could be more coherent and comprehensive across Africa and enable a rational allocation of subsidies to achieve policy goals.

## HOW WOULD A SOLAR RECEIVABLES FINCO WORK?

- The objective of the SRF would be to offer to purchase, or finance,<sup>15</sup> solar receivables from PayGo companies on a limited recourse basis.
- A purchase of solar receivables would be carried out at a price that is discounted against the contractual value of the receivables (i.e., the contractual income stream). This discount would represent the effective interest to be earned by the PayGo company after accounting for the expected collection rate on receivables purchased.
- PayGo companies would use standard receivables documentation promulgated by the SRF, enabling the SRF to purchase uniform customer contracts.
- The PayGo seller would typically retain responsibility for “servicing” the receivables sold to the SRF. This would include collections, warranty service and other related matters. The PayGo seller would receive a servicing fee for this activity, which would be deducted from the initial purchase price paid by the SRF for the receivables and paid out as earned. If the SRF was forced to remove the PayGo seller and hire a successor servicer to collect the receivables, it would have a cash flow stream from the receivables available to pay that successor servicer.
- The PayGo seller<sup>16</sup> of solar receivables would have to bear part of credit risk to the SRF in the sale. Customer defaults in payment of receivables would be the SRF’s risk up the amount of the agreed credit risk. As noted above, the SRF would be required to price this risk into the purchase price for the SHS receivables purchased. More importantly, the PayGo seller/servicer would have to be a diligent collection agent for the sold receivables because of its loss risk.

- Example: Say a PayGo company sells \$100 of receivables expected to pay \$90 to the Finco for \$82. Say also that the PayGo company provides a 10% guarantee of payment. If that pool of receivables pays \$90 or more<sup>17</sup>, there would be no obligation of the PayGo company to pay on the guarantee. If the pool pays \$81, the PayGo company would be obliged to pay \$9 on its guarantee, as that is 10% of the portfolio value uncollected. If the pool pays only \$75, the PayGo company would still only be obliged to pay \$9 because that is the limit of its guarantee. In this latter case however, the SRF would adjust future purchases from that PayGo company to reflect the higher loss experience by discounting its receivables more than in the prior purchases.<sup>18</sup>
- Once the SRF is up and running with regular relationships with PayGo companies, the receivables administration process should become very streamlined, e.g., a PayGo company would originate a sale to a customer using the SRF's form of sale/financing agreement and routinely (perhaps weekly) transfer the solar receivables created to the SRF. The SRF's bank accounts used for direct deposits of customers mobile money payments would be part of the original contracts. Customers would pay into the SRF's own accounts, so there would be no intercompany cash management issues. This kind of seamless cash management would also increase efficiency and lower the cost of operating the SRF's business.

## WHAT WOULD A SOLAR RECEIVABLES FINCO LOOK LIKE? WHO WOULD FUND IT?

The SRF would work best as a public/private partnership, with government donor agencies, development finance institutions (DFIs) and impact investors providing the core risk capital for its operation. To achieve the public policy goals of the SRF, we would recommend that the SRF be capitalized as follows:

## **EQUITY CAPITAL**

The SRF would be financed like a microfinance bank, with an equity foundation and debt on top of that foundation. The equity foundation would consist of:

- A first loss equity layer provided by donors, governmental and/or charitable institutions.
- A second loss equity layer provided by DFIs that have been crucial supporters of PayGo as a means to achieve energy access.
- The top layer of equity provided by impact investors (family offices, high net worth individuals, institutions and charitable investors), if the SRF models out as providing attractive equity returns for the senior layer, over time it may be possible to attract other institutional commercial investors.

## **DEBT CAPITAL**

We would also expect that the SRF would be leveraged with a prudent level of debt that would enable it to maintain strong equity capital ratios. This debt would likely be layered with senior and subordinated debt.

## **CURRENCY**

Since most solar receivables are generated in the local currency of the customer, it makes sense that the SRF would be a multicurrency institution that would buy receivables in any currency. In fact, because of its size, the SRF would have the ability to do economically what individual PayGo companies have so far struggled to do affordably: hedge its currency risk or fund itself in multiple currencies to hedge its currency risk.

## **OPERATIONS**

The stakeholders of the SRF would have the option of building an institution from scratch, much the way Electrifi was created by the EU. Alternatively the SRF could – at least initially – be created by leveraging private sector resources. Factors and receivables analysts such as Solar Frontier Capital and Nithio could be contracted to carry out functions to build the SRF more quickly. GOGILA's PayGo PERFORM KPIs and other industry standards and data could be leveraged, e.g. for assessing companies.

## CONCLUSION

An SRF could be a highly catalytic tool to usher in the next generation of PayGo operations. PayGo companies could efficiently operate in their markets and make products available to even the lowest income customers with market efficient subsidies provided by the SRF. Other customers could be financed on arm's length terms but in a most cost-effective way that enables the growth of stable, profitable PayGo companies across developing markets. All this could be done while rendering PayGo companies attractive to equity investors with the promise of IRRs that could be in 25%-30% range.

There are certainly also a number of risks and critical questions that need to be addressed in setting up the SRF, for example:

- The SRF would have major competitive advantages. How would this impact existing debt investors?
- The SRF would be a large and incredibly important institution that is “too big to fail”. How could related risks be mitigated?
- The SRF would have a great deal of power in the negotiations - given it is likely to have a monopoly position, at least initially, and with public funds an obligation to be 'fair' and inclusive. Very clear and transparent guidelines on who can access the funds and a governance structure with the right representation could help manage this.
- If concessional finance is provided, certain product categories and beneficiary groups would need to be targeted.

Much work would need to be done to design and create the SRF<sup>19</sup>. Setting up an SRF is highly complex and requires the involvement of many participants. If the PayGo community shares our view that an SRF would be worthwhile for the sector, we believe that the next step would be to establish a steering committee of industry leaders to oversee a detailed study and analysis of the proposal. The steering committee should seek grant funding to hire a project leader and small staff to do the analysis over a 6-12 month period and prepare a blueprint and projections for the launch and operation of the SRF. If endorsed by the SRF steering committee, fundraising to capitalize and launch the SRF could begin.

We believe that the time is right for key stakeholders in the sector to closely evaluate the practicality of an SRF as a way to bring the PayGo sector to profitability.

## APPENDIX A

### FINCO COST CAPITAL ANALYSIS

#### Assumptions

One critical point of the SRF model is the cost of funds that a consumer finance company borrows at. We only look at the cost of debt here, not the cost of equity.

In the US, the costs of funds of a consumer finance company ranges from 2-3%. In India, a less mature market, it ranges around 6-7%. Assuming that the SRF will use a mix of concessionary and commercial capital, we arrived at a cost of funding of 3%.

#### Methodology

The cost of debt of a consumer finance company may vary significantly depending on the specific circumstances of each company, such as a company's size, market position, risk profile, capital structure, and prevailing market conditions.

The idea was to select a panel of consumer finance companies in “mature” markets as the SRF would likely be a cross-border institution financed by mature market capital. Europe is not included here because most institutions offering consumer financing are banks and are involved in a lot of other activities which did not allow us to identify the cost of funds specifically dedicated to consumer finance. For this reason, the selection below shows US and Indian companies. We look at India in order to get a range of the cost of funding in a less mature market.

Company	Location	Description	Source	Cost of funds (excl. deposit)
ALLY	USA	Saving, credit cards, investing & retirement, mortgage, auto, personal loans.	Annual report 2021	5.05% <sup>20</sup>
Capital One	USA	Credit card (64%), savings, auto, business, commercial.	Annual report 2021	0.79% (secured) to 1.79% (subordinated)
Rocket Companies	USA	Mortgage, auto, solar, personal finance + Sales, technology & marketing services.	Annual report 2021	2.05%
Sterling Bancorp	USA	Personal banking, home loans, business banking, commercial loans.	Annual report 2022	2.08% (secured) to 6.32% (subordinated)
HDB Financial Services Limited	India	Non-banking financial company that provides various retail finance services.	Annual report 2022	6.4%
CreditAccess India	India	Non-banking financial company that provides various retail finance services.	Annual report 2021	7.35%



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## FOOTNOTES

1. Our thanks to the many commentators who reviewed a draft of this article and provided their valuable feedback.

2. <https://documents1.worldbank.org/curated/en/099235110062231022/pdf/P175150063801e0860928f00e7131b132de.pdf>

3. <https://documents1.worldbank.org/curated/en/099235110062231022/pdf/P175150063801e0860928f00e7131b132de.pdf>, page 35

4. See “Learnings from a Decade of Energy Access Investing in Africa” (2021)

5. A collection rate of 75% is not uncommon, while some of the best performing companies have rates in the 90-95% range. As noted above, failing to achieve a target collection rate can wipe out an expected profit margin.

6. <https://documents1.worldbank.org/curated/en/099235110062231022/pdf/P175150063801e0860928f00e7131b132de.pdf> p.22

7. Although we have no current data available, logic suggests that there will be a growing replacement market for PayGo products as they reach the end of useful life.

8. While borrowing in the PayGo sector today is primarily in the form of amortizing term loans, the typical model for borrowing to finance inventory involves revolving loans that finance the inventory from purchase to sale, then sees the company repaying the loan with the proceeds of sale, then borrowing again when it purchases new inventory. With a revolving loan, the average outstanding principal amount may be as high as a term loan but the daily outstanding amount will fluctuate as inventory is bought and sold. This lowers the cost of borrowing as no/less interest is paid when the loan balance zero or low in between inventory purchases.

9. Note that this projection is based on our synthesis of publicly available data of large consumer finance companies. Although we have high confidence in the ability to successfully structure a Finco for PayGo receivables, our projected model may have material flaws and should be further examined.

10. See “Securitization: Unnecessary Complexity or Key to Financing the DESCO Sector” (2016).

11. <https://www.dlight.com/wp-content/uploads/BLK2-Press-Release-14-June-2022.pdf>

12. This is not true in all cases however. Anecdotal evidence strongly indicates that collection and sales functions should not be performed by the same sales agents.

13. Note that the implied target interest rate and cost of debt for the Finco are lower than in Figure 5 because we assume concessional capital as part of the SRF’s capital structure. Equity IRR in the SRF still exceeds 20% with a cost of debt at the Figure 5 levels.

14. See Appendix A.

15. Purchasing PayGo solar receivables would be a more complete way to remove solar receivables from the selling PayGo company’s balance sheet. In some countries, however, a receivables sale triggers VAT. It is possible in those countries to replicate the commercial terms of a receivables sale with a limited recourse financing transaction, achieving effective parity with an outright receivables sale.

16. We will use the term “seller” here even though the PayGo company may technically be a borrower where a financing transaction is used.





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17. In a typical receivables financing or securitization, the excess collections over \$90, if any, would be remitted to the seller/servicer PayGo company.

18. We would expect the SRF to develop state of the art competencies at tracking and forecasting default rates and, over time, adequately discounting receivables for collection risk.

19. We made a number of simplifications in our models and, as noted, our assumptions may well have flaws that need to be addressed. The aim of this paper is not to provide final models but to spur discussion. Among other assumptions:

- We used the EBT multiple to calculate the company value, since the main difference of the two models lies in the reduced interest cost of the company financing its receivables through the SRF, which is not reflected in EBIT or EBITDA
- We assumed a debt/ equity ratio of 2, which implies a significantly lower equity requirement for the PAYG company that finances its receivables through the SRF
- We assumed a relatively low cost of debt of 3% for the SRF, which requires concessionary capital
- We did not consider how currency fluctuations impact the cost of debt
- We did not consider the costs required to set up a SRF facility for a PayGo company because we believe this should largely be underwritten by the SRF

20. Please find calculation details [here](#).

## ABOUT PERSISTENT

Founded in 2012, Persistent is Africa's Climate Venture Builder. We believe in the power of carbon neutral economic development in Africa and as such are leading experts and pioneer investors in the distributed renewable energy sector on the continent. We build commercially successful businesses that can scale sustainably, driven by the belief that this is the best approach to climate and socio economic impact in underserved African markets.

Operating out of Nairobi, Lagos, New York, and Zurich, Persistent invests financial capital and human resources through our venture building model, focusing on ideation to early growth stage. We often assign our team members (venture builders) to work in secondment operational roles, hand in hand with the management teams of our portfolio companies.

To date, Persistent has made over 20 early-stage investments (4 exits) in PayGo solar home systems, commercial and industrial solar, ecosystem enablers, and e-mobility players. Next to delivering solid financial returns, we have contributed to improving over 5 million lives, powering over half a million households, avoiding over 1 million tons of CO<sub>2</sub>e, and creating 17,000 jobs.



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