

Study of the Frequency of Paying Wages to Employees in Developing Countries

-- The Case of Angola

Kaiyi Chen

Phillips Exeter Academy, Exeter, NH, 03833, United States

Abstract. Wages have long been a central issue of contention between parties in labor relations, but the periodicity of wage payment has not received sufficient attention as a key issue in the wage payment process. The length of the wage payment cycle has a significant impact on both the worker and the employer. It is generally believed that a shorter wage payment cycle can better protect workers' right to be paid for their work, and at the same time, a shorter wage payment cycle can change people's consumption patterns, especially those of low-income earners, and thus improve their quality of life. In developing countries, in addition to finding the delicate balance between free markets and government regulation, the economy needs the efforts of social entrepreneurs.

Keywords: Angola; Corporate; Payroll Cycle; Financial Literacy.

1. Introduction

American educator Abraham Flexner once said, "Probably no nation is rich enough to pay for both war and civilization." This is particularly accurate in Angola's case. Right after it gained independence from Portugal in 1975 through the Alvor Agreement, Angola immediately went into a civil war that was mainly fought between UNITA supported by the United States and MPLA assisted by the Soviet Union. The political turmoil finally ended in 2002 with the death of Jonas Savimbi, the leader of UNITA, but it had already abandoned the nation in ruins: about 500,000 Angolan people had died in the civil war, and four million refugees were "internally displaced." [1] In the next twenty years, Angola underwent a painful period of reconstruction: establishing a labor market from scratch, cultivating land that was demolished by the mines during wartime, and steadying the inflation of its currency (Kwanza)... [2] Despite their effort, people today in Angola continues to suffer from the legacy of the war: the 2020 Poverty Report for Angola has demonstrated that 41% of its population struggles below the poverty line of 21 dollars (12,181 Kwanzas) per month. [3] You still spot a family of twelve fitting into a thirty-square-meter thatched hut in the impoverished countryside of Angola. Twenty-five kilograms of corn flour and 20 kilograms of edible oil cost around 13,000 and 20,000 kwanzas, respectively, while factory workers earn 50,000 kwanzas a month at most and often experience delays in receiving their wages during economic downturns. People are just surviving, not living.

Financial illiteracy further expanded the impact of poverty. Many Angolans spend most of their salaries right after they receive them at the end of each month without comprehending that saving money would free them from financial stress in times of struggle and improve their quality of life. This lack of understanding, coupled with the striking visual merchandising design and the wide variety of goods in many retail stores that stimulate excitement and sudden desire to purchase, drives customers to make terrible financial decisions, such as purchasing goods and services that will not significantly improve their life quality in the long run, instead of saving money to invest in education which might fundamentally change the fate of a family. By doing so, they will have little to no money for a whole month, during which their desires to purchase accumulate unconsciously. Therefore, when their salary arrives the next month, they would again spend most of the money in an extremely short time. It gradually develops into a vicious cycle.

While propagating financial literacy takes time, it is possible to quickly help people make better financial decisions. Suppose wages are being paid bi-weekly instead of monthly without increasing their total amount. In that case, salary being broken down leads people to consider their financial

situations more cautiously, since they will only be able to purchase the products of great significance but not necessarily the goods that they purely desire at the moment. Meanwhile, bi-weekly payment allows workers to maintain a certain amount of spending money, making it less likely that they would end up in a desperate financial situation. Theoretically, paying workers more frequently reduces their financial stress. We set out to test this hypothesis among the workers of the Fatima sofa factory. Supreet Kaur from UC Berkeley, Sendhil Mullainathan from the University of Chicago, Suanna Oh from the Paris School of Economics, and Frank Schilbach from MIT have done similar research targeting low-income Indian piece-rate manufacturing workers. Through the workers' self-assessment of financial stress and direct measurement of the workers' productivity, these researchers concluded that increasing the frequency of payment indeed reduces workers' financial stress, which, in turn, increases their productivity because they become more focused at work.[4] Inspired by their research, we aimed to focus on Fatima sofa factory workers in Luanda, Angola, and test if we would receive similar results.

2. The Experiment

2.1 Background

Workers were gathered from mainly four procedures in the factory, including 40 from upholstery, 33 from sewing, 19 from sponge (cutting and pasting), and 31 from carpentry. Upholstery is then divided into four groups: A, B, C, and M; sewing also into four groups: 1, 2, 3, and 4. These smaller groups compete against each other in their specific tasks for yearly factory awards, while workers in sponge and carpentry generally work together to complete production goals. To divide the workers into comparable groups and avoid spill-overs when measuring their productivity, we first needed a better understanding of the workers' education, family, and financial situations, so we collected their general information through a baseline survey.

2.2 Baseline Survey

Lack of access to higher education among the workers is identified as a main trend throughout the results of the surveys. Most workers have never been to college: 69.2% of the workers have concluded secondary school education, 20.5% have started their secondary school education, and only 2.6% have earned a bachelor's degree. A simple sequence of shapes is shown in Raven's Progressive Matrices aimed to test the workers' STEM education: only 44.9% of the workers correctly predicted the next shape in the sequence. However, the workers have shown significant interest and spent sufficient time reading books: even though 11.5% of the workers have no time to read and 42.3% of the workers only spend 0-2 hours reading every day, 25.6% spend 2-4 hours and 20.6% spend more than 4 hours reading.

Most workers have a family to feed and usually are its sole economic income. With an average age of 26, the median worker has two kids in their family, and the average worker has 2.7 kids. The median worker lives with 2 other family members, and the average worker lives with 2.45 other family members. 69.2% of the workers reported that the family members that they live with do not have a job, and the reports of their total household income have demonstrated again that most of them provide the sole income of their households. 98.7% of the workers don't have any other jobs, so their monthly income of 50,000 kwanzas (about 116.77 USD) is the only source of revenue for their family.

The results of the survey again prove that most workers do not have a habit of saving money. 61.6% of the workers do not have any savings, and rather, they usually spend their salary right after it is distributed. The workers seem to have some financial support when the situation is urgent, at least. Even though the answers varied when the workers were asked about the value of their assets that could be sold in an urgent need of cash, 60.3% of the workers have assets worth more than 30,000 kwanzas in total. However, it would still be difficult for most workers to gather 50,000 kwanzas in 2 days for an emergency medical expense: only 13.7% decided that it might be easy for them. While

merely 9.6% deemed that it would be impossible to collect that much money in a short amount of time, 75.3% of the workers found it difficult or extremely difficult.

By surveying their monthly consumption and significant expenses, we discovered that most workers live under constant financial pressure. 61.6% of the workers have ongoing significant expenses, such as their education or health issues; 78.1% have upcoming big expenses, such as marriage or a child's education. Compared to education and health care, the purchase of house furniture is clearly the main big expense for workers in the factory: more than 55% of workers spend more than 30,000 kwanzas on furniture, while about 50% of workers spend less than 10,000 kwanzas on education. Meanwhile, among normal life consumptions in the household, food is clearly the most expensive one compared to school, transportation, and entertainment: 43.75% are spending more than 30,000 kwanzas on food every month. Since a lot of workers do not even have access to entertainment activities or afford their kids to school, many spend nothing on education or utilities. At last, when asked to rate how worried they are about their household financial situation on a scale of 1 to 5, most workers, 26.3%, chose "5 - extremely worried."

To confirm the helpfulness of this study for these workers, we also surveyed their thoughts and feelings on this experiment. 76.3% claimed that the policy change would somewhat decrease their level of stress regarding their finances, while no one reported that the policy change would reversely increase their level of stress. In addition, 57.5% of the workers revealed that the policy change would somewhat lead them to make better financial decisions. Overall, even though the workers did not firmly believe that the increase in pay frequency would significantly decrease their financial stress and in turn make better financial decisions, they were convinced that the study would still make a positive impact.

2.3 Procedures

According to the information provided by the baseline survey, we divided FATIMA workers into two comparable groups: Upholstery B, upholstery C, sewing 3, and sewing 4 being the treatment; upholstery A, upholstery M, sewing 1, and sewing 2 being the control. For workers in the sponge and carpentry departments, we assigned them individually to either treatment or control based on their reported family, education, and financial information.

We planned to complete the experiment in four weeks. Nothing was shared with the workers during the first week; in the middle of the second week, the announcement was made to the treatment group declaring that they would be paid half of their monthly salaries at the end of the week and the other half two weeks later (nothing was shared with the control group); then the third and fourth weeks serve as the treatment to test how the workers reacted to the increase in their pay frequency.

To evaluate the change in the workers' financial stress and productivity, we designed a condensed survey -- the end-of-day survey, and collected responses from the workers at the end of each week. This shorter survey gathered information on their savings, repaid loans, newly requested loans, the stressfulness of repaying loans, financial problem worriedness, frequency of feeling less focused during work, and number of mistakes over the past week. We sought to quantify each evaluation in the survey so that we could analyze data more efficiently and accurately. We asked the workers to describe their stressfulness of repaying loans and financial problem worriedness on a scale of 1 to 5, 1 being "not worried at all" and 5 being "extremely worried." Meanwhile, we provided multiple choices for the workers' evaluation of the frequency of them feeling less focused during work (never, rarely, sometimes, often, and always) and assigned numbers to these words later on according to their degrees of frequency during the process of analyzing data.

Meanwhile, the productivity report of each upholstery and sewing team was submitted to us every week. Since workers in sponge and carpentry collaborated as a whole group, we were not able to analyze their productivity reports.

2.4 Results

Table 1. Result of Data

	Savings	Repaid loan	New loan	Loan repayment stress	Worried about financial problems	Feeling less focused during work	Reported Mistakes	Productivity
Announcement	-9.8*** (2.97)	5.1*** (2.47)	5.273*** (2.048)	0.07 (0.28)	0.104 (0.385)	0.022 (0.108)	0.074 (0.14)	-1.08*** (6.24)
Treatment	-2.79 (2.484)	1.9 (2.067)	3.29* (1.7)	-0.04 (0.235)	-0.727** (0.322)	0.033 (0.093)	0.053 (0.118)	7.33 (5.4)
Observations	344	344	344	344	344	380	344	232
R-squared	0.7385	0.502	0.3919	0.5617	0.542	0.5407	0.4442	0.4128
Note: *** p<0.01, ** p<0.05, and * p<0.1								

We derived the coefficient for each evaluation with the mean of the treatment group subtracts that of the control group during the same week of the experiment. While “announcement” stands for the second week, “treatment” symbolizes the third and the last week. With these coefficients, we developed our own interpretation of the data.

Individuals reduce their savings once the announcement has been made about the increase of pay frequency (-9.8). Some of these savings went to repaying debts that, as savings decreased noticeably during the second week when the workers in the treatment group just learned about the new pay strategy, the amount of repaid loans increased dramatically (5.1). Similarly, accompanied with a steady decline in savings (-2.79), the amount of repaid loans increased steadily during the third and fourth weeks of the experiment (1.9). In an economy with frequent fluctuations, it is possible that workers used to have loans and precautionary savings to guard against economic recessions, but they no longer need to keep those since they are being paid more frequently.

While some repaid their debts, others requested for new loans (announcement: 5.273, treatment: 3.29) that, during the announcement and treatment weeks, workers generally seemed to feel more confident about their ability of repaying debts so they requested for more. Meanwhile, coupled with the data on the workers’ savings, the new-loan results suggest that workers were possibly making some big purchase, such as furniture and education as they reported in the baseline survey. In a way, the workers were demonstrating a sign of financial planning when they make big purchase to invest in their futures.

Even though the data has shown a null effect on loan repayment stress (announcement: 0.07, treatment: -0.04), workers self-reported that they were significantly less worried about their financial problems. Even though their financial stress unexpectedly increased by a small margin during the announcement week (0.104), it decreased much more dramatically during the weeks of treatment (-0.727) that the increase in pay frequency did appear to make an impact on workers’ financial stress.

The reported focus (announcement: 0.022, treatment: 0.033) and mistakes (announcement: 0.074, treatment: 0.053) during work did not indicate that either announcement or treatment has made a significant impact on productivity, but it is important to note that these data are generated from the workers’ self-evaluation. However, the productivity reports conducted by the managers of the factory reveal that there is an enormous increase in productivity with treatment (7.33), even though the announcement itself surprisingly led to a small decline (-1.08). Indeed, there is potential possibility of error with the high p values (announcement: 6.24, treatment: 5.4) of the productivity reports.

3. Conclusion

From the results of this experiment with the Fatima sofa factory workers, we are confident that increasing pay frequency reduces workers’ financial stress and, in turn, increases their productivity. However, certainly, more experiments are needed focusing on other occupations and other places around the world to validate the results of this one and whether this hypothesis is universal in all developing countries.

Nevertheless, shortening the wage payment cycle brings other benefits to the employees. With Angola’s high inflation rate, the incremental pay the workers received two weeks earlier amounted to a greater value by the end of the month. Angola’s inflation rate was 25.32% in 2021. In May 2022,

Angola recorded a 24.42% inflation rate, the lowest since the beginning of 2021. From 1990 to 2019, the average inflation rate in the U.S. was about 2.32%, while, during this time period, the average inflation rate in Angola was 395.1% per year: “An item that cost 100 Kwanza in 1991 was so charged 1,706,620,771,409.69 Kwanza at the beginning of 2020.” Therefore, bi-weekly payment of salary would, in the end, has more value than monthly payment even though they seem to be the same amount, which clearly would be more beneficial for the workers.

From the management perspective, in many developing countries, increasing the frequency of paying employees is a business strategy worth pondering. as a part of the service profit chain, when employees feel respected and supported by the firm, they would in turn care more about the company and deliver the same energy to the customers. By establishing this service profit chain, a business will increase its productivity and revenue in the long run. This is internal marketing.

Angola is not a self-sufficient country. Its excessive reliance on petroleum means that the prices of general goods fluctuate with the price of oil. To diversify its economy, Angola requires foreign investors who locate businesses and build infrastructure in the country rather than extracting resources. In addition to the purpose of a business to make a profit, a firm in Angola also bonds itself with the reconstruction of this country by playing a significant role in diversifying Angola’s economy by manufacturing and retailing in Angola, investing in infrastructures, and offering a new lifestyle to Angolan people.

In developing countries, other than searching for a fine balance between a free market and governmental regulations, the economy is in need of social entrepreneurs who strive “to lead worthwhile and meaningful lives with fulfilling work, with dignity and the respect of others, and in the fullest possible discharge of their capabilities.” Digging deep into the labor sector, this experiment offers companies a strategy to maximize the benefits of their employees while not decreasing their profits. It is only a tiny step toward becoming a social-responsible corporation. Still, it poses greater questions to businesses in developing countries: Other than creating job opportunities and paying taxes, how can a business revitalize the local economy and improve living conditions? Maybe when more companies construct their culture around the framework of ESG, we can truly make the world a better place.

References

- [1] <https://www.lifepersona.com/angola-civil-war-main-causes-and-consequences>.
- [2] <https://www.lifepersona.com/angola-civil-war-main-causes-and-consequences>.
- [3] [https://africa.cgtn.com/2020/06/03/angola-poverty-rate-at-41/#:~:text=Angola% E2%80% 99s% 20 poverty%20rate%20stands%20at%2041%20percent%2C%20meaning,the%202020%20Poverty%20Rep ort% 20for%20Angola%20on%20Tuesday](https://africa.cgtn.com/2020/06/03/angola-poverty-rate-at-41/#:~:text=Angola%E2%80%99s%20poverty%20rate%20stands%20at%2041%20percent%2C%20meaning,the%202020%20Poverty%20Report%20for%20Angola%20on%20Tuesday).
- [4] [https://take-profit.org/en/statistics/inflation-rate/angola/#:~: text=Angola% 20Inflation% 20Rate% 20 was%2025.32%20%25%20in%202021.,Prices.%20Historical%20data%20on%20core%20CPI%20in% 20Angola](https://take-profit.org/en/statistics/inflation-rate/angola/#:~:text=Angola%20Inflation%20Rate%20was%2025.32%20%25%20in%202021.,Prices.%20Historical%20data%20on%20core%20CPI%20in%20Angola).
- [5] <https://tradingeconomics.com/angola/inflation-cpi>.
- [6] <https://www.statista.com/statistics/191077/inflation-rate-in-the-usa-since-1990/>.
- [7] [https://www.worlddata.info/africa/angola/inflation-rates.php#:~: text=The% 20inflation% 20rate% 20 for%20consumer,the%20price%20increase%20was%201%2C706%2C620%2C771%2C309.69%20%20 5](https://www.worlddata.info/africa/angola/inflation-rates.php#:~:text=The%20inflation%20rate%20for%20consumer,the%20price%20increase%20was%201%2C706%2C620%2C771%2C309.69%20%205).