

Understanding consumer take-up of fintech and its

potential value

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Abstract

Remittances, i.e., money sent by migrants to family and friends, are a key pillar of economic development. Organizations such as the International Fund for Agricultural Development and the World Bank have thus argued for increased transparency and reduced transaction fees via Fintech, i.e., remittance-comparison platforms like Finder, Monito, and SaveonSend. In this paper, we present *preliminary and incomplete* evidence on how consumers interact with such platforms using survey and web-clicks data from a sample of 383 Central American migrants. We find the following. First, Fintech/information seems to impact decision-making. Second, the direction of such effect depends on the nature of additional information, i.e., delivery speed versus reviews by prior customers. Third, these effects depend on the amount of money that is being sent as well as the MTO in question. More work is needed to understand the robustness and generalizability of these findings as well as their underlying mechanisms.

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1 Introduction

Migrant remittances are a significant driver of global development and serve as a pillar of economic stability (Yang, 2011). Nonetheless, sending remittances remains costly. The World Bank estimates that, as of the first quarter of 2020, the global average cost of sending US\$ 200 held steady at about 7 percent of the transaction value. In fact, Sustainable Development Goal 10.7 seeks to reduce global remittance costs to 3 percent by 2030, in an effort to leave more money in the hands of the poor. As some international organizations have argued, one possible way to achieve this is by increasing transparency and competition in the industry through publicly available databases that compare money transfer operators (MTOs) on attributes such as cost, speed, and reliability of sending money.¹ These arguments are partly based on the impact that metasearch sites such as Kayak and TripAdvisor have had on the airline and travel industries (e.g., Scott Morton et al., 2015).²

In order for comparison websites such as Finder, Monito, and SaveOnSend to play a similar role in the remittance industry, consumers (and firms) need to pay attention them. While tech-savvy migrants seem to be comparing MTOs on such websites, anecdotal evidence suggests that take-up has remained low, particularly among the market segment that may benefit from them most – migrant consumers who send frequent but small amounts, also known as the \$200 and below market.³ For example, LoVoi et al. (2016) find that take-up of digital tools and services by the above market segment has remained low, partly due to a preference for cash transactions which goes hand in hand with lack of trust and technological literacy. Moreover, Orozco et al. (2020) report that while trending upward, digital payments from the United States to select Latin American corridors was at most 47 percent of the market in 2019.

Against this backdrop, we partner with a World Bank certified remittance-comparison platform to address the following research questions. First, do remittance choices exhibit systematic "stickiness" (e.g., MTO habits) or are they impacted by additional, and potentially new, information

¹These discussions have become even more prevalent due to the COVID-19 pandemic, which has forced previously unwilling consumers and MTOs to consider switching from cash-only, brick-and-mortar services to digital, see for example https://bit.ly/3c77ewd.

²Viceisza and Xu (2020) explore the impacts of comparison websites on the demand and supply sides of the remittance industry from an industrial-organization perspective (along the lines of for example Brown and Goolsbee, 2002).

³See for example https://bit.ly/31DbdxE.

provided through comparison websites? Second, what are the potential welfare effects of impacting choices through information? In particular, how do choices in the presence of such information compare to stated preferences and typical behavior? Third, what attributes of MTOs (e.g., fee, speed, reliability, delivery mode) do migrants consider when making remittance decisions? Finally, what additional insights can be gained from complementing choice data with visual attention? In particular, how do answers to the previous research questions vary once choice-process data in the form of eye-tracking are accounted for? Given the particular policy interest in the \$200 and below market, we recruited a sample of 383 Central American migrants that fit this demographic through a reputable nongovernmental organization (NGO) in the Washington DC area. The data were also collected at the NGO's centers.

In this version of the paper, we present <u>preliminary and incomplete</u> evidence on the first research question referenced above. We find the following. First, Fintech/information seems to impact decision-making. Second, the direction of such effect depends on the nature of additional information, i.e., delivery speed versus reviews by prior customers. Third, these effects depend on the amount of money that is being sent as well as the MTO in question. More work is needed to understand the robustness and generalizability of these findings as well as their underlying mechanisms.

We make several contributions to the literature. First, we add to findings on the sender side of remittances (e.g., Lucas and Stark, 1985; de la Brière et al., 2002; Ashraf et al., 2015; Torero and Viceisza, 2015). In so doing, we indirectly shed light on the potential recipient-side impacts of remittances (e.g., Edwards and Ureta, 2003; Yang and Choi, 2007; Yang, 2008). Second, we complement prior evidence on how financial inclusion, FinTech, and digitization more generally impact behavior (e.g., Jensen, 2007; Jensen and Oster, 2009; Nakasone et al., 2014; Gomber et al., 2018; Goldfarb and Tucker, 2019; Stulz, 2019; Philippon, 2019). Finally, we supplement several parts of the behavioral literature, in particular on (a) visual attention and choice process (e.g., Krajbich and Rangel, 2011; Reutskaja et al., 2011; Caplin, 2016; Gabaix, 2019; Harrison and Swarthout, 2019), (b) neuroeconomics more generally (e.g., Caplin and Schotter, 2008; Glimcher, 2010), (c) behavioral development (e.g., Kremer et al., 2019), (d) information and choice overload (e.g., Chernev et al., 2015), and financial literacy, particularly among migrants (e.g., Gibson et al., 2012; Lusardi et al., 2017; Kaiser et al., 2020). One of our key contributions is the inclusion of

eye-tracking data from field participants that have relatively little education and for whom such choices have significant day-to-day relevance.

The remainder of the paper is organized as follows. Section 2 describes the study design. Section 3 discusses the data and empirical strategy. Finally, Section 4 presents select findings.

2 Study design

2.1 Treatments and randomization

Since we created the offline-equivalent of an existing remittance-comparison platform, it is useful to first understand what the real-time site looks like. The landing page is in Figure 1. It has the option to change from English to Spanish in the upper right corner. Users can choose (1) how much they would like to send, (2) to which country, and (3) the delivery speed/transfer time, i.e., whether the funds should arrive "the same day or less" or "in a few days". Once users click "compare", the site redirects to a results page that pulls data from MTOs that (1) service the respective corridor (i.e., from the US to country X) and (2) have an online presence containing the attributes discussed next. This is because the site scrapes such information from MTO webpages in real time.

Figure 2 contains part of the site's results page, in particular for sending \$200 to Mexico arriving in a few days. The page provides the following attributes by option/row: (1) the MTO name and logo, (2) customer reviews (as a measure of reliability/trustworthiness), (3) the exchange rate, transaction fee, and thus, amount that will arrive, (4) the delivery speed, and (5) whether the funds will arrive as a deposit or in cash for pick-up or home delivery. By default, the results page ranks the options according to "best value" which is calculated based on the exchange rate and fee.⁴ However, users can also rank based on delivery speed and best reviewed. Once users click "send money", the site redirects to the MTO's website.

For the study, we made the following modifications to the above pages:

i. The landing page was simplified as follows (Figure 3). First, since the whole study was in Spanish, there was no need for a bilingual site. Second, since participants were randomly

 $^{^{4}(1)}$ Total Cost = Send Amount + Fee. (2) Receive Amount = Send Amount * Exchange Rate. (3) Effective Exchange Rate (EER) = (2) divided by (1). Best value is the MTO with the highest EER. Cost Difference = Send Amount * [1 - (EER / Best EER)].

assigned to stakes of \$100 or \$300 (see lottery discussion in Section 2.2), the amount to be sent was not a choice. For example, the screenshot in Figure 3 is for the \$100 treatment. There was a similar screen for the \$300 treatment. Third, the ability to search for "same day or less" versus "a few days" was removed, since this was varied as part of the experiment (more below). Finally, the destination drop-down box only gave El Salvador, Guatemala, or Honduras as options, since these were the three countries under consideration (also see Section 2.3).

ii. The results page was modified as follows (Figure 4). First, a countdown clock was added to the top of the page since participants had a maximum of five minutes to review the page and decide on their preferred MTO. Second, the page did not contain the option to rank by "best value", "fastest", or "best reviewed" because attributes were manipulated as part of the experiment, as explained next.

The experimental design comprised two main treatments: Group A and Group B. Both saw the simplified landing page discussed in (i) above and after clicking "compare/comparar", advanced to the modified results page discussed in (ii) above. This process was done three times. So, each participant saw three landing pages and three results pages, with five minutes for each results page since this is where an actual decision had to be made.⁵ Groups A and B differed in terms of the attributes that were on the second results page. Specifically:

- Results page 1 contained the following attributes: the MTO name and logo; the exchange rate, transaction fee, and thus, amount that would arrive; and whether the funds would arrive as a deposit or in cash for pick-up or home delivery.
- If a participant was in Group A, results page 2 added delivery speed to the attributes on page 1. If a participant was in Group B, page 2 added customer reviews instead.
- Finally, results page 3 added customer reviews to page 2 if the participant was in Group A and delivery speed if the participant was in Group B. So, while results page 3 was the same for Groups A and B, the order in which additional information had been presented varied.

⁵As Figure 3 indicates, each landing page was termed "option" during the actual study.

Table 1 summarizes the attributes by Group and results page. Assignment to Group A or B was random, since odd study IDs were assigned to A and even IDs were assigned to B. In addition, participants were randomly assigned to stakes of \$100 (60 percent) or \$300 (40 percent). Finally, there were three possible versions of results pages, which varied in terms of the order of the MTOs and which MTO had a 50 percent price discount. From a programming standpoint, this led to the creation of 108 possible webpages, i.e., 3 countries \times 2 Groups (A or B) \times 2 stakes (\$100 or \$300) \times 3 results pages \times 3 webpage versions. Figure 5 shows these combinations by means of a tree.

	Stakes: S	\$100	Stakes: \$300		
	Group A	Group B	Group A	Group B	
	МТО	Same	Same	Same	
Page 1	exchange rate + fee	Same	Same	Same	
	form of delivery	Same	Same	Same	
Page 2	Adds delivery speed	Adds reviews	Same as \$100-A	Same as \$100-B	
Page 3	Adds delivery speed + reviews	Adds reviews + delivery speed	Same as \$100-A	Same as \$100-B	

Table 1: Attributes by treatment Group and results page

2.2 Study protocol

The study was implemented as follows:

1. NGO personnel recruited potential participants who had to meet the following criteria: (a) be older than 18 years of age; (b) have sent remittances at least four times in the past year to El Salvador, Guatemala, or Honduras; (c) be able to read and use a computer; and (d) not wear bifocal glasses (for purposes of eye-tracking). They were informed that the study would take between one to two hours and that they would be paid \$50 for participating. In addition, one in eight participants would have \$100 or \$300 sent to their family/friends in the country of origin. The gist of the recruitment flyer in English is in Figure 6. While the following was not explained to potential participants, the lottery increased the chance that decisions in the study were given careful consideration, as in the day-to-day environment.

- 2. Those who agreed to participate provided informed consent (Figure 7).⁶ They were then assigned a study ID and completed a pre-survey (http://bit.ly/36pOsfS).⁷ Among other issues, the survey asked about (a) demographics (e.g., country of origin, household composition), (b) preferences for remittances (e.g., typical sending patterns, frequency/amounts, preferred MTOs), (c) pre-existing knowledge of comparison websites, (d) economic variables (e.g., employment, income), and (e) behavioral characteristics (e.g., risk, time).
- 3. The main experiment was conducted:
 - (a) Participants were seated at a laptop and primarily given the following instructions: (1) a reminder of the study ID which had to be entered on the main page prior to starting;
 (2) the study objective, i.e., to better understand why and how people send remittances;
 (3) an explanation that the study would entail eye-tracking and thus, calibration of the Tobii eye-tracker at the bottom of the laptop screen; and (4) an explanation that they would have to review webpages with several MTOs and then, make choices (with five minutes for each page). Figure 8 shows one of the sessions during the instruction phase.
 - (b) The eye-tracker was calibrated and participants were asked not to move back and forth in order to maintain accuracy. The eye-tracker was then activated.
 - (c) Participants saw three landing pages, each followed by a results page on which they had to choose an MTO (as discussed in Section 2.1).
- 4. A subset of participants completed a short post-survey (http://bit.ly/36mQJbs). This open-ended survey asked participants to indicate any issues that they considered important, but the study may have missed.
- 5. The \$50 were paid in cash at the end of the session. The lottery was conducted once a batch of sessions had finished. Lottery winners were notified by phone and asked to confirm the contact information for their preferred recipient in the country of origin. After the money

⁶The study protocol (# 0B6A1D) was approved by Spelman's Institutional Review Board on July 14, 2016 prior to receiving NSF funding.

⁷The version of the survey at the above link is in Spanish; however, the questions are fairly self-explanatory. If one needs clarification on specific questions, please contact the authors.

was sent, they were provided with a confirmation number so the recipient could claim the funds.

2.3 Sample and power

We focused on migrants from El Salvador, Guatemala, and Honduras for several reasons. First, these countries continue to rely heavily on financial remittances as a percent of Gross Domestic Product (GDP), ranging anywhere from 12 to 21 percent (see http://bit.ly/36iCwwl). El Salvador in particular is the seventh highest remittance-receiving country as a share of GDP. Second, the countries are of particular interest given their geographical proximity to and recent migratory relations with the United States (e.g., Cohn et al., 2017). Third, given this demographic has been studied by us and others previously (e.g., Ambler et al., 2014; Ashraf et al., 2015; Torero and Viceisza, 2015), we contribute to existing findings on the sender side of remittances to Central America.

In the National Science Foundation (NSF) proposal, we committed to a sample size of 400 migrants. This number was not based on ex ante power calculations for the following reasons. First, the NSF gave a maximum award budget. Considering subject payments, implementation, and other budget categories, we thus committed to a sample of 400 participants across six potential between-subject treatments. As explained in Section 2.1, we ended up with four main treatments between-subjects: A-\$100, A-\$300, B-\$100, and B-\$300. Second, given the plan to collect visual attendance measures in the field from a sample of consumers with relatively little education, there were no reliable priors for assessing possible effect sizes. Third, compared to several studies that use eye-tracking data, the intended sample seemed relatively large; especially considering that such data are high frequency (at the millisecond level).⁸ Ultimately, we ended up with a sample of 383 individual migrants (also see Section 3.1). In the final version of the paper, we will conduct ex post power analysis along the lines of Maniadis et al. (2014) as well as multiple hypothesis tests.

⁸See for example Wedel (2015) who review attention research in marketing.

3 Data and empirical strategy

3.1 Data

We collected (1) pre-survey data; (2) website clicks, i.e., choice of MTOs, for the three results pages; (3) eye-tracking data during the process of reviewing the results pages and choosing MTOs; and (4) post-survey data. We will primarily focus on (1)-(3), since the post-survey was very short and only a subset of participants completed it. So, (4) will be used to extract anecdotes that complement the main findings from (1)-(3). Although a sample of 383 unique individuals was recruited, only 378 of them completed all of (1)-(3). I.e., five individuals (1.3 percent of the sample) are missing pre-survey and/or clicks data. Since the study was conducted across two waves (May and October), 13 individuals participated twice. For these individuals, the second pre-survey response will be dropped from the analysis. When analyzing the clicks and eye-tracking data, robustness will be assessed by controlling for repeat participation or dropping the second response. If the second response is included, we have clicks for 391 migrants, 13 (3.3. percent) of whom participated in the study twice. Below, we discuss the main variables that will be analyzed in the final version of the paper and how those are coded. Only a subset will be assessed in Section 4.

3.1.1 Pre-survey

Remittance variables

- 1. *MTO* Habit_{ij} (Q103): This variable is a dummy or set of dummies for the MTO j that participant i typically uses to send money.
- 2. Compare MTO_i (Q85): This variable is a dummy for whether or not participant *i* typically compares MTOs, e.g., via web or phone.
- 3. *Compare Attribute_{ik} (Q86)*: This variable is a dummy or set of dummies for whether or not participant *i* compares MTOs on attribute *k*, e.g., fees or delivery speed.
- 4. Compare Aware_i (Q89-93): This variable is a dummy for whether or not participant *i* is aware of the existence of comparison websites.

- 5. *Remittance*_i (Q103-104): This variable is the average monthly remittance amount (in US\$) that participant *i* sends to the top three recipients.
- 6. Fee_i (Q104): This variable is the average fee (in US\$) that participant i incurs across MTOs.
- 7. *Relation_i* (Q103): This variable is a dummy or set of dummies for the relationship between participant *i* and the main remittance recipient/s.
- 8. Spending preference_i (Q107: This variable is a dummy for remittances being spent as they should according to participant i's preference, i.e., equality of the two columns.

Demographics

- 9. Female_i (Q10): This variable is a dummy for whether or not participant i identifies as female.
- 10. Age_i (Q11): This variable is the participant *i*'s age.
- 11. *Education*_i (Q73): This variable is a dummy for whether or not participant *i* completed primary school or higher.
- 12. *HH* size_i (Q74): This variable is participant i's household (HH) size.
- 13. Married_i (Q75): This variable is a dummy for whether or not participant i is married.
- 14. *El Salvador_i* (*Q6*): This variable is a dummy for whether or not participant i identifies El Salvador as the country of origin.
- 15. *Guatemala_i* (Q6): This variable is a dummy for whether or not participant *i* identifies Guatemala as the country of origin.
- 16. *Honduras_i* (*Q6*): This variable is a dummy for whether or not participant i identifies Honduras as the country of origin.

Employment and assets

17. *Employment*_i (Q108): This variable is a dummy for whether or not participant i is employed. Retired will be coded as zero while "other" will be coded as one if it identifies an occupation not previously listed.

- 18. *Smartphone*_i (*Q*8): This variable is a dummy for whether or not participant i owns a smartphone.
- 19. Tablet_i (Q9): This variable is a dummy for whether or not participant i owns a tablet.
- 20. *Financial access US_i* (*Q96*): This variable counts the number of financial instruments that participant i has access to in the US.
- 21. *Financial access home*_i (Q97): This variable counts the number of financial instruments that participant i has access to in the the country of origin.

Behavioral characteristics

- 22. *Risk_i* (*Q80*): This variable is the share of \$100 that participant *i* hypothetically chose to invest in a risky asset relative to a safe asset. The risky asset paid 25 times the amount invested with 50 percent chance and zero otherwise. The safe asset paid 10 times the amount invested with certainty.⁹
- 23. *Time_i* (*Q*81-84): Participants made a hypothetical choice between a \$100 reward in one month and an \$X reward in three months. X started out at \$125 and was increased to \$150 and \$200 as applicable. Participants who always chose \$100, were asked how much X would need to be (up to \$1,000) in order for them to wait three months. Participant *i* is categorized as "0=very impatient" if \$100 was always chosen, "1=impatient" if \$100 was chosen once or twice, and "2=patient" if the participant chose X the first time.
- 24. *Altruism_i* (*Q114*): This variable is a dummy for whether or not participant i always or sometimes *gives* money to others.
- 25. *Trust_i* (*Q113*): This variable is a dummy for whether or not participant *i* always or sometimes *lends* money to others.
- 26. Information processing_i (Q117): This variable counts how frequently participant *i* feels overwhelmed by information, e.g., words, letters, and numbers.¹⁰

⁹This type of lottery was first proposed by Gneezy and Potters (1997) and applied in a field context by for example Charness and Viceisza (2016).

¹⁰The question is similar to willingness-to-take-risk questions along the lines of Dohmen et al. (2011).

27. *Financial literacy*_i (Q99): This variable is a dummy for whether or not participant i identified the correct category "More than \$102".

3.1.2 Website clicks

- 1. *MTO* $Choice_{it}$: This is a categorical variable for participant *i*'s choice of company on page t. There will be three such choices for each participant. These variables have also been converted into a set of dummy variables for whether or not participant *i* chose MTO *j* on page t.
- 2. *MTO* $Attributes_{jt}$: This set of variables represents the attributes of company j on page t. Specifically:
 - (a) $Reviews_{jt}$: The (weighted) number of positive reviews that MTO j on page t has.
 - (b) Fee_{jt} : The exchange rate and fee associated with company j on page t. We may end up creating two separate variables, one for the fee and one for the exchange rate.
 - (c) $Discount_{jt}$: A dummy variable for whether or not MTO j on page t had a 50 percent price discount.
 - (d) Amount_{jt}: The amount that would arrive if funds were sent via MTO j on page t.
 - (e) Speed_{jt}: A dummy variable for whether the funds sent via MTO j on page t would arrive in a day or less.
 - (f) *Delivery*_{jt}: A categorical variable for how funds sent via MTO j on page t would arrive,
 i.e., as a deposit, in cash for pick-up or delivery, or either.

3.1.3 Eye-tracking

The data were collected by means of the Tobii X2-60 eye-tracker and exported using version 3.4.8 of Tobii Studio software. The default I-VT fixation filter was used, as discussed in Section 6.2 of version 3.4.5 of the Tobii Studio user manual (http://bit.ly/2vmKBDC). This filter is responsible for how fixation data are calculated. A separate document describing the detailed process for exporting the data is available upon request. At a high level, the following steps were implemented (some of this may be specific to Tobii):

- 1. Areas of interest (AOIs) were identified as in Figure 9, specifically: the clock; the MTO logo and name; customer reviews; the fee and exchange rate; the amount that would arrive; the delivery speed; the mode of delivery; and the send money button.
- 2. Webpages were grouped according to the variations in Section 2.1.
- 3. AOIs were copied and pasted to webpage-groups.
- 4. AOIs were assigned to AOI-groups, e.g., all logos in row one of page one were part of a group, all logos in row two of page one were part of a different group, and so on.
- 5. Raw statistics were exported, in particular, time to first fixation, total fixation duration, total visit duration, and percentage fixated. See the previously referenced Tobii user manual for a complete list of statistics.

These raw statistics will generate at least the following variables:

- 1. *Fixation Duration*_{ikjt}: The average amount of time that participant*i*fixated on attribute*k*for company*j*on page*t*. This variable is an average since a participant may fixate on the AOI multiple times. If an attribute/AOI was not fixated upon, it will be assigned a zero.</sub>
- 2. *Visit Duration*_{*ikjt*}: The average amount of time that participant *i* visited attribute *k* for company *j* on page *t*. A visit is defined as the interval of time between the first fixation on the AOI and the next fixation outside the AOI. This variable is an average since a participant may visit an attribute/AOI multiple times. If an attribute was not visited, it will be assigned a zero.
- 3. *Duration*_{*ijkt*}: This variable is defined as *Fixation Duration*_{*ikjt*} + *Visit Duration*_{*ikjt*}. I.e., it gives an overall measure of time spent on an attribute/AOI.
- 4. *Fixation*_{*ijkt* τ}: The attribute/AOI *k* that participant *i* fixated on for company *j* on page *t* at a given point in time τ . This can include refixations.

Due to the preliminary nature of this paper, the eye-tracking variables have not yet been analyzed. They are thus not included in the analysis reported in Section 4.

3.2 Empirical strategy

In order to address the research questions discussed in Section 1, we need a framework that will utilize all of the above-mentioned data, in particular, both choice and choice-process data. So, we will primarily explore two types of models:

- Models that *implicitly* account for (in)attention. Specifically, we will start with a panel mixed logit model, thus building off the classic discrete choice literature along the lines of McFadden (1978, 1981). Recent work suggests that these types of models can be interpreted as models of rational inattention, thus describing boundedly rational behavior (e.g., Matejka and McKay, 2015; Fosgerau et al., 2019).¹¹
- Models that *explicitly* account for (in)attention (see for example Caplin, 2016; Gabaix, 2019, for reviews). Specifically, we will run (a) endogeneous attribute attendance models along the lines of Hole (2011) and (b) sequential search models along the lines of Reutskaja et al. (2011).¹²

In this version of the paper, we only present preliminary descriptives.

4 Preliminary findings

Table 2 describes some of the sample characteristics as collected in the pre-survey (recall Section 3.1.1). 52 percent of our participants are women. On average, they are 40 years old, live in house-holds that have four members, and send about \$300 in monthly remittances to the main recipient. 72 percent of the sample has completed at least primary school, with 52 percent being of Salvado-ran descent, 31 percent Guatemalan, and 15 percent Honduran. In terms of participants' day-to-day MTO choices, a significant proportion typically sends via Western Union (WU, 42 percent). The

¹¹These results partly stem from the fact that these papers model information costs in specific ways, in particular using the so-called Shannon entropy (Matejka and McKay, 2015) or a generalized class of entropies (Fosgerau et al., 2019).

¹²Caplin et al. (2011) also test for search and satisficing based on a choice-process design that has two key features: (1) participants are able to select and switch between choices at any time and (2) choice is recorded at a random point in time. Somewhat related, Caplin et al. (2018) discuss a method that allows for recovery of attention costs from choice data, but requires three key features: (1) several incentive levels, (2) several task complexities, and (3) a clear sense of what is correct or not. We do not have these features explicitly built into our design, so we will refrain from exploring these approaches.

next largest category is Other (32 percent), which includes (1) MTOs such as MoneyGram, Sigue, PayPal, (2) commercial banks such as Bank of America, and (3) family/friends. It is then followed by Ria Money Transfer (21 percent).

Table 2 also shows to what extent our randomization was successful, thus rendering the experimental design internally valid. Stated differently, the table shows whether participants are balanced on their pre-characteristics across Groups A and B and stakes (\$100 and \$300). By and large, the participants are comparable across conditions. As expected, there are some significant differences, specifically on gender, household size, and whether the participant typically compares MTOs based on fees. In the final version of the paper, we will control for these unbalanced characteristics. In robustness analysis, we will also assess via LASSO (i.e., machine learning) what covariates should be included.

Table 3 compares participants' MTO choices in the study (i.e., during the experiment/eyetracking phase) across results pages for stakes of \$100 (Panel I) and \$300 (Panel II). As a reminder, Page 2 for Group A added the delivery speed to Page 1 and Page 2 for Group B added customer reviews to Page 1. Thus, Page 2 can be seen as the primary test of additional information. Some suggestive patterns emerge. First, Fintech/information seems to impact decision-making. Second, the direction of such effect depends on the nature of additional information, i.e., speed versus reviews. Third, these effects depend on the stakes as well as the MTO in question.

While the above findings are intriguing, it is important to keep in mind that they are *preliminary and descriptive*. In particular, future iterations of the paper will (1) compare across *all* experimental variations through more rigorous analyses (e.g., the discrete choice models and tests for search discussed in Section 3.2); (2) control for covariates (e.g., the unbalanced characteristics in Table 2); (3) incorporate eye-tracking data to assess whether visual attention moderates the above effects; and (4) assess whether Fintech/additional information improves migrant decision-making and welfare, e.g., by leading to MTO choices that are more aligned with their preferences over attributes (i.e., fees versus delivery speed versus reviews).

	Ν	All	A-100	B-100	A-300	B-300	p-value of diff.
Female	381	0.52	0.64	0.47	0.52	0.43	0.02**
Age	381	39.57	38.00	41.57	38.44	40.16	0.13
Completed at least primary school	378	0.72	0.73	0.66	0.76	0.74	0.44
Household size	378	4.21	4.48	3.81	4.52	4.13	0.01**
Married	378	0.37	0.36	0.40	0.34	0.36	0.85
Salvadoran	378	0.52	0.52	0.50	0.55	0.52	0.93
Guatemalan	378	0.31	0.32	0.31	0.31	0.28	0.96
Honduran	378	0.15	0.14	0.16	0.13	0.19	0.72
Employed	372	0.89	0.90	0.88	0.91	0.85	0.65
Has smartphone	381	0.82	0.86	0.84	0.80	0.78	0.45
Has tablet	381	0.17	0.14	0.16	0.25	0.17	0.25
# financial accounts (US)	377	1.14	1.20	1.21	1.10	1.05	0.84
# financial accounts (origin)	377	0.29	0.27	0.30	0.20	0.36	0.36
Percent allocated to risky asset	330	21.68	19.58	25.37	17.32	23.42	0.31
Patience (0=very impatient 2=patient)	378	1.02	1.05	1.03	0.87	1.09	0.40
Altruism (always/sometimes gives money)	367	0.54	0.56	0.56	0.49	0.54	0.83
Trust (always/sometimes lends money)	364	0.50	0.55	0.50	0.46	0.47	0.64
Feeling overwhelmed by information	346	5.40	5.32	5.15	6.10	5.21	0.12
Financially literate	377	0.50	0.50	0.54	0.54	0.44	0.51
Monthly remittance top 3 recipients (USD)	363	369.03	315.31	333.53	423.98	425.75	0.36
Monthly remittance primary recipient (USD)	366	301.76	260.86	271.79	334.41	349.76	0.52
Remittance fee, primary recipient (USD)	343	8.31	8.05	8.34	8.34	8.57	0.48
Compares MTOs	378	0.58	0.65	0.54	0.54	0.61	0.28
Compares MTO fee	378	0.41	0.46	0.34	0.34	0.52	0.03**
Compares MTO speed	378	0.20	0.19	0.22	0.20	0.20	0.93
Aware of comparison sites	378	0.48	0.42	0.56	0.41	0.51	0.10
Western Union	355	0.42	0.42	0.42	0.44	0.41	0.99
Ria Money Transfer	355	0.21	0.24	0.17	0.25	0.19	0.47
Xoom	355	0.03	0.02	0.04	0.01	0.03	0.79
Wells Fargo	355	0.01	0.02	0.00	0.03	0.01	0.41
Transfast	355	0.00	0.00	0.00	0.00	0.01	0.32
Lucky Money	355	0.00	0.00	0.00	0.01	0.00	0.24
Other MTOs (e.g., MoneyGram) or family	355	0.32	0.29	0.37	0.25	0.35	0.32
Primary recipient is parent	367	0.38	0.40	0.30	0.47	0.39	0.14
Primary recipient is sibling	367	0.21	0.26	0.21	0.17	0.20	0.51
Primary recipient is grandparent	367	0.05	0.05	0.06	0.04	0.05	0.99
Primary recipient is spouse	367	0.10	0.09	0.12	0.09	0.11	0.84
Primary recipient is child	367	0.10	0.08	0.13	0.07	0.11	0.52
Spending based on sender's preference	325	0.80	0.84	0.81	0.81	0.75	0.51

Table 2: Pre-survey characteristics across Groups (A,B) and Stakes (\$100,\$300)

***p < 0.01, ** p < 0.05, * p < 0.1. *p*-values are obtained by running a one-way ANOVA test using STATA with standard errors clustered at the day-part level. All variables were measured before interacting with the comparison site. These results are for the subsample of respondents that excludes repeat respondents.

	Ν	All	Page 1	Page 2-A	Page 2-B	Page 3	p-value of diff.	
				(+speed)	(+reviews)	(full)		
	Panel I: Stakes of \$100							
Western Union	686	0.18	0.22	0.16	0.16	0.16	0.22	
MoneyGram	686	0.14	0.14	0.25	0.07	0.12	0.00***	
Wells Fargo	686	0.06	0.06	0.09	0.04	0.04	0.33	
PayPal	686	0.00	0.00	0.01	0.00	0.01	0.39	
Ria Money Transfer	686	0.20	0.19	0.14	0.23	0.22	0.26	
Lucky Money	686	0.04	0.02	0.12	0.02	0.03	0.00***	
Remitly	686	0.13	0.21	0.04	0.18	0.07	0.00^{***}	
Transfast	686	0.02	0.03	0.02	0.03	0.03	0.97	
WorldRemit	686	0.11	0.08	0.05	0.16	0.13	0.02**	
Xoom	686	0.11	0.03	0.12	0.09	0.19	0.00***	
Pangea	686	0.01	0.01	0.00	0.02	0.00	0.18	
			Panel II:	Stakes of \$	6300			
Western Union	484	0.12	0.17	0.09	0.08	0.09	0.05*	
MoneyGram	484	0.12	0.14	0.16	0.08	0.09	0.19	
Wells Fargo	484	0.09	0.12	0.12	0.08	0.06	0.29	
PayPal	484	0.00	0.00	0.00	0.00	0.00	_	
Ria Money Transfer	484	0.19	0.19	0.15	0.22	0.21	0.60	
Lucky Money	484	0.10	0.10	0.25	0.03	0.07	0.00***	
Remitly	484	0.10	0.11	0.07	0.17	0.07	0.06^{*}	
Transfast	484	0.06	0.06	0.03	0.06	0.07	0.55	
WorldRemit	484	0.14	0.10	0.05	0.22	0.17	0.00***	
Xoom	484	0.08	0.01	0.08	0.05	0.16	0.00***	
Pangea	484	0.00	0.00	0.00	0.00	0.00	_	

Table 3: Comparison of MTO Choice across Pages (1,2,3) and Groups (A,B)

***p < 0.01,** p < 0.05,* p < 0.1. *p*-values are obtained by running a one-way ANOVA test using STATA with standard errors clustered at the day-part level. These results are for the full sample of respondents, since the findings are more conservative in terms of statistical significance than if restricted to the subsample that excludes repeats.

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Figures

Figure 1: Comparison website's landing page

Find the right company to send your money home

Find the best exchange rates and lowest fees

		Change Langua	ge <mark>EN</mark> ≎
		YOU LIKE TO SEND?	
	US \$1000	6	
	YOUR SEND	DESTINATION	
	India	*	
	CHOOSE TRA	NSFER SPEED	
	A few days	Same day or less	
	COM	PARE	
8 1 .		_	
	Q	uestions?	

Figure 2: Comparison website's (partial) results page for \$200 to Mexico

	1				Change Language 🛛 EN 🛟		
S س د د	Send Money To Mexico Money transfer companies offer very different Dollar to Peso exchange rates, fees, transfer speeds and delivery methods. Use to compare companies and find the Right company for you. Choose which configure the companies that are subject to federal regulations and meet disclosure and consumer protection transferments						
16	HOW MUCH?	200 HERE TO? MEXI	CO~ HOW SOON? A FEW DAYS	- CHANGE			
	Sort Results By \$ B	EST VALUE	<pre></pre>	★ BEST REVIEWED			
	TRANSFER COMPANY	FX RATES AND FEES	FEATURES	COST RANKING			
	Paypal 숨 ☆ ☆ ☆ ☆ 2007 Trustpilot reviews	USD to MXN: 18.800	Receive 3,760 MXN Transfer time: One day or less Receive in bank account	Best Value SEND MONEY			
	Ria Money Transfer 合合合合合 386 Trustpilot reviews	USD to MXN: 19.020	Receive 3,804 MXN Transfer time: 4 business days Receive in bank account or cash	Costs \$0.65 More SEND MONEY			
	Lucky Money ☆ ☆ ☆ ☆ ☆ ☆ 0 Trustpilot reviews	USD to MXN: 18.810	Receive 3,762 MXN Transfer time: Within minutes Receive in bank account, cash or home delivery	Costs \$4.54 More SEND MONEY			
	Transfast 含含含含☆ 2128 Trustpilot reviews	USD to MXN: 18.000 \$0.00 Fee	Receive 3,600 MXN Transfer time: 3 business days Receive in bank account or cash	Costs \$8.51 More SEND MONEY			
	wordservit worldremit 会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会会	USD to MXN: 17.092	Receive 3,418 MXN Transfer time: One day or less Receive in bank account, cash or home delivery	Costs \$21.73 More SEND MONEY	Questions?		



Figure 3: Offline website's landing page

Group A option1 \$100 user input page

012

Figure 4: Offline website's (partial) results page for \$100 to Honduras

00:00:00:00:00

Enviar Dinero A Honduras

Las compañías de transferencia de dinero ofrecen diferentes tipos de cambio, tarifas, velocidades de transferencia y métodos de entrega. Utilice para comparar empresas y encontrar la empresa adecuada para usted. Elija con confianza. sólo trabaja con las compañías que están sujetas a las regulaciones federales y cumplen con los requisitos de divulgación y protección al consumidor.

SERVICIO DE TRANSFERENCIA	TIPO DE CAMBIO Y CUOTA	DETALLES	ACCIÓN
Money gram	USD a HNL: 23.5146 \$6.99 Comisión	Recepción 2187.09 HNL Recibir en en cuenta bancaria o efectivo	Enviar dinero
Lucky Money	USD a HNL: 23.51 \$4.75 Comisión	Recepción 2295.16 HNL Recibir en cuenta bancaria, efectivo, envio a domicilio	Enviar dinero
Pangea	USD a HNL: 23.5146 \$6.95 Comisión	Recepción 2188.03 HNL Recibir en en cuenta bancaria	Enviar dinero
western Union	USD a HNL: 23.4634 \$7 Comisión	Recepción 2182.10 HNL Recibir en efectivo	Enviar dinero



Figure 5: Experiment design

29

Figure 6: Recruitment flyer





Invitation to participate in research study about sending money to Central America (El Salvador, Honduras and Guatemala)

Objective of the study:

The objective of this study is to understand how and why people send money to family and friends (also known as "remittances") in an effort to improve money-transfer services.

Dates and length of the study:

The study will last for 1-2 hours. Depending on your availability, you can participate during the following two-hour windows on the following dates ...

Location:

NGO (exact locations concealed for privacy purposes).

What will you gain from participating in the study:

You will be paid **\$50** for participating in the study. In addition, you will be entered into a lottery. The winners of this lottery will have **\$100** or **\$300** sent to their families/friends in the respective country of origin. One in eight participants will win this lottery of \$100 or \$300.

Criteria for participation:

(a) Have sent remittances at least four times in the past year to families/friends in El Salvador, Honduras or Guatemala; (b) Be able to read; (c) Be able to use a computer; (d) *NOT* wear bifocal glasses.

What should I do if I would like to participate in the study?

Please contact the offices of NGO at ... During this call, we can get you registered and discuss your preferred times for participating in the study. In addition, we can address any questions or concerns you may have.

Many thanks for your interest in participating in our study!

Figure 7: Informed consent form



Consent Form: Study on Remittances

- This study will last for one year. We may contact you throughout this period to ask questions. However, agreement to participate in this study does not mean that you must participate for the full duration of the study.
- Are there any risks associated?
 There are no specific risks to participating in this study, beyond those of everyday life.
- Will information from this study be kept private?
 - The information from this study will be kept private. It will be stored securely and only authorized personnel will have access.
- Who may I contact for more information?
 - You may contact Dr. Angelino Viceisza (cell number aviceisz@spelman.edu) or Chandra Chambliss at the Spelman College Institutional Review Board (404-270-5706 irb@spelman.edu).
- What if I change my mind about participating?
 - Participation in this study is voluntary and you may withdraw from it at any time by formally notifying Dr. Angelino Viceisza before the findings are presented.
- Statement of consent
 - If you agree to participate in this study as outlined above, please check the first box below.
 - If you do not agree, but would like to be contacted in the future, please check the second box. Please also complete the requested information, so we can contact you.
- I **agree** to participate in this study.
- I do not agree to participate in this study, but agree to be contacted in the future.

Signature

Email address

Date

First Name, Last Name (PRINT)

Phone number





Figure 9: Sample areas of interest on (partial) results page



Enviar Dinero A Honduras

Las compañías de transferencia de dinero ofrecen diferentes tipos de cambio, tarifas, velocidades de transferencia y métodos de entrega. Utilice para comparar empresas y encontrar la empresa adecuada para usted. Elija con confianza. sólo trabaja con las compañías que están sujetas a las regulaciones federales y cumplen con los requisitos de divulgación y protección al consumidor.

