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# Ethnic Investing and the Value of Firms

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**Abstract.** We study ethnic investing, using transaction data from Kenya's stock exchange and CEO/board turnover. We show that a given investor invests more in a given firm when the firm is run by coethnics and earns lower risk-adjusted returns on such investments. We then model and empirically test for the aggregate impact of (i) the implied taste- or psychology-driven investor discrimination and (ii) counteracting demand- and supply-side forces. Our estimates imply that listed Kenyan firms could collectively be worth 38% more—with minority-run firms benefitting the most—if the neutral proportion of active investors increased from 4.6% to 50%.

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**Keywords:** large firms in developing countries • favoritism when the full market is observed • supply-/demand-side responses to investor favoritism

## 1. Introduction

People tend to invest more in others to which they are linked through ethnic ties.<sup>1</sup> This may be due to information asymmetries arising from easier communication or screening among coethnics, in which case investors tend to earn higher returns on coethnic investments (Lang 1986, Greif 1993, Cornell and Welch 1996, Fisman et al. 2017). Alternatively, investors may have a taste for—or a psychological or social bias toward—investing in coethnics, in which case they tend to earn lower returns on coethnic investments (Becker 1957, Hjort 2014, Fisman et al. 2020).

The aggregate economic consequences of coethnic investing—an elusive target for economists since Banerjee and Munshi (2004) showed evidence that ethnic-majority firms benefit from easier access to capital—depend on the nature and magnitude of these investor biases. They also depend on market responses to favoritism (Arrow 1973, Shleifer and Vishny 1997, Van Nieuwerburgh and Veldkamp 2009).

In this paper, we study the extent, nature, and market-wide impact of coethnic investing in Kenya. We use complete 2006–2010 transaction-level data from the Nairobi Securities Exchange. We first show that a given Kenyan investor invests considerably more in a given firm when its CEO and/or board is of the same ethnicity as the investor and earns lower risk-adjusted returns on such coethnic investments. We use a simple model to illustrate how supply- and

demand-side responses counteract such investor taste for or bias toward coethnic firms and show evidence consistent with these predictions and also that market responses appear to far from offset the overall impact on Kenyan firms' value.

The Kenyan stock market is an ideal setting in which to study coethnic investing. First, ethnic divisions are salient in Kenyan society (Ndegwa 1997, Barkan 2004, Berge et al. 2020). Second, some investment objects—here, large firms—in effect change ethnicity across time in Kenya, and we observe the investment behavior of tens of thousands of ethnically identifiable investors. We can, thus, estimate how coethnicity affects investment within investor–investment object pairs. Third, because we study atomistic investors whose returns are observed—pecuniary, unobserved dimensions of returns are unlikely in retail stock market investing<sup>2</sup>—we can distinguish returns-increasing and -decreasing sources of discrimination. Finally, observing a delineated, complete market and the full extent of its supply and demand sides allows us to study counteracting forces and the ultimate impact market-wide.

We start by documenting a positive and large coethnicity effect in investment decisions. To do so, we regress investments in a given firm on measures of the firm's CEO and/or board belonging to the same ethnicity as the investor in the month in question. We show that the particular parallel trends assumption required to interpret the estimate causally appears to hold.

We next show that the risk-adjusted return on coethnic investments is, on average, lower. This underpins a simple model characterizing how coethnic investing arising from investor preferences or biases misallocates demand. The model also illustrates how supply- and demand-side market participants—firms, through their choice of (CEO) ethnicity, and neutral investors—can benefit from partially or fully equating demand for and supply of each type of firm.

Finally, we show evidence suggesting that coethnic investing markedly lowers firms' average value in Kenya. In the first of three ways we probe the model's predictions, we show that a given firm's price-to-book value increases when its coethnic investor base—the proportion of all portfolio wealth held by active investors of the same ethnicity as the firm's CEO—rises. Next, firm values are higher when the proportion of overall equity held by neutral—foreign and institutional—investors is higher.<sup>3</sup> Individual firms benefit less from neutral investors than from coethnic investors, but minority ethnicity firms benefit more from neutral investors than majority ethnicity firms do.

A sharper form of variation arises on the market's supply side when a change in firm ethnicity, resulting from CEO turnover changes, abruptly increases a firm's coethnic investor base. We find that the firm's price-to-book value then also increases. In contrast, when CEO turnover abruptly decreases a firm's coethnic investor base, firm value also decreases.

These results imply that demand- and supply-side forces counteract but do not offset the impact of coethnic investing on firm value. One of our back-of-the-envelope calculations suggests that the total value of the firms on Kenya's stock exchange could be 38% (or US\$5.35 billion in 2010) higher if the proportion of neutral investors in the market was one half rather than the monthly average of 4.6%.

Economists have long been interested in market-wide economic costs of discrimination (Becker 1957, Phelps 1972, Arrow 1973, Charles and Guryan 2008, Hsieh et al. 2019). We make progress by analyzing a complete market associated with comparatively efficient capital allocation wherein a specific form of micro-level (investor  $\times$  firm) discrimination can be identified, yielding theoretical predictions for how value creation should be affected in the absence of fully compensating supply- or demand-side responses and in which such responses are also observed.

The body of work on ethnic ties and investment is related but distinct (see, e.g., Rauch and Trindade 2002, Banerjee and Munshi 2004). Focusing on a stock market and large firms—on both of which there is almost no research from developing countries<sup>4</sup>—we estimate the causal effect of coethnicity within a given investor–investment object pair. Existing studies instead capture shared identity combined with

correlated, unobserved match characteristics by comparing a given investor when assigned to a coethnic versus a noncoethnic investment opportunity (Hjort 2014; Fisman et al. 2017, 2020) or vice versa (Burgess et al. 2015, Burchardi et al. 2019).

Finally, this paper relates to the literature that studies the nature of discrimination (see List and Rasul 2011, Charles and Guryan 2013, Bertrand and Duflo 2017 for overviews and Bohren et al. 2019, 2024; Rose 2023 for recent related work) and the parallel finance literature on discrimination and home bias in investing (see, for overviews, Lewis 1999, Coeurdacier and Rey 2013, Cooper et al. 2013, Ardan 2019). We show that, in a context in which investors are atomistic and risk-adjusted financial returns are plausibly fully observed, the primary explanation underlying coethnic investing appears to be preferences or psychology. This may constrain regions and firms with small or poor investor bases (Teoh et al. 1999, Banerjee and Munshi 2004, Banerjee and Duflo 2005).<sup>5</sup>

## 2. Data

Detailed information on the data we use is in Online Appendix A.1; we now provide an overview. The version of the National Stock Exchange (NSE) transactions registry to which we have access reports the firm's ticker ID, the number of shares traded, the price, the seller's (masked) ID, the buyer's (masked) ID, and the date for all trades that occurred on the NSE from January 1, 2006, through December 31, 2010. Short selling was not allowed during this period.

We do not observe shares that an investor bought before the NSE went digital in 2006 and did not trade thereafter.<sup>6</sup> To construct a measure of an investor's portfolio, we, thus, assume that all investors have zero holdings as of 2006. We thereafter simply add any observed purchases to investor  $i$ 's inferred holdings and subtract any observed sales (see Online Appendix A.1). Our results are very similar if we instead focus only on investors who opened their NSE account in 2006 or later, in which case we observe investors' full portfolio at every point in time. The fact that we do not observe pre-2005 holdings is also not relevant for the flow measure of coethnic investing that, as we describe in Section 3, is our preferred measure.

The version of the NSE's investor registry to which we have access reports the investor's (masked) ID, account creation year, and—crucially—last name. In addition, the names of listed firms' CEO and board members are publicly available. Information on firms' book value, outstanding shares, etc., come from their financial statements.

Online Table A.1 provides summary statistics on our analysis sample. We restrict attention to investors who trade five or more times at least in one year.<sup>7</sup> There are

about 55,000 such investors for which we can also infer ethnicity with average portfolio values of around US\$6,000 in 2006.<sup>8</sup> The 47 firms that appear on the NSE cover a range of sectors with 53% in services, 38% in industrial, and 9% in agriculture. They are large with an average total market capitalization of around US\$261 million in 2006.

We probabilistically assign ethnicities to investors, CEOs, and board members using their last names. The starting point is name  $\times$  ethnicity match probability information recorded by Yenkey (2015, 2018a, b). We then construct four measures of an investor's ethnic proximity to a firm's CEO and board; Online Appendix A.2 has detailed information on their construction. The first,  $\text{CoethnicCEO}_{ijt}$ , is an indicator equal to one if investor  $i$  and the CEO running firm  $j$  in month  $t$  are relatively likely to belong to the same ethnicity; they share a *Likely Ethnicity*. The second,  $\text{CEOCOethnicityIndex}_{ijt}$ , is a zero (minimum proximity) to one measure of the expected ethnic proximity between the investor's and the CEO's name given each person's expected probability of belonging to each ethnicity. Specifically, the index is equal to the inner product of the investor and the CEO's name  $\times$  ethnicity match probabilities. In this case, we can make use of the full sample, and we avoid restricting attention to the investor's and CEO's most likely ethnicity and the judgment required to define a *Likely Ethnicity*.<sup>9</sup>

One board measure,  $\text{BoardCoethnicityIndex}_{ijt}$ , is the proportion of board members that are coethnic (measured as for  $\text{CoethnicCEO}_{ijt}$ ) with the investor. The other,  $\text{CoethnicBoard}_{ijt}$ , is an indicator and essentially repeats the construction of  $\text{CoethnicCEO}_{ijt}$  twice: first between individual board members and the investor and then for the board as a whole vis-à-vis the investor. This measure of investor-board coethnicity is strict: for  $\text{CoethnicBoard}_{ijt} = 1$  in month  $t$ , each board member must be classified as either likely coethnic or noncoethnic, and the board as a whole must be more likely to share the investor's ethnicity than any other. We see that all four definitions of  $\text{CoethnicFirm}_{ijt}$  give similar results.<sup>10</sup>

In panel C of Online Table A.1, we show statistics at the investor  $\times$  firm  $\times$  month level. Of particular interest is coethnicity between investors and firms. With ethnicity defined as our preferred measure of *Likely Ethnicity* (see Online Appendix A.2 for details), 48.8% of investors in our sample are classified as Kikuyu. Kikuyus are the biggest ethnic group in Kenya—roughly 17% of the population—and their disproportionate representation among investors on the stock market may, in part, reflect their comparatively strong economic position. In addition, 5.8% of investors are Luo, 5.4% Kamba, 4.0% South Asian, 3.6% Luhya, and 2.9% Kalenjin. On the CEO (or firm type) side, 26.9% of CEOs are classified as Kikuyu, 25.4% as Anglo, 7.5% as South Asian, 4.5% as

Luo, 3.0% as Kamba, 3.0% as Meru, and 1.5% as Luhya. With coethnicity measured as  $\text{CoethnicCEO}_{ijt} = 1$ , the investor belongs to the same ethnicity as the CEO in 27% of investor  $\times$  firm  $\times$  month observations in our analysis data set.

### 3. Ethnic Investing in Kenya

We observe which particular investors belong to the same ethnicity as each firm's management at each point in time, and coethnicity status changes when CEOs and board members are replaced by others of another ethnicity. We first run

$$\text{Investment}_{ijt} = \alpha + \beta \text{CoethnicFirm}_{ijt} + \gamma_i + \delta_j + \psi_{c(jt)} + \theta_t + X_{jt} + \varepsilon_{ijt}, \quad (1)$$

where  $\text{Investment}_{ijt}$  is the value of the investment investor  $i$  holds in firm  $j$  in month  $t$  normalized by the total value of all the investor's investments: a portfolio weight (Cohen et al. 2008, Hvide and Døskeland 2011). We also exploit the granularity of transactions data to construct  $\text{OrderImbalance}_{ijt}$ : the value of shares in firm  $j$  purchased by investor  $i$  in month  $t$  minus the value of shares sold divided by the sum of purchases and sales by  $i$  in  $j$  at  $t$  (see, e.g., Chordia et al. 2002).<sup>11</sup>

In addition to month fixed effects  $\theta_t$ , we include investor, firm, and CEO ethnicity fixed effects  $\gamma_i$ ,  $\delta_j$ , and  $\psi_{c(jt)}$  so that our results are not driven by differences across investors, firms, or the various ethnic groups in our data. We also include a measurable value control ( $X_{jt}$ ) that varies at the firm-month level, the return-on-equity (ROE) over the past 12 months. We cluster the error term  $\varepsilon_{ijt}$  at the investor ethnicity  $\times$  CEO ethnicity level.

The share of investments held in a given firm is 1.8% higher if the firm is managed by a coethnic CEO at the relevant point in time ( $\text{CoethnicCEO}_{ijt} = 1$ ). This is shown in the top panel of Table 1. Similarly, the fraction of the investor's investments an investor holds in a firm is 2% greater when the investor has maximum ethnic proximity to the firm's CEO ( $\text{CEOCOethnicityIndex}_{ijt} = 1$  versus  $= 0$ ).<sup>12</sup> Columns (3) and (4) show that  $\text{Investment}_{ijt}$  is 3.5% higher if firm  $j$  is managed by a coethnic board at time  $t$  ( $\text{CoethnicBoard}_{ijt} = 1$ ) and 8.5% greater when investor  $i$  has maximum ethnic proximity to the firm's board ( $\text{BoardCoethnicityIndex}_{ijt} = 1$  versus  $= 0$ ).

We also find that investor  $i$ 's normalized net investment in a given firm— $\text{OrderImbalance}_{ijt}$ —is 11% greater if the firm is managed by a coethnic CEO in the month in question, 18% greater with maximum ethnic proximity to the CEO, 70% greater if the firm is managed by a coethnic board, and 167% greater with maximum ethnic proximity to the board. This is shown in the bottom panel of Table 1. Online Table A.2 shows that the results are very similar if we restrict attention to investors' buys, ignoring their sells, or if we exclude

**Table 1.** Investor–Firm Coethnicity and Investment

Dependent variable:	(1)	(2)	(3)	(4)
	Investment	Investment	Investment	Investment
<i>CoethnicCEO</i>	0.00979*** (0.00350)			
<i>CEOCOethnicityIndex</i>		0.0110*** (0.00392)		
<i>CoethnicBoard</i>			0.0197*** (0.00438)	
<i>BoardCoethnicityIndex</i>				0.0461*** (0.00991)
Value controls	Yes	Yes	Yes	Yes
Investor fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
CEO ethnicity fixed effects	Yes	Yes	Yes	Yes
Mean of dependent variable	0.547	0.546	0.560	0.543
$R^2$	0.399	0.393	0.431	0.390
$N$	273,482	399,457	187,355	429,519
Dependent variable:	(1)	(2)	(3)	(4)
	OI	OI	OI	OI
<i>CoethnicCEO</i>	0.00885* (0.00467)			
<i>CEOCOethnicityIndex</i>		0.0128** (0.00531)		
<i>CoethnicBoard</i>			0.0708*** (0.00996)	
<i>BoardCoethnicityIndex</i>				0.117*** (0.0185)
Value controls	Yes	Yes	Yes	Yes
Investor fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
CEO ethnicity fixed effects	Yes	Yes	Yes	Yes
Mean of dependent variable	0.0805	0.0731	0.101	0.0700
$R^2$	0.331	0.325	0.344	0.317
$N$	409,313	602,420	280,488	648,131

*Notes.* The specification is estimated on investor–firm–month-level data. The sample consists of all months in which a trade is made by any investor in any firms' stock. Panel A shows the outcome investment, which is the proportion of the investor's portfolio that is held in the share. Panel B shows order imbalance, which measures how much the investor net buys or sells a particular firm's stock as a proportion of the investor's total traded stock of the same stock during the same month. All specifications in both panels include investor, firm, month, and CEO ethnicity fixed effects, and we control for the value control ROE in the prior 12-month period. Standard errors are clustered at the investor ethnicity  $\times$  CEO ethnicity level. The data set spans January 2006–December 2010.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

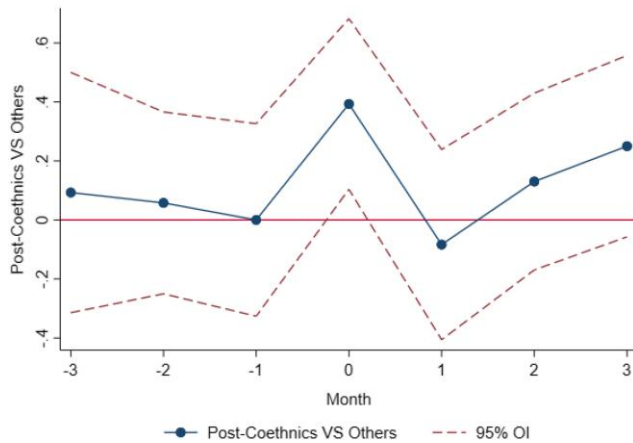
Anglo and South Asian investors (see Online Table A.3). The same is true if we exclude the largest investors in the sample.<sup>13</sup> We also find some evidence that coethnic bias in investment decisions is somewhat greater for investments in services than in industrial. We leave a deeper investigation of heterogeneity in ethnic investing across individual investors to future research.

The estimates in Table 1 capture how coethnicity itself and any correlated match characteristics of investor–firm pairs affect investment. They rely both on cross-sectional variation of the form used in existing studies of ethnic discrimination in markets and workplaces—loosely, comparing the investment of investors A and B in firm 1 relative to firm 2 when one investor shares an ethnicity with one of the two firms and the other with neither—and on changes in

coethnicity within investor–investment object pairs.<sup>14</sup> We next replace  $\gamma_i$  and  $\delta_j$  with an investor–firm fixed effect. By only using CEO/board turnover to estimate  $\beta$ , we isolate a more precisely defined coethnicity effect—how shared identity affects investment—under a particular identifying assumption.<sup>15</sup> That assumption is that investment in particular firms—those that switch from being managed by a CEO/board of ethnicity A to one(s) of ethnicity B—would evolve similarly relative to investment in other firms for investors of ethnicity A and B compared with other investors absent such switches.

Before regression results, we examine this assumption. Thirteen out of the 47 firms in our sample change ethnicity (and three do so multiple times). In Figure 1, we see that investment from postcoethnics—coethnics

**Figure 1.** (Color online) Investment Flows from Postcoethnics vs Others When a Firm Changes Ethnicity Because of CEO Turnover



*Notes.* We regress the monthly OI between postcoethnics and others. Postcoethnics mean the investor and the firm are coethnic after the firm switches CEO. Others mean the investor and the firm aren't coethnic both before and after the firm switches CEO. The sample uses only those firms in which the ethnicity of the CEO changes at least once, and we delete the pre-coethnics sample. The change occurs at month 0. This figure is consistent with Online Figure A.1.

of the incoming CEO—rises markedly in the month the new CEO takes over relative to investment from investors who are coethnic with neither the outgoing nor the incoming CEO.<sup>16</sup> In the subsequent month, the flow of investment from postcoethnics is again similar to that of others. From month 2 onward, we see indications of postcoethnics investing more than others again. Most importantly, we see no indication of concerning non-parallel pretrends in Figure 1.

Table 2 shows that overall investment increases significantly within a given investor–firm pair when a CEO or board member of a different ethnicity than the investor is replaced by a coethnic. We lose some power when restricting to investor–firm pairs that change CEO coethnicity status and including investor–firm fixed effects. However, the estimates in Table 2 suggest that investors, if anything, adjust the share of their investments that is held in a given firm somewhat more when coethnicity turns on within a given investor–firm pair. The patterns in Figure 1 provide direct, visual support for a causal, shared identity–based interpretation of the results in Table 2. This is important for interpreting the estimates in Table 1. Together, the three indicate that the coethnicity effect we uncover is driven by investor–management match effects. Various underlying phenomena may contribute to or explain these match effects, and they may also be heterogeneous across ethnic groups. An example is the possibility that investors from larger ethnic groups expect firms run by CEOs from their group to benefit from political or consumer favoritism and that their investment behavior

also contributes substantially to the estimates in Tables 1 and 2.

In this section, we show that Kenyan investors invest considerably more in a given firm when the firm is run by coethnics and that such coethnic investing appears to be driven to a large extent by shared identity itself.

#### 4. Understanding Ethnic Investing

Ethnic investing may broadly be due to information asymmetries or investor preferences or biases. Both are consistent with the results in Section 3, but the former imply higher returns and the latter lower or equal returns. The documented role of shared identity may point toward preferences or biases. To investigate, we run

$$\text{RiskAdjReturns}_{bijt} = \alpha + \beta \text{CoethnicFirm}_{ijt} + \gamma_i + \delta_j + \psi_{c(jt)} + \theta_t + X_{jt} + \varepsilon_{bijt}. \quad (2)$$

For stocks bought and sold during our sample period, we define (risk-unadjusted) returns as the realized return based on the buy and sell price. For stocks that were bought but not sold during our data period, we compute returns as unrealized paper returns on December 31, 2010.<sup>17</sup> We then measure  $\text{RiskAdjReturns}_{bijt}$ , the risk-adjusted return on investment  $b$  made by investor  $i$  in firm  $j$  in month  $t$ , in several ways; our preferred measure is simply the Sharpe ratio: the difference between the returns on the investment and the risk-free return divided by the standard deviation of the difference. Within a given firm–month pair—that is, for buys of the stock of a given firm made in a given month— $\text{RiskAdjReturns}_{bijt}$  varies across investors. This is because different investors invest in the firm on different days within the month and sell their stocks at different times.

A given investor's risk-adjusted returns on investments in a given firm in a given month are, respectively, 9.6% and 21.8% lower if the investment is made when the firm is run by a coethnic CEO or when the investor has maximum ethnic proximity to the CEO relative to when the CEO is a noncoethnic.<sup>18</sup> This is shown in the top panel of Table 3. A different way to illustrate the magnitude of the estimates is as follows. Column (1) shows that an investor's return on investments is 1.12% lower for one unit of risk taken if the investment is made when the firm is run by a coethnic CEO relative to when the CEO is a noncoethnic. The median of risk (standard deviation of excess returns) in our sample is 1.55. Therefore, for investors taking median risk, return on investments is 1.74% lower if the investment is made when the firm is run by a coethnic CEO relative to when the CEO is a noncoethnic. In many columns of the bottom panel the negative estimates are even larger in magnitude; there, we estimate how coethnic

**Table 2.** Investor–Firm Coethnicity and Investment Within Investor–Firm Pairs

Dependent variable:	(1)	(2)	(3)	(4)
	Investment	Investment	Investment	Investment
<i>CoethnicCEO</i>	0.0123 (0.0200)			
<i>CEOCOethnicityIndex</i>		0.0267 (0.0228)		
<i>CoethnicBoard</i>			0.0622*** (0.0125)	
<i>BoardCoethnicityIndex</i>				0.231*** (0.0467)
Value controls	Yes	Yes	Yes	Yes
Pair fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
CEO ethnicity fixed effects	Yes	Yes	Yes	Yes
Mean of dependent variable	0.533	0.529	0.546	0.525
$R^2$	0.606	0.606	0.629	0.606
$N$	204,937	295,741	134,914	316,152
Dependent variable:	(1)	(2)	(3)	(4)
	OI	OI	OI	OI
<i>CoethnicCEO</i>	-0.0354 (0.0419)			
<i>CEOCOethnicityIndex</i>		0.0386 (0.0457)		
<i>CoethnicBoard</i>			0.157*** (0.0280)	
<i>BoardCoethnicityIndex</i>				0.648*** (0.0930)
Value controls	Yes	Yes	Yes	Yes
Pair fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
CEO ethnicity fixed effects	Yes	Yes	Yes	Yes
Mean of dependent variable	0.125	0.115	0.140	0.112
$R^2$	0.444	0.445	0.466	0.441
$N$	306,925	449,148	201,232	481,154

*Notes.* The specification is estimated on pair-month-level data. Pair is defined as a unique investor–firm grouping. The sample consists of all months in which a trade is made by any investor in any firms' stock. Panel A shows the outcome investment, which is the proportion of the investors' portfolio that is held in the share. Panel B shows order imbalance, which measures how much the investor net buys or sells a particular firm's stock as a proportion of the investor's total traded stock of the same stock during the same month. All specifications in both panels include pair, month, and CEO ethnicity fixed effects, and we control for the value control ROE in the prior 12-month period. Standard errors are clustered at the investor ethnicity  $\times$  CEO ethnicity level. The data set spans January 2006–December 2010.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

investing affects returns by exploiting changes in coethnicity within investor–firm pairs.

The measures of returns and risk we use are common in the finance literature. Alternative measures generally give similar findings. The conclusions are, for example, very similar to those from Table 3 if we restrict to investments both bought and sold or to firms whose CEO ethnicity remains constant during our data period<sup>19</sup> and if we focus on end-of-first-year returns as shown in Online Tables A.4–A.6. For the latter exercise, the end-of-first-year return is calculated based on transaction price and the price of the last day in the first calendar year (see Online Appendix A.3 for more details). Online Figures A.1 and A.2 show that monthly returns are, on average, lower soon after a firm changes ethnicity and that postcoethnics additionally earn lower returns compared with others in the period after such

switches. In Figure 1, we see that postcoethnics are especially likely to invest at such times. In Online Appendix A.3, we provide more details and additional results.

Our results so far indicate that Kenyan investors engage in coethnic investing and that a taste for or psychological bias toward coethnic firms appears to be the most common motivation. In a setting in which individual investors are generally small, these average behaviors and motivations are the natural starting point for a theoretical framework focusing on the aggregate economic consequences of coethnic investing. In the next section, we present such a model; corresponding empirical tests are in Section 6. A primary focus is how neutral investors affect the aggregate impact of the costly form of favoritism that individual investors in our sample display on average, accounting for

**Table 3.** Investor–Firm Coethnicity and Returns

Dependent variable:	(1) Risk-adjusted returns	(2) Risk-adjusted returns	(3) Risk-adjusted returns	(4) Risk-adjusted returns
<i>CoethnicCEO</i>	−0.0112** (0.00447)			
<i>CEOCOethnicityIndex</i>		−0.0195*** (0.00561)		
<i>CoethnicBoard</i>			−0.0592*** (0.00775)	
<i>BoardCoethnicityIndex</i>				0.0111 (0.0184)
Value controls	Yes	Yes	Yes	Yes
Investor fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
CEO ethnicity fixed effects	Yes	Yes	Yes	Yes
Mean of dependent variable	0.117	0.0893	0.132	0.0726
R <sup>2</sup>	0.583	0.568	0.638	0.550
N	216,545	318,345	150,091	342,730
Dependent variable:	(1) Risk-adjusted returns	(2) Risk-adjusted returns	(3) Risk-adjusted returns	(4) Risk-adjusted returns
<i>CoethnicCEO</i>	0.00930 (0.0180)			
<i>CEOCOethnicityIndex</i>		−0.0875* (0.0491)		
<i>CoethnicBoard</i>			−0.129*** (0.0291)	
<i>BoardCoethnicityIndex</i>				−0.104 (0.104)
Value controls	Yes	Yes	Yes	Yes
Pair fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
CEO ethnicity fixed effects	Yes	Yes	Yes	Yes
Mean of dependent variable	0.162	0.137	0.189	0.120
R <sup>2</sup>	0.755	0.751	0.787	0.745
N	137,215	196,784	92,344	209,102

*Notes.* The specifications are estimated on investor-firm-month-transaction-level data. Risk-adjusted return is the Sharpe ratio, which is defined as the difference between the risk unadjusted returns and the treasury bill rates in Kenya divided by the standard deviation of the difference. The sample consists of all transactions initiated during the period. The month indicates origination of the transaction. Specifications in panel A include investor, firm, month, and CEO ethnicity fixed effects, whereas specifications in panel B include pair, month, and CEO ethnicity fixed effects. We control for the value control ROE in the prior 12-month period in both panels. Standard errors are clustered at the investor ethnicity × CEO ethnicity level. The data set spans January 2006–December 2010.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

variation in investor group size. We theoretically conceptualize neutral investors as a different category than biased-on-average individual investors and empirically proxy for them simply with foreign and institutional investors.<sup>20</sup>

## 5. Theoretical Framework

If each group of investors primarily invests in firms of a specific type, this will—relative to a scenario in which investors are neutral—tend to lower the average value of firms. Investors as a whole could create more value by investing in firms with a smaller investor base. This clientele prediction, first emphasized by Merton (1987), only holds if responses to coethnic investing on the demand and supply sides of the market are limited in scope, however.

We consider a model of financial markets in which firms differ in ethnicity and some investors favor coethnic firms. We focus on the two-ethnicities case. We describe the setup, results, and intuition here: details and proofs are in Online Appendix A.4.

### 5.1. Firms

We study a one-period world with two types of firms that differ in ethnicity. Firms of a given type have the same production technology, characterized by a normally distributed cash flow with mean  $\mu_i$  and variance  $\sigma_i^2$ , where  $i = 1, 2$ . Cash flows within each firm type are perfectly correlated, whereas the covariance between cash flows of different types is  $\sigma_{12}$ . Besides firm stocks, there is a riskless asset with rate of return normalized to zero and perfectly

elastic supply. Borrowing is allowed, but short selling of risky assets is not.

## 5.2. Investors

There are three investor types. Biased investors only invest in firms run by coethnics, whereas neutral investors invest in both firm types.<sup>21</sup> Let  $I$  denote the total number of investors,  $\alpha$  the share of neutral investors, and  $\beta$  the share of biased investors in ethnic group 1. All investors have constant absolute risk-aversion preferences with risk tolerance  $\tau$ .

## 5.3. Equilibrium and Results

We solve for investors' optimal portfolio choices and equilibrium prices in Online Appendix A.4, assuming for simplicity that the two types of firms differ only in their ethnicity. In the same Online Appendix, we also analyze the differences between the mixed scenario (biased and neutral investors) and the scenario in which all investors are neutral.

Prices are determined by four primary effects. Consider stock prices for firm type 1 ( $p_1$ ):

- Biased investor demand effect: A higher share of biased investors in group 1 ( $\beta$ ) increases demand for these firms' stocks, pushing  $p_1$  upward.
- Crowd-out demand effect: Neutral investors avoid overpriced stocks from group 1 when  $\beta$  is large, creating downward pressure on  $p_1$ .
- Diversification demand effect: Lower cash flow correlations enable neutral investors to diversify more effectively, increasing demand and prices for both share types. Note that this demand effect applies only to neutral investors as biased investors invest exclusively in firms from their ethnic group.
- Supply effect: A large presence of group 1 shares ( $N_1$ ) implies high supply, lowering  $p_1$ . If cash flows are positively correlated, a large number of shares from the other ethnic group ( $N_2$ ) also reduces  $p_1$ , whereas a negative correlation causes  $N_2$  to increase  $p_1$ .

**Proposition 1.** *A firm's stock price is increasing in the share of biased investors of the firm's ethnicity under reasonable conditions.*

**Proof.** See Online Appendix A.4. □

To see the intuition and to focus on demand-side effects, assume  $N_1 = N_2$ .<sup>22</sup> Proposition 1 always holds when the correlation between cash flows ( $\rho$ ) is negative or when it is positive and  $\beta \leq \frac{1}{2}$ . However, it may fail when  $\alpha$  is very low,  $\beta$  is large, and  $\rho > 0$ . Intuitively, when most investors are biased, increases in  $\beta$  (which in that case is already high), slightly raise the price in group 1 but significantly lower the price in group 2. Neutral investors adjust to avoid overpriced group 1 shares, causing the crowd-out effect to dominate and preventing the price in group 1 from increasing with  $\beta$ .

Conversely, with larger  $\alpha$ , fewer investors are biased, limiting demand responses to changes in  $\beta$ . As a result, share prices remain relatively stable, and neutral investors adjust less. The crowd-out effect weakens, causing Proposition 1 to hold.

**Proposition 2.** *A firm can benefit from changing its ethnicity from that of the smaller (investor) group to that of the larger (investor) group under reasonable circumstances.*

**Proof.** See Online Appendix A.4. □

When a firm changes its ethnicity, it alters its investor base and the stock supply. For small firms with minimal impact on total supply, the benefits of switching from minority to majority ethnicity are unambiguous. However, large firms can exert significant downward pressure on stock prices through increased supply, making the switch unprofitable.<sup>23</sup>

**Proposition 3.** *Total market value is increasing in the share of neutral investors.*

**Proof.** See Online Appendix A.4. □

Except in extreme cash flow correlation cases, total market value is consistently higher under complete investor neutrality compared with a mixed scenario with biased and neutral investors (see Online Appendix A.4). Coethnic bias reduces risk sharing, distorts share prices, and increases firms' average cost of capital. Positive price distortions in one firm group are offset by negative distortions in the other, lowering total market value. As neutral investors increase, these distortions diminish, and aggregate market value rises.

**Proposition 4.** *A marginal increase in the share of neutral investors has a larger effect on the stock price of firms of the minority ethnicity.*

**Proof.** See Online Appendix A.4. □

When outstanding shares are the same, the price of firms of the minority ethnicity is lower, and they are, therefore, more attractive to neutral investors. An increase in the share of neutral investors consequently affects the market value of these firms more.

## 5.4. Supply- and Demand-Side Responses to Coethnic Investing

We describe a partial equilibrium with ethnically biased investing of the form we document in Sections 3 and 4. Proposition 1 then implies that the price of majority-ethnicity firm shares are higher than that of otherwise similar minority-ethnicity firm shares. We might then expect both demand- and supply-side responses.

First, unbiased investors may enter the market. Propositions 3 and 4 then predict an increase in total market value and especially in the value of minority-run

firms. Second, undervalued minority-ethnicity firms may strategically respond to coethnic investing. Proposition 2 states that they can do so by becoming a majority-ethnicity firm, for example, by appointing a CEO from the larger ethnic (investor) group.

For demand- and supply-side responses to eliminate the difference in investment objects' value and the impact on aggregate value creation because of ethnic investing, such responses would need to be of comparable magnitude to investor biases themselves. They may not be because markets—even textbook ones such as stock exchanges—often display costs associated with market responses. Limiting costs of arbitrage are well established (Gromb and Vayanos 2010), and neutral investors may have easy access to other appealing markets. Similarly, firms tend to experience significant CEO transition costs, and the labor market for CEOs is thin in Kenya (Hjort et al. 2024).

## 6. The Consequences of Ethnic Investing

### 6.1. Ethnic Investing and the Value of a Firm: Empirics

To test how coethnic investing affects the price-to-book value of firms, we first run

$$\text{PriceToBook}_{jt} = \alpha + \beta \text{CoethnicInvestorBase}_{jt} + \delta_j + \theta_t + X_{jt} + \varepsilon_{jt}. \quad (4)$$

We include firm fixed effects  $\delta_j$ , month fixed effects  $\theta_t$ , and a value control that varies at firm  $\times$  month level (ROE), and we cluster the error term  $\varepsilon_{jt}$  at the firm level. We measure  $\text{CoethnicInvestorBase}_{jt}$  simply as the portfolio value investors who are active—that is, who trade—at time  $t$  and who belong to the same ethnicity as firm  $j$ 's CEO hold relative to that of all potentially active coethnic investors.<sup>24</sup>

We restrict the sample to firms whose ethnicity remains constant during our data period; those that do not change their CEO to someone belonging to a different ethnicity. Variation in  $\text{CoethnicInvestorBase}_{jt}$ , thus, arises on the demand side from investors joining or leaving the market and changes in their activity. The inclusion of firm and month fixed effects and the focus on coethnic potential investors leave room only for very particular noncausal interpretations of the results from (4).<sup>25</sup> Because we are not able to exploit relevant, market-wide exogenous variation in  $\text{CoethnicInvestorBase}_{jt}$ , interpreting the results through the lens of the model in Section 5 and the investor behavior documented in Sections 3 and 4 that motivated it is helpful.

We find that a firm's price-to-book value rises significantly relative to other firms when its coethnic investor base increases in size, consistent with Proposition 1. This result is in the first column of panel A of Table 4. The estimate implies, for example, that we would expect the price-to-book value of a firm that is led by a

CEO from an ethnic group that has the same proportional number of investors as the group with the biggest investor base observed in our data to be 67% greater than an otherwise identical firm led by a CEO from an ethnic group with a base of the same size as the smallest one we observe.<sup>26</sup>

To test Proposition 3, we next add the additional regressor  $\text{NeutralInvestorBase}_t$  to (4). We proxy for neutral investors with foreign and institutional investors. Because they are not coethnic with any firms,  $\text{NeutralInvestorBase}_t$  varies only across months.<sup>27</sup> The average proportion of active neutral investor is 4.6%.

Firms' average price-to-book value increases significantly when the proportion of active investors that are neutral rises. We show this in the second column of panel A of Table 4. A doubling of the share of neutral investors is associated with 3% higher average price-to-book firm value. However, we also find—again consistent with the framework in Section 5—that neutral investors influence individual firms' value notably less than coethnic investors do. Investor favoritism is a different phenomenon than demand itself.

We next show that minority-ethnicity firms especially benefit from neutral investors. We simply add the interaction between  $\text{CoethnicInvestorBase}_{jt}$  and  $\text{NeutralInvestorBase}_t$  to the regression. The results in column (3) of panel A of Table 4 imply that we would expect the price-to-book value of a firm that is led by a CEO from an ethnic group that has the same proportional number of investors as the group with the smallest coethnic investor base observed in our data to increase 36% more in response to a doubling of the share of neutral investors than that of an otherwise identical firm with a coethnic base as large as the biggest one we observe.<sup>28</sup> This finding is consistent with Proposition 4 of the model in Section 5 and illustrates how coethnic investing misallocates demand across firms.

In panel B of Table 4, we estimate the coethnic investor base effect in an alternative way. Thirteen of the 47 firms in our sample change ethnicity during our data period. We code changes in a firm's investor base as 0/1 up-or-down events resulting from CEO (ethnicity) turnover and restrict attention to 12-month windows around such events in the spirit of an event study analysis. In this way, we test Proposition 2, which considers a particular supply-side response: that a firm can benefit from changing its ethnicity to that of a larger investor group. We run

$$\begin{aligned} \text{PriceToBook}_{jt} &= \alpha + \beta I(\text{CEO switched} \rightarrow \Delta \text{CoethnicInvestorBase})_{jt} \\ &\quad + \delta_j + \theta_t + X_{jt} + \varepsilon_{jt}. \end{aligned} \quad (5)$$

Here,  $I(\text{CEO switched} \rightarrow \Delta \text{CoethnicInvestorBase})_{jt}$  is an indicator for firm  $j$  increasing or decreasing its coethnic investor base by changing its CEO from an

**Table 4.** Aggregate Consequences of Coethnic Investing

Dependent variable:	(1) Log price-to-book	(2) Log price-to-book	(3) Log price-to-book
Coethnic Investor Base	1.770** (0.731)	2.303** (1.101)	11.15*** (2.184)
Neutral Investor Base		0.657** (0.306)	0.911*** (0.255)
Coethnic Investor Base × Neutral Investor Base			−20.63*** (3.631)
Value controls	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	No	No
CEO ethnicity switch	No	No	No
Mean of dependent variable	0.853	0.853	0.853
R <sup>2</sup>	0.883	0.729	0.747
N	1,828	1,828	1,828
	CEO switch → Investor base ↑ (1)	CEO switch → Investor base ↓ (2)	
Dependent variable:	Log price-to-book	Log price-to-book	
I(CEO switched → Δ CoethnicInvestorBase)	0.330** (0.125)	−0.206*** (0.0751)	
Value controls	Yes	Yes	
Month fixed effects	Yes	Yes	
Firm fixed effects	Yes	Yes	
Mean of dependent variable	0.970	0.802	
R <sup>2</sup>	0.816	0.848	
N	1,648	2,319	

*Notes.* In the top panel, column (1) includes only biased investor base value, which refers to the aggregate value traded by those coethnic investors in the month as a proportion of total value traded in the same month. Column (2) includes both biased investor base value and neutral investor base value, and the latter refers to the aggregate value traded by those neutral investors in the month as a proportion of total value traded in the same month. Column (3) adds the interaction of the two variables. The specifications are estimated on firm-month-level data. The data set spans January 2006–December 2010 and covers only those firms listed on the NSE on which the ethnicity of the CEOs remained constant throughout the period. All specifications include firm and month fixed effects, and we control for the value control ROE in the prior 12-month period. Standard errors are clustered at the firm level. In the bottom panel, the specifications are estimated on firm-month-level data. All specifications include firm and month fixed effects. Switched CEO is an indicator equal to one if the ethnicity of the firm CEOs change during the period. Investor base size has the same definition as in the top panel. Post switch is an indicator equal to one after the change in CEOs. The sample looks at a 12-month window around the switch, six months prior and six months following. Column (1) limits the sample to those firms in which the new CEO has a higher investor base size than the old CEO, and column (2) limits the sample to those firms in which the new CEO has a lower investor base size than the old CEO. All specifications include firm and month fixed effects, and we control for the value control ROE in the prior 12-month period. Standard errors are clustered at the firm level.

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

individual belonging to one ethnicity to someone else belonging to another ethnicity. The indicator equals one in any month  $t$  after the switch.

A firm that changes its ethnicity to one with a larger investor base sees a significant and large—33.2%—increase, whereas a firm changing its ethnicity to one with a smaller investor base sees a corresponding—albeit proportionally smaller at around 20%—decrease in price-to-book value. These results are in panel B of Table 4. They exploit abrupt and large changes in firms' coethnic investor base coming from the supply (firm) side of the market and, thus, support the demand (investor) side evidence in panel A.

The evidence in this section points toward three conclusions. The first is that the relative funds of potential investors of the same ethnic group as a given firm influence the value of large firms in Kenya as the model in Section 5 predicts when investors have a taste for or

psychological bias toward coethnic firms. The second is that counteracting demand- and supply-side responses affects firms' value as theory predicts. Finally, the first takeaway holds despite the second one: the magnitude of counteracting market responses isn't large enough to offset the impact of investor favoritism on market-wide value creation.

## 6.2. The Cost of Ethnic Investing

We can now estimate the overall cost of coethnic investing. We focus on counterfactual demand-side scenarios. The proofs of Propositions 3 and 4 characterize how an increase in the share of neutral investors and corresponding decrease in ethnically biased investors—as might occur over time—affect market-wide value creation. We consider two counterfactual scenarios.

We first assign all firms a neutral investor base as large as the largest one we observe, corresponding to

the month when foreign and institutional investors made up the largest share of all potentially active investors. In the second scenario, we increase the share of neutral investors in the market to half or, in other words, set  $\text{NeutralInvestorBase}_t = 0.5$  and  $\text{CoethnicInvestorBase}_{jt} = 0.5$  for all firms. We calculate expected changes in firms' valuation using the estimated coefficients on  $\text{NeutralInvestorBase}_t$  and  $\text{NeutralInvestorBase}_t \times \text{CoethnicInvestorBase}_{jt}$  in panel A of Table 4 and firms' information (book value and outstanding shares) at the end of our data period.

Suppose that the estimated coefficient on firms' neutral investor base in column (2) of panel A of Table 4 is  $\hat{\gamma}$ .  $(\text{NeutralInvestorBase}_{jt}^C - \text{NeutralInvestorBase}_{jt}) \times \hat{\gamma}$  is, thus, the difference between the firm's price-to-book value under the counterfactual less coethnic investing scenario and the observed state of the world. The decrease in the expected value of a firm because of coethnic investing is then  $(\text{NeutralInvestorBase}_{jt}^C - \text{NeutralInvestorBase}_{jt}) \times \hat{\gamma} \times \text{BookValue}_{jt} \times \text{TotalShares}_{jt}$ . Computing this quantity for the last month observed in our data suggests that listed Kenyan firms could collectively be worth US\$6.02 billion or 42% more if the proportion of neutral investors in the market was as high as the maximum in our data period. If, instead, we use the estimates from column (3) and, thus, account for differential effects of neutral investors on firms with larger and smaller coethnic investor bases, this counterfactual scenario is predicted to increase the value of listed Kenyan firms by US\$8.96 billion or 63%.

In the other counterfactual scenario in which half of investors are neutral, listed Kenyan firms are predicted to jointly be worth US\$5.35–7.90 billion or 38%–55% more.

Both scenarios are far out of sample compared with the share of neutral investors in almost all months during our data period. The counterfactual calculations we present, therefore, rely on substantial extrapolation of the linearly estimated effect of neutral investors in panel A of Table 4. They nevertheless underscore the massive market-wide value loss that likely results from coethnic investing in Kenya.

## 7. Conclusion

We use transaction data from Kenya's stock exchange and CEO/board turnover to document the surprising extent of excess investing in coethnic investment objects in a large, anonymous type of market associated with efficient capital allocation. Coethnic investments earn lower returns, pointing toward a taste-based or psychological explanation. Taking advantage of the complete market nature of a stock exchange and variation over time in firms' coethnic investor bases and neutral investor activity, we show that, while both demand- and supply-side market responses counteract ethnic investing, they far from offset the impact on total stock

market value creation. In our model, firm fundamentals (e.g., share numbers and cash flow correlations) do not explicitly depend on the parameters that capture ethnic bias. Thus, the model and corresponding empirical results illustrate how bias distorts prices away from the fundamentals-based benchmark (complete investor neutrality). Such distortions plausibly, in turn, influence fundamentals, for example, because ethnic-majority firms gain better capital access and can more easily invest and recruit good workers (Banerjee and Munshi 2004, Hales et al. 2015) or because stock market wealth affects consumer spending, which, in turn, affects local economic activity and employment (Chodorow-Reich et al. 2021), but modeling and testing for such downstream impacts on fundamental value is beyond the scope of this paper.

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## Endnotes

<sup>1</sup> See, for example, Fafchamps (2000), Rauch (2001), Banerjee and Munshi (2004), Guiso et al. (2009), Hjort (2014), Burgess et al. (2015), Beach and Jones (2017), Fisman et al. (2017, 2020), and Burchardi et al. (2019).

<sup>2</sup> The mean and median of the share of firms owned by each of their 10 largest individual Kenyan shareholders is 0.13% and 0.05% in our data.

<sup>3</sup> For evidence on institutional investors' role in rich countries' stock markets, see, for example, Gabaix et al. (2006), Boehmer and Kelley (2009), Campbell et al. (2009), Basak and Pavlova (2013), and Edelen et al. (2016). Do et al. (2024) show compelling evidence that investments in firms with Jewish connections earned higher returns during a period of increased antisemitism in 19th century France.

<sup>4</sup> Anagol and Kim (2012), Anagol et al. (2018, 2021), and Yenkey (2015, 2018a, b) are important exceptions.

<sup>5</sup> Returns are usually unobserved. We follow Cohen et al. (2008), Bandiera et al. (2009), Hjort (2014), and Fisman et al. (2017, 2020) in using returns to tell apart discrimination motivations. However, nonatomistic investors who favor coethnics may benefit outside of the observed market or workplace. In the finance literature, this

paper is most closely related to Teoh et al. (1999). They find that boycotts of South Africa in the 1980s had little discernible effect on the valuation of firms operating in the country and financial markets because corporate involvement with South Africa was small. Our analysis of individual investors' decisions is also closely related to Hong and Kacperczyk (2009), Kumar et al. (2015), and Barber et al. (2021). They show that firms that do not promote vice or funds that promise impact or are run by managers with American-sounding names command a higher willingness to pay from particular investors.

<sup>6</sup> About 36% of stock held at the beginning of 2006 was sold during the 2006–2010 period or, conversely, 64% of starting-point holdings were not traded during our data period. However, total value traded from 2000 to 2005 was about 20% of that from 2006 through 2010, a period when the number of investors on the NSE grew rapidly (Yenkey 2015). The Privatization Act of 2005 lowered entry barriers to retail investing by digitizing the trading system and by requiring firms to make a higher proportion of newly issued shares accessible to domestic, small-scale investors via smaller lots.

<sup>7</sup> We imposed this restriction when we first started working on this paper's analysis for computational ease and because we expected it not to influence results much. In the final stretch of our work on the paper, we tried loosening the restriction, requiring fewer trades in at least one year or imposing at least X trades restrictions across the full sample period instead. Such changes to the analysis sample indeed have little influence on the paper's results and conclusions.

<sup>8</sup> This includes a small number of brokers and institutional investors for which we can infer the ethnicity of the individual listed as account owner.

<sup>9</sup> The variable  $CEO_{CoethnicityIndex_{ijt}}$  is assumptions-free in that it follows directly from the raw data from the research assistants (RAs). The reason why this measure also allows us to make use of a larger part of our sample is that it does not require leaving out observations for which we cannot assign a name to a given ethnicity with confidence.  $CoethnicCEO_{ijt}$  is, for example, missing if either the investor or the CEO does not have a *Likely Ethnicity*.

<sup>10</sup> A sensible further alternative to the eight coethnicity codings from which we show results (the four preferred ones used in our main tables and figures and four alternative ones using different probability cutoffs to define ethnicity in Online Table B.1) is to define an investor–CEO (or board) pair as coethnic if all the Kenyan research assistants who coded the names in our data unanimously agreed that the two names represent the same ethnic group. This yields estimates of the effect on investment (OI) and risk-adjusted returns that are consistent with—and, if anything, bigger than—those resulting from our preferred, broader coethnicity definitions, but this approach relies on a small number of coethnic matches (only about 4% of investor–CEO pairs in the sample are defined as perfectly coethnic in this sense).

<sup>11</sup>  $OrderImbalance_{ijt}$  is a flow measure of investment. Unlike  $Investment_{ijt}$ , it also is not influenced by the evolution of (the values of) an investor's holdings. Normalizing by volume traded is standard: doing so controls for potential liquidity differences across observations (see, e.g., Chordia et al. 2002).

<sup>12</sup> Ethnic concentration increases during our data period: the other side of the market in transactions that increase the portfolio weight of coethnic firms is often simply noncoethnics of the CEO or board. The period we study is also one in which many small investors joined the stock market.

<sup>13</sup> Examples are leaving out the 10% of investors with highest portfolio value or the 10% biggest investors in each firm.

<sup>14</sup> Table 1 combines both forms of variation because a comprehensive notion of coethnicity is most relevant for aggregate economic consequences.

<sup>15</sup> Unobserved match effects between managers and investors that are correlated with coethnicity are—even among retail investors—a possibility but less plausible. They would be hard to reconcile with the Section 4 results on returns, and managers tend to have much less influence on firm activities than features of the firm itself do (Bertrand and Schoar 2003).

<sup>16</sup> Figure 1 depicts results from a dynamic version of the ( $OrderImbalance_{ijt}$  version of) specification (1) estimated on the investor  $\times$  switcher firms sample. It, therefore, maps to the Table 1 market-wide results, which motivate the model in Section 5.

<sup>17</sup> We later show results restricted to realized returns.

<sup>18</sup> Similarly, an investor's risk-adjusted return on investments made when the firm's board is generally of the same ethnicity as the investor are 44.8% lower. For the  $BoardCoethnicityIndex_{ijt}$  measure of  $CoethnicFirm_{ijt}$ , the point estimate is small and noisily estimated but positive.

<sup>19</sup> For these firms, the estimated differential return on coethnic investments cannot be due to any stock price dynamics associated with CEO (ethnicity) turnover.

<sup>20</sup> We show in the Online Appendix that the model's key results hold also in the case in which only a subset of local investors are ethnically biased.

<sup>21</sup> When we test the model's predictions empirically, this implies treating all individual Kenyan investors as biased because we observe a particular group of investors—institutional investors and foreigners—that are plausibly less biased (no firms are coethnic with such neutral investors). Online Appendix A.5 shows that key results hold even when only a subset of investors in each ethnicity are biased.

<sup>22</sup> Inequality (6) from Online Appendix A.4 then simplifies to

$$1 > \frac{(2\beta - 1)\rho\alpha(1 - \alpha)}{\alpha + \alpha(1 - \alpha)(1 - 2\beta) + (1 - \beta)^2(1 - \alpha)^2(1 - \rho^2)}. \quad (3)$$

The following discussion of and takeaways from Proposition 1 generally hold also for the case in which total shares in the two firm types are not equal.

<sup>23</sup> With only neutral investors, the benefit of switching depends solely on the relative share supply unlike with biased investors, for which correlation also matters. Without bias, there is no need to counteract distortions by leveraging cash flow correlation.

<sup>24</sup> We define potentially active investors as all individual investors who have invested on the NSE up to and including the month in question.

<sup>25</sup> Two patterns are arguably necessary for the estimated coefficient on  $CoethnicInvestorBase_{jt}$  in (4) to not reflect a causal effect of the relative size of firms' coethnic investor bases. First is that large numbers of retail investors of a given ethnicity become active or inactive on the stock market at times when particular firms of the same ethnicity (but not the market as a whole) whose market value is, in fact, not responsive to coethnic demand would, in any case, see a notable increase or decrease in their stock price for other reasons. And second is that such dynamics are either highly correlated across firms of a given coethnicity or driven by firms' whose attraction is big enough to spill over onto other firms of the same ethnicity (as we assign active investors of a given ethnicity to all firms of the same ethnicity).

<sup>26</sup> This calculation uses the average investor base size of firms in our data. The biggest investor base size is, thus, equal to the investor base size of the firm, which has the maximum average size, which is 0.38. The smallest investor base size is defined analogously and is 0.00001 in our data. Because the referenced estimate in Table 4 is 1.77, the percentage change corresponds to  $1.77 \times (0.38 - 0.00001) \times 100\% \approx 67\%$ .

<sup>27</sup> To test the impact of an explanatory variable defined at the market  $\times$  month level, we naturally rely on variation at the same level. Because  $\theta_t$  is collinear with  $\text{NeutralInvestorBase}_t$ , it is left out of this regression. Similar to  $\text{CoethnicInvestorBase}_{it}$ , we measure  $\text{NeutralInvestorBase}_t$  as the portfolio value of neutral investors that are active—that is, that trade—at time  $t$  relative to that of all potentially active investors. We now define potentially active investors as all individual Kenyan investors and neutral investors who have invested on the NSE up to and including the month in question.

<sup>28</sup> From column (3) of panel A in Table 4, we find that the expected percentage change in price-to-book value for the groups with the smallest and largest coethnic investor bases are, respectively,  $0.91 + 0.00001 \times (-20.66)$  and  $0.91 + 0.38 \times (-20.66)$ . Taking the difference and multiplying it by 0.046 (because we are doubling the neutral investor share) yields approximately 36%.

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