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Understanding ethnic hiring discrimination: A contextual analysis of experimental evidence

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ABSTRACT

Previous research has demonstrated that context matters in understanding unequal treatment in hiring—for example, some studies have illustrated that hiring discrimination is low in large organisations or high in public-facing occupations. Following a review of the recent literature on ethnic hiring discrimination, we identified fourteen plausible moderators (i.e. discrimination correlates) from which we derived an equal number of hypotheses related to taste-based and statistical discrimination theories. We empirically tested these hypotheses through a moderation analysis of data from a correspondence experiment supplemented with occupation, organisation, and sector characteristics. Our empirical approach allowed us to simultaneously evaluate and control the interaction effects of multiple contextual factors with ethnic hiring discrimination. Overall, we find that minority (non-Flemish) candidates receive significantly fewer positive responses to their job applications than majority (Flemish) candidates. In particular, non-Flemish candidates experience significantly less discrimination when applying to not-for-profit organisations or organisations with a large workforce. We also find partial empirical support for the hypotheses that hiring discrimination is high in occupations requiring much interaction between colleagues and in occupations where labour market tightness is low. Future research avenues include evaluating the rationale behind the discrimination correlates mentioned above and testing the replicability of this study's findings across different institutional contexts, labour markets, and grounds for discrimination.

1. Introduction

Earlier research has shown that ethnic minorities face substantial unequal treatment in the hiring process (Baert, 2018; Bertrand and Duflo, 2017; Lippens et al., 2023; Quillian et al., 2017; Thijssen et al., 2021). A recent meta-analysis of field experimental evidence indicated that, worldwide, ethnic minorities receive about a third fewer positive responses than similar majority candidates when applying for a job—depending on the specific minority group, this figure amounted to more than forty per cent (Lippens et al., 2023).[1] This unequal treatment appears persistent across regions and time (Lippens et al., 2023; Quillian et al., 2017, 2019). Current policies issued by governments and businesses to strengthen the integration of minority groups in the labour market seem insufficient to banish discrimination in the workplace. Such policies include employment subsidies for hiring applicants from under-represented groups or diversity training for employers and recruitment professionals (Bezrukova et al., 2016; Butschek and Walter, 2014; Organisation for Economic Co-operation and Development [OECD], 2020). To some extent, these policies steer in the dark because it is not always clear why or when ethnic hiring discrimination occurs (Lippens et al., 2022). The current study evaluates which and to what extent theory-derived context factors correlate with levels of ethnic hiring discrimination, enabling a targeted evaluation of discrimination moderators.

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[1] Applicants with an Arab, Maghrebi, or Middle Eastern background, for example, are, on average, about 41% less likely to receive a positive response than their majority counterparts (Lippens et al., 2023).

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Within the economics literature, there are two dominant explanatory mechanisms of hiring discrimination: taste-based and statistical discrimination (Arrow, 1973; Becker, 1971; Lang and Kahn-Lang Spitzer, 2020; Lang and Lehmann, 2012; Phelps, 1972). On the one hand, taste-based discrimination posits that employers discriminate because of contact preferences for applicants from the majority in-group (Becker, 1971). At the same time, employers could discriminate because employees or customers have similar preferences; the willingness of these employees and customers to work for other employers or purchase goods and services from other firms due to their prejudice against minority colleagues or personnel could influence the decision-making of the employer towards discriminating against minority applicants (Becker, 1971; Borjas, 2020). On the other hand, statistical discrimination assumes employers discriminate due to (potentially inaccurate) statistical beliefs about unobserved productivity-related characteristics of applicants based on their group membership (Arrow, 1973; Lang and Kahn-Lang Spitzer, 2020; Phelps, 1972). Employers might rely on these perceived characteristics either because of a general lack of information about the productivity of the individual applicant or because this information is too costly to acquire.

These theories lead to different predictions concerning the context in which discrimination increases or decreases and thus deserves more policy attention. An illustrative hypothesis derived from taste-based discrimination theory is that discrimination is higher for occupations where the level of contact with colleagues or customers is high (e.g. Derous et al. 2017, Laouénan 2017). The rationale is that if individuals of the majority in-group disfavour having contact with individuals of the minority out-group, employers might refrain from hiring minority applicants for occupations where such contact is significant. Conversely, an example of a hypothesis based on statistical discrimination is that large organisations have a dedicated, more formalised human resource department, make more use of standardised recruitment procedures, and have a higher capacity to assess and learn about candidates' productivity than small organisations (Baert et al., 2018; Midtbøen, 2015). Therefore, job agents who adopt the norm set inherent to these procedures or internalise the learned productivity-related candidate information might rely less on previously held (statistical) beliefs, resulting in less (statistical) hiring discrimination.[2]

At present, the study of the empirical value of the mechanisms of ethnic labour market discrimination and its heterogeneity is limited by the narrow focus on restricted sets of research hypotheses and the occasionally ad hoc interpretations given to the research findings (Adamovic, 2022). A recent systematic review of the empirical evidence of the mechanisms of ethnic labour market discrimination by Lippens et al. (2022) illustrates these shortcomings. As highlighted above, a popular approach to detect taste-based motives of discrimination, for example, is examining the association between customer contact and ethnic hiring discrimination. However, evidence in either direction is sometimes taken at face value and not contrasted with other possible moderators related to alternative hypotheses concerning taste-based or statistical discrimination (e.g. Combes et al. 2016, Laouénan 2017, Longley 2003). By singling out moderation effects, it remains unclear to what extent the interpretations of the evidence validly reflect the underlying mechanism and, therefore, which contextual factors correlate with ethnic hiring discrimination. A better approach would be to bundle potential moderators for which there is direct theoretical evidence to eliminate alternative interpretations. This approach boils down to testing multiple explanatory factors simultaneously through regression analyses.

Our primary objective is thus to jointly test a broader set of active contextual moderators of ethnic hiring discrimination than previously tested in the correspondence audit literature. To this end, we relied on the systematic review of Lippens et al. (2022) to identify potential moderators linked to taste-based or statistical discrimination. This identification led to prespecifying research hypotheses set out in Section 2. Next, we integrated field-experimental data from a correspondence experiment comprising 1780 applications with administrative data directly related to the identified moderators at the occupation, organisation, and sector levels. Finally, we confronted a set of fourteen theoretically grounded research hypotheses regarding moderators of ethnic hiring discrimination against the empirical reality. This contextualisation of the experiment's results with data from external sources produces additional insights beyond the mere reporting of discrimination estimates. Overall, we find substantial evidence for the role of the organisation in shaping ethnic hiring discrimination.

2. Research hypotheses

As mentioned in the introduction, we put forward several research hypotheses that can be directly linked to taste-based discrimination, statistical discrimination, or both, based on a review of the literature concerning the mechanisms of ethnic discrimination in hiring (i.e. Lippens et al. 2022).[3] The breadth of the set of hypotheses—fourteen in total—was only restricted by the input from this literature synthesis as well as the data availability of context variables from external data sources (see Section 4). Table 1 summarises these hypotheses, relating to five different levels: (i) candidate, (ii) vacancy, (iii) occupation, (iv) organisation, and (v) sector.[4] In what follows, we highlight the theoretical arguments for testing these hypotheses and present empirical research that has already done so in the context of ethnic hiring discrimination.

2.1. Candidate characteristics

First, we specified four hypotheses based on the candidate characteristics integrated into the experimental design. On the one hand, based on the theory of statistical discrimination, we presume that ethnic hiring discrimination would be lower (higher) if the fictitious job candidate attains a high (low) level of education, was (un)employed, or had substantial (little) work experience (**H1a, H1b, H1d**). All three characteristics could serve as a proxy for the (unobserved) productivity of the applicants, simultaneously lowering the information ambiguity on the employer's side (Arrow, 1973; Phelps, 1972). Koopmans et al. (2019), Birkelund et al. (2017), and Baert et al. (2017) provided some empirical support for each of these propositions. Additionally, in a recent meta-analysis, Quillian et al. (2019) found that racial discrimination is,

[2] In line with the comments in Lippens et al. (2022), a plausible alternative explanation is that job agents simply conform to the organisation's rules and procedures so that the moderation effect of firm size is actually related to this organisational formalisation instead of the individual-level statistical rationale (see also Dobbin et al. 2015).

[3] We are aware that there are alternative theoretical perspectives which we could have framed this set of hypotheses in—our aim was not to be exhaustive in terms of theoretical interpretations. We highlight some alternative interpretations throughout Section 2 (in footnotes).

[4] At least one important level is missing from this list, namely the decision-maker or job agent level. For example, one could assume that if the job agent has a non-majority ethnic origin, potentially resembling or matching that of the job applicant, they might treat this applicant more favourably (i.e. ethnic homophily; McPherson et al., 2001). This favourable treatment could be because of a lower animosity towards candidates of non-majority ethnicity or because the job agent possesses more (unfavourable) information about the (average) unobserved productivity characteristics of this (group of) applicant(s) (Arrow, 1973; Becker, 1971; Phelps, 1972). Carlsson and Rooth (2007), Edo et al. (2019), and Gutfleisch (2022) provide empirical evidence for this proposition. However, given our experimental setup, it was often impossible to know who this decision maker was, which could differ from the job agent mentioned in the vacancy (if this information was already available). Therefore, any proxy for job agent characteristics would have been too inaccurate to include in our analyses.

Table 1
Moderators of ethnic hiring discrimination following taste-based or statistical discrimination theory: summary of the literature review and research hypotheses.

Characteristic	Expectations based on taste-based or statistical discrimination	Examples of empirical research
A. Candidate characteristics		
Educational level	A job candidate's educational level can signal productivity to employers: higher educational attainment then signals higher average productivity (following statistical discrimination). Employers using this information as a proxy for individual-level productivity and attaching higher values to higher educational attainment might rely less on their prior statistical beliefs, reducing discrimination in hiring. **H1a: Ethnic hiring discrimination is higher if the job candidate attained a low level of education.**	Koopmans et al. (2019) considered the relationship between educational attainment and group differences in ethnic discrimination as measured in a correspondence experiment. They found that lower levels of educational attainment could only account for the unequal treatment of some groups (e.g. Turkish candidates). Nevertheless, this relationship became statistically insignificant when controlling for the value distance between the minority and majority groups.
Employment status	Knowing a job candidate's employment status lowers information ambiguity on the employer's side (following statistical discrimination). Employers could infer that employed candidates attain higher productivity than currently unemployed candidates. **H1b: Ethnic hiring discrimination is higher if the job candidate is (or has been) unemployed.**	Birkelund et al. (2017) investigated whether unemployment constituted an additive or a multiplicative disadvantage for ethnic minority candidates. They found that unemployed minorities only faced an additive (but not a multiplicative) disadvantage, suggesting that unemployment status had no moderation effect. Nevertheless, Pierné (2018) found that candidates of foreign origin benefited more from being employed vis-à-vis employed native candidates.
Gender	A female job candidate with an ethnic background belongs to two minority groups. This double minority status could result in additional discrimination (following taste-based discrimination). **H1c: Ethnic hiring discrimination is higher if the job candidate is female.**	Derous et al. (2015) conducted a field experiment with experienced recruiters to investigate this 'double jeopardy' hypothesis. They found that Arab female candidates were rated more favourably than Arab male candidates, going against this hypothesis. Arai et al. (2016) and Dahl and Krog (2018) discovered similar evidence for this interaction effect. However, Bursell (2014) and Di Stasio and Larsen (2020) found no evidence that ethnic females had a selection advantage over males of the same ethnicity or race.
Work experience	The signal of relevant previous work experience (vis-à-vis no work experience) presumably lowers information ambiguity. Because employers know about the job candidate's experience in a similar position, this reduced information ambiguity could result in less discrimination (following statistical discrimination). Additionally, employers could infer that the higher the level of experience, the higher the candidate's productivity. **H1d: Ethnic hiring discrimination is higher the less work experience the job candidate possesses.**	Baert et al. (2017) examined whether work experience mitigated ethnic hiring discrimination. Their results indicated that the unequal treatment of ethnic minorities in hiring was negated when they signalled having acquired twenty years of previous work experience. By contrast, Ahmad (2020), in a similar study, found no evidence for a moderation effect of work experience.
B. Vacancy characteristics		
Contract type	Offering a fixed-term contract (vis-à-vis an open-ended contract) possibly carries less risk to the employer. A fixed-term contract usually entails lower or shorter barriers to exit, which has two advantages: the cost of a wrong hire is more easily negated, and this contract type counters the need for extensive candidate assessment (i.e. information acquisition). Because the bar for candidate information acquisition is lower for fixed-term contract employees, and fewer costs (or risks) are associated with hiring a particular candidate through a fixed-term contract, this could result in less discrimination (following statistical discrimination). **H2: Ethnic hiring discrimination is lower if the contract offered is fixed-term.**	Edo et al. (2019) examined the interaction effect of contract type and ethnicity on unequal treatment in hiring but found no evidence for such an effect. Contrarily, Martínez-Pastor (2013) indirectly examined a similar event by looking at the effect of ethnicity on the probability of being employed through a fixed-term contract in the Spanish labour market. They found that Latin Americans and Africans were more likely to have a fixed-term contract, with a more prominent effect for the latter group.
C. Occupation characteristics		
Extra-organisation interaction	Different occupations require different levels of extra-organisation interaction with customers, representatives of external organisations, or the public. Prejudiced customers, for example, might be reluctant to interact with ethnic minority employees. If these customers no longer want to deal with the organisation because of this contact-induced animosity, employers might act on this, resulting in additional discrimination in hiring against ethnic minorities (i.e. customer discrimination, following taste-based discrimination). **H3a: Ethnic hiring discrimination is higher for occupations that require high extra-organisation interaction.**	Bertrand and Mullainathan (2004) examined the relationship between the expected customer contact (in a given occupation) and unequal treatment in hiring but found no differences in discrimination. By contrast, Derous et al. (2017) found that dark-skinned (versus light-skinned) applicants received lower suitability ratings and that this relationship was higher for occupations with high customer contact. Combes et al. (2016) and Laouénan (2017) found similar evidence in correlational research: African(-American) job candidates appeared underrepresented in jobs requiring substantial customer contact.
Intra-organisation interaction	Differences between occupations exist regarding the required intra-organisation interaction with colleagues. Possible contact with ethnic minorities could incite animosity amongst coworkers towards these minorities. Employers who risk losing employees because of this contact-induced animosity might act on this, leading to additional discrimination against ethnic minorities (i.e. employee discrimination; following taste-based discrimination). **H3b: Ethnic hiring discrimination is higher for occupations that require high intra-organisation interaction.**	Weichselbaumer (2017) investigated the role of team contact, mentioned in the vacancy to which fictitious job candidates applied in a correspondence experiment, in the unequal treatment of ethnic minorities in hiring. In contrast to theoretical expectations, they did not find evidence that hiring discrimination varied by the extent of team contact.
Bottleneck status	A tight labour market means employers have difficulty filling vacancies because of the limited labour supply. In occupations that have acquired a bottleneck status, inter-candidate competition is low. At the same time, employers might rank candidates based on their animosity towards these candidates or their beliefs about the average productivity of the group to which the candidates belong (following taste-based and statistical discrimination). Because minority candidates face less competition from majority candidates in bottleneck occupations, employers might rank these candidates higher, resulting in less discrimination and vice versa (Baert et al. 2015). **H3c: Ethnic hiring discrimination is lower in occupations with a bottleneck status.**	Baert et al. (2015) tested the relationship between hiring discrimination and labour market tightness at the occupational level. The results indicated that ethnic minorities were more discriminated against when vacancies were easy to fill (i.e. when labour market tightness was low). On the other hand, findings from a similar field experimental study in a different institutional context by Carlsson et al. (2018) suggest that ethnic discrimination in hiring increases with labour market tightness.

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Table 1 (*continued*)

Characteristic	Expectations based on taste-based or statistical discrimination	Examples of empirical research
D. Organisation characteristics		
Nationality diversity of the management	A more internationally diverse organisation management might positively affect ethnic minority applicants. On the one hand, this could signal to the organisation's employees that the organisation is welcoming to employees of different ethnicity, lowering the overall taste-based animosity (following taste-based discrimination). On the other hand, this could indicate that the organisation has implemented rulesets and procedures that advance ethnic diversity. If these procedures allow for a more accurate assessment of ethnic minority applicants' productivity characteristics, lowering information ambiguity, this could also contribute to lower discrimination (following statistical discrimination). **H4a: Ethnic hiring discrimination is lower if the organisation's management is more ethnically diverse.**	Bursell (2007) explored the relationship between CEO ethnicity (signalled through their name) and differences in call-back in a correspondence experiment. They found that ethnic hiring discrimination diminished if the CEO had a foreign (versus non-foreign) name.
Not-for-profit status	Presumably, not-for-profit (versus for-profit) organisations are more indifferent to making costs due to inefficiencies caused by hiring discrimination because profit objectives do not formally drive not-for-profit organisations. A higher willingness to pay for discrimination could lead to higher levels of discrimination (following taste-based discrimination). However, organisations that pursue social aims might have a more conscious and considerate approach to discrimination issues, lowering the general 'taste' for discrimination. In addition, because of the lack of focus on profitability, not-for-profit organisations are presumably willing to spend more costs on personnel assessment. More assessment means more (accurate) information about potential candidates, leading to less discrimination (following statistical discrimination). **H4b: Ethnic hiring discrimination is lower if the organisation has a not-for-profit legal status.**	Several previous studies considered the relationship between the legal form of a given organisation and ethnic hiring discrimination committed by representatives of that organisation (e.g. Baert et al. 2018, Midtbøen, 2014, Zschirnt and Ruedin 2016). The current empirical consensus in research based on the correspondence testing method is that hiring discrimination is lower in public or not-for-profit organisations than in private or for-profit organisations.
Size	Because large (versus small) organisations might have a dedicated or more formalised human resources department, a greater capacity to process job applications or a greater learning capacity concerning unobserved applicant characteristics, they might acquire more (accurate) information about job candidates. More (accurate) information about job candidates presumably leads to less reliance on stereotypical beliefs about these candidates and, thus, less discrimination (following statistical discrimination). **H4c: Ethnic hiring discrimination is lower if the organisation size is large.**	Baert et al. (2018) investigated the interplay between organisation size and (ethnic) hiring discrimination. Despite the theoretical expectations under statistical discrimination theory, they uncovered no evidence for a moderation effect of organisation size on the relationship between the discrimination ground and unequal treatment in hiring. Maurer-Fazio (2012) examined a similar relationship; the results from their correspondence experiment also suggested that organisation size did not play a role in ethnic hiring discrimination.
E. Sector characteristics		
Product market competition	In sectors where inter-firm product market competition is high, organisations risk being driven out of the market by competitors. Consequently, they should want to refrain from discriminating, especially if this comes at a cost. Therefore, the willingness to pay for discrimination driven by taste diminishes (following taste-based discrimination). **H5a: Ethnic hiring discrimination is lower in sectors with high product market competition.**	Berson (2012) evaluated the moderation effect of competition on ethnic hiring discrimination (via a correspondence experiment). They found that the level of product market competition positively impacted the employers' response but did not find evidence for additional differential treatment between ethnic minority or majority job applicants if the product market competition was high (versus low).
Representation of foreign nationalities	In sectors where ethnic minorities are strongly represented, the unequal treatment of minority job applicants might be lower vis-à-vis sectors where this representation is weak. This discrimination could be because the animosity towards these applicants is generally lower, resulting in less discrimination (following taste-based discrimination). However, this could also be because employers have learned about the (average) unobserved characteristics of the (group of) minority applicants, leading to less information asymmetry and consequently less reliance on statistical beliefs (following statistical discrimination; Altonji and Pierret, 2001). **H5b: Ethnic hiring discrimination is lower if ethnic minorities are more strongly represented within the sector.**	Baert et al. (2015) examined whether labour market tightness moderated the effect of ethnicity on unequal treatment in hiring. Specifically, they controlled for the interaction effect between the fraction of foreign workers in a given sector and ethnicity. Based on their results, there is no evidence for a moderation of the representation of ethnic minorities at the sector level and ethnic hiring discrimination, which is in line with the subsequent study of Baert et al. (2017).
Job vacancy rate	Employers can face difficulties filling job vacancies in sectors where there is an abundance of vacancies relative to the combined number of vacancies and occupied positions, expressing some form of labour market tightness. Here, competition between candidates is low. Therefore, hiring discrimination might be low because minority candidates face less competition from majority candidates (following taste-based and statistical discrimination). **H5c: Ethnic hiring discrimination is higher if the job vacancy rate is high.**	Carlsson et al. (2018) considered the relationship between the vacancy–unemployment ratio (at the occupation level) and ethnic hiring discrimination. Their results showed that discrimination increased in economic downturns, i.e. when labour market tightness was high. This finding is opposite to expectations under ranking models of job search (but in line with screening models of job search).

on average, higher in studies where the applicants attained lower levels of education, including high school and post-high school vocational degrees (versus college education).

On the other hand, based on taste-based discrimination theory, we expect that the unequal treatment of ethnic minorities would be greater if the job candidate is female because of the double minority status and

the consequently increased salience of minority traits (**H1c**; Becker, 1971).[5] Nevertheless, most recent empirical evidence on hiring discrimination has refuted this 'double jeopardy' hypothesis, finding no evidence for a moderation effect or even an association in the opposite direction to the disadvantage of ethnic minority males (Dahl and Krog, 2018; Derous et al., 2015; Di Stasio and Larsen, 2020).

2.2. Vacancy characteristics

Second, we put forward one hypothesis based on the information retrieved from the vacancies we applied for in our correspondence experiment—i.e. that ethnic hiring discrimination would be lower if the contract offered is fixed-term (**H2**). The rationale for this proposition is that fixed-term contracts presumably carry lower risk to the employer than open-ended contracts (Eichhorst, 2014). The lower or shorter barriers to exit decrease the need for extensive candidate assessment: a fixed-term contract without extensive financial commitments can be used as a 'test contract'. Through these contracts, the employer can learn about previously unobserved productivity characteristics of the employee (i.e. employer learning; Altonji and Pierret, 2001). This way, the upfront assessment costs and costs of a potential mismatch are partially negated. If the employee's performance is unsatisfactory, the employer could opt not to extend the contract. Edo et al. (2019) tested the interaction effect between contract type and ethnicity on hiring discrimination directly but found no evidence for such an effect.

2.3. Occupation characteristics

Third, at the occupation level, we hypothesise that unequal treatment in hiring would be greater for occupations that require high extra-organisation contact (also known as 'public-facing occupations') or intra-organisation contact (**H3a, H3b**). More specifically, if an occupation entails high levels of interaction with customers (i.e. extra-organisation) or colleagues (i.e. intra-organisation), we expect this contact-induced animosity could drive away these customers and employees. In turn, (the anticipation of) the incurred economic losses could make employers act on this by ranking ethnic minority candidates lower, resulting in increased discrimination. The findings of Derous et al. (2017), for example, provide evidence for the hypothesis concerning customer contact, while earlier research on the moderation effect of intra-organisation interaction on ethnic hiring discrimination does not (e.g. Weichselbaumer 2017).

In contrast with a lower ranking of minority candidates due to (taste-based) contact preferences, said candidates might be ranked higher when labour market tightness at the occupation level is high (Baert et al., 2015; Carlsson et al., 2018). An initial lower ranking of minority candidates could be induced either because of animosity towards these minority candidates (following taste-based discrimination) or because, on average, employers expect them to have lower productivity than their majority counterparts (following statistical discrimination; Arrow, 1973; Becker, 1971; Phelps, 1972). In tight labour markets, however, there are fewer candidates for each open vacancy, which implies that minority candidates face less competition from majority candidates. Therefore, they are more likely to find a job, analogous to the rationale of Blanchard and Diamond's (1994) ranking model (Baert et al., 2015). The mechanisms of this model suggest that hiring discrimination against ethnic minorities could be lower if labour market tightness is high.

Alternatively, scholars have also positioned labour market tightness against screening models (Baert et al., 2015; Carlsson et al., 2018; Lockwood, 1991; Vishwanath, 1989). Here, the direction of the effect is more ambiguous because it depends on the uncertainty surrounding the unobserved productivity-related characteristics of the ethnic minority group. Suppose the uncertainty around these characteristics is large. In that case, the signalling qualities of ethnicity could be stronger (weaker) in an economic upturn (downturn), leading to more (less) statistical discrimination (Carlsson et al., 2018). While Baert et al. (2015) found evidence for a negative moderation effect of labour market tightness on ethnic hiring discrimination, Carlsson et al. (2018) came to the opposite result. Since the institutional context of the current study is similar to the one in Baert et al. (2015), our hypothesis follows that of the ranking model; we assume ethnic hiring discrimination is lower in occupations with a 'bottleneck status' or low inter-candidate competition (**H3c**).[6]

2.4. Organisation characteristics

Fourth, we posit three hypotheses related to an equal number of organisational characteristics. The first of those propositions concerns the diversity of the organisation's management in terms of nationality; an internationally diverse management could signal that the organisation welcomes employees of different ethnicities but also that there are (selection) procedures in place that promote organisational (management) diversity. Therefore, we expect ethnic hiring discrimination to be lower if the organisation's management is more diverse in terms of nationalities (**H4a**).[7] In this context, Bursell (2007) found that a foreign-sounding CEO name moderated ethnic hiring discrimination at the organisational level, positively impacting call-back rates of ethnic minorities.

The second hypothesis at the organisational level relates to the organisation's (not-)for-profit status. From a taste-based perspective, organisations not driven by profit objectives might be more indifferent to making costs due to discrimination inefficiencies, leading to a higher willingness to pay for discrimination (Becker, 1971). However, another line of thinking is that organisations driven by social aims might be more considerate about discrimination issues by design and that their employees harbour less animosity towards ethnic minorities. Zschirnt and Ruedin (2016), for example, also hypothesised that the animosity against ethnic minorities would be lower in organisations with clear non-commercial social goals (e.g. in organisations that actively promoted equal opportunities). Moreover, because of the lack of profit-driven focus, these organisations might be willing to spend more costs on candidate assessment. Even in cases where the assessment costs to acquire information about unobserved characteristics appear disproportionately high relative to the probability of changing the status quo decision (Bartoš et al., 2016). Eventually, lower information ambiguity could result in less discrimination (Arrow, 1973; Phelps, 1972). Taken together, we expect ethnic hiring discrimination to be higher if

[5] This corroborates with the intersectional perspective which suggests that ethnic discrimination is different between men and women (Crenshaw, 1998). However, this hypothesis might not always hold: foreign men may experience more discrimination in hiring, particularly in positions that involve direct interaction with customers, due to the perception of being more intimidating (Di Stasio and Larsen, 2020).

[6] The term 'bottleneck status' comes from the Dutch term 'knelpuntberoep' in the external data (see Section 4.1). It is an official term indicating it is hard to find candidates for a particular occupation, causing a bottleneck in the hiring process.

[7] These assumptions align with intergroup contact theory, which posits that (positive) contacts between in- and out-group members lead to less prejudice (Allport, 1954; Pettigrew et al., 2011). If there is a large sector representation of ethnic minorities, one could expect that there are also more opportunities for interethnic contacts, lowering ethnic (hiring) discrimination. By contrast, realistic group conflict theory assumes that contact between members of different ethnic groups results in conflict and, consequently, more prejudice (Berkowitz & Sherif, 1967; Francis et al., 1973). Therefore, knowing that the mere perception of threat could also induce prejudice, one could expect that the larger the sector representation of ethnic minorities, the higher the perceived threat and thus the higher the level of ethnic discrimination (Esses et al., 1998; Riek et al., 2006). Nevertheless, Van Assche et al. (2023) show empirically that even in the face of threat, increased contact reduces prejudice.

the organisation has a for-profit legal status, which appears to be the empirical consensus at present (**H4b**; e.g. Baert et al. 2018, Midtbøen, 2014, Zschirnt and Ruedin 2016).

Our last hypothesis at the organisational level is that the unequal treatment of ethnic minorities would be lower if the organisation is large (versus small; **H4c**). Hiring managers in large organisations are presumably more likely to face a formalised selection process where they must follow dedicated procedures to process applications (Arrow, 1973; Baert et al., 2018; Krishnan and Scullion, 2017; Mayson and Barrett, 2006; Phelps, 1972). At the same time, they have more capacity to acquire information about applicants, lowering the reliance on (false) statistical beliefs. In a large-scale correspondence experiment, Kline et al. (2022) found that discrimination was lower in firms where the hiring function was more centralised than in firms where the hiring responsibility was relatively decentralised. They ascribed this to the rulesets originating from more mature human resources practices, presumably replacing the discretionary judgements of individual job agents.[8,9] By contrast, Maurer-Fazio (2012) put forward the hypothesis that discrimination would be lower in large companies because interactions between the management and employees are less needed or frequent, hinting at a taste-based mechanism.[10] Recent empirical evidence, however, has failed to demonstrate the (negative) moderation effect of firm size on hiring discrimination (Baert et al., 2018; Maurer-Fazio, 2012).[11]

2.5. Sector characteristics

Fifth, at the sector level, we identified three possible moderation effects directly derived from the two seminal discrimination theories. The first potential moderation effect at this level is based on the product market competition. We presume that, in sectors where the product market competition is high, ethnic hiring discrimination would be low (**H5a**). More specifically, in those sectors, the employers' willingness to pay to discriminate could be negated by the risk of being driven out of the market due to competition (Becker, 1971; Borjas, 2020). Berson (2012), for example, examined a very similar hypothesis but did not find evidence for a moderation effect of competition.

The second moderation effect at the sector level is related to the representation of ethnic minorities. We hypothesise that the unequal treatment in hiring would be lower if ethnic minorities were more strongly represented within a given sector (**H5b**). Similar to the reasoning behind the hypothesis concerning the diversity of the organisation's management, a generally higher representation could signal that there is, on average, less animosity towards ethnic minorities (Becker, 1971). It could also signal that employers have learned about the unobserved characteristics of minority applicants, resulting in less reliance on inaccurate statistical beliefs (Altonji and Pierret, 2001; Arrow, 1973; Phelps, 1972). Based on a cross-sectional analysis of field experimental and administrative data, Baert et al. (2015, 2017), however, have found no empirical support for this proposition.

Finally, the third possible moderation effect relates to the job vacancy rate. We hypothesise that ethnic hiring discrimination would be higher if sectoral job vacancy rates were low (**H5c**). Like high labour market tightness in bottleneck occupations, a high job vacancy rate could signal an increasingly tight labour market. In such a labour market situation, where employers have difficulties filling vacancies, minority candidates could climb up the candidate rankings, facing less competition from majority candidates and thus less hiring discrimination (consistent with both taste-based and statistical discrimination rationales).

2.6. Methodological contributions to the literature

The approach of the current study adds to the literature in three different ways. First, by adopting a systematic strategy to develop hypotheses based on theoretical grounds, as outlined above, we circumvent the ad hoc and exploratory approach some studies have adopted in unravelling the contextual factors contributing to ethnic hiring discrimination (Lippens et al., 2022). Our hypothesis set, described in this section, was only bound by the considered theoretical mechanisms and the available contextual data (combined with the estimates from the correspondence audit), making it a relatively broad set compared to previous papers evaluating moderators of ethnic hiring discrimination. Second, by considering and testing hypotheses jointly, we reduce the influence of unobserved factors (see Section 4 for the empirical strategy). Moderators can be correlated with other variables, either observed or unobserved. Joint testing accounts for the subset of variables we can observe and control. Third, by prespecifying hypotheses before handling the data, we avoid the pitfall of data mining, simultaneously reducing the risk of confirmation bias and *p*-hacking (Button and Walker, 2020). While prespecification is customary in other fields, like psychology, this approach has yet to permeate the economics discipline (Banerjee et al., 2020; Burn et al., 2022).

3. Correspondence experiment

To establish a baseline measurement of ethnic hiring discrimination, we used the time-tested field experimental method of the correspondence audit study. This method detects unequal treatment by monitoring and comparing the responses to applications of pairs of fictitious job candidates applying for genuine vacancies. The characteristics of the candidates are, on average, identical, except for their ethnic origin. Because one can give a causal interpretation to the association between the candidates' ethnicity and the employers' responses, correspondence experiments are often referred to as the 'golden standard' to measure hiring discrimination (Baert, 2018; Lippens et al., 2023; Neumark, 2018; Verhaeghe, 2022). The rest of this section is structured as follows: (i) the outline of the experiment's design; (ii) the description of the sample and the followed procedure; (iii) a summary of the Flemish institutional context; and (iv) the description of the main results concerning the differential treatment of minority candidates.

3.1. Experimental design

We employed a matched correspondence test design to capture unequal treatment in hiring against sub-Saharan African (i.e. Ghanaian),

[8] In Kline et al.'s (2022) study, the relationship between firm characteristics and racial contact gaps (i.e. discrimination) was large; about 20% of the firms discriminating most heavily against Blacks were responsible for about 50% of the hiring discrimination against Blacks. However, an important reservation was made about the obvious solution to the problem. While centralising the hiring function might lower levels of discrimination, it might also be differed to later stages in the process (see also Quillian et al. 2020).

[9] This interpretation aligns with seminal sociological work in that the reduction in discrimination could also be linked to the procedures in se rather than the internalisation of these procedures by hiring managers (Dobbin et al., 2015).

[10] Maurer-Fazio (2012) study was conducted in the Chinese context. The assumption concerning the lower frequency and importance of employer-employee interactions might be rooted in the high hierarchical structuring of Chinese organisations (Zhang and Spicer, 2014). Interestingly, cultural differences across organisation could thus play a (maybe unexpected) role in which specific discrimination mechanisms activate.

[11] A related hypothesis is that (ethnic) hiring discrimination would be lower if the job agent worked for an employment agency. Here, too, one might assume that because of the dedicated function of such agencies to search for candidates and match these with open vacancies, they have formalised selection procedures to optimise the information acquisition process (see Carlsson 2010). Therefore, we controlled the moderation effect between the employment agency status of an organisation on ethnic hiring discrimination to validate whether the latter effect persisted if there would be a moderation effect of firm size on discrimination (see Section 4.2).

Maghrebian (i.e. Moroccan), Eastern European (i.e. Slovakian), and Turkish minority job candidates compared to the Flemish majority group.[12] The pairs in our experiment were nearly identical, only differing based on their ethnicity, signalled via the name of the applicants on their resumes. More concretely, each candidate pair consisted of a candidate with a typical Flemish-sounding name and one with a non-Flemish-sounding name. All candidates had the same nationality, i.e. Belgian. Besides randomly allocating names within pairs, we experimentally manipulated three other characteristics between pairs to measure intersectionality effects, namely (i) gender (i.e. male or female), (ii) experience in a related function (i.e. none, five years, or 20 years), and (iii) employment status (i.e. employed or unemployed). Due to this between-pair allocation, these characteristics are considered 'unmatched' (Vuolo et al., 2018).[13] The educational level of the applicants depended on the vacancy—we did not experimentally alter this characteristic. Fig. 1 depicts an abstraction of our design.

Before the start of the experiment, we compiled sets of resumes that were accompanied by a corresponding cover letter, alternating between two layouts (i.e. type A and B). The layouts of these resumes were derived from examples made publicly available by the Flemish Public Employment Agency. This approach has two advantages (Lahey and Beasley, 2018). First, the resumes presumably had high face validity, as they were based on existing resume templates. Second, experiment detection was unlikely because we assumed other job seekers frequently used these resume templates and thus circulated widely within the Flemish labour market. The templates also contained very similar information. For example, they both mentioned an identical age and city of residence, although the candidates' exact birth dates and addresses differed. Moreover, both candidates attained the same educational level with comparable study subjects. By randomly assigning names to template types A and B, the potential effect of layout differences was nullified by design.

3.2. Sample and procedure

In the first part of the correspondence experiment, conducted between February 2020 and February 2021, we sent 1300 applications to 650 vacant positions in the Antwerp area. The second part, which partly overlapped with the former, occurred between December 2020 and May 2021 in the Ghent area and was reserved for 240 job postings, resulting in 480 applications. The same procedure was followed in both experiments. We retrieved the vacancies from the website of the Flemish Public Employment Service, as well as from other professional online job platforms (i.e. StepStone, Indeed, Jobat, and LinkedIn) and websites of companies located in the Antwerp or Ghent area.

To cover a broad range of job functions across these sectors, we considered dozens of occupations requiring different educational backgrounds. The related sampling process for selecting vacancies for our study involved two steps. First, we looked at vacancies published across various job domains using the Flemish Public Employment Service website and randomly selected sets of vacancies for each domain. We then identified the primary sector linked to the organisations that posted these vacancies, focusing on sectors with the highest vacancy concentration in the Antwerp or Ghent area. Second, we identified the most commonly sought-after occupations within each sector. We did this because applying for vacancies was only partially automated, and we had limited resources to conduct the experiment itself. Therefore, we had to restrict the number of unique applicant profiles concerning the allocated occupations. To identify suited occupations, we sampled recently published vacancies for each previously selected sector and determined which occupations were most in demand.

During this process, we also considered the gender representation in each occupation so that it would not appear unusual for a male or female applicant to apply for a given vacancy. Specifically, we excluded occupations with a male or female representation of 5% or less when constructing applicant profiles using occupation information on gender representation from Statbel (2021), the statistics office of the Belgian Federal Government. An example of an occupation we excluded is 'maintenance technician', for which a mere 0.9% of employees were female. This process resulted in a set of 51 different occupations, of which the following six job functions were most applied to: (i) construction managers ($N = 91$), (ii) general office clerks ($N = 81$), (iii) accounting associate professionals ($N = 72$), (iv) clerical support workers ($N = 69$), (v) commercial sales representatives ($N = 62$), and (vi) shop sales assistants ($N = 59$). All jobs either required a secondary education degree or a bachelor's degree.[14]

Apart from the set of sampled vacancies—each linked to one organisation—the sector focus was the most notable difference between the experiments in the two areas. For the experiment in the Antwerp area, we mainly focused on these five sectors: administrative and support services, construction, industry, transport and storage, and wholesale and retail. For the experiment in the Ghent area, we primarily narrowed in on vacancies in the following sectors: administrative and support services, human health and social work activities, industry, and wholesale and retail. In addition, there was a rest category 'other' for vacancies linked to sectors that could not be classified into one of the above categories but were identified in our search for vacancies linked to the occupation assigned to each applicant profile. Altogether, we could categorise the vacancies into six focus sectors and one residual group: (i) administrative and support services ($N = 217$), (ii) wholesale and retail ($N = 152$), (iii) industry ($N = 59$), (iv) transport and storage ($N = 55$), (v) human health and social work activities ($N = 54$), (vi) construction ($N = 46$), and (vii) other ($N = 307$).

Following identification, we e-mailed two resumes to the e-mail address listed in each vacancy. For every resume of a fictitious Flemish candidate, we sent out one resume of its sub-Saharan African, Maghrebian, Eastern European, or Turkish counterpart, generally on alternating days (with a minimum of 12 h and a maximum of 72 h apart) and always in alternating sequence to experimentally negate order effects. Job agents could react to the applications by e-mail or through the candidates' voicemail. If we received a reaction, we consistently responded with the message that the applicant was no longer looking for a job.

Finally, we monitored the job agents' reactions to identify possible unequal treatment within the candidate pairs. We delineated two levels of positive response—i.e. in the broad callback definition and the strict callback definition. A broadly positive response was defined as any positive response in reaction to the application, which could be an invitation for an interview but could also comprise a request for additional information, a request to call back, or the advice to apply for another vacancy at the same organisation. A strictly positive response was defined as an invitation for a job interview.

[12] In line with Baert et al. (2017), by testing discrimination against multiple ethnic minorities, we could avoid the pitfalls of earlier correspondence studies that only looked at a single minority group, which may have resulted in an unbalanced understanding of discrimination. This approach also allowed us to differentiate between minority groups perceived as lower ranked versus minority groups perceived as higher ranked within the Flemish community (see Alanya et al. 2015, 2017).

[13] The unmatched nature of these characteristics makes the results based on these moderators more susceptible to confounding bias. However, such bias should be (partially) countered by the random allocation of employers to candidate sets.

[14] Given the underrepresentation of people with a migration background in tertiary education above the bachelor level (i.e. master's or doctoral degrees), candidates who would have attained a higher educational level would be less representative, which could raise suspicion, and were therefore not included in this experiment to avoid experiment detection (Baert et al., 2015; Baert and Vujić, 2018; Baert et al., 2017).

3.3. Institutional context

As mentioned in the previous subsection, the correspondence experiment took place around Antwerp and Ghent, two major Flemish (Belgian) cities annex provincial capitals. With almost 530,000 citizens, Antwerp is the largest city in Flanders in terms of population (Agentschap Binnenlands Bestuur, 2022). Its port activities substantially drive its local economy, given its position as the fourteenth largest container port in the world (Port of Antwerp, 2021). The condition of the local labour market, however, is one of the poorest in Flanders, with an employment rate (i.e. the fraction of employed individuals aged 20 to 64 years relative to the total population in this age group) of just 66.4% in 2019 and an unemployment rate (i.e. the fraction of unemployed individuals seeking for or available to work relative to the active population) of 14.5% in 2020 and 13.1% in 2021 (Agentschap Binnenlands Bestuur, 2022; Baert, 2021). Compared to Antwerp, the labour market situation of Ghent (with about 265,000 citizens) appears somewhat better, with an employment rate of 72.0% in 2019 and an unemployment rate of 11.0% in 2020 and 9.6% in 2021.

The COVID-19 pandemic, which ran during the period of the correspondence experiment, had a substantial impact on the Flemish labour market at large (De Smet et al., 2021b; Lippens et al., 2021). During the initial months of the crisis (i.e. March–May 2020), it caused a severe economic downturn. The impact of the first two lockdowns restricting social and economic life was significant and was reflected in decreased economic growth, consumer and business confidence, temporary unemployment, and temporary work. Despite this initial downturn, the Flemish labour market recovered, aided by various protective and support measures. A year after the beginning of the pandemic, the Flemish labour market had fewer non-working jobseekers than before, many vacancies, and a record-low number of bankruptcies. However, there was an increase in long-term non-working job seekers, specifically amongst vulnerable groups, and a reappearance of a labour shortage (Scholiers and Vansteenkiste, 2021). By May 2021, (un)employment rates reached pre-crisis levels (De Smet et al., 2021a). Given the proximity between the two cities and the Flemish and Federal (Belgian) Governments' joint approach to tackling the crisis, the pandemic had a similar impact on the labour market contexts of Antwerp and Ghent. For example, the Antwerp area only saw a small net workforce outflow during the first year of the crisis (i.e. −0.9%), comparable to the Ghent area's (i.e. −0.1%; Vandekerkhove et al., 2022). The sudden economic downturn and subsequent quick recovery had an ambiguous effect on the overall results of the experiment. In our analyses, we included time fixed effects to control for evolutions in the labour market situation (due to the COVID-19 pandemic) for the entire duration of our correspondence audit study.

During the testing period, there were notable differences in temporary unemployment across various sectors (De Smet et al., 2021b). At the onset of the crisis, the construction sector was a primary contributor to temporary unemployment, with 13.0% of the Flemish temporary unemployed in March 2020, but this declined to 6.6% by May 2020. A year later, it remained roughly the same at 6.5%. From January to March 2021, five sectors still made disproportionate use of temporary unemployment, with up to five times more temporary unemployed workers in the hospitality sector, followed by arts, entertainment and recreation (3.5 times higher), other services (2.8 times higher), administrative and support services (1.4 times higher), and industry (1.2 times higher).

In 2020, only a few sectors, such as healthcare, energy, water and waste processing, and agriculture, recorded an increase in the number of issued vacancies (De Smet et al., 2021b). The most significant declines in vacancies were in business services, hospitality and tourism, and recreation, culture, and sport, where this number decreased by 30% to 50%. However, in the first four months of 2021, nearly all of the top twenty sectors experienced growth in vacancies, except for the beverage, food, and tobacco manufacturing sectors, which declined by 5.4%. With the anticipated reopening of hospitality in May 2021, this sector also reported many more vacancies, rising by 20.2%.

In this context, it is essential to acknowledge that the labour market conditions during the COVID-19 pandemic could have uniquely influenced employers' perceptions of candidates. For instance, candidates applying during this period might be perceived as having fewer outside options compared to a more typical economic context. This altered perception could, in turn, affect employers' likelihood of discriminatory hiring practices, as they might assume that candidates are more likely to accept offers because they have fewer alternatives than under normal circumstances. These unique dynamics introduce an added layer of complexity to interpreting our ethnic hiring discrimination estimates and warrant caution when generalising these results to more typical labour market conditions.

Previous correspondence experiments in Flanders have demonstrated unequal treatment of ethnic minorities in hiring. The most recent figures are those from Baert et al. (2017). Based on the data from their experiment in the Ghent area, Maghrebian candidates received 42.86% fewer positive responses than their Flemish counterparts. The figure for Turkish candidates is similar—they received 40.47% fewer positive reactions. Sub-Saharan African candidates received 22.73% fewer positive responses, but this finding was statistically insignificant (at the 5 % level). Remarkably, Eastern European candidates received 6.25% more positive reactions than Flemish candidates—yet, again, this result was not statistically significant. In the following subsection, we discuss the main treatment effects of the current correspondence experiment and briefly compare these with the above findings.

3.4. Main treatment effect

To evaluate the differential treatment between Flemish and non-Flemish job candidates in the current experiment, we calculated positive response rates for each ethnic group from which we subsequently derived discrimination ratios (*DR*; see Eq. (1)). The discrimination ratio is equal to the response rate in the ethnic minority treatment group $(t + b)/n_{treat}$ divided by the response rate in the Flemish majority control group $(c + b)/n_{control}$. Here, t is the number of positive responses for minority candidates only, c is the number of positive responses for Flemish candidates only, b is the number of vacancies for which both candidates received a positive response, n_{treat} is the number of candidates in the minority (treatment) group, and $n_{control}$ is the number of candidates in the majority (control) group. This ratio is also referred to as the positive response or risk ratio (Bertrand and Mullainathan, 2004; Lippens et al., 2023). Given that, in our experiment, $n_{control}$ equals n_{treat}, we can rewrite Eq. (1) into its simpler form (see Eq. (2)).

$$DR = \frac{(t+b)/n_{treat}}{(c+b)/n_{control}} \tag{1}$$

$$DR = \frac{(t+b)}{(c+b)} \tag{2}$$

Moreover, we calculated the net discrimination rate (*NDR*) as the difference between the number of positive responses for minority candidates only and the number of positive responses for majority candidates only $c - t$ divided by the total number of positive responses across both groups $c + t + b$ (see Eq. (3); Riach and Rich, 2002). The significance of the treatment effect was computed using McNemar's test.[15]

$$NDR = \frac{c-t}{(c+t+b)} \tag{3}$$

[15] We used the standard specification of McNemar's test, which is most appropriate for statistically comparing count data from two categorical variables: $\chi^2 = \frac{(c-t)^2}{(c+t)} \sim \chi^2(1)$.

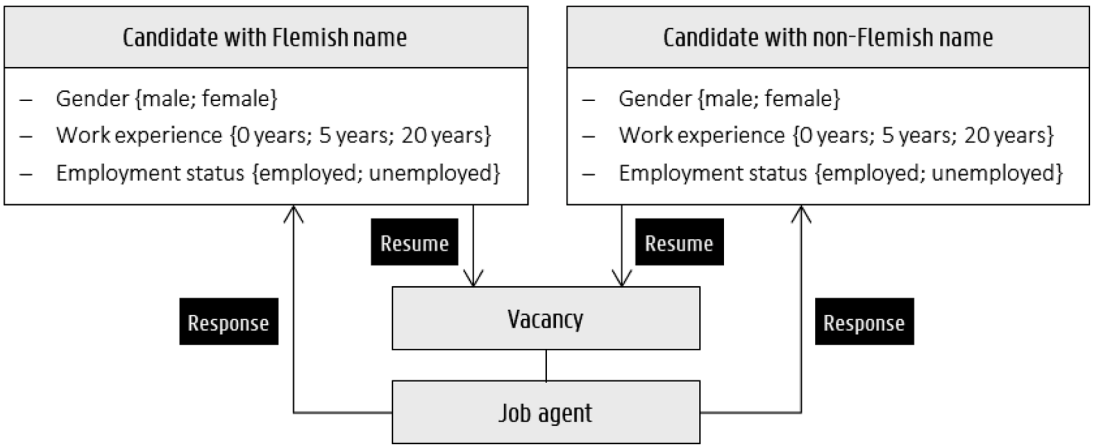

Fig. 1. Abstraction of the correspondence experiment design.
Notes. Words between curly brackets are possible values of the corresponding variable. Except for the name of each candidate, an identical set of candidate characteristics (i.e. gender, work experience, and employment status) was ascribed to each candidate pair. These characteristics thus only varied between pairs. For each candidate, one resume was sent to an open vacancy. We eventually logged the responses of the job agents to the candidates' applications.

We first consider the treatment effect based on positive responses in the broad callback definition (i.e. the reporting default), which contains more nuanced information than solely looking at invitations to an interview. The results can be retrieved from Table 2 (and the count data from Table A1 in the online appendix). Across ethnicities, ethnic minority candidates receive 15.82% fewer positive responses than similar Flemish (majority) candidates (DR = 84.18%, NDR = 13.91%, $p < 0.001$).

For reasons of completeness, we also report the treatment effect by specific ethnicity. However, we must note that recent research has demonstrated that Belgians (amongst which Flemings) were relatively unsuccessful in recognising the specific ethnic origin of non-Belgian names despite being successful in distinguishing between Belgian and non-Belgian names (Martiniello and Verhaeghe, 2022). Eastern European applicants are most discriminated against, receiving 26.51% fewer positive responses than their Flemish counterparts ($DR = 73.49\%$, $NDR = 25.39\%$, $p = 0.002$). They are followed by Maghrebian ($DR = 78.51\%$, $NDR = 18.35\%$, $p = 0.006$) and Turkish candidates ($DR = 85.43\%$, $NDR = 12.50\%$, $p = 0.039$), receiving 21.49% and 14.57% fewer positive responses, respectively. The discrimination ratio related to sub-Saharan African applicants is precisely 1, indicating no evidence of hiring discrimination against these candidates in the broad callback definition. The differential treatment of Turkish and Maghrebian candidates (relative to Flemish candidates) is consistent with the most recent figures of Baert et al. (2017). Conversely, the findings related to the sub-Saharan African and Eastern European subgroups differ from Baert et al. (2017): we find evidence of discrimination against Eastern European but not sub-Saharan African candidates, while Baert and colleagues uncovered discrimination against sub-Saharan Africans but not Eastern Europeans.[16]

If we restrict our variable of interest to invitations to an interview, we still find evidence of ethnic discrimination in hiring across all minority groups: minority candidates receive 17.86% fewer invitations to an interview than Flemish candidates ($DR = 82.14\%$, $NDR = 15.06\%$, $p = 0.004$). Moreover, we note that the applicants from each minority group receive fewer invitations to an interview than their majority counterparts do; Eastern European, Turkish, Maghrebian, and sub-Saharan African candidates receive 40.00%, 21.30%, 13.24%, or 7.97% fewer invitations than Flemish candidates, respectively. However, only the treatment effect regarding Turkish applicants is statistically significant at the 5%-significance level ($DR = 78.70\%$, $NDR = 18.52\%$, $p = 0.041$). We partly attribute this discrepancy to the lower statistical power: the total proportion of invitations to an interview (18.65%) is low compared to the total proportion of positive responses received (37.98%). Additionally, one loses information about the treatment of the candidates when only considering interview invitations. For example, in the case of a non-invitation, the zero-coded value does not provide any information on whether the employer responded positively (e.g. with a request for additional information about the applicant's work history), did not respond, or rejected the applicant.

4. Context data

We enriched the correspondence experiment data with occupation, organisation, and sector data from external sources to test our research hypotheses delineated in Section 2 and Table 1. Here, we outline which data we extracted from external sources, how we matched the data with the respective vacancies for which we applied, and how we operationalised these data into variables included in our analyses.[17] Descriptive statistics of these variables (by response category) can be retrieved from Tables A2 and A3 (in the online appendix). Moreover, we summarise our empirical strategy at the end of this section. The contextual approach we applied in this study corresponds with the approach of Dalle et al. (2023), who performed an extensive moderation analysis of age discrimination in hiring.

4.1. *Data sourcing and operationalisation*

Fig. 2 illustrates the framework of the data-sourcing process. The candidate characteristics are described in more detail in Section 3.1. Starting at the vacancy level, we assigned two variables to each vacancy. First, we identified whether the type of contract offered was fixed-term (including interim contracts) or open-ended. Second, we registered for each vacancy in which area the vacant position was located (i.e. Antwerp or Ghent).

Occupation characteristics were collected from multiple external data sources and linked via their respective ISCO-08 (International

[16] These figures are based on a distinctly different sample of vacancies in terms of occupations, organisations, and sectors, making it hard to formally compare the results.

[17] In case of missing data, the variables either took on the value 'unknown' if the variable was categorical or, if the variable was continuous, missing values were imputed using the mean.

Standard Classification of Occupations, 2008) identifiers or by matching the data using job titles. Besides three possible moderators, i.e. extra- and intra-organisation interaction and labour market tightness, we also constructed one control variable, i.e. the average monthly gross wage by occupation.[18] First, the O*NET database (National Center for O*NET Development, 2022a, 2022b), comprising information about work attributions and job characteristics based on United States survey data, enabled us to calculate the level of extra- and intra-firm interaction. Extra-organisation interaction was computed by taking the average of (i) communication with people outside the organisation and (ii) dealing with external customers. Intra-organisation interaction was calculated as the mean of the level of (i) communication with supervisors, peers, or subordinates and (ii) working with others in a group or team. The values of the O*NET variables ranged from 0 (not at all required) to 100 (very much required). Second, we consulted the 2021 list of bottleneck occupations published by the Flemish Public Employment Agency (Vlaamse Dienst voor Arbeidsbemiddeling en Beroepsopleiding, 2021) to chart the labour market tightness status for each occupation. The bottleneck variable equalled 1 if the occupation was labelled as such in the list; the value was 0 otherwise. Third, we retrieved the 2019 average monthly gross wages of full-time employees by occupation from Statbel (2019), the statistics office of the Belgian Federal Government.

Organisation characteristics were retrieved from Bel-first (2022), a database containing comprehensive information on Belgian and Luxembourgish organisations, and were matched via the organisations' national identification numbers. First, we created an indicator of the organisation's legal form by reclassifying the information retrieved from Bel-first. On the one hand, organisations were considered for-profit if the legal form was either a (private) company (limited by shares or with limited liability) or a cooperative society (with limited liability). On the other hand, organisations were labelled not-for-profit if the legal form was an association in charge of missions, a Dutch-speaking regional authority, a public utility founding, a public company limited by shares, a (private) non-profit association, or a co-operative society with limited liability with a social aim. Out of the 890 organisations, 759 were considered private sector companies, 9 public sector companies, 75 social sector companies, and 47 companies whose status is unknown. Second, we determined the nationality diversity of the organisations' management by calculating the fraction of non-Belgian nationalities of the members amongst their management teams relative to the total size of the management teams. Third, we collected information regarding the number of full-time employees per organisation, which we used as a proxy for the organisation's size. Fourth, we derived the employment agency status of a given organisation based on its NACE (*Nomenclature statistique des Activités économiques dans la Communauté Européenne*) code (i.e. organisations with NACE codes 78100, 78200, and 78300 were labelled as employment agencies).

Finally, we collected sector characteristics via three external data sources. First, the 2018 Herfindahl-Hirschman Index (*HHI*) of product market competition was retrieved via the Federal Public Service Economics of Belgium (Prijzenobservatorium, 2021). This index is often used to measure market concentration or competition (Matsumoto et al., 2012). As lower fractional values entail high competition, we operationalised product market competition as $1 - HHI$. Second, we established the representation of ethnic minorities using population statistics from the Belgian Data Warehouse (Datawarehouse Arbeidsmarkt en Sociale Bescherming, 2022). We collected, by sector, the number of wage earners having a current Belgian nationality and a foreign first nationality, having a current Belgian nationality and the foreign first nationality of their parents, or having a current foreign nationality. These data were then summed and divided by the total number of wage earners (per sector) to arrive at a fraction of mixed or foreign nationality wage earners. Third, we consulted Statbel's (2021) job vacancy survey data to retrieve the job vacancy rate by quarter, year and sector. These data provide us with extra information about labour market tightness at the sector level, i.e. in addition to similar information contained in the occupations' bottleneck status (cf. supra).

4.2. Moderator analysis

We established the treatment effect of ethnicity on a positive reaction to an application in Section 3.4. We are, however, particularly interested in the possible interaction effects between the candidate's ethnicity and other candidate characteristics, as well as the vacancy, occupation, organisation, and sector characteristics derived from the literature review in Section 2. To test our research hypotheses, we used ordinal logistic regression analyses for each set of interactions and an overall model including all interactions (Agresti, 2010). There are two arguments for using ordinal logistic regression: (i) it is particularly useful for analysing data with a dependent variable with a natural ordering, and (ii) it can provide more detailed insights than binary logistic regression as underlying nuances in responses are more adequately captured. In our case, interview invitations are valued higher than other positive responses, such as a request for additional applicant background information, providing the nuanced natural ordering to the correspondence audit data. In addition, we performed robustness checks, comparing the findings of the ordered logit models with those of alternative (standard logit) models.

Specifically, we regressed the probability of a positive reaction on the variables of interest. In line with the empirical specifications of Baert et al. (2016d) and Baert and Vujić (2018), the outcome variable assumed three levels: (i) a rejection or no reaction, (ii) a positive reaction but not an (immediate) invitation to an interview, or (iii) an invitation to an interview. The formal notation is written in Eq. (4) where $Pr(Y \leq j)$ is the cumulative probability that the outcome variable is less than or equal to a certain outcome value j (i.e. reaction level), β_{j0} is the intercept at outcome value j, and $\beta_1, \beta_2, \ldots, \beta_c$ are a set of c model coefficients. For each predictor p in $x_2, x_3, \ldots, x_p$ at the candidate, vacancy, occupation, organisation, and sector level, the ordered logit models included an interaction term with the candidate's ethnicity x_1. While most interactions were included to test the research hypotheses from Section 2 formally, the (i) city where the correspondence experiment took place, (ii) average monthly gross wage at the occupational level, and (iii) employment agency status of the organisation were included as control variables. Given the correlation between the assignment of the fictitious candidates to a pair (or cluster) and the treatment of those candidates, standard errors were clustered at the vacancy level (Abadie et al. 2022, Vuolo et al. 2018).

$$Pr(Y \leq j) = logit^{-1}\left(\beta_{j0} + \beta_1 x_1 + \beta_2 x_2 + \beta_3 (x_1 * x_2) + \ldots + \beta_{c-1} x_p + \beta_c \left(x_1 * x_p\right)\right) \quad (4)$$

To validate the results of our primary ordinal logistic regression analysis, we performed (i) regular logistic regression analyses at the candidate level with (a) the probability of any positive response or (b) an interview invitation as the dependent variables and (ii) ordinal logistic regression analyses at the vacancy level with the probability of discrimination in (a) positive response or (b) invitation to an interview as the dependent variables. In the latter two sets of analyses, the outcome values equalled (i) discrimination against the Flemish candidate, (ii) no discrimination, or (iii) discrimination against the non-

[18] Employers might be more likely to employ ethnic minorities in job functions with lower average wages.

Table 2
Probability of an invitation to an interview or a positive response: differential treatment in the hiring of sub-Saharan African, Maghrebian, Eastern European, and Turkish candidates compared to Flemish candidates.

(1) thnicity	(2) Number of vacancies	(3) Positive response rate minority candidate	(4) Positive response rate Flemish candidate	(5) Discrimination ratio (*DR*)	(6) 1−*DR*	(7) Net discrimination rate (*NDR*)	(8) McNemar's χ^2 (*p*)
A. Any positive response (broad sense)							
All (minority) ethnicities	890	28.09%	33.37%	84.18%	15.82%	13.91%	17.12*** (<0.001)
Sub-Saharan African	162	36.42%	36.42%	100.00%	0.00%	0.00%	0.00 (1.000)
Maghrebian	283	25.80%	32.86%	78.51%	21.49%	18.35%	7.69** (0.006)
Eastern European	163	22.09%	30.06%	73.49%	26.51%	25.49%	9.94** (0.002)
Turkish	282	29.08%	34.04%	85.43%	14.57%	12.50%	4.26* (0.039)
B. Invitation to an interview (strict sense)							
All (minority) ethnicities	890	12.92%	15.73%	82.14%	17.86%	15.06%	8.12** (0.004)
Sub-Saharan African	162	14.20%	15.43%	92.03%	7.97%	6.67%	0.33 (0.564)
Maghrebian	283	16.25%	18.73%	86.76%	13.24%	10.94%	1.69 (0.194)
Eastern European	163	5.52%	9.20%	60.00%	40.00%	33.33%	3.00† (0.083)
Turkish	282	13.12%	16.67%	78.70%	21.30%	18.52%	4.17* (0.041)

Notes. Positive response rates were calculated as the number of positive responses received by a (fictitious) candidate of a given ethnicity divided by the number of applications sent by this candidate. The discrimination ratio (i.e. positive response ratio) is calculated as the positive response rate in the ethnic minority group divided by the positive response rate in the Flemish (majority) group (Bertrand and Mullainathan, 2004). The net discrimination rate is calculated as the difference between the number of positive responses for the Flemish candidates only and the number of positive responses for the minority candidates only divided by the total number of positive responses across both groups (Riach and Rich 2002).

*** $p < 0.001$.
** $p < 0.01$.
* $p < 0.05$.
† $p < 0.10$.

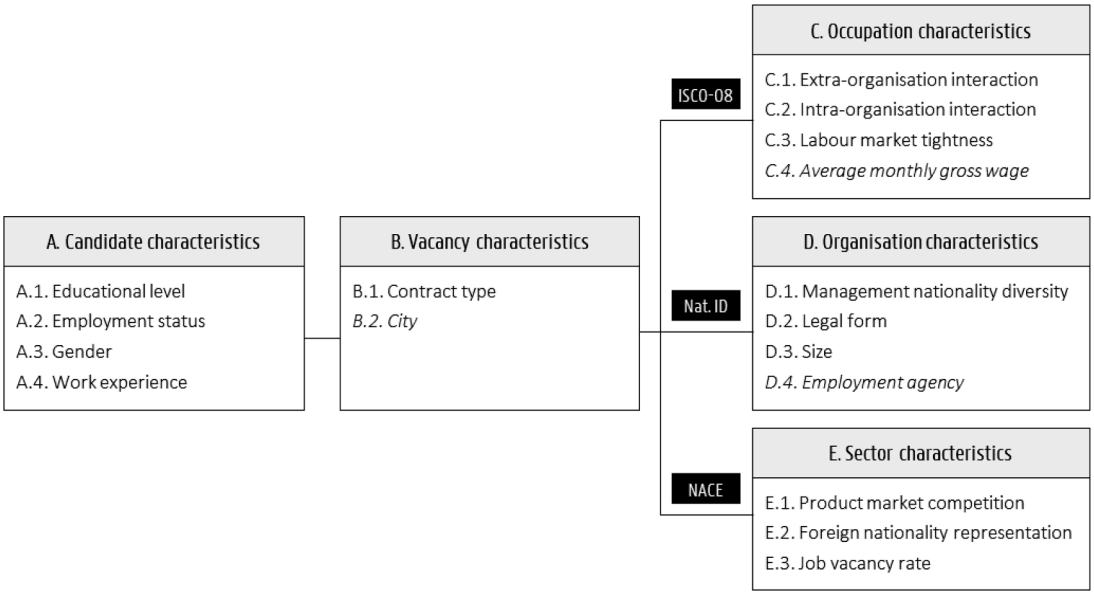

Fig. 2. Data sourcing framework: moderator and control variables.
Notes. Acronyms and abbreviations: ISCO-08 (International Standard Classification of Occupations, 2008); Nat. ID (national identification number); NACE (*Nomenclature statistique des Activités économiques dans la Communauté Européenne*). Non-italicised variables were considered potential moderators; italicised variables were used in the analyses as control variables.

Flemish candidate.[19] The results from these robustness checks can be retrieved from Tables A5–A8 (in the online appendix). Note that each model to validate our main findings is more specific and thus based on less information than the primary ordered logit models. More concretely, these alternative models only considered the probability of a positive response in either the broad or the strict callback definition, ignoring some essential nuances in the treatment of the candidate. In Section 5, we discuss any discrepancies between the original ordinal models and the other models.

We conclude this section with some notes on statistical power. We conducted a series of power analyses to evaluate the sufficiency of our sample sizes for the primary and subgroup analyses. These computations are presented in Tables A9 and A10 (in the online appendix), together with the computation details. The results generally indicate that our sample sizes are adequate for achieving statistical power in the primary analyses focusing on the overall minority–majority group distinction

[19] In the logit models at the vacancy level, 'discrimination against the Flemish candidate' meant that ethnic minority candidate received a positive response but the Flemish candidate did not. 'No discrimination' meant that both candidates or neither candidate received a positive reaction. 'Discrimination against the non-Flemish candidate' meant that Flemish candidate received a positive response but the non-Flemish candidate did not.

across a range of effect sizes and model specifications. However, the power analyses also reveal a potential limitation: while our sample sizes are generally sufficient for detecting medium to large effects, they may be underpowered for detecting small effects, particularly when focusing on subgroup differences in the underlying moderation effects.

5. Results

Whereas in Section 3, we described the main results concerning ethnic hiring discrimination in the Flemish labour market, this section contextualises these results by highlighting moderators of ethnic hiring discrimination. Except for candidates with a sub-Saharan African name, we observe that applicants with an ethnic minority-sounding name are substantially discriminated against in hiring, with up to about 26% fewer positive responses to an application and 40% fewer invitations to an interview (for Eastern European-named applicants). Our contextual analysis consisted of testing fourteen research hypotheses linked to taste-based and statistical discrimination based on an extensive review of the literature (see Section 2 and Table 1). In addition, we report on the robustness of the uncovered moderation effects using alternative model specifications.

Table 3 presents seven ordered logit models with the odds of a positive reaction as the dependent variable (see Section 4.2 for details on the empirical strategy). The first (base) model includes only one predictor: the candidate's ethnicity. The second to the sixth models contain the interaction terms of ethnicity and other characteristics at the candidate, vacancy, occupation, organisation, and sector level, respectively (as well as the main terms of these characteristics). The seventh (complete) model comprises all of the above terms.

5.1. Occupation moderators

First, there is weak evidence of a negative moderation effect of extra-organisation interaction on ethnic hiring discrimination (going against **H3a**). Hiring discrimination presumably decreases when the extra-organisation interaction in a job is high ($log\ OR = 0.015$, $SE = 0.008$, $p = 0.070$; see Model 7 in Table 3). Nonetheless, we find the effect to be minimal and not robust if we compare this observation with the results from alternative model specifications (see Tables A5 and A6 in the online appendix). This result contrasts with the findings of Derous et al. (2017), who found that jobs requiring high customer contact negatively influenced the relationship between dark skin colour and job suitability ratings. Instead of relying on a cross-sectional relationship, their experiment directly controlled the perception of customer contact by integrating it into their vignette design. The salience of the ethnicity of the minority candidates was also heightened by introducing skin colour as the key ethnic characteristic. Overall, their findings appear more convincing than the weak and non-robust moderation effect we observe in the current study. Moreover, it is important to consider that the labour market dynamics during the COVID-19 pandemic could have uniquely influenced the weak evidence for a negative moderation effect of extra-organisation interaction on ethnic hiring discrimination. The widespread reduction in face-to-face interactions and customer contact during this period may have shaped these results, making them less generalisable to non-pandemic circumstances.

Second, we observe no statistically significant moderation effect of the occupation characteristics of intra-firm contact on hiring discrimination in general (i.e. **H3b**). Given that the COVID-19 pandemic led to a widespread shift to remote work and reduced face-to-face intra-firm interactions, these unique labour market conditions could have influenced the observed null result regarding ethnic hiring discrimination and intra-firm interaction. Therefore, caution is advised when interpreting this finding, as it may not be generalisable to periods of regular workplace interaction. However, we observe two significant estimates if we consider the specific ethnic origin of the candidates. Past work has illustrated that ethnic minority groups may be treated differently within the same institutional context (Booth et al., 2012; Koopmans et al., 2019). Thus, it is conceivable that the variation in the unequal treatment of minority candidates of different groups depends on contextual factors.

On the one hand, the odds of a positive response for sub-Saharan African candidates (vis-à-vis Flemish applicants) on average diminish by 7.04% for every percentage point increase in the average level of intra-firm interaction in an occupation, controlling for all other interactions (partially supporting **H3b**; log OR = −0.073, SE = 0.029, $p = 0.014$, Holm-corrected $p = 0.054$; see Model 7 in Table A4 and Fig. A1 in the online appendix). Alternatively, a one standard deviation increase in contact with colleagues relates to an average 47.59% decrease in the odds of a positive response for sub-Saharan African versus Flemish candidates. From an economic frame of reference, we put forward an explanation in terms of taste-based discrimination. Specifically, employers may discriminate against minority candidates because of the anticipated ethnic prejudice some majority coworkers might hold, potentially driving them away from the organisation (see Section 2).

The question remains, however, why sub-Saharan African but not Maghrebian, Eastern European, or Turkish candidates experience this additional discrimination (compared to Flemish candidates) when the required intra-firm interaction in an occupation is high. A possible rationale is that their (unobserved) physical characteristics, such as skin tone, are more salient than those of candidates with a different ethnic origin. Ethnic salience has been linked to prejudice in hiring, and this relationship is known to be moderated by interpersonal contact (Derous et al., 2017; Maddox, 2004). Nonetheless, this rationale hinges on the capabilities of job agents to mentally differentiate between names of different ethnic origins and to allocate correct physical characteristics to these names. As highlighted in Section 4, we need to be wary of this assumption (Martiniello and Verhaeghe, 2022).

The above finding also provides a rationale as to why sub-Saharan African candidates, on average, do not seem to face hiring discrimination in our correspondence experiment. The discrimination ratio for sub-Saharan African candidates is precisely 1, indicating no evidence of discrimination against these candidates in the hiring process (see Table 2). However, this average hides the variation in discrimination across occupations requiring different levels of intra-organisation contact. In low-contact occupations (e.g. truck driver), sub-Saharan Africans are often more likely to receive a positive response than Flemish candidates. In contrast, in high-contact occupations (e.g. administrative assistant), sub-Saharan applicants are more often discriminated against.

Third, when the job linked to the vacancy is not marked as a bottleneck occupation, the odds of a positive response for Maghrebian candidates (compared to Flemish candidates) decrease by 61.48%, on average, controlling for all other interactions (partially supporting **H3c**; $log\ OR = -0.954$, $SE = 0.432$, $p = 0.027$, $Holm\text{-}corrected\ p = 0.109$; see Model 7 in Table A4 and Fig. A2 in the online appendix).[20] In other words, when the labour market tightness for a given job is low, the probability of a positive response for Maghrebian applicants decreases more steeply relative to the same probability for Flemish candidates. Baert et al. (2015) found a comparable result in previous empirical research in the Flemish labour market for Turkish candidates. Maghrebian (i.e. Moroccan) and Turkish minorities are strongly represented in Belgium (Heath et al., 2008; Martens, 2017). At the same time, they face substantial negative repercussions in the labour market due to public and political discourse and negative attitudes of the in-group (Alanya et al., 2015, 2017; Heath et al., 2008; Voas and Fleischman, 2012). Research in Flanders shows a "quasi-consensual ethnic hierarchy with Moroccan minorities at the bottom and the Belgian majority at the top" (Alanya et al., 2017, p. 20). Therefore, Maghrebians could be ranked

[20] Note that this result becomes statistically insignificant (at the 10% level) when correcting for multiple hypothesis testing using Holm's (1979) restrictive correction. Therefore, notwithstanding the large effect, we need to interpret this result with certain caution.

very low relative to Flemings in terms of hiring preferences. This mechanism could explain the additional discrimination in hiring when there is a wide choice between job candidates (i.e. when labour market tightness is low). However, the above finding, too, is conditional on the proposition that job agents can accurately distinguish between applicants' ethnic origins.

5.2. Organisation moderators

Fourth, we find empirical support for the moderation effect of an organisation's not-for-profit status on ethnic hiring discrimination (i.e. discrimination decreases if the organisation has a not-for-profit status, supporting **H4b**). This result is robust across all alternative models we tested (see Section 4.2 and Tables A5–A8 in the online appendix) and when we correct the *p*-value for multiple hypothesis testing using Holm's (1979) correction.[21] On average, the odds of a positive response for non-Flemish candidates (relative to those of Flemish candidates) increase by 56.67% if the organisation applied to has a not-for-profit legal status, controlling for all other interactions ($log\ OR = 0.449$, $SE = 0.184$, $p = 0.015$, *Holm-corrected* $p = 0.030$; see Model 7 in Table 3 and Fig. A3 in the online appendix). This finding is in line with previous studies examining this moderation effect (e.g. Baert et al. 2018, Midtbøen, 2014, Zschirnt and Ruedin 2016) and may suggest that organisations in the public domain or that pursue social aims or impact have a more conscious approach to the discrimination issue. This approach can trickle down to the decision-makers who consequently hold less animosity towards ethnic minorities (i.e. taste-based discrimination). Vice versa, individuals who already are more considerate about this issue or hold less prejudice might prefer working for organisations with clear social or societal objectives or general public interests, resulting in less discrimination within these organisations.

We note two other likely interpretations for the above finding. An explanation we also posited in Section 2 is that because of a lack of focus on profitability, not-for-profit organisations are willing to incur more information acquisition costs than for-profit organisations even when these costs appear disproportionately high compared to the information acquisition potential. Consequently, decision-makers within not-for-profit organisations could rely less on statistical priors about group averages, which they might use as a proxy for unobserved productivity characteristics of individual applicants (i.e. statistical discrimination). In turn, this could result in less ethnic discrimination in hiring. A final explanation, which particularly applies to public sector organisations, can be found in these organisations' highly regulated and formalised personnel management procedures, especially in the Belgian institutional context (OECD, 2007). This high regulation may provide less room for job agents to discriminate in the hiring process, increasing the chances of a positive response for ethnic minorities.

Fifth, we observe a negative moderation effect of the size of the organisation expressed in the number of employees on unequal treatment in hiring (i.e. discrimination reduces if the organisation is large, supporting **H4c**). This result appears to be mainly driven by differences between Flemish and non-Flemish candidates in receiving any positive reaction (rather than just an invitation to an interview). Besides, we observe similar findings in the logit models at the candidate level and ordered logit models at the vacancy level where the outcome variable is broadly defined but not if the outcome only includes invitations to an interview (see Tables A5–A8 in the online appendix). The odds of a positive response for non-Flemish candidates (versus Flemish candidates) on average increase by 7.79% for every 100% increase (i.e. doubling) in the size of the organisation the candidates applied to, controlling for all other interactions ($log\ OR = 0.075$, $SE = 0.037$, $p = 0.041$; see Model 7 in Table 3 and Fig. A4 in the online appendix). In alternative terms, a one standard deviation increase in organisation size relates to an average 15.84% increase in the odds of a positive response for non-Flemish versus Flemish candidates.

Our main explanation for the interaction between organisation size and ethnicity is the presumed larger formalisation and standardisation of selection procedures in larger organisations (Baert et al., 2018). Both theoretically and empirically, there is evidence for this formalisation hypothesis (Krishnan and Scullion 2017, Mayson and Barrett 2006). Accordingly, a greater formalisation may relate to less reliance on prior statistical beliefs and discretionary judgement and, hence, to less statistical discrimination (Midtbøen, 2015). The results from our analysis do not align with those of Baert et al. (2018) and Maurer-Fazio (2012), who found no evidence for such a moderation effect (see also Section 2). However, our finding is consistent with the observations in the study of Kline et al. (2022), who found convincing evidence that a higher centralisation of the hiring function (in large firms) correlated with lower hiring discrimination against Blacks in the United States.

Alternatively, employers from large companies could discriminate less than small companies because of pooled risk. Here, the assumption is that large companies hire more employees than small companies, averaging the risk and buffering against the cost of 'wrong' hires. In large companies, hiring various individuals from different ethnic backgrounds can help negate any perceived risk tied to a specific ethnicity—an advantage small companies most probably do not have. Consequently, more risk-averse employers might discriminate more in small (than large) companies. In addition, with more hires, large companies can gather more data on the actual performance of employees from different ethnic backgrounds. This experience can help correct misguided beliefs about the productivity of certain ethnic groups, also called 'employer learning', thereby reducing statistical discrimination (Altonji and Pierret, 2001).

5.3. Other moderators

We find no statistically significant evidence for the remaining research hypotheses—i.e. the moderation effect of educational level, employment status, gender, work experience, contract type, management nationality diversity, product market competition, foreign nationality representation, or job vacancy rate on ethnic hiring discrimination. Of course, the absence of evidence for an effect does not constitute conclusive evidence for the absence of this effect. However, some of our results align with observations from recent empirical studies. More specifically, Koopmans et al. (2019), Edo et al. (2019), Berson (2012), and Baert et al. (2015, 2017) also found little to no evidence for a moderation effect of educational level, contract type, product market competition, or the sector representation of employees with a foreign nationality on ethnic hiring discrimination, respectively. In contrast, our null results regarding the moderation effect of employment status, gender, work experience, management nationality diversity, and job vacancy rate on ethnic hiring discrimination do not match with previous research results of Birkelund et al. (2017), Derous et al. (2015), Baert et al. (2017), Bursell (2007), and Carlsson et al. (2018), respectively. Future research should shed light on whether these contextual discrepancies are structural.

Considering the significant disruptions caused by the COVID-19 pandemic on various sectors of the economy, it is plausible that these unprecedented circumstances might have specifically influenced the findings related to product market competition and job vacancy rates. In particular, the economic downturn resulting from the pandemic could have temporarily weakened competition in sectors where it would typically have been strong. Labour market anomalies, including fluctuations in job vacancy rates during the pandemic, could be attributed to numerous businesses shutting down, placing employees on unemployment for technical reasons, or freezing hiring. As a result, the observed absence of a significant moderation effect of product market competition and job vacancy rate at the sector level on ethnic hiring

[21] Because of reasons of conciseness, these alternative models with *p*-value corrections are not reported but are available on request.

Table 3
Odds of a positive response: ordered logit model.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Candidate characteristics							
Ethnicity: Non-Flemish	−0.245***	−0.359*	−0.259***	0.422 (1.582)	−0.590***	−0.464	−0.559 (1.759)
	(0.059)	(0.142)	(0.076)		(0.155)	(0.453)	
Education: Secondary		−0.098					−0.198 (0.257)
		(0.200)					
Ethnicity: Non-Flemish x Education: Secondary		−0.072					−0.119 (0.244)
		(0.201)					
Employment: Unemployed		−0.233					−0.209 (0.166)
		(0.162)					
Ethnicity: Non-Flemish x Employment: Unemployed		−0.052					−0.029 (0.156)
		(0.149)					
Gender: Female		−0.125					−0.100 (0.164)
		(0.155)					
Ethnicity: Non-Flemish x Gender: Female		0.209 (0.131)					0.195 (0.139)
Experience: 5 years		0.055 (0.212)					0.068 (0.217)
Experience: 20 years		−0.227					−0.239 (0.223)
		(0.217)					
Ethnicity: Non-Flemish x Experience: 5 years		−0.060					−0.069 (0.187)
		(0.181)					
Ethnicity: Non-Flemish x Experience: 20 years		0.127 (0.185)					0.086 (0.192)
B. Vacancy characteristics							
Contract: Fixed-term			0.062 (0.198)				−0.103 (0.220)
Contract: Unknown			−0.404† (0.231)				−0.417†
							(0.236)
Ethnicity: Non-Flemish x Contract: Fixed-term			−0.010 (0.185)				−0.066 (0.207)
Ethnicity: Non-Flemish x Contract: Unknown			−0.174 (0.217)				−0.147 (0.225)
City: Gent			0.725 (0.441)				0.499 (0.460)
Ethnicity: Non-Flemish x City: Gent			0.030 (0.177)				0.005 (0.185)
C. Occupation characteristics							
Bottleneck: No				−0.170 (0.158)			−0.069 (0.166)
Ethnicity: Non-Flemish x Bottleneck: No				−0.112 (0.130)			−0.078 (0.137)
Extra-organisation contact				−0.023**			−0.022**
				(0.007)			(0.008)
Ethnicity: Non-Flemish x Extra-organisation contact				0.013† (0.007)			0.015† (0.008)
Intra-firm contact				0.008 (0.012)			0.004 (0.013)
Ethnicity: Non-Flemish x Intra-firm contact				−0.005 (0.010)			−0.010 (0.011)
D. Organisation characteristics							
For-profit: No					−0.151 (0.296)		−0.050 (0.312)
For-profit: Unknown					0.219 (0.300)		0.215 (0.312)
Ethnicity: Non-Flemish x For-profit: No					0.437** (0.169)		0.449* (0.184)
Ethnicity: Non-Flemish x For-profit: Unknown					−0.174 (0.255)		−0.134 (0.274)
Fraction mult. management					−0.134 (0.227)		−0.070 (0.233)
Ethnicity: Non-Flemish x Fraction mult. management					−0.061 (0.220)		−0.060 (0.228)
Log number of employees					0.052 (0.040)		0.047 (0.042)
Ethnicity: Non-Flemish x Log number of employees					0.063† (0.036)		0.075* (0.037)
E. Sector characteristics							
Product market competition						0.054 (0.755)	0.040 (0.805)
Ethnicity: Non-Flemish x Product market competition						0.039 (0.456)	0.452 (0.493)
Fraction foreign nationality						1.107 (0.760)	0.619 (0.827)
Ethnicity: Non-Flemish x Fraction foreign nationality						0.634 (0.748)	0.346 (0.825)
Job vacancy rate						3.604 (5.015)	4.101 (3.893)
Ethnicity: Non-Flemish x Job vacancy rate						−1.132	−0.671 (2.253)
						(4.285)	
Intercepts							
Rejection or no reaction | Other positive reaction	0.693	−0.238	−0.011	0.293	0.262	0.565	0.346
Other positive reaction | Interview invitation	1.671	0.809	1.035	1.341	1.316	1.609	1.421
Controls							

(*continued on next page*)

Table 3 (*continued*)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Average monthly wage (occupation)	No	No	No	Yes	No	No	Yes
Employment agency (organisation)	No	No	No	No	Yes	No	Yes
Fixed effects: Month and Year	No	Yes	Yes	Yes	Yes	Yes	Yes
Model parameters							
N	1780	1780	1780	1780	1780	1780	1780
AIC	2952.179	2836.531	2825.404	2828.837	2818.758	2831.769	2837.219
Nagelkerke's pseudo-R^2	0.004	0.107	0.109	0.109	0.118	0.105	0.144

Notes. Abbreviations used: mult. (multinational). Presented statistics are coefficient estimates with standard errors between parentheses. Standard errors were clustered at the vacancy level, given the correlation between the assignment of the fictitious candidates to a pair (or cluster) and the treatment of those candidates (Abadie et al. 2022, Vuolo et al. 2018). Standard errors were also corrected for heteroscedasticity using Long and Ervin's (2000) HC1 correction (based on the White correction).

*** $p < 0.001$.
** $p < 0.01$.
* $p < 0.05$.
† $p < 0.10$.

discrimination during this period could reflect these exceptional conditions rather than stable market trends. Interpreting these specific null findings requires caution, considering the potentially distorting effects of the pandemic on product and labour market competition.

5.4. Taste or statistics?

Finally, we conclude this section with a brief discussion on how our study's findings can help distinguish between sources of discrimination, i.e. taste-based and statistical discrimination. Overall, the results produce mixed signals. On the one hand, the finding that hiring discrimination against sub-Saharan Africans increases in occupations requiring high intra-organisation contact follows taste-based discrimination. The idea here is that employers may discriminate against sub-Saharan Africans due to concerns that majority-group coworkers may hold ethnic prejudices, potentially leading to the exit of these candidates from the organisation. On the other hand, the finding that discrimination is reduced in large organisations aligns with statistical discrimination theory. Here, we presume that larger organisations have more means to screen job candidates (or better HR policies imposing more careful screening or dedicated diversity-promoting training, amongst other advantages), acquire more (accurate) candidate information, and thus discriminate less.

Furthermore, our findings that hiring discrimination (i) decreases if the organisation has a not-for-profit legal status and (ii) decreases against Maghrebians in bottleneck occupations aligns with both mechanisms. Organisations pursuing social aims might have a more considerate approach to discrimination, lowering the taste for discrimination. At the same time, they may be willing to invest more in personnel assessment due to a lack of emphasis on profitability, resulting in more accurate information about job candidates, potentially reducing statistical discrimination. Conversely, Maghrebian job candidates may be ranked lower than Flemish candidates due to taste-based preferences or statistical beliefs. In occupations for which it is challenging to find suited job candidates, resulting in lower inter-candidate competition, their ranking is likely to increase, lowering discrimination in hiring. In summary, our results suggest that both economic mechanisms of discrimination, i.e. taste-based and statistical discrimination, play a role in shaping hiring discrimination in Flanders.

6. Conclusion

Our understanding of ethnic hiring discrimination depends partly on the context in which it occurs. However, it is not always clear which particular contextual factors contribute to changes in discrimination. From an economic frame of reference, taste-based and statistical discrimination theories provide some pointers as to where and when the unequal treatment of ethnic minorities in hiring increases or decreases. Following a comprehensive survey of the literature concerning moderators of ethnic hiring discrimination, we formulated fourteen research hypotheses (concerning an equal number of contextual factors) rooted in taste-based and statistical discrimination theory. We empirically tested these hypotheses through a moderation analysis of field-experimental data from a correspondence test conducted in Flanders (Belgium) and administrative data from external sources comprising relevant occupation, organisation, and sector characteristics. This approach enabled us to estimate to what extent and in which direction these contextual factors moderate ethnic hiring discrimination.

Our study addresses two critical drawbacks of the current empirical research on the moderators of ethnic hiring discrimination. First, prior studies have often relied too much on ad hoc interpretations of the empirical evidence. Our approach involved a priori identifying relevant moderators (directly related to theory) at the candidate, vacancy, occupation, organisation, and sector levels. Second, several studies have previously narrowed in on a limited set of cross-sectional interactions, sometimes even singling out moderators. Based on a broad set of research hypotheses—broader than most previous studies—we bundled fourteen possible moderators, controlling other relevant variables, into one integrated analysis. This joint testing strategy allowed us to eliminate some alternative interpretations of our results.

Overall, we find evidence of hiring discrimination against candidates with a non-Flemish-sounding name; the organisation plays a crucial role in understanding this discrimination. On the one hand, when applying for a job at public sector organisations or organisations that pursue social aims or impact, the odds for ethnic minorities (compared to Flemings) of receiving a positive response increase significantly, on average. However, this relationship reveals little about the dominant mechanism. Ethnic hiring discrimination could be lower due to a generally decreased prejudice against ethnic minorities (i.e. fewer taste-based preferences). It could also be because the lack of focus on profitability entails that not-for-profit organisations are willing to incur higher information acquisition costs. In turn, this could make job agents less reliant on inferring unobserved productivity characteristics of individual applicants based on group-level information (i.e. statistical discrimination). Moreover, the high regulation of personnel management in public sector organisations in Belgium might also leave less room for discretionary decision-making by job agents.

On the other hand, the odds of a positive response for non-Flemish (versus Flemish) candidates significantly increase, on average, in organisations with a large workforce. These organisations often have a higher formalisation of their selection procedures and presumably have more dedicated resources to process applications and acquire information about individual applicants. Increased formalisation and dedicated resources could not only limit discretionary decision-making at the organisational level but could also result in less statistical discrimination at the individual level. In particular, job agents with more (accurate)

information about the productivity of individual applicants may fall back less on their (inaccurate) statistical beliefs. The interpretations of both findings are in line with the observations in a recent large-scale correspondence experiment where a substantial amount of the variation in discrimination could be linked to differences between organisations and, more specifically, to the centralisation of the hiring function (Kline et al., 2022). One alternative explanation is that large companies may discriminate less due to pooled risk, as hiring more employees averages out risk, buffers against the cost of wrong hires, and allows corrections of biased beliefs about ethnic groups' productivity, reducing statistical discrimination.

Furthermore, our study lends partial empirical support to two hypotheses concerning occupational context factors. First, compared to Flemish applicants, we observe that the odds of a positive response for sub-Saharan African applicants significantly decline in occupations requiring high levels of intra-organisational interaction or teamwork. This trend is best understood through the lens of taste-based discrimination; employers may preemptively exclude sub-Saharan African candidates to avoid anticipated economic losses, such as current employees demanding higher compensation or wanting to leave the organisation due to the new hires (i.e. employee taste-based discrimination). These minorities may be particularly vulnerable to such discrimination given the higher ethnic salience of their physical characteristics, like skin tone. Second, we note that Maghrebian candidates also face higher levels of discrimination when labour market tightness is low for a given occupation. This heightened discrimination appears to be influenced by prevalent negative attitudes towards Maghrebians in Flanders. Under such conditions, prejudiced employers may be more likely to rank Maghrebian applicants lower than their Flemish counterparts, given the large pool of candidates relative to the number of open vacancies. Nevertheless, the validity of these minority-specific findings is contingent on job agents' ability to distinguish between applicants' ethnic origins based on names. In addition, more research is required to validate these findings and delve deeper into the specific motives behind these forms of ethnic hiring discrimination to substantiate our interpretations.

Overall, our study's findings suggest that taste-based as well as statistical discrimination mechanisms contribute to ethnic hiring discrimination in Flanders. Taste-based discrimination may be demonstrated through higher levels of discrimination against sub-Saharan Africans in occupations requiring high levels of intra-organisational contact. Statistical discrimination appears from the finding that discrimination decreases in larger organisations, which may have more resources to assess job candidates accurately. Moreover, our results regarding the moderation effect of the firm's not-for-profit status and occupation's bottleneck status align with both mechanisms. The current study highlights the complexity of contextualising hiring discrimination and the need to consider at least both taste-based and statistical mechanisms in understanding the issue.

Finally, we recognise two limitations concerning our empirical strategy. First, interaction effects other than those between the candidate's ethnicity and other candidate characteristics could not be given a causal interpretation. Nevertheless, this limitation afflicts nearly all moderator analyses and is not unique to our study. The inability to causally interpret the interaction effects is because these interactions most likely correlate with other, unobserved moderators of ethnic hiring discrimination. For example, the moderation effect of the size of an organisation is unlikely causal—alternatively, the higher level of formalisation in larger organisations appears to be a more plausible driver of the lower unequal treatment of ethnic minorities in hiring. Nonetheless, this hypothesis requires more evaluation to be addressed in future research; one would have to formally establish the link between organisation size, the formalisation and standardisation of the hiring process, and hiring discrimination. Second, the results are bounded by their focus on ethnicity as a discrimination ground and the Flemish (Belgian) labour market where this research occurred. Although the hypotheses in the current study were theoretically well-founded, and most studies are affected by the particular time and circumstances in which they are carried out, it remains uncertain whether similar moderation effects would hold for other discrimination grounds (such as gender) or in other institutional or labour market contexts. As discussed in the results section, the COVID-19 pandemic, during which this correspondence audit study was conducted, might have impacted the current study's findings.

Given these limitations, we see several directions for future research. Subsequent research may attempt to set up a similar study design, including alternative or additional control variables to test the robustness of the uncovered moderation effects. We also see a viable opportunity for research designs where moderators are experimentally altered, and the effects of these moderators are tested separately (e.g. Lahey, 2008; Van Borm et al., 2022). These studies could shed light on the underlying motives of some of the uncovered moderation effects. Last, following Di Stasio et al. (2021), amongst others, future research could investigate the replicability of the current findings in other labour market contexts or concerning different discrimination grounds, possibly even opening up research avenues for cross-country or cross-ground analyses.

Declarations

Ethics approval and consent to participate

Ethical approval to conduct the correspondence experiment that is the subject of this study has been obtained from the Ethics Commission of the Faculty of Political and Social Sciences, Ghent University—i.e. the commission under which the research project (i.e. EdisTools) resides. We did not seek consent from the subjects to participate in the correspondence experiment because doing so would result in biased treatment effects. This approach aligns with the ethical approach in the current correspondence testing literature. Furthermore, there is currently no satisfactory alternative to the corresponding testing method to measure hiring discrimination directly, accurately, and objectively. The level of inconvenience for the subjects was minimised by (i) only contacting subjects once in the context of the experiment and (ii) promptly declining invitations for job interviews or any other commitments or requests. The correspondence experiment data were fully pseudonymised and are only accessible to the members of the EdisTools research team.

Preregistration

The approach followed in this study was not publicly preregistered. However, this study's experimental design, analysis methods, data linkage, and initial data management plans were prespecified as part of a research grant application to Research Foundation – Flanders (FWO) on April 25, 2018 (S004119N). The application underwent international peer review under FWO's standard procedure for Strategic Basic Research (SBO) projects (see https://www.fwo.be/en/fellowships-funding/research-projects/sbo-projects). Relevant excerpts of this application can be obtained from the corresponding author.

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CRediT authorship contribution statement

Louis Lippens: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Axana Dalle:**

Conceptualization, Methodology, Data curation, Writing – original draft, Writing – review & editing, Project administration. **Fanny D'hondt:** Validation, Writing – review & editing. **Pieter-Paul Verhaeghe:** Data curation, Writing – review & editing, Funding acquisition. **Stijn Baert:** Conceptualization, Methodology, Validation, Writing – review & editing, Supervision, Funding acquisition.

Declaration of Competing Interest

The authors have no relevant financial or non-financial competing interests.

Data availability

A minimal set of anonymised data will be made available on request for replication purposes.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.labeco.2023.102453.

References

Abadie, A., Athey, S., Imbens, G.W., Wooldridge, J.M., 2022. When should you adjust standard errors for clustering? Q. J. Econ. 138 (1), 1–35. https://doi.org/10.1093/qje/qjac038.

Adamovic, M., 2022. When ethnic discrimination in recruitment is likely to occur and how to reduce it: applying a contingency perspective to review resume studies. Hum. Resour. Manag. Rev. 32 (2), 100832 https://doi.org/10.1016/j.hrmr.2021.100832.

Agentschap Binnenlands Bestuur, 2022. Gemeente-Stadsmonitor. Vlaamse Overheid. Retrieved March 24, 2022, from. https://aabgsm1.azurewebsites.net/gemeente.

Agresti, A., 2010. Analysis of Ordinal Categorical Data, 2nd ed. Wiley Series in Probability and Statistics. https://doi.org/10.1002/9780470594001.

Ahmad, A., 2020. Does additional work experience moderate ethnic discrimination in the labour market? Econ. Ind. Democr. https://doi.org/10.1177/0143831x20969828. *0143831X2096982*.

Alanya, A., Baysu, G., Swyngedouw, M., 2015. Identifying city differences in perceived group discrimination among second-generation Turks and Moroccans in Belgium. J. Ethn. Migr. Stud. 41 (7), 1088–1110. https://doi.org/10.1080/1369183x.2014.965669.

Alanya, A., Swyngedouw, M., Vandezande, V., Phalet, K., 2017. Close encounters: minority and majority perceptions of discrimination and intergroup relations in Antwerp, Belgium. Int. Migr. Rev. 51 (1), 191–217. https://doi.org/10.1111/imre.12203.

Allport, G.W., 1954. The Nature of Prejudice. Perseus Books.

Altonji, J.G., Pierret, C.R., 2001. Employer learning and statistical discrimination. Q. J. Econ. 116 (1), 313–350. https://doi.org/10.1162/003355301556329.

Arai, M., Bursell, M., Nekby, L., 2016. The reverse gender gap in ethnic discrimination: employer stereotypes of men and women with Arabic names. Int. Migr. Rev. 50 (2), 385–412. https://doi.org/10.1111/imre.12170.

Arrow, K.J., 1973. The theory of discrimination. In: Ashenfelter, O., Rees, A. (Eds.), *Discrimination in Labor Markets*, 1st ed. Princeton University Press, pp. 3–33.

Baert, S., 2018. Hiring discrimination: an overview of (almost) all correspondence experiments since 2005. In: Gaddis, S.M. (Ed.), Audit studies: Behind the Scenes With theory, method, and Nuance, 1st ed. Springer, pp. 63–77. https://doi.org/10.1007/978-3-319-71153-9_3.

Baert, S., 2021. The iceberg decomposition: a parsimonious way to map the health of labour markets. Econ. Anal. Policy 69, 350–365. https://doi.org/10.1016/j.eap.2020.12.012.

Baert, S., Albanese, A., du Gardein, S., Ovaere, J., Stappers, J., 2017. Does work experience mitigate discrimination? Econ. Lett. 155, 35–38. https://doi.org/10.1016/j.econlet.2017.03.011.

Baert, S., Cockx, B., Gheyle, N., Vandamme, C., 2015. Is there less discrimination in occupations where recruitment is difficult? ILR Rev. 68 (3), 467–500. https://doi.org/10.1177/0019793915570873.

Baert, S., De Meyer, A.S., Moerman, Y., Omey, E., 2018. Does size matter? Hiring discrimination and firm size. Int. J. Manpow. 39 (4), 550–566. https://doi.org/10.1108/ijm-09-2017-0239.

Baert, S., Rotsaert, O., Verhaest, D., Omey, E., 2016. Student employment and later labour market success: no evidence for higher employment chances. Kyklos 69 (3), 401–425. https://doi.org/10.1111/kykl.12115.

Baert, S., Vujić, S., 2018. Does it pay to care? Volunteering and employment opportunities. J. Popul. Econ. 31 (3), 819–836. https://doi.org/10.1007/s00148-017-0682-8.

Banerjee, A., Duflo, E., Finkelstein, A., Katz, L., Olken, B., Sautmann, A., 2020. *Praise of Moderation: Suggestions for the Scope and Use of Pre-Analysis Plans for RCTs in Economics*. National Bureau of Economic Research. https://doi.org/10.3386/w26993.

Bartoš, V., Bauer, M., Chytilová, J., Matejka, F., 2016. Attention discrimination: theory and field experiments with monitoring information acquisition. Am. Econ. Rev. 106 (6), 1437–1475. https://doi.org/10.1257/aer.20140571.

Becker, G., 1971. The Economics of Discrimination, 2nd ed. University of Chicago Press.

Bel-first, 2022. Powerful Belgian & Luxembourg Business Intelligence. Bureau van Dijk. Retrieved March 12, 2022, from. https://belfirst.bvdinfo.com.

Berkowitz, L., Sherif, M., 1967. In common predicament: social psychology of intergroup conflict and cooperation. Am. Sociol. Rev. 32 (2), 333. https://doi.org/10.2307/2091843.

Berson, C., 2012. *Does Competition Induce Hiring equity?* (Centre D'economie De La Sorbonne [CES] Working Papers No. 2012.19). Université Paris 1 Panthéon-Sorbonne. https://halshs.archives-ouvertes.fr/halshs-00718627.

Bertrand, M., Duflo, E., 2017. Field experiments on discrimination. In: Banerjee, A.V., Duflo, E. (Eds.), Handbook of Economic Field Experiments, 1st ed., pp. 309–393. https://doi.org/10.1016/bs.hefe.2016.08.004.

Bertrand, M., Mullainathan, S., 2004. Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. Am. Econ. Rev. 94 (4), 991–1013. https://doi.org/10.1257/0002828042002561.

Bezrukova, K., Spell, C.S., Perry, J.L., Jehn, K.A., 2016. A meta-analytical integration of over 40 years of research on diversity training evaluation. Psychol. Bull. 142 (11), 1227–1274. https://doi.org/10.1037/bul0000067.

Birkelund, G.E., Heggebø, K., Rogstad, J., 2017. Additive or multiplicative disadvantage? The scarring effects of unemployment for ethnic minorities. Eur. Sociol. Rev. 33 (1), 17–29. https://doi.org/10.1093/esr/jcw030.

Blanchard, O.J., Diamond, P., 1994. Ranking, unemployment duration, and wages. Rev. Econ. Stud. 61 (3), 417–434. https://doi.org/10.2307/2297897.

Booth, A.L., Leigh, A., Varganova, E., 2012. Does ethnic discrimination vary across minority groups? Evidence from a field experiment. Oxf. Bull. Econ. Stat. 74 (4), 547–573. https://doi.org/10.1111/j.1468-0084.2011.00664.x.

Borjas, G., 2020. Labor market discrimination. In: Borjas, G. (Ed.), Labor Economics, 8th ed. McGraw-Hill Education, New York, pp. 299–340.

Burn, I., Button, P., Corella, L.M., Neumark, D., 2022. Does ageist language in job ads predict age discrimination in hiring? J. Labor Econ. 40 (3), 613–667. https://doi.org/10.1086/717730.

Bursell, M., 2014. The multiple burdens of foreign-named men – Evidence from a field experiment on gendered ethnic hiring discrimination in Sweden. Eur. Sociol. Rev. 30 (3), 399–409. https://doi.org/10.1093/esr/jcu047.

Bursell, M., 2007. *What's in a name? A field experiment test for the existence of ethnic discrimination in the hiring process* (Stockholm University Linnaeus Center for Integration Studies [SULCIS] Working Paper No. 2007:7). The Stockholm University Linnaeus Center For Integration Studies. https://econpapers.repec.org/paper/hhssulcis/2007_5F007.htm.

Butschek, S., Walter, T., 2014. What active labour market programmes work for immigrants in Europe? A meta-analysis of the evaluation literature. IZA J. Migr. 3 (1) https://doi.org/10.1186/s40176-014-0023-6.

Button, P., Walker, B., 2020. Employment discrimination against indigenous peoples in the United States: evidence from a field experiment. Labour Econ. 65, 101851. https://doi.org/10.1016/j.labeco.2020.101851.

Carlsson, M., 2010. Experimental evidence of discrimination in the hiring of first- and second-generation immigrants. Labour 24 (3), 263–278. https://doi.org/10.1111/j.1467-9914.2010.00482.x.

Carlsson, M., Rooth, D.O., 2007. Evidence of ethnic discrimination in the Swedish labor market using experimental data. Labour Econ. 14 (4), 716–729. https://doi.org/10.1016/j.labeco.2007.05.001.

Carlsson, M., Fumarco, L., Rooth, D.O., 2018. Ethnic discrimination in hiring, labour market tightness and the business cycle - evidence from field experiments. Appl. Econ. 50 (24), 2652–2663. https://doi.org/10.1080/00036846.2017.1406653.

Combes, P.P., Decreuse, B., Laouénan, M., Trannoy, A., 2016. Customer discrimination and employment outcomes: theory and evidence from the French labor market. J. Labor Econ. 34 (1), 107–160. https://doi.org/10.1086/682332.

Crenshaw, K., 1998. Demarginalizing the intersection of race and sex: a black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. Fem. Leg. Stud. 57–80. https://doi.org/10.4324/9780429500480-5.

Dahl, M., Krog, N., 2018. Experimental evidence of discrimination in the labour market: intersections between ethnicity, gender, and socio-economic status. Eur. Sociol. Rev. 34 (4), 402–417. https://doi.org/10.1093/esr/jcy020.

Dalle, A., Lippens, L., Baert, S., 2023. *Nothing really matters: a field experiment on demand-side moderators of age discrimination in hiring* [Unpublished manuscript]. Faculty of Economics and Business Administration, Ghent University.

Datawarehouse Arbeidsmarkt en Sociale Bescherming, 2022. Globale Cijfers. Kruispuntbank van de Sociale Zekerheid. Retrieved March 13, 2022. https://www.bcss.fgov.be/samigc/?language=nl.
Derous, E., Pepermans, R., Ryan, A.M., 2017. Ethnic discrimination during résumé screening: interactive effects of applicants' ethnic salience with job context. Hum. Relat. 70 (7), 860–882. https://doi.org/10.1177/0018726716676537.
Derous, E., Ryan, A.M., Serlie, A.W., 2015. Double jeopardy upon resumé screening: when Achmed is less employable than Aïsha. Pers. Psychol. 68 (3), 659–696. https://doi.org/10.1111/peps.12078.
De Smet, R., Neefs, B., Vansteenkiste, S., Penders, I., 2021a. Kwartaalbericht Vlaamse arbeidsmarkt. Mei 2021. Werk.Focus 2, 1–21.https://www.steunpuntwerk.be/files/publications/WERK/WerkFocus/werk.focus_2021_02.pdf
De Smet, R., PendersNeefs, I., Vansteenkiste, S., 2021b. De Vlaamse arbeidsmarkt tijdens het eerste jaar van de COVID-19-pandemie. Over. Werk—Tijdschrift van het Steunpunt Werk 31 (1), 6–28.https://www.steunpuntwerk.be/files/publications/OW/OW_2021_1/overwerk_2021_1_01.pdf.
Di Stasio, V., Larsen, E.N., 2020. The racialized and gendered workplace: applying an intersectional lens to a field experiment on hiring discrimination in five European labor markets. Soc. Psychol. Q. 83 (3), 229–250. https://doi.org/10.1177/0190272520902994.
Di Stasio, V., Lancee, B., Veit, S., Yemane, R., 2021. Muslim by default or religious discrimination? Results from a cross-national field experiment on hiring discrimination. J. Ethn. Migr. Stud. 47 (6), 1305–1326. https://doi.org/10.1080/1369183x.2019.1622826.
Dobbin, F., Schrage, D., Kalev, A., 2015. Rage against the iron cage. Am. Sociol. Rev. 80 (5), 1014–1044. https://doi.org/10.1177/0003122415596416.
Edo, A., Jacquemet, N., Yannelis, C., 2019. Language skills and homophilous hiring discrimination: evidence from gender and racially differentiated applications. Rev. Econ. Househ. 17 (1), 349–376. https://doi.org/10.1007/s11150-017-9391-z.
Eichhorst, W., 2014. Fixed-term contracts. IZA World of Labor, p. 45. https://doi.org/10.15185/izawol.45.
Esses, V.M., Jackson, L.M., Armstrong, T.L., 1998. Intergroup competition and attitudes toward immigrants and immigration: an instrumental model of group conflict. J. Soc. Issues 54 (4), 699–724. https://doi.org/10.1111/j.1540-4560.1998.tb01244.x.
Francis, R.G., LeVine, R.A., Campbell, D.T., 1973. Ethnocentrism: theories of ethnic attitudes, and group behavior. Int. Migr. Rev. 7 (4), 466. https://doi.org/10.2307/3002563.
Gutfleisch, T., 2022. Hiring discrimination against foreigners in multi-ethnic labour markets: does recruiter nationality matter? Evidence from a factorial survey experiment in Luxembourg. Res. Soc. Stratif. Mobil. 77, 100672 https://doi.org/10.1016/j.rssm.2021.100672.
Heath, A.F., Rothon, C., Kilpi, E., 2008. The second generation in western Europe: education, unemployment, and occupational attainment. Annu. Rev. Sociol. 34 (1), 211–235. https://doi.org/10.1146/annurev.soc.34.040507.134728.
Holm, S., 1979. A simple sequentially rejective multiple test procedure. Scand. J. Stat. 6, 65–70. https://www.jstor.org/stable/4615733.
Kline, P., Rose, E.K., Walters, C.R., 2022. Systemic discrimination among large U.S. employers. Q. J. Econ. 137 (4), 1963–2036. https://doi.org/10.1093/qje/qjac024.
Koopmans, R., Veit, S., Yemane, R., 2019. Taste or statistics? A correspondence study of ethnic, racial and religious labour market discrimination in Germany. Ethn. Racial Stud. 42 (16), 233–252. https://doi.org/10.1080/01419870.2019.1654114.
Krishnan, T., Scullion, H., 2017. Talent management and dynamic view of talent in small and medium enterprises. Hum. Resour. Manag. Rev. 27 (3), 431–441. https://doi.org/10.1016/j.hrmr.2016.10.003.
Lahey, J., Beasley, R., 2018. Technical aspects of correspondence studies. In: Gaddis, S. M. (Ed.), *Audit studies: Behind the Scenes With theory, method, and Nuance*, pp. 81–101. https://doi.org/10.1007/978-3-319-71153-9_4.
Lahey, J.N., 2008. Age, women, and hiring. J. Hum. Resour. 43 (1), 30–56. https://doi.org/10.3368/jhr.43.1.30.
Lang, K., Kahn-Lang Spitzer, A., 2020. Race discrimination: an economic perspective. J. Econ. Perspect. 34 (2), 68–89. https://doi.org/10.1257/jep.34.2.68.
Lang, K., Lehmann, J.Y.K., 2012. Racial Discrimination in the Labor Market: theory and Empirics. J. Econ. Lit. 50 (4), 959–1006. https://doi.org/10.1257/jel.50.4.959.
Laouénan, M., 2017. Hate at first sight': evidence of consumer discrimination against African-Americans in the US. Labour Econ. 46, 94–109. https://doi.org/10.1016/j.labeco.2017.03.008.
Lippens, L., Baert, S., Ghekiere, A., Verhaeghe, P.P., Derous, E., 2022. Is labour market discrimination against ethnic minorities better explained by taste or statistics? A systematic review of the empirical evidence. J. Ethn. Migr. Stud. 48 (17), 4243–4276. https://doi.org/10.1080/1369183x.2022.2050191.
Lippens, L., Moens, E., Sterkens, P., Weytjens, J., Baert, S., 2021. How do employees think the COVID-19 crisis will affect their careers? PLoS One 16 (5), e0246899. https://doi.org/10.1371/journal.pone.0246899.
Lippens, L., Vermeiren, S., Baert, S., 2023. The state of hiring discrimination: a meta-analysis of (almost) all recent correspondence experiments. Eur Econ Rev 151, 104315. https://doi.org/10.1016/j.euroecorev.2022.104315.
Lockwood, B., 1991. Information externalities in the labour market and the duration of unemployment. Rev. Econ. Stud. 58 (4), 733. https://doi.org/10.2307/2297830.
Long, J.S., Ervin, L.H., 2000. Using heteroscedasticity consistent standard errors in the linear regression model. Am. Stat. 54 (3), 217–224. https://doi.org/10.1080/00031305.2000.10474549.
Longley, N., 2003. Measuring employer-based discrimination versus customer-based discrimination. The case of French Canadians in the national hockey league. Am. J. Econ. Sociol. 62 (2), 365–381. https://doi.org/10.1111/1536-7150.t01-2-00004.
Maddox, K.B., 2004. Perspectives on racial phenotypicality bias. Pers. Soc. Psychol. Rev. 8 (4), 383–401. https://doi.org/10.1207/s15327957pspr0804_4.
Martens, A., 2017. Moroccan migration in Belgium's labor policy and labor market. In: Timmerman, C., Fadil, N., Goddeeris, I., Clycq, N., Ettourki, K. (Eds.), Moroccan Migration in Belgium: More than 50 Years of Settlement, 1st ed. Leuven University Press, pp. 87–104. https://doi.org/10.2307/j.ctt21c4s72.7.
Martínez-Pastor, J.I., 2013. Fixed-term contracts: does nationality matter? J. Ethn. Migr. Stud. 40 (5), 814–828. https://doi.org/10.1080/1369183x.2013.778141.
Martiniello, B., Verhaeghe, P.P., 2022. Signaling ethnic-national origin through names? The perception of names from an intersectional perspective. PLoS One 17 (8), e0270990. https://doi.org/10.1371/journal.pone.0270990.
Matsumoto, A., Merlone, U., Szidarovszky, F., 2012. Some notes on applying the Herfindahl–Hirschman Index. Appl. Econ. Lett. 19 (2), 181–184. https://doi.org/10.1080/13504851.2011.570705.
Maurer-Fazio, M., 2012. Ethnic discrimination in China's internet job board labor market. IZA J. Migr. (1), 1. https://doi.org/10.1186/2193-9039-1-12.
Mayson, S., Barrett, R., 2006. The 'science' and 'practice' of HRM in small firms. Hum. Resour. Manag. Rev. 16 (4), 447–455. https://doi.org/10.1016/j.hrmr.2006.08.002.
McPherson, M., Smith-Lovin, L., Cook, J.M., 2001. Birds of a feather: homophily in social networks. Annu. Rev. Sociol. 27 (1), 415–444. https://doi.org/10.1146/annurev.soc.27.1.415.
Midtbøen, A.H., 2014. Discrimination of the second generation: evidence from a field experiment in Norway. J. Int. Migr. Integr. 17 (1), 253–272. https://doi.org/10.1007/s12134-014-0406-9.
Midtbøen, A.H., 2015. The context of employment discrimination: interpreting the findings of a field experiment. Br. J. Sociol. 66 (1), 193–214. https://doi.org/10.1111/1468-4446.12098.
*National Center for O*NET Development (2022). *Work activities*. O*NET OnLine. Retrieved March 11, 2022, from https://www.onetonline.org/find/descriptor/browse/4.A.
*National Center for O*NET Development (2022). *Work context*. O*NET OnLine. Retrieved March 11, 2022, from https://www.onetonline.org/find/descriptor/browse/4.C.
Neumark, D., 2018. Experimental research on labor market discrimination. J. Econ. Lit. 56 (3), 799–866. https://doi.org/10.1257/jel.20161309.
Organisation for Economic Cooperation and Development, 2007. OECD Reviews of Human Resource Management in Government: Belgium. OECD. https://www.oecd.org/gov/pem/39375676.pdf.
Organisation for Economic Cooperation and Development, 2020. All Hands in? Making diversity Work For All. OECD. https://doi.org/10.1787/efb14583-en.
Pettigrew, T.F., Tropp, L.R., Wagner, U., Christ, O., 2011. Recent advances in intergroup contact theory. Int. J. Intercult. Relat. 35 (3), 271–280. https://doi.org/10.1016/j.ijintrel.2011.03.001.
Phelps, E.S., 1972. The statistical theory of racism and sexism. Am. Econ. Rev. 62 (4), 659–661.
Pierné, G., 2018. Hiring discrimination, ethnic origin and employment status. Int. J. Manpow. 39 (1), 152–165. https://doi.org/10.1108/ijm-05-2016-0104.
Port of Antwerp (2021). *2021 Feiten & Cijfers*. Havenbedrijf Antwerpen. https://www.portofantwerp.com/sites/default/files/Port-of-Antwerp-Cijferboekje-2021_0.pdf.
Prijzenobservatorium, 2021. *Marktwerking in België: horizontale screening sectoren 2020*. Instituut voor de nationale rekeningen. Federal Public Service Economy. https://economie.fgov.be/nl/publicaties/marktwerking-belgie-5.
Quillian, L., Heath, A., Pager, D., Midtbøen, A., Fleischmann, F., Hexel, O., 2019. Do some countries discriminate more than others? Evidence from 97 field experiments of racial discrimination in hiring. Sociol. Sci. 6, 467–496. https://doi.org/10.15195/v6.a18.
Quillian, L., Lee, J.J., Oliver, M., 2020. Evidence from field experiments in hiring shows substantial additional racial discrimination after the callback. Soc. Forces 99 (2), 732–759. https://doi.org/10.1093/sf/soaa026.
Quillian, L., Pager, D., Hexel, O., Midtbøen, A.H., 2017. Meta-analysis of field experiments shows no change in racial discrimination in hiring over time. Proc. Natl Acad. Sci. 114 (41), 10870–10875. https://doi.org/10.1073/pnas.1706255114.
Riach, P.A., Rich, J., 2002. Field experiments of discrimination in the market place. Econ. J. 112 (483), F480–F518. https://doi.org/10.1111/1468-0297.00080.
Riek, B.M., Mania, E.W., Gaertner, S.L., 2006. Intergroup threat and outgroup attitudes: a meta-analytic review. Pers. Soc. Psychol. Rev. 10 (4), 336–353. https://doi.org/10.1207/s15327957pspr1004_4.
Scholiers, B., Vansteenkiste, S., 2021. De invloed van COVID-19 op arbeidsmarkttransities: kwetsbare profielen onder druk. Over.Werk—Tijdschrift van het Steunpunt Werk 31 (2), 17–24.
Statbel, 2019. An Overview of Belgian wages and Salaries. Federal Public Service Economy. Retrieved February 12, 2022 from. https://statbel.fgov.be/en/themes/work-training/wages-and-labourcost/overview-belgian-wages-and-salaries.
Statbel, 2021. Beroepen in België. Federal Public Service Economy. Retrieved February 12, 2022 from. https://statbel.fgov.be/nl/themas/werk-opleiding/arbeidsmarkt/beroepen-belgie.
Thijssen, L., van Tubergen, F., Coenders, M., Hellpap, R., Jak, S., 2021. Discrimination of Black and Muslim minority groups in western societies: evidence from a meta-analysis of field experiments. Int. Migr. Rev. https://doi.org/10.1177/01979183211045044. *019791832110450*.
Vandekerkhove, T., Goesaert, T., Struyven, L., 2022. *Dynamiekmonitor Voor De Vlaamse arbeidsmarkt: stromen van werknemers. Jobs En Werkgevers Tijdens De COVID-crisis*. Hiva - Onderzoeksinstituut Voor Arbeid En Samenleving, KU Leuven. https://publicaties.vlaanderen.be/view-file/50212.
Van Assche, J., Swart, H., Schmid, K., Dhont, K., Al Ramiah, A., Christ, O., Kauff, M., Rothmann, S., Savelkoul, M., Tausch, N., Wölfer, R., Zahreddine, S., Saleem, M.,

Hewstone, M., 2023. Intergroup contact is reliably associated with reduced prejudice, even in the face of group threat and discrimination. American Psychologist 78 (6), 761–774. https://doi.org/10.1037/amp0001144.
Van Borm, H., Lippens, L., Baert, S., 2022. An Arab, an Asian, and a Black guy walk into a job interview: ethnic stigma in hiring after controlling for social class. SSRN Electron. J. https://doi.org/10.2139/ssrn.4281262.
Verhaeghe, P.P., 2022. Correspondence studies. In: Zimmermann, K.F. (Ed.), Handbook of Labor, Human Resources and Population Economics. Springer, Cham. https://doi.org/10.1007/978-3-319-57365-6_306-1.
Vishwanath, T., 1989. Job search, stigma effect, and escape rate from unemployment. J. Labor Econ. 7 (4), 487–502. https://doi.org/10.1086/298218.
Vlaamse Dienst voor Arbeidsbemiddeling en Beroepsopleiding, 2021. Knelpuntberoepen in Vlaanderen 2021. VDAB. https://www.vdab.be/sites/default/files/media/files/Knelpuntberoepen%202021.pdf.
Voas, D., Fleischmann, F., 2012. Islam moves west: religious change in the first and second generations. Annu. Rev. Sociol. 38 (1), 525–545. https://doi.org/10.1146/annurev-soc-071811-145455.
Vuolo, M., Uggen, C., Lageson, S., 2018. To match or not to match? Statistical and substantive considerations in audit design and analysis. In: Gaddis, S.M. (Ed.), Audit Studies: Behind the Scenes With theory, Method, and Nuance. Springer, pp. 119–140. https://doi.org/10.1007/978-3-319-71153-9_6.
Weichselbaumer, D., 2017. Discrimination against migrant job applicants in Austria: an experimental study. Ger. Econ. Rev. 18 (2), 237–265. https://doi.org/10.1111/geer.12104.
Zhang, Z., Spicer, A., 2014. 'Leader, you first': the everyday production of hierarchical space in a Chinese bureaucracy. Hum. Relat. 67 (6), 739–762. https://doi.org/10.1177/0018726713503021.
Zschirnt, E., Ruedin, D., 2016. Ethnic discrimination in hiring decisions: a meta-analysis of correspondence tests 1990–2015. J. Ethn. Migr. Stud. 42 (7), 1115–1134. https://doi.org/10.1080/1369183x.2015.1133279Tables.