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Fertility Intentions Among Immigrants and Non-Immigrants in France: A Quantitative Study Focusing on Gender and Gender Equality Values

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Abstract

Fertility in France has been rapidly declining in the last years, moving far from replacement levels despite the country's historically high fertility and family-support policies. Using data from the second round Wave 1 of the French Generations and Gender Survey and building on the Second Demographic Transition theory (Lesthaeghe and van de Kaa, 1986), according to which population decline needs to be compensated with migration, this study examines the fertility intentions of immigrants and non-immigrants in France and how individual level factors are associated with them. Six nested binary logistic regression models and a separate model, run on the immigrant sub-sample only, tested individual-level factors in association with fertility intentions, grounding in Ajzen's (1991) theory of Planned Behaviour, McDonald's (2000) Gender Equity theory, Goldscheider et al.'s (2015) Gender Revolution Framework and migration's adaptation and socialization hypotheses. Results show gender equality values as significantly associated with fertility intentions, but strongly gendered towards men, rather than acting uniformly among all groups. Additionally, fertility intention significantly depends on the region of birth, with respondents from high fertility countries showing much higher intentions than French-born respondents. This study demonstrates how individual-level factors and specifically gender egalitarian values and region of origin, operate heterogeneously among the population, with implications for future family policies.

Keywords: *Fertility Intentions, France, Gender Equality, Migration, Generations and Gender Survey, Second Demographic Transition, Theory of Planned Behaviour, Gender Equity Theory, Gender Revolution, Adaptation, Socialization.*

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1. Introduction

1.1 Scope and Motivation of the Study

Fertility and reproduction are essential topics in the contemporary demographic debate. Currently, fertility is seeing global variations that go from one extreme to the other. In fact, even though there's a growing concern in the drastic decline that many regions have been experiencing in the Total Fertility Rate (TFR) since 2008, which corresponds with the rising of post-transitional societies (Sobotka, 2020), the total world population has actually been increasing every year (World Bank, 2025), helped especially by the contribution of Sub-Saharan African countries. They are in fact experiencing an overall growing and well above replacement levels of TFR. This is also an object of concern as it represents a threat for environmental resources and a sustainable future (O'Sullivan, 2023) and it's contributed by different factors, such as poor access to modern contraception but also a general strong pro-natalist culture (Sobotka, 2020).

Nevertheless, low fertility remains below the replacement levels of 2.1 births per woman in most high-income countries, causing worries for governments and institutions (Berrington, 2021). A decreasing population is a concerning issue as it affects different aspects of the social and economic domains of a country, such as the size of the labour force, the pension system, the provisions for public healthcare and other public finances, as well as social security (Bignami et al., 2024).

With the Second Demographic Transition (SDT) theory Lesthaeghe and van de Kaa (1986) support the idea that going towards in society, migration would become an essential part of compensating the fertility decline, by shaping "multicultural societies". And in fact, immigrants and their descendants widely shape demographic trends in European countries, representing about one-quarter to one-fifth of the population of Northern and Western Europe (Kulu et al., 2024).

In France fertility has been constant and close to replacement levels for a big part of the 21st century, but in the last years this trend has shifted toward a fast decline, reaching a TFR of 1.61 children per woman (Eurostat, 2025) and being projected to get lower. At the same time it represents an interesting case as it has a large share of the immigrant population, also from outside of Europe, being one of the most popular destinations, with 14% of immigrant residents in 2025 (Eurostat, 2026).

Using data from the Generations and Gender Survey (GGS) Round II Wave 1, the following thesis aims to carry out a quantitative study, comparing the fertility intentions of immigrants and non-immigrants in France and factors influencing them, to be able to discuss implications and possibilities. Studying fertility intentions of individuals, rather than the fertility rate of a country, is what allows us to uncover motives behind the outcome of having a child. According to Ajzen's Theory of Planned Behaviour" (1991), intentions are antecedents of a behaviour and they can be predicted by analysing social norms and attitudes. This allows us to confidently identify how specific social norms reflect on fertility intentions.

1.2 Research Questions

To guide the analysis, the thesis will answer 3 research questions:

1. To what extent do the fertility intentions of immigrants and non-immigrants differ in France?

With this research question, the goal is to understand if and in what measure there are differences in the fertility intentions of respondents who immigrated to France and the French-born population.

2. How do different individual-level factors correlate to the fertility intentions of immigrants and non-immigrants in France?

This second question wants to find how relevant individual-level factors, such as socio-economic and gender equality beliefs, are associated with the fertility intentions of the two groups of respondents in France, possibly finding similarities or differences among them, or different strengths in their association with fertility intention.

3. How does the age of arrival in France of immigrants reflect on their fertility intentions?

Lastly, this last inquiry wants to test how strong the "migration status" holds in time in reflecting in ideas and intentions about fertility, measuring the effects of socialization and adaptation.

1.3 Structure of the Thesis

The thesis is structured through different sections, starting with the state-of-the-art (Section 2), in which is given an overview on the literature about the topics of fertility intentions and migration, as well as the intersectionality between them, exploring frameworks applied in Europe and then more specifically in France. Section 3 provides the analytical framework of reference for the study, offering perspectives from which hypotheses are formulated. Section 4 illustrates the methodology adopted in the analysis, discussing data, variables construction and the sample choice, as well as the statistical methods and analytical strategy. Finally, in Section 5, the results of the analysis are presented, first all descriptive findings are illustrated and then each model's regression coefficients are reported. Sequentially, a bigger discussion ties findings to the theories previously illustrated, also highlighting limitations and future research possibilities (Section 6). Follows a comprehensive conclusion (Section 7) which summarises the thesis analysis and concludes with suggestions for policy directions.

2. State-of-the-art

2.1 Low Fertility in Europe

Since the end of the 20th century, fertility in Europe has been progressively decreasing, because of a multitude of factors. Lesthaeghe and van de Kaa talked about the Second Demographic Transition (SDT) theory (1986), which introduced a multitude of living arrangements other than marriage, as well as marriage not always involving procreation, but also the idea that population will face a size decline if not complemented by immigrants, involving the growth of "multicultural societies". Additionally it takes into consideration new factors that differ from the period of fertility growth before the 70s, such as divorce increase, fertility age postponement, efficient contraception, rising symmetry in gender roles, retreat of the state and secularization (Lesthaeghe, 2014).

A crucial factor contributing to the decrease in women's fertility in Europe is the progressive age post-ponement in childbearing, which impacts actual fertility realization even when intentions might be close to replacement levels (Berrington, 2021). In fact, the average age at first birth has increased significantly, from the 20s to the 30s, causing women to have or want fewer children or none at all, to have more time to invest in themselves. On the other side it can lead to involuntary childlessness, making it always more relevant to recur to the use of Medical Assisted Reproduction (MAR). This delay is also widely correlated with time spent in education, but also increased contraception used in partnership dynamics and an overall decrease of union stability (Beaujouan, 2023).

But while fertility rates are low in Europe, fertility intentions remain to a large extent close to replacement levels, showing a significant gap in fertility realizations, especially in highly educated women in regions where work-family balance support is weak, in particular in German-speaking and Southern European countries (Beaujouan and Berghammer, 2019). Looking at the gap to encourage policy making to support individuals or couples wishing to have their desired number of children is an ecological fallacy that only looks at macro-factors,

because ideals are not constructed on actual conditions; instead, it's more adequate to look at fertility intentions, measured on the individual level that shows a realistic wish to have a child, suggesting that policies should look at individual motivators rather than targeting fertility increase in general (Philipov, 2009).

When talking about fertility intentions, age is also a huge factor in the fluctuation of ideas and uncertainty. The study of intentions, in fact, moves on a range from definitely yes to definitely no, because of how unsure the future might be with the passing of age, as well as policies and partnership context (Barker and Buber-Ennser, 2023). However, studies demonstrate how the change of intention over time is more likely for men, as also in partnership dynamics, women have been proven to usually have the ultimate choice of having a child, as they have stricter parameters and veto power in decisional settings (Stein et al. 2014); additionally, for what concerns probability of behavior realization of fertility intentions, men are more likely to change their mind as they get older or as they get into stable relationships, while women are less likely to be affected by change (Fiori et al., 2017). Change is also more likely on short-term fertility intentions and in a negative expression of intention (Barker and Buber-Ennser, 2023).

Many others are the factors associated with fertility intention and it's important to deeply understand them as motivators, to be able in the future to draw structural support tools that can reduce the gap between intention and realization. Fertility research widely highlights the importance of gender egalitarian values in determining fertility ideals, following McDonald's (2000) and Goldscheider et al.'s (2015) theoretical frameworks (see Section 3.2), which support how perception of equality both in the public and mostly in the private sphere can be significantly associated with the intention of having a child. Overall, in low fertility countries, higher levels of division of housework are associated with an increased likelihood of intending to have a child and a less equitable division of childcare is associated with a decreased intention of having another child

(Leocádio et al., 2024). However it would be a mistake to consider gender equality values as having an effect on fertility intention uniformly across the whole population, in fact it can vary significantly by gender: women value primarily their partner's support in housework and employment, while men value their own employment and their satisfaction with family work arrangements the most, showing that gender equality is a stratified factor and different groups can value some aspects more than others (Neyer et al., 2013). The association between gender equality values and fertility intention is also not fixed in time, but it dynamically evolves around life circumstances. The employment status, for example, is a strong moderator of the relationship (Barker and Buber-Ennser, 2024), and in particular employed women, compared to unemployed, suffer a double burden in dealing with both family and work balance (Erfani and Pilon, 2025). Additionally, another factor that can be associated with fertility intention is education, which overall in Europe shows a positive relationship with fertility; this gradient is stronger for men than for women, and for second births rather than first, but it flattens when gender equality employment opportunities are widespread (Testa and Stephany, 2018).

Many studies indicate that immigration helps with population decrease and shapes demographic trends in Europe (Kulu et al., 2024), suggesting that immigrants' fertility could have a relevant role in the process. First it's important to understand that there are major differences between intra-European immigrants and from outside the EU. For example, an observed trend is that of west-Europeans to cohabit before marriage and have children outside of marriage, but that is not the case for most immigrants from Africa and South Asia. There's in fact a strong heterogeneity of partnership and childbearing life trajectories based on the country or region of origin (Kulu et al., 2024). Second, there can be differences on a gender level for immigrants in family formation, as it has been observed that men's intentions are more likely to be disrupted and they are more likely to remain childless (Friedrich and Milewski, 2026). This can also be a consequence that men are more likely to take into consideration the economic factors more

heavily than women, who value partnership more when deciding to have a child, because they have traditionally been socialized to ensure the family's finances (Novelli et al., 2020).

Immigrants in Europe are also found to follow the "adaptation theory", in fact the longer their stay the more likely they are to have fertility intentions similar to those of non-immigrants (Kulu, 2005). This is also why fertility patterns and intentions of first generation immigrants often don't reflect on their descendants, as they are more likely to be socialized by the institutions of the country of birth and adapt in that context (Carlsson, 2019).

Nevertheless, although studying fertility intentions is beneficial and represents the best predictor of childbirth on the individual level, as well as helping demonstrating correlations with different macro-factors, there can be external constraints affecting the effective realization, that go beyond cultural personal beliefs and social norms followed, such as the fluctuations in the job market or in the inflation rate, making it very important to talk in terms of probability (Spéder and Bálint, 2024).

2.2 Fertility and Migration in France

France is the first country in Europe to have started a fertility transition, more than a century before the other European countries, after the French revolution, because of a gradual shift towards secularization, escaping for the first time in history the Malthusian stagnation, for which with continuous population growth technological progress would have stopped (Blanc, 2023). Nevertheless, more recently, with a rate of 1.61 children born per woman (Eurostat, 2025), France remains one of the top countries for Total Fertility Rate (TFR). In fact, despite a strong secularization of the marriage institution, for many decades, births have been kept higher than the European average, close to replacement levels, with most births occurring outside of marriage (Regnier-loilier et al., 2011). But the fertility rate in France is now rapidly dropping, reaching the lowest levels in the

last 100 years, losing more than 0.25 points in only 5 years and being projected to get even lower, going further from replacement levels in absence of migration (Eurostat, 2025).

Research about fertility intentions and their realization in France identifies a distinction between individual-level and institutional factors. Employment is one of the driving fertility determinants in France, both for what concerns financial security but also the conciliation of work-family balance, thanks to flexible working hours; women's educational level also loses importance once employment is accounted for (Régnier-Loilier et al., 2011). Socio-demographic factors are also relevant to determine fertility in France, in fact for what concerns age, it's the highest between the ages of 25 and 34 and then declines rapidly from 35; parity is significant as well, as already having a child, and especially a second child, significantly reduce the possibility of a third; marital status also plays an important role in determining fertility, in fact being married is highly associated with fertility compared to just cohabitation (Régnier-Loilier et al., 2011). All these individual-level factors that lead to fertility are mediated by the social pressure that especially women experience in feeling that they need to have a child (Mazuy and de La Rochebrochard, 2008). On an institutional level, in France there's a history of long standing pro-natalist policies, ranging from daycare provision, parental leave and family benefits, promoting gender equality in the institutional level (Toulemon et al., 2008), that helped maintain high levels of fertility until recently.

France is also an interesting case as around 14% of its population is represented by immigrants, of which more than half from outside Europe, and is a popular immigration destination (Eurostat, 2026). Immigrants in France exhibit a more conservative behaviour compared to their descendants and French-born, by marrying early and having more children. At the same time, their country of origin also has an effect on their family trajectories, as for example European

immigrants exhibit similar fertility levels, as differences with France are smaller, than immigrants from high fertility countries (Delaporte and Kulu, 2022).

Another factor that can strongly influence the fertility behaviour of immigrants is the delayed entry in the job market, especially for men, as they need to be seen as monetary caretakers of the family, while women's social pressure to have children counterbalances the job insecurity that they might experience (Dupray and Pailhé, 2017). This remains valid also in the non-immigrants context, as employment is a much stronger factor on fertility intentions, for example than education (Régnier-Loilier et al., 2011) and historically employment bills that disadvantaged young people brought to a decrease of fertility, by encouraging having less children rather than not having any (Clark and Lepinteur, 2022).

First generation immigrants of Sub-Saharan countries are more likely to get married, with higher effect of transnationalism and higher fertility than second generations, who manifest similar fertility behaviour (Afulani and Asunka, 2015). Nevertheless, children of immigrants, whose parents come from high fertility countries, still show higher fertility intentions than their peers, even though they're not realized (Ng, 2024). This is because socialization in the culture of origin has a bigger effect than adaptation in the country of migration on fertility ideals, rather than actual fertility; the more "adapted" in the French context (like having a French partner, acquiring French citizenship or speaking French), the more fertility ideals are like non-immigrants (Afulani and Asunka, 2015). But although women who immigrated to France from high-fertility SSA countries show a higher fertility than native born French women, they manifest a much lower fertility than women in their country of origin (Behrman, 2022).

France represents an interesting case selection to study the fertility intentions of immigrants and non-immigrants because of its significant immigrant population, and growing popularity, and above all because of a delayed trend towards low fertility compared to other European countries, despite it having a decently strong

family support plan. The majority of the publications on fertility in France focuses in fact on the high fertility period in the first part of the 21st century, in a comparative key to other European countries that were experiencing lower fertility. Also considering research using the GGS longitudinal data, the studies using the French GGS Round II dataset are still very limited, because of the very recent availability of the data. The gap in the literature lies in the novelty of the data but also in looking at the rapid decrease of fertility and fertility intentions in France in the last years, as well as the opportunities that immigrants can represent in the country. Additionally, studying how the role of different individual-level factors on fertility intentions can have evolved in the last years, can give insights and inspiration to think about the phenomenon in a different light and inspire new policy design.

3. Theoretical Framework and Hypotheses

3.1 Intentions and the Theory of Planned Behaviour

This study focuses on fertility intentions, rather than realization, to understand fertility trends in France among immigrants and non-immigrants. The concept of having intention as object of the study is grounded in Ajzen's Theory of Planned Behaviour (1991). Ajzen supports the stance that intentions are antecedents of behaviour and they should be able to capture underlying motivational factors that actually influence the behaviour. In particular, intention is conceptualized in three distinct determinants: the attitude toward the behaviour, which reflects how favourable the individual is towards that particular behaviour, the subjective norm, which refers to the social pressure to perform the behaviour, and the perceived control over the behaviour, meaning the perceived difficulty of performing the behaviour. Overall, intention is conceptualised as stronger when all the three factors are favourable to the circumstance. Ajzen's theory shows the complexity and the layers of intentions that make it an ideal object to study.

Studying fertility ideals, rather than realized behaviour, is highly appropriate for this analysis because they are able to show underlying values, norms and ideologies that shape the intention of having a child in low fertility countries (Ng, 2023), like the case of France, and can uncover the roles of those individual-level factors that are object of the study.

3.2 Fertility Intention and Gender Equality

Having introduced the Theory of Planned Behaviour as the baseline framework of the study, this section draws theoretical motivations on individual level factors that are associated with fertility intention. In particular, the focus is on two widely recognized theories in fertility studies: McDonald's (2000) gender equity framework and Goldscheider et al.'s (2015) gender revolution theory, which put gender and gender values at the centre of individual level factors influencing fertility.

A terminological clarification is necessary at this point between gender equality and equity. McDonald (2000) develops his framework around the concept of gender *equity*, which is defined with the individuals' perceived fairness and equality of opportunity, while this study approaches the topic more broadly and looks at gender *equality*, as widely used by Goldscheider et al. (2015), and includes the use of an index around questionnaire items that deal more with values and ideals, rather than perceived fairness (see Section 4.6.2); therefore, throughout the analysis, the term used will be *equality*. Nevertheless, McDonald's theory is used as a very close theoretical grounding, even if conditions are not exactly identical, considering that he also describes equality as a straightforward concept that can be easily measured (McDonald, 2013).

McDonald (2000) addresses an apparent contradiction in fertility trends around the world, in fact, if in high fertility countries higher gender equity values are essential to help lowering fertility, in low fertility contexts, low fertility is caused by the conflict of high levels of gender equity in individual-level social

institutions (like employment, education or politics) and instead low levels of equity in family oriented institutions (housework, child caring). According to McDonald there's a mismatch of gender equity in these two different types of institutions, that change at different rates and have different consequences on fertility. A focal point of the theory is that the transition from high fertility towards replacement levels is pushed by the rise of gender equity within the family, because women gain more decision making power on childbearing, without the process for the women's status to change also outside the household; by contrast, in low fertility countries, especially in Western Europe, gender equity among public institutions expanded more rapidly than inside the households, which resulted in fertility below replacement levels. To recover this trend, the slower rise of gender equity on the family level is expected to support positive fertility trends. An important clarification is given later by McDonald (2013), in fact he specifies that the gender equity theories refer to differences in fertility between countries, rather than between women in the same country, because of the contextual reasons that influence fertility realization over individual-level motivations. Because this study only looks at intentions, and not realizations, intra-country study results coherent with the observation of individual-level factors, rather than aiming for a cross-country comparison of institutional determinants of fertility, like suggested by McDonald.

McDonald (2013) also advances the idea that policy regimes that support women's individual ambitions and family responsibilities can lead to higher fertility. He identifies several policy approaches, starting with socio-democratic systems, like the Nordic states, which through state-funded subsidies, especially on childcare have tried to balance work-family responsibilities for women; even France has developed a model of policy support for mothers working full-time, at the disadvantage of part-time employment for example. Instead, countries with little to no family support policies, like Southern Europe, experience even lower levels of fertility. This policy dimension is interesting to consider, as France has been identified having family support policies, which may have implications on

how gender equality associates with intention among the immigrant and non-immigrant respondents.

Another fundamental framework for the study is Goldscheider et al.'s (2015) Gender Revolution Framework, which on top of McDonald's theory emphasizes also the role of men in fertility transitions. The authors first talk about the "first phase" of the gender revolution, which involves women's entry in employment and consequently a delay in marriage and parenthood, as well as weakened fertility intentions because the entry in the job market did not correspond with lower responsibilities in the domestic sphere; but then, with the "second half" of the gender revolution, men's participation in housework and childcare would increase relieving women's burden, encouraging union stability and fertility increase. Drawing on empirical evidence from Sweden, the authors report that the relationship between gender equality and positive fertility trends emerges when equality is manifested in the private sphere, rather than just in the public. Because of the role of men's behavioural change in the "second half" of the revolution, which happens at a later time compared to women, the relationship between gender values and fertility intention could also differ by gender; in fact, it could be that men and women in the context of France, could be in different stages of the mechanisms. This provides theoretical grounding to test for gender as a moderator throughout the analysis.

The present study provides a gender equality index built with items both concerning attitudes toward the public and the private sphere, tested on an individual level, and drawing from McDonald's and Goldscheider et al.'s theoretical frameworks.

3.3 Migration and Fertility

Beyond McDonald's (2000) and Goldscheider et al.'s (2015) theories, the Second Demographic Transition (Lesthaeghe and van de Kaa, 1986) offers a framework to how migration incorporates in the study of fertility intentions and in particular

with fertility decline. Although theoretically the theory gives an overview of factors leading to low fertility in contemporary societies, it further adds on how immigration can be a resource to replace population and encourage a demographic transition toward multicultural societies in Europe. This connection between low fertility and migration provides a solid motivation to study and compare immigrants' intentions to non-immigrants as a focal point of the analysis, rather than as a marginal trend.

At the individual level, migration and fertility intentions are theorised through 4 distinct and mutually exclusive mechanisms. The *socialization hypothesis* supports that fertility behaviour for migrants reflects the fertility preferences that they learnt during their childhood, therefore fertility intentions result to be similar to those in their country of origin; the *adaptation hypothesis*, in contrast, assumes that fertility intentions are driven by the current social context, by adapting to the new contest; the *selection hypothesis* argues instead that migrants are not representative of their country of origin, as the act of migrating makes them a special selected group with already values similar to the country of destination; lastly, the *disruption hypothesis* supports that after migrating, immigrants suffer from low fertility due to disruptive circumstances associated with the migration (Kulu and Milewski, 2007).

While selection and disruption represent valuable possible mechanisms in migrant fertility research, the present study does not allow to test for them: the country specific sample does not allow for a comparison of the migrant group with samples in their country of origin to check the selection hypothesis and there's no significant data available to test statistically for disruptive events following the act of migrating to check for the disruption mechanism. Therefore, socialization and adaptation are taken as the framework of fertility behavior of immigrants for this study.

3.4 Hypotheses

Drawing on the theoretical framework outlined in the paragraphs above, a series of hypotheses are elaborated to address the study's research questions.

> *H1: Fertility intentions in France differ between immigrant and non-immigrant respondents and the largest differences are expected in participants from high-fertility countries.*

Hypothesis 1 follows the Second Demographic Transition theory, in which immigration, and in particular immigrants' fertility, is seen as essential to counteract decreasing fertility and is seen as a structural feature of low fertility societies, like France, therefore indicating that immigrants have different fertility intentions. Additionally, the socialization theory is integrated in the hypothesis as it highlights how immigrants carry norms from their country of origin; accordingly the same is believed for fertility ideals and therefore the largest gap with French-born respondents is expected to be observed in participants from countries with high fertility.

> *H2a: Gender equality values are significantly associated with fertility intentions, at net of other individual-level factors.*

Hypothesis 2a reflects the focus of RQ2 on how individual-level factors correlate with fertility intention. Grounding in McDonald's (2000) and Goldscheider et al. (2015)'s theories on fertility intentions in low fertility contexts, gender equality values are taken as the focal variable of the study. Because gender equality values in this study combine attitudes towards both the private and the public sphere in one united index, while theory hypothesizes on the direction of the association with fertility with them separated, no direction is predicted here; instead it tests the overall meaningfulness in the scenario of France at net of the other individual-level factors.

H2b: The direction and strength of the association between gender equality values and fertility intention differs by gender, rather than acting uniformly among both groups.

The hypothesis H2b builds on H2a and tests whether the relationship between gender equality values and fertility intention differs by men and women or it's instead uniform, following Goldscheider et al. (2015) emphasis on men's later role than women in reaching gender equality but fundamental for the "second half" of the gender revolution, suggesting that men and women could be in different stages of revolution and therefore their intention systematically differ.

H2c: The association between gender equality and fertility intention differs between immigrant and non-immigrant respondents, reflecting that immigrants' values could still be shaped by the country of origin.

This hypothesis also builds on H2a by testing whether the association between gender equality values and fertility intention of immigrants differs from non-immigrants. This possibility comes from the migration theories explained in section 3.3, as the foreign-born respondents could still have values that they've been socialized with from their country of origin, or if instead it was overcome by the process of adaptation.

H3: For immigrants, spending a longer period of time in French institutions, meaning that they've immigrated at a younger age, significantly associates with fertility intention.

Finally, hypothesis H3 tests separately and on the immigrant sample only the predictions of socialization and adaptation theories. Adaptation would be supported in the case that the age at migration of respondents had significant associations with fertility intentions, while on the contrary socialization would be

supported to be significant in case immigrant respondents maintained overall a constant intention among all ages at migration.

4. Data and Methods

4.1 Epistemological Approach

This study adopts a quantitative approach to understand trends in fertility intention among immigrants and non-immigrants in France, in relation to individual factors. In particular, the methodological approach follows the post-positivist assumption that because of the human nature of social research, researchers can never be entirely sure of what they've measured, meaning that scientific results should be considered as interpretations and beliefs, rather than absolute truths and facts (Fischer, 1998). Additionally, purely quantitative studies and only having a large amount of data is not enough by itself to fully understand fertility change, which is not only affected by demographics but also a series of socio-economic factors that can only be caught in depth by additional qualitative methods (Szreter, 2011).

This quantitative study needs to be therefore conceptualized as an attempt to interpret statistical associations, and consequently identify fertility trends in the context of France that don't need to be confused with the purpose of reaching the absolute truth of the phenomenon.

4.2 Data: the Generation and Gender Survey

The study uses secondary data from the Generations and Gender Survey (GGS) Round 2, collected by the Gender and Generations Programme (GGP), a cross-country research infrastructure that focuses on families and life course trajectories of individuals, funded in 2000 by the United Nations Economic Commission for Europe (UNECE). The first round (GGS I) of surveys began in 2004 and collected information across 19 countries, while the second round (GGS II) started in 2020, with a revised questionnaire and sample, and although it's still

ongoing, it involves 28 different countries and territories, allowing cross-national comparability. Each round plans for a first wave of surveys and second follow-up waves built on the same survey with additional questions added to measure status-change (Gauthier et al., 2025). While in the first round a face-to-face approach was adopted to collect the data, leaving national teams autonomy in deciding what kind of assistance to use, the second round employs Computer-Assisted Web Interviewing (CAWI) in the majority of the cases, making the survey easier and quicker to take for the respondents, as well as more financially beneficial (Leocádio et al., 2023).

This study specifically uses data from the France Round 2 and Wave 1 collection. The data was gathered between September 2023 and July 2024 using both the CAWI and CAPI (Computer-Assisted Personal Interviewing) on the population between the ages of 18 and 79. The sampling employed a stratified probability strategy defined by living standard decile or potentially living with a partner of the same sex, so not aiming for a specific target for the immigrant population, which is distinguished in this analysis. The surveys were carried out on a national level by the French statistics agency, the Institut National des Études Demographique (INED) and then the data was centrally elaborated by the Netherlands Interdisciplinary Démographic Institute (NIDI), where the GGP operates. The sampling frame was identified thanks to Fideli, the French tax administration database of INED, offering full coverage of the population, although missing responses were up to 75%. The total number of respondents summed up to be n=14,285.

The GGS-II baseline questionnaire is particularly adequate to carry out fertility studies, as it covers a wide range of related topics: demographics, life histories, fertility intentions, household structure, generational relationships, health and wellbeing, work, income and attitudes (Gauthier et al., 2023). One of its strongest features is how it includes sections with specific dates and months of events, allowing to draw the life course of individuals as well as sequence of events

(Gauthier et al., 2025), which is essential to this study to be able to identify the immigrants sub-group, their origin and their age at migration, as well as allowing to build more complex variables such as parity and relationship status, not directly measured.

The dataset was downloaded from the GGP portal, prior to approval, in both a .sav and .csv format, and then imported into R to start the statistical analysis.

4.3 Ethical Considerations

This study uses secondary data from the Round 2, Wave 1, France GGS dataset and therefore follows the ethical considerations declared by the Generations and Gender Programme. Fieldwork procedures included measures to protect all the respondents, including screenings to exclude ineligible individuals, and all the participants received a letter explaining that their interview was going to be considered "of public interest and statistical quality" (Generations and Gender Programme, no date).

GGS data is available for download for non-commercial purposes only, following registration and approval on the GGP portal, with the condition of submitting any results to the GGP bibliography. This study will use the data with the only purpose of conducting the analysis as part of a Master's thesis and will commit to submit the final project to the GGP to contribute to its bibliography.

4.4 Sample

The working sample was derived from the dataset after some analytical considerations. The first restriction was based on age, by identifying men and women under 45 at the moment of the interview as, scientifically, completed family size refers to the average number of children women will give birth by age 45 (Berrington, 2021) and it roughly represents the limit for men and women to plan to have children, reflecting that the focus on the studies remains on planning and intentions. As fertility intentions remain as the main focus, respondents were

not excluded based on fecundity status. In fact, in low fertility contexts, like France, intention is considered a stronger tool of analysis than just the biological capacity, driven by economic and social reasons (Hayford, 2009). For the same reason, this study does not directly identify same-sex couples and their intentions, as the questionnaire also did not discriminate in asking fertility intentions.

Applying these criteria resulted in a total sample of 6,570 respondents, which, after the construction of all the variables, ended up to be an unweighted sample of n=5,342 (women=2,693; men=2,649). In this sample, n=592 forms the immigrants group: this corresponds to the 11.08% of the total sample, which is proportionally close to the 14% of immigrants in France compared to total population (Eurostat, 2026). Still, the sample size of immigrants based on country of birth remains modest, which is treated as one of the limitations of the study that will be further addressed.

4.5 Methods

The study employs nested logistic regression models as its main method. As the purpose of the analysis is to understand the overall fertility intentions of individuals and what influences them, a binary approach has been adopted over ordinal, which would have been more adequate for studies about short-term intention and realization, as it can show the strength of it; on top of that, it doesn't require for the dependent variable to be equally distributed and avoids the proportional odds assumption required by ordinal, which in the scenario of intentions could not be the most adequate as distances can be very individual. Therefore a simple yes/no dependent variable represents the output of the study, answering the question: "Do you intend to have a(nother) child in the future?"

The use of nested binary logistic regression models is an established method in comparative survey-based research. Erfani and Pilon (2024), using the Canadian General Social Survey, adopted a nested binary logistic logic in which in a second model added the controls to the first baseline model and in the third the interaction

terms to test the hypotheses directly. Again, using GGS data, Barker and Buber-Ennser (2024) also approach a nested logistic modelling, by adding factors to each model, to individually test their individual effect. Moving from a baseline model and then progressively adjusting it to reach a significant model fit is an effective and recognised method in the study of fertility intentions, which allows to identify key variables.

Six models are estimated using a nested building approach, in which one or a group of independent variables are progressively added to each model to improve the fit (Schlegel, 2026). It allows for better control for each variable and to assess their effect almost individually, also to avoid multicollinearity, and to reach the best model in the end.

The analysis was run on R and it used the *survey* package in R, designed to handle complex survey data, incorporating the weight variable to ensure representativeness of the sample. The comparison and validity of the model was tested using Akaike Information Criterion (AIC) and Wald tests, ensuring that the last model is the most fit of the six.

The coefficients were interpreted mainly using Odds Ratios by exponentiating the logistic results, along with the 95% intervals. Additionally, Predicted Probability, which states how likely it is that the dependent variable occurs for a case, was used as a graphical form of interpretation between the fertility intention of an individual and continuous independent variables, like the gender equality index.

4.6 Variables

4.6.1 Dependent Variable

The dependent variable of this study is the intention of having a child in the future, resulting in a variable (YES/NO) outcome constructed from two items of the French GGS questionnaire: *fer14* (“Do you intend to have a/another child during the next three years? Please take into account only biological children”)

and *fer15* (“Supposing you don’t have a/another child during the next three years, do you intend to have any (more) children at all?”). Variable *fer14* is asked to all women under 50, men with a female partner under 50, men with no partner and women with a female partner under 50. Its responses are on a 5 level Likert scale (def yes, prob yes, unsure, prob no, def no) with an additional option that flags individuals that are currently expecting a child at the moment of the interview, meaning women that are pregnant or those who have a partner that’s pregnant. Variable *fer15* is asked as a sequential robustness question to *fer14* to all respondents except who answers that they’re currently expecting a child and including who answers affirmatively. Additionally, it loses the biological and temporal constraint to the previous question, in fact, especially for younger cases, three years could be too much of a short period to plan for a child.

Because the study focuses on overall fertility intentions, the two variables were combined according to a sequential binary logic:

1. In *fer14* respondents planning to have a child were coded as intending to have a child (YES), together with who answered "definitely yes” or "probably yes”;
2. Respondents whose intention was unclear or negative in *fer14*, that answered “unsure” or “probably not” or "definitely not”, were coded as intending to have a child (YES) if they answered positively (“definitely yes” or “probably yes”) in *fer15*;
3. Respondents whose intention was unclear or negative in *fer14* were coded as not intending to have a child (NO) if they answered negatively in *fer15* (“probably not” or "definitely not”);
4. Respondents whose intention was unclear or negative in *fer14*, that answered “unsure” or “probably not” or "definitely not”, were coded as intending to have a child (YES) if they answered “unsure” in *fer15,* according to Ní Bhrolcháin and Beaujouan (2015)’s theory, which states that fertility intentions responses are constructed, including uncertain responses, which therefore should not be treated as missing values;

additionally they show how even positive responses present an extent of uncertainty due to many factors on the individual level. Given a demonstrated relationship between positive intention and uncertainty, in this analysis "unsure" answers in *fer15* are therefore coded as YES, to avoid not acknowledging them; nevertheless the study recognizes it as a choice that contains limitations affecting a substantial number of cases that could, in the near future, take a firmer stance in either direction. Nevertheless a robustness check was run at the end of the analysis for models 4 and 6 (see Appendix A) in which unsure cases were handled as missing and results show that there's no substantial change in coefficients;

5. Respondents with missing or refused responses were handled as missing.

4.6.2 Focal Independent Variables

The study uses a variety of independent variables to build a strong and coherent model, including 4 focal variables, that are the theoretical interest of the study, as they're believed to have an effect on the dependent variable (Aneshensel, 2013): Region of Birth, Gender Equality Index, Gender, Age at Migration.

Region of Birth

The first focal variable is the region of birth of the respondents, built to distinguish those born in France from outside of France, but also to identify macro-geographic areas that could possibly show different trends between each other. The variable uses two items of the GGS questionnaire: *dem03* (Were you born in this country? YES/NO) and *dem04biso* (In which country were you born?), asked to those who answered "NO" to the first question.

Given the reduced sample of total immigrants and therefore the small number of respondents for each individual country, to understand geographical trend, countries were aggregated in groups based on geographic proximity, resulting in five total regions of birth: France, the biggest and the reference category derived from *dem03*, Europe, North Africa, Sub-Saharan Africa and Other (primarily

Asia and the Americas), because no additional region had big enough cases to represent one by itself, with least of 30 respondents each. North Africa and Sub-Saharan Africa were treated as two distinct groups because of their analytical distinction in African studies that also reflects on different fertility trends, in fact if SSA has a growing population, North Africa has seen its fertility slowly declining starting from the 70s already and now all the countries are at a rate of less than four children per woman (Guengant and May, 2013).

This operationalization of the two variables allows to carry out the research on the immigrant group compared to the born in France cases and additionally allows inter-regional comparison. Cases with missing or uncertain answers on region of birth were treated as missing on the variable.

Gender Equality Index

The Gender Equality Index is together with the Region of Birth a fundamental focal independent variable of the study, necessary to test McDonald and Goldscheider et al.'s theories on how gender equality influences fertility.

The index was constructed using six items from the "attitudes" section of the GGS questionnaire. Five items were taken from the group of questions about gender importance in which, given a topic, the respondents had to share if according to them the statement was a role more for men or women, on a scale of five: "men definitely", "men slightly", "both sexes equally", "women slightly", "women definitely". The topics and variables touched were *att07a* (Who would make better political leaders?), *att07b* (For whom is a university education more important?), *att07c* (For whom is having a job more important?), *att07d* (For whom is looking after the home and children more important?) and *att07g* (Who are better at caring for small children?). The items were recoded from 0 to 2, where 2 represents most egalitarian values and 0 the least. 2 was attributed the answer "both sexes equally", 1 for "slightly" answers and 0 for "definitely". A sixth item (*att03j*) was used to build the index and was taken from the values

section of the questionnaire and measures the level of agreement to the statement "A pre-school child is likely to suffer if his/her mother works" on a 5 level Likert scale from "strongly disagree" to "strongly agree". The answers were recoded also on a scale from 0 to 2 in five equal increments (0, 0.5, 1, 1.5, 2), where 2 represents "strongly disagree" with the statement". Because this section of the questionnaire was not mandatory, the missingness was particularly high and adding the sixth variable helped reduce it to some extent, although it remained at 14.2%. Nevertheless, the index was built as the mean of all non-missing items. Because of the importance of the variable, cases missing a gender equality index were treated as missing and not included in the final working sample (see Section 4.2).

To assess the internal consistency of the index, Cronbach's alpha was run using polychoric correlation, more appropriate than the classic Pearson for ordinal items, as Pearson tends to underestimate associations between them (Park, 2024). The six items showed an alpha of 0.78 (see Appendix B), indicating good internal consistency and removing any item would not improve reliability significantly.

Gender

Gender was measured using the variable *dem01* (Male, Female or Other). Only a small number out of all the respondents (n=27) reported "Other", therefore they were excluded because the group, after filtering the sample, would have been close to non-existent and therefore would have not produced significant statistical estimations.

Gender is included first as a control variable, but then in model 6 it's introduced as a focal interactive term, testing how fertility intentions in the model differ between men and women.

Age at Migration

Age at migration is the focal variable to test for H3, and is used to measure length of stay in the country, to understand if that could have a significant effect on fertility intentions. It's constructed for all the immigrant sub-sample (born outside of France) by subtracting the year of birth (*dem02y*) to the year of migration to France (*dem05y*).

Only a single respondent resulted in an unusual value of age at migration=-1, which, believed to be a migration as a newborn, was coded as 0.

4.6.3 Control Independent Variables

The study also includes a series of control variables, included to account for confounding factors: Age, Education, Employment, Marital Status, Parity.

Age/Age²

Age is an essential control variable in fertility studies, as it can heavily influence intention; nevertheless if to measure short-term fertility it can have a crucial role, for overall fertility it's believed that it can have a lighter decisional power, therefore it's treated as a control. Age was measured as the difference between the year of interview (*intdatey*) and the year of birth (*dem02y*).

Age^2 is included in the analysis because although we're measuring long-term fertility intentions, they tend to remain stable in younger cases but tend to decline rapidly as the respondents get closer to the reproductive age limit for women (Adejugbe and Ahmed, 2025). To avoid an equally distributed decline that would not reflect the reality of the situation, Age^2 is used to allow the regression line to change direction as the age changes.

Education

Education attainment is included as a control given the important role attributed in fertility studies in delaying fertility and possibly touching on other independent

variables, such as economic power or equality values, therefore it's important to isolate the focal relationships at net of education.

In the GGS dataset, education is measured with the item *dem07isced*, measuring the highest level of education obtained according to the ISCED scale. Because of the many categories, the variable was recoded in three broader groups: low (primary and lower attainment), medium (upper-secondary and post-secondary) and high (tertiary education), which follows the standard division for fertility and education literature (Vasireddy et al., 2023).

Employment Status

Employment status was included as a control variable because of its direct connection to economic power but also direct participation in the labour market. Nevertheless, income was not chosen instead because of it doesn't reflect directly the time that having a job could take from participating in family life; additionally some immigrant groups' intentions could not be fully represented by the income, because of economic disparities that could not have the same effect on some immigrants compared to French, therefore employment status becomes more comparable across the groups.

The variable is measured from the GGS item *dem06* and recoded into three smaller categories: employed (including those who are self-employed or in a family business), unemployed and inactive, a category that includes those still in education, on permanent leave, in military or civic service, retired or "Other".

Marital Status

Marital status as an independent variable serves as a control for fertility intentions, as partnership is highly associated with family planning in the literature, although the effect is believed to be much stronger when measuring short-term fertility. No direct items in the GGS questionnaire measures marital status directly, therefore it was constructed by using two variables: *dem21* (Do

you have a partner at the moment (including both opposite and same-sex partnerships)? YES/NO) and *dem28a* (Are you and your partner legally married? YES/NO). A three category variable resulted by identifying married, partnered and unpartnered, rather than binary, as marriage compared to only having a partner could not represent a major difference for some groups.

Parity

Parity represents if the respondent already has any child at the moment of the interview and not controlling for it could cause a misunderstanding in hiding pre-existent family size, in fact there can be a big difference in intention for a first born rather than successive children.

Because no item summing up the question "do you already have a child" in absolute was available in the French GGS questionnaire, it was necessary to build it from different ones. First, questions related about currently having children with the current partner were taken into consideration (*dem41, dem42*); then all the variables *lhi07* were used to understand if the respondent had any child with any previous partners (up to 8 past different partners); finally any child outside of cohabitation was accounted for with variable *lhi18* and *lhi19*. Responses were coded in a binary YES/NO result, with YES registered if at least one child was registered in at least one of the cases.

A child count verification item actually exists (*lhi20*) but because it's in the form of a confirmation of the number of children with a YES/NO answer, there's no actual registration of the count for each case, just if it's correct. Therefore it was necessary to build the parity variable.

4.6.4 Weight

The *weight* variable provided by the GGS France dataset is essential as all the items are presented as unweighted, therefore there's a need for a weight to ensure that the sample is representative of the underlying population. The weight variable

ranged from 0.10 to 5.00 with a mean of 0.98, consistent with a normalised weight centred around 1.

Analyses were estimated using the *survey* package on R, which is more appropriate to deal with complex survey data; in particular the *svydesign* function was set to treat each respondent as one independent sampling unit (ids=1), as there were no cluster groups identifiers. This approach was chosen over the standard logistic regression package on R (*glm*), because it would treat weights as duplicated observations, rather than as a correction for a possible unequal representativeness of the sample.

4.7 The Model

Selecting and operationalizing all the variables, as well as building the final working sample, led to the final construction of the whole model of the analysis. The dependent variable, fertility intention, was modelled using 6 nested binary logistic models, in which every added variable in each aimed to improve the model fit (Table 1).

Model 1 is the baseline of the analysis and includes Region of Birth, which is the focal point of the study around which H1 is built, as well as Age and Gender as controls, to check from the beginning to avoid that their possible strong effect could confound estimates. Model 2 adds the variable Education, which is usually temporally completed before other control variables added in a second moment and could directly influence them to some extent; controlling for it at this moment also assesses its individual contribution before introducing the other focal variable. Model 3 finally adds the Gender Equality Index, the focal independent variable derived by the theoretical approaches to the study, only now that other possible confounders correlated to this variable have been accounted for. Model 4 adds the remaining control variables: Employment, Marital Status and Parity, as they are closely related to the life circumstances that could determine fertility

intentions; adding them after testing the focal variables allows to assess their independent contribution.

Model 5 and 6 extend and elaborate the fully adjusted model 4 and introduce interactions related to the hypotheses object of the study. Model 5 tests whether the association between Gender Equality Index and Fertility Intention differs by Immigrant Status (H2c); this recoding of Region of Birth is used instead to avoid unstable estimates due to small regional groups. Model 6 tests instead whether the same association differs by gender (H2b). Both models are estimated at net of all the control variables.

Variable	M1	M2	M3	M4	M5	M6
Region of Birth	✓	✓	✓	✓	✓*	✓
Age, Age²	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
Education		✓	✓	✓	✓	✓
Gender Equality Index			✓	✓	✓	✓
Employment				✓	✓	✓
Marital Status				✓	✓	✓
Parity				✓	✓	✓
Immigrant Status × Gender Equality Index					✓	
Gender × Gender Equality Index						✓

Table 1. *Summary of independent variables included in models 1-6*

Note. **In model 5, Region of Birth was not used as a 5-category variable like in the other models; instead a binary recoding in immigrant/non-immigrant was used to avoid unstable estimates due to very small groups.*

Additionally to the 6 nested models, a 7th separate binary logistic model was built for the immigrant group only to test if the length of stay in France has any kind of

effect on the dependent variable (H3), by running the regression between the variable Age at Migration and Fertility Intention at net of the control variables.

4.8 Analytical Strategy

The analytical strategy consisted first in preparing the dataset for the actual analysis. The data was filtered to reach the needed working sample and then all the variables were built and operationalized according to the criteria previously mentioned. Afterwards all missing data was handled by excluding cases with missing responses on the dependent variable and especially on the gender equality values variable, where missingness was up to 14.2%, as that part of the questionnaire was non-mandatory, but essential for the purpose of the study. To conclude the preparations, the weight variable was applied to the unweighted dataset.

The actual analysis was carried out in three main steps. In a first step, descriptive statistics were produced to show the characteristics of the weighted sample, including by gender and by region of birth; additionally, bivariate representations were built to pre-test the previously formulated hypotheses. Second, all the six logistic regressions were run in order and additively, culminating in Model 6, which is the most complete and accurate. Specifically, two interactions were tested based on the hypotheses formulated: gender equality value by immigration status, as a binary variable rather than region of birth, as that would have created a very big standard error, and gender equality values by gender, following two of the hypotheses formulated. A region of birth by gender interaction was tested on the side but produced very unstable estimates, not being able to be considered significant. Last, a separate model was run on the immigrant sub-sample only, to test in specific if the age of arrival is significant in influencing fertility intentions (RQ3).

Each sub-model's fit was evaluated with two complementary approaches. The first adopted is the Akaike Information Criterion (AIC), that allows to compare

models with the same number of cases and dependent variable and shows if the model improves at each stage with its coefficient decreasing, and the Wald test, adequate to evaluate if a variable or a group added value to the model is significant via the associated p-value (Schlegel, 2026).

Prior to interpretation, all models went through diagnostics evaluation, which confirmed the robustness of the model. In particular, Variance Inflation Factor (VIF) assessed if any of the variables were too correlated with one another, which could result in unstable coefficients, by calculating how much larger the variance of a variable is compared to no correlation with the other independent variables (Schlegel, 2026). The test proved that none of the variables was significantly overlapping, with small coefficients all under 2, except for age and age^2 that present very high coefficients, which is correct because they are correlated, as it should be.

5. Results

5.1 Descriptive Statistics

The final weighted working sample included 5,242 respondents, of which 4,675 were born in France while 567 were foreign-born respondents, representing the immigrant group. They were additionally distributed in 4 groups based on Region of Birth: North Africa (n=164), Sub-Saharan Africa (n=150), Europe (n=157) and other regions (n=96).

Table 2 shows the weighted characteristics across the regions of birth, allowing to catch differences and similarities among the groups.

Variable	France	North Africa	Sub-Saharan Africa	Europe	Other	p	test
n	4674.9	164.3	149.7	157.0	95.8		
Gender = Male (%)	2270.1 (48.6)	69.9 (42.5)	69.6 (46.5)	87.4 (55.6)	51.6 (53.8)	0.419	
Age (mean (SD))	31.55 (7.90)	35.62 (6.25)	33.47 (6.38)	31.73 (7.61)	33.42 (7.97)	<0.001	
Education (%)						<0.001	
Low	522.1 (11.2)	57.5 (35.0)	33.4 (22.3)	40.4 (25.7)	12.1 (12.6)		
Medium	2015.4 (43.1)	30.1 (18.3)	70.0 (46.8)	53.2 (33.9)	18.9 (19.7)		
High	2137.4 (45.7)	76.8 (46.7)	46.3 (30.9)	63.4 (40.4)	64.8 (67.7)		
Employment (%)						0.006	
Employed	3372.6 (72.1)	108.6 (66.1)	96.3 (64.3)	118.8 (75.7)	66.4 (69.3)		
Unemployed	321.4 (6.9)	14.6 (8.9)	27.3 (18.3)	11.2 (7.1)	4.4 (4.6)		
Inactive	981.0 (21.0)	41.2 (25.1)	26.0 (17.4)	27.0 (17.2)	25.0 (26.1)		
Marital Status (%)						<0.001	
No partner	1527.2 (32.7)	28.0 (17.1)	50.0 (33.4)	59.0 (37.6)	29.6 (30.9)		
Not married	1718.9 (36.8)	14.3 (8.7)	31.1 (20.8)	40.0 (25.5)	12.4 (12.9)		
Married	1428.8 (30.6)	122.0 (74.3)	68.6 (45.8)	58.0 (36.9)	53.8 (56.2)		
Parity = Yes (%)	2127.5 (45.5)	125.1 (76.1)	103.2 (68.9)	79.5 (50.7)	38.8 (40.5)	<0.001	
Gender Equality Index (mean (SD))	1.70 (0.32)	1.61 (0.32)	1.63 (0.34)	1.65 (0.35)	1.71 (0.26)	0.021	

Table 2. *Weighted characteristics of the sample by Region of Birth*

The Region of Birth groups differ significantly ($p<0.001$) on age, education, marital status and parity, while gender composition was overall similar across the regions ($p=0.419$), showing a close to equal split of men and women, which helps make the sample significant. North Africa was the region with the oldest average age (35.62), but also with the highest rates of respondents with low education as their highest attainment (35%) and interestingly also the region with the highest respondents that have obtained a higher education (46.7%); they also show the highest percentage of individuals that are married (74.3%), alongside the second highest parity (76.1%). Sub-Saharan African respondents showed the highest parity over all the other groups (68.9%) and also a considerably higher unemployment rate (18.3%). French-born respondents showed instead the lowest rate of low education (11.2%) and also among the highest of high education (45.7%); additionally is the single region with the lowest overall parity (45.5%). The European sample shows overall similarities with the French-born

respondents, especially for what concerns age and employment; low education as the highest attainment is the most different percentage, in fact if France had the lowest rate, Europe overall has the second highest value (25.7%). Other Regions, which include many heterogeneous countries, present the highest high education value (67.7%), as well as the second highest marriage (56.2%) but the lowest parity (40.5%). The Gender Equality Index also differed significantly by Region of Birth (p=0.021), although with a more modest value; overall respondents from Other Regions showed the highest mean score (M=1.71), followed closely by the French-born sample (M=1.70), while North Africans showed the lowest value (M=1.61).

Table 3 illustrates the weighted sample characteristics by gender, allowing to look for trends between the two groups.

Variable	Female	Male	p	test
n	2693.17	2548.50		
Age (mean (SD))	31.82 (7.83)	31.73 (7.87)	0.766	
Region of Birth (%)			0.419	
France	2404.8 (89.3)	2270.1 (89.1)		
North Africa	94.5 (3.5)	69.9 (2.7)		
Sub-Saharan Africa	80.0 (3.0)	69.6 (2.7)		
Europe	69.6 (2.6)	87.4 (3.4)		
Other	44.2 (1.6)	51.6 (2.0)		
Education (%)			<0.001	
Low	309.0 (11.5)	356.4 (14.0)		
Medium	1031.9 (38.3)	1155.6 (45.3)		
High	1352.3 (50.2)	1036.4 (40.7)		
Employment (%)			<0.001	
Employed	1835.5 (68.2)	1927.0 (75.6)		
Unemployed	192.9 (7.2)	186.0 (7.3)		
Inactive	664.8 (24.7)	435.5 (17.1)		
Marital Status (%)			<0.001	
No partner	754.7 (28.0)	939.1 (36.8)		
Not married	997.9 (37.1)	818.8 (32.1)		
Married	940.6 (34.9)	790.7 (31.0)		
Parity = Yes (%)	1394.7 (51.8)	1079.5 (42.4)	<0.001	
Gender Equality Index (mean (SD))	1.70 (0.31)	1.69 (0.32)	0.141	
Fertility Intention = yes (%)	1384.7 (51.4)	1481.0 (58.1)	<0.001	

Table 3. *Weighted characteristics of the sample by Gender*

The composition of men and women in the 5 regions of birth remains stable and there are no significant differences (p=0.419) as well as in age (p=0.766), showing a good distribution in the analytical sample; they also don't differ significantly for what concerns the gender equality index (p=0.141), indicating broadly similar gender equality values among the two groups, with women only slightly more egalitarian than men (women M=1.70, men M=1.69). Nevertheless, they differ significantly (p<0.001) on many other characteristics. Men show higher levels of

medium education (45.3% versus 38.3%) but lower than women in higher education (40.7% versus 50.2%), and they also show higher rates of employment (75.6% versus 68.2%). Men also report higher percentages having no partner (36.8% versus 28.0%) and show a lower parity than women (42.4% versus 51.8%). Finally, men report significantly higher fertility intentions than women (58.1% versus 51.4%).

Having described the sample composition and their characteristics, bivariate relationships with the dependent variable are presented in Figure 1, 2 and 3. Overall, 54.7% of the weighted sample intends to have a child.

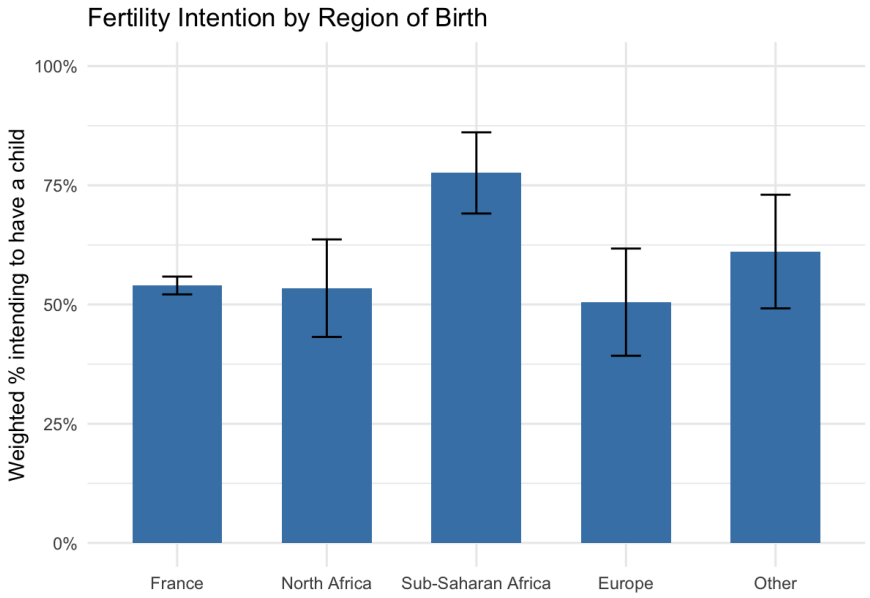

Figure 1. *Fertility Intention by Region of Birth*

Figure 1 shows the fertility intentions of respondents by region of birth, showing that French-born (54.0%), European (50.5%) and North African (53.4%) groups share similar rates of intention, a little over half of the representative sample. Sub-Saharan African respondents reported the highest value (77.6%), followed by other regions with a moderately high rate (61.1%). It's important to notice the wideness of the confidence intervals, particularly for the foreign-born, reflecting their small sizes compared to France, to be cautious in following interpretations.

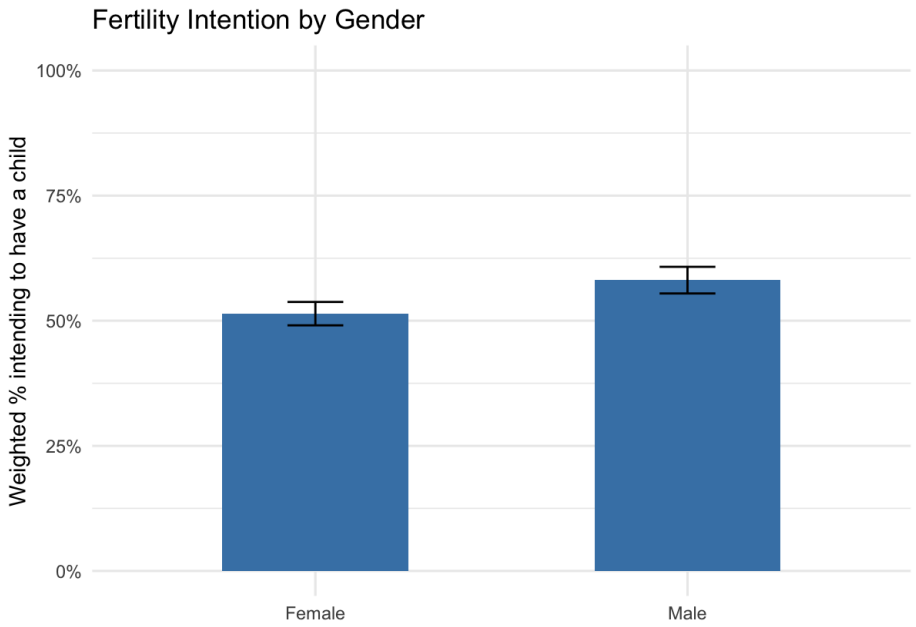

Figure 2. *Fertility Intention by Gender*

Figure 2 illustrates overall fertility intentions of men and women, with no regional distinction. The plot confirms the pattern observed in Table 3, in fact men report higher positive fertility intentions than women (58.1% versus 51.4%).

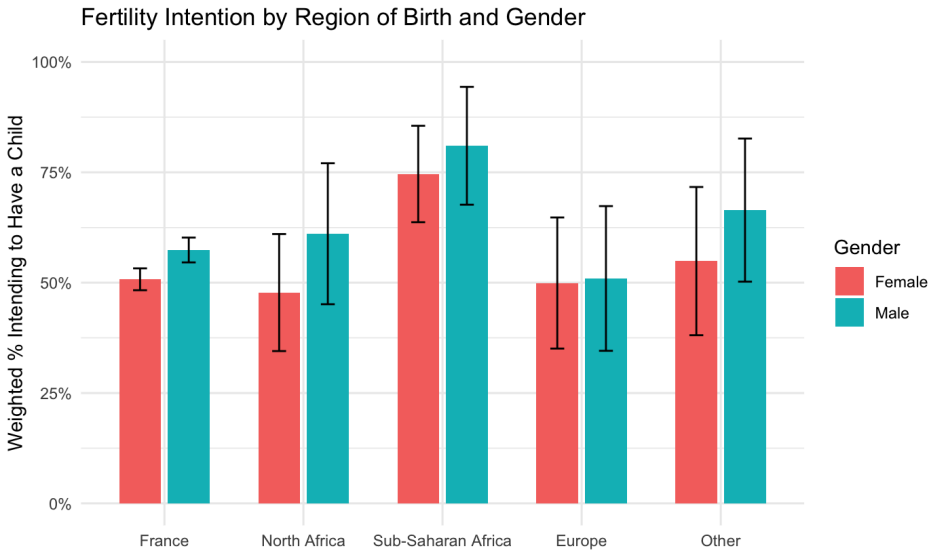

Figure 3. *Fertility Intention by Gender x Region of Birth*

Figure 3 shows fertility intentions by gender in each region of birth. Men present more positive intentions to have a child than women in all regions, confirming a consistent trend, although in Europe the values are almost identical and non-significant (49.9% for women and 51.0% for men). The gender gap is the most visible among North African (47.8% for women and 61.1% for men, with 13.3% percentage gap), with North African women having the lowest percentage among all the other groups, while Sub-Saharan African respondents reported the highest scores for both men and women (74.6% for women and 81.0% for men), indicating consistency with findings in Figure 2.

5.2 Nested Logistic Regression Models

Six nested binary logistic regression models were estimated to test the study's research questions, which results are shown in Table 4 as odds ratios and 95% confidence intervals. Models from 1 to 4 sequentially introduce all the independent variables, culminating in a fully adjusted model, which was extended with the introduction of interactive terms in models 5 and 6 (see Section 4.7). Across all the models, France is the reference category for region of birth, women is the reference for gender, employed for the employment status , no partner is the reference category for marital status and low education is the reference for education.

Table 4. *Regression results*

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.25 [0.03, 1.91]	0.44 [0.05, 3.56]	0.66 [0.08, 5.72]	0.05 [0.00, 0.69]*	0.22 [0.01, 8.12]	0.02 [0.00, 0.26]**
Region: North Africa	2.31 [1.28, 4.17]**	2.42 [1.34, 4.36]**	2.36 [1.32, 4.23]**	3.22 [1.84, 5.64]***	—	3.16 [1.80, 5.56]***
Region: Sub-Saharan Africa	6.28 [3.19, 12.38]***	6.89 [3.47, 13.69]***	6.86 [3.47, 13.57]***	8.97 [4.78, 16.81]***	—	9.10 [4.84, 17.13]***
Region: Europe	0.77 [0.39, 1.51]	0.81 [0.42, 1.54]	0.80 [0.42, 1.52]	0.89 [0.42, 1.88]	—	0.91 [0.43, 1.96]
Region: Other	2.61 [1.27, 5.37]**	2.39 [1.18, 4.83]*	2.38 [1.17, 4.81]*	2.10 [1.09, 4.02]*	—	2.16 [1.13, 4.15]*
Age	1.36 [1.19, 1.56]***	1.29 [1.13, 1.48]***	1.29 [1.13, 1.48]***	1.53 [1.31, 1.78]***	1.53 [1.31, 1.79]***	1.54 [1.32, 1.79]***
Age²	0.99 [0.99, 0.99]***	0.99 [0.99, 0.99]***	0.99 [0.99, 0.99]***	0.99 [0.99, 0.99]***	0.99 [0.99, 0.99]***	0.99 [0.99, 0.99]***
Gender: Male	1.52 [1.27, 1.82]***	1.58 [1.32, 1.89]***	1.58 [1.32, 1.89]***	1.39 [1.15, 1.68]***	1.36 [1.13, 1.64]**	8.56 [2.76, 26.56]***
Education: Medium	—	1.14 [0.77, 1.68]	1.15 [0.78, 1.69]	1.15 [0.77, 1.71]	1.13 [0.76, 1.70]	1.17 [0.78, 1.74]
Education: High	—	1.61 [1.11, 2.34]*	1.64 [1.13, 2.38]**	1.41 [0.95, 2.08]	1.36 [0.91, 2.02]	1.44 [0.97, 2.13]
Gender Equality Index	—	—	0.76 [0.57, 1.02]	0.63 [0.46, 0.86]**	0.46 [0.14, 1.54]	1.02 [0.69, 1.50]
Employment: Unemployed	—	—	—	1.08 [0.73, 1.61]	1.15 [0.79, 1.69]	1.09 [0.73, 1.63]
Employment: Inactive	—	—	—	1.14 [0.83, 1.56]	1.16 [0.85, 1.59]	1.18 [0.86, 1.61]
Marital Status: Not Married	—	—	—	1.64 [1.28, 2.09]***	1.61 [1.26, 2.05]***	1.63 [1.27, 2.08]***
Marital Status: Married	—	—	—	1.27 [0.94, 1.71]	1.25 [0.93, 1.69]	1.27 [0.94, 1.71]
Parity: Has Child	—	—	—	0.19 [0.15, 0.24]***	0.20 [0.15, 0.25]***	0.19 [0.15, 0.24]***
Immigrant Status: Non-immigrant	—	—	—	—	0.20 [0.02, 1.65]	—
Non-immigrant × Gender Equality Index	—	—	—	—	1.44 [0.42, 5.00]	—
Gender Equality Index × Male	—	—	—	—	—	0.34 [0.18, 0.66]**

5.2.1 Models 1–4: the additive models

Results for models 1 to 3 are quickly reported, as the associations were only quickly measured and not final; in fact variables were introduced one or a few at the time to assess their effect individually, to reach a coherent construction of the complete model 4, more in detail illustrated.

Model 1

Model 1 (see Table C1, Appendix C) introduced the association between region of birth and fertility intention, controlling for age and gender. Age showed negative association with intention (OR=0.36, $p<0.001$), while its quadratic term age^2 showed a significant negative association (OR=0.99, $p<0.001$), demonstrating that fertility intention increases through the early adulthood and then declines rapidly as respondents reach the upper end of the age sample. Additionally men showed significantly higher odds of intention than women (OR=1.52, $p<0.001$). Compared to French-born respondents, Sub-Saharan Africans showed substantially higher odds of fertility intention (OR=6.28, $p<0.001$), representing the group with the highest intention, although also North African (OR=2.31, $p<0.01$) and other regions (OR=2.61, $p<0.01$) showed a similar significant trend compared to France, while other European born respondents did not differ significantly (OR=0.77, $p=0.44$).

Model 2

Model 2 (see Table C2, Appendix C) added the control variable education to the baseline. Education is significantly associated with fertility intentions: respondents with high education showed higher odds of intending to have a child than those with low education (OR=1.61, $p<0.05$), while medium education did not differ significantly from low education (OR=1.14, $p=0.51$). Other trends observed in model 1 remained constant, with coefficients changing only slightly and not significantly.

Model 3

Model 3 (see Table C3, Appendix C) introduced one of the focal independent variables of the study, the gender equality index, and tested its main effect on the dependent variable. Controlling for region of birth, age, gender and education, a negative but non-significant association was observed (OR=0.76, p=0.07), suggesting that more egalitarian values are associated with a negative fertility intention, although not significantly.

The region of birth and gender variables remained constant with the previous models, meaning that respondents born in Sub-Saharan Africa and men have the highest intentions; instead the association with education strengthened slightly compared to model 2, in fact high education is slightly more strongly associated with intention of having a child (OR=1.64, p<0.01).

Model 4

Model 4 (see Table C4, Appendix C) includes finally the completed group of variables that are the object of the analysis, with the introduction of the last control variables: employment, marital status and parity, incorporating all the socio-demographics and the complete sample to test hypotheses thoroughly. Parity especially demonstrated to have a strong statistical association with fertility intention (OR=0.19, p<0.001), meaning that respondents that had at least one child at the moment of the interview were less likely to intend to have another, and it also significantly improved model fit compared to model 3 (see section 5.3).

Figure 4 summarises all the coefficients of the model by displaying odds ratios with 95% confidence intervals, as well as highlighting significant coefficients (p<0.05).

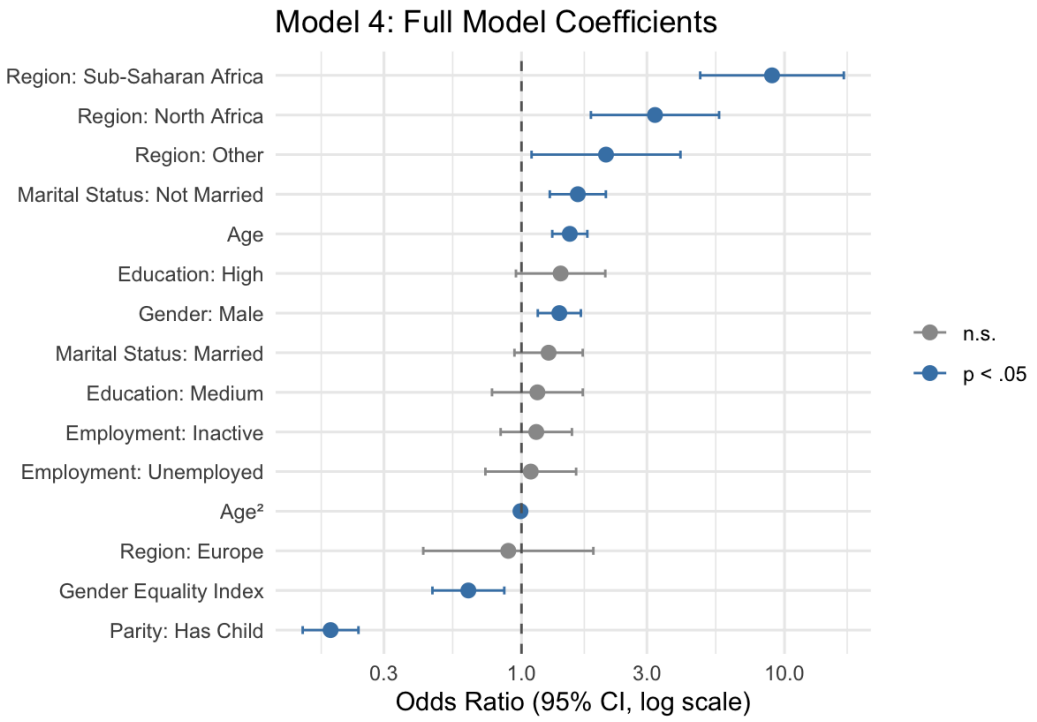

Figure 4. *Model 4 coefficients*

Marital status also shows to be particularly significant for fertility intention, in fact respondents who have a partner but are not married showed higher odds of intentions compared to those with no partner (OR=1.64, p<0.001), while interestingly married respondents did not differ significantly (OR=1.27, p=0.12). This pattern shows how having a partner is strongly associated with fertility intention and the fact that the association doesn't stand for married individuals could be connected to parity, possibly more common among married couples.

Employment status showed no significant associations with the dependent variable, for any of the categories, as well as education. Instead, the gender equality index, strictly connected to hypothesis 2a, gained significance in this final additive model (OR=0.63, p<0.01). This is a substantial difference from the finding in model 3, indicating that this association was uncovered by the introduction of one or more of the new control variables. In this scenario, more

egalitarian values correspond to significantly lower odds of intending to have a child.

The region of birth pattern remains consistent even in this model, with respondents born in Sub-Saharan Africa (OR=8.97, $p<0.001$) having the highest odds of positive intention compared to those born in France. Individuals born in North Africa (OR=3.22, $p<0.001$) and other regions (OR=2.10, $p<0.05$) also showed significantly higher odds of intention, while the Europe group kept remaining non-significant and the most similar to the reference group (OR=0.89, $p=0.75$).

Gender remained highly significant (OR=1.39, $p<0.001$), although the odds lowered a little compared to previous models, suggesting that the introduction of unemployment, marital status and parity could have slightly reduced the gender gap. Education's association with fertility also weakened, compared to model 3, and lost its significance once the last control variables were introduced (OR=1.41, $p=0.09$), suggesting that the previous relevance actually operated through employment, parity and marital status.

It's worth noting that 95% confidence intervals are also represented in Figure 4, reflecting the precision of each estimate. In fact, because of small sample sizes, the region by birth groups show very wide confidence intervals reflecting sample uncertainty, while other variables estimated from the full sample of the study show more confident results.

5.2.2 Models 5 and 6: the interaction models

Model 5 and 6 introduce interaction terms to build complexity on the fully additive model 4, showing therefore more complex results.

Model 5

Model 5 (see Table C5, Appendix C) introduces the interaction term between the gender equality index and the immigrant status of the respondents to test whether the association of gender equality and fertility intention, as seen in model 4, differs by region of birth (H2c). Results show a binary immigrant/non-immigrant variable, rather than the five regions of birth, following unstable estimates with the variable, because each group, except for France, consisted of a too small size. The contribution of region of birth is therefore grasped by the immigrant status of the respondents and not analysed individually.

The interaction term between gender equality index and immigrant status was not statistically significant (OR=1.44, p=0.56), suggesting that there's no significant difference between immigrants and non-immigrants in gender equality affecting fertility intention, in this sample. Nevertheless, even if not significant, the direction of the association remained consistent with findings in models 3 and 4, meaning that more egalitarian views are associated with negative intention. The wide confidence interval of the estimates further shows the unreliability of the results.

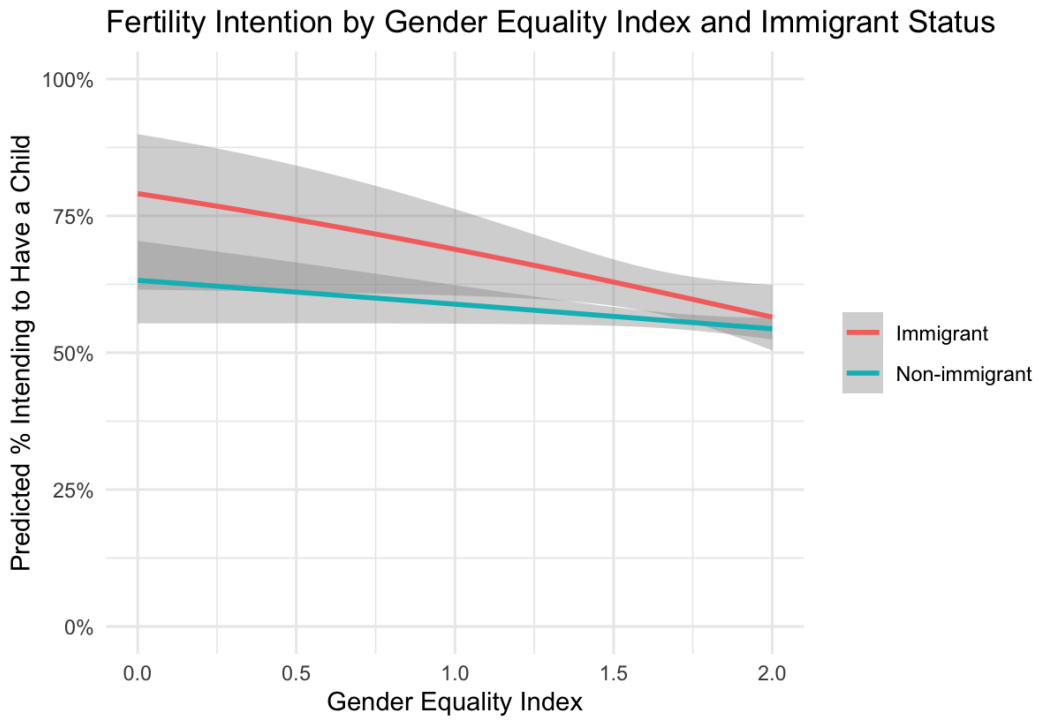

Figure 5. *Fertility Intention by Gender Equality Index x Immigrant Status*

Figure 5 represents graphically the predicted probability of intending to have a child associated with the gender equality index score, divided by the two immigrant status groups and at net of controls. Both groups show a consistent negative trend, although it's worth to notice that the slope is steeper for the immigrant group, while the non-immigrant's has a weaker decline, although again the big confidence intervals don't allow for significant statements.

The other coefficients in model 5 remain consistent with what was observed in the previous models. Age held a curvilinear association with the dependent variable (age OR=1.53, $p<0.001$; age^2 OR=0.99, $p<0.001$) and gender also kept a significant coefficient, with men once again more likely to intend to have a child than women (OR=1.36, $p<0.01$), although with a lower significance because of the small size of the reference sample. Marital status also remained significant for partnered but not married individuals compared to the reference group (OR=1.61, $p<0.001$), while parity once again demonstrated to be the most significant control

(OR=0.20, p<0.001). Employment and education in this model showed no significant association with fertility intention.

Overall, these results do not support hypothesis 2c, in fact the association between gender equality and fertility intention does not differ significantly between French-born and foreign-born respondents. The null result is further examined in relation to theory in section 6.

Model 6

Model 6 (see Table C6, Appendix C) introduces the interaction term between gender and the gender equality index to assess their effect on fertility intention. This is coherent with newer gender equality and fertility theories (see section 3), which address the central role of both men and women in the demographic change, rather than the immigration status tested in model 5. The interaction term was introduced into the fully adjusted model 4. Region of birth was kept as the five category model, rather than the binary immigrant status, as its effect is not focal like it was in model 5 and therefore, even if the estimates have wide confidence intervals, it doesn't affect the interaction directly.

Results show that the interaction between gender and gender equality index is significant (OR=0.34, p<0.01), indicating that the association between gender equality values and fertility intentions changes substantially between men and women in the sample studied. Among women, the gender equality index did not show a significant association with intending to have a child (OR=1.02, p=0.92), in fact, consistently with what was observed in model 3 prior to the introduction of the gender interaction, having more egalitarian views showed no correlation to intention. Instead, the association proved to be strongly negative; by combining the gender equality index coefficient with the interaction coefficient it shows a decrease in the odds of intending to have a child of 0.35 per unit, suggesting a strong association with negative fertility intention as the gender equality index score increases. This pattern indicates that the significance of the main effect of

gender equality index in model 4 was strongly driven by men's intentions, rather than by a mechanism operating for both genders.

Figure 6. *Fertility Intention by Gender Equality Index and Gender*

Figure 6 shows the predicted probability of intending to have a child at the score of gender equality index, divided by gender. At the score of 0, meaning with low egalitarian values, men show a much higher positive intention than women, with a gap of roughly 40%, while as the index increases towards 2, which is the most egalitarian score, the intentions of men and women tend to converge, as men's intention slope decreases constantly, while women's slightly increases, indicating that the gender gap between respondents with gender equality scores narrows significantly. The confidence intervals are strongly narrower toward the centre of the range, as it's where most of the respondents concentrate, while it's wider toward lower gender equality scores, where the group of respondents was significantly smaller.

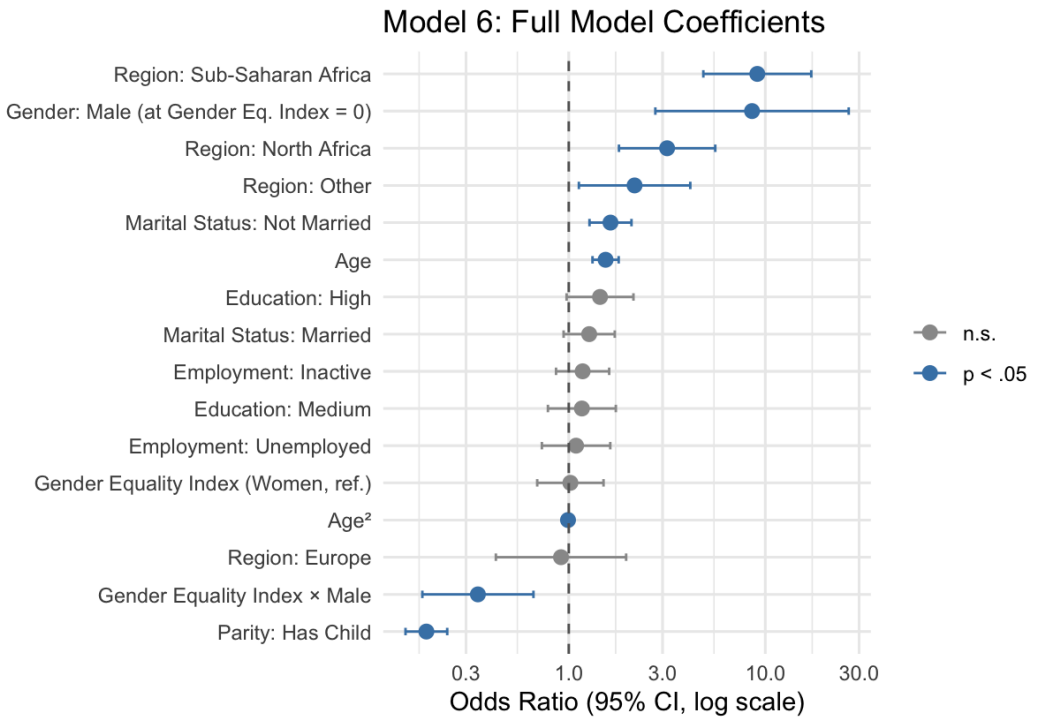

Figure 7. *Model 6 regression coefficients*

Figure 7 summarises the regression coefficients of model 6, in order of odds ratios and showing the 95% confidence intervals, as well as highlighting significant coefficients. The interaction term shows an odds ratio clearly below the value of 1.0 and strongly significant, confirming its negative direction. The regions of birth in this model are strongly consistent with findings in model 4, in fact respondents born in Sub-Saharan (OR=9.10, p<0.001) and North Africa (OR=3.16, p<.001) showed again the most valuable association with fertility intention, compared to the French-born sample. Other regions remained significant (OR=2.16, p<0.05), while Europe stayed non-significant and the most similar to France (OR=0.91, p=0.82), consistent with previous patterns. Even in model 6, parity is confirmed to be the most significant predictor of fertility intention (OR=0.19, p<0.001), with respondents that already have a child being less likely to intend to have another. Marital status remained consistent again for partnered but not married individuals (OR=1.63, p<.001) compared to those with no partner, while married did not exhibit once again significant differences from the reference group; consistent

with model 4, employment and education didn't show any significant association with fertility intentions. It's worth to note that the Gender: Male coefficient in Figure 7, it's not the mean of the gender gap in fertility intention, but rather the gap of intention when the gender equality index is at 0, as it's the interaction term focal to the model; the wide confidence interval reflects the fluctuation of distance in the gap, that narrows toward the end of the gender score (as shown in Figure 6).

To assess whether the gender pattern is consistent across the regions of birth, which are the other focus of the study, the intention of having a child was observed graphically in Figure 8, by plotting the relationship between gender interaction between gender equality index and gender and its association with fertility intention in the 5 regions of birth. Although the association was not tested by adding region of birth as a third interaction term, the figure serves as a descriptive tool to further examine the trend.

Figure 8. *Fertility Intention by Gender Equality Index and Gender, by Region*

The plots show a consistent trend for what concerns men, in fact in all regions men's positive fertility intention declines as the gender equality index score increases, although for Sub-Saharan Africa the slope is less steep than in the other regions and more similar to the female trend, indicating a smaller gender gap and

instead high overall intention of fertility. It's worth addressing the wideness of the confidence intervals for the foreign born respondents, as their sample size is much smaller than France, which is also the reason why this relationship was not measured by adding region of birth as a third interaction term. For North Africa and Europe the women's slope followed the male trend of declining towards higher values of gender equality, while for other regions the trend is completely opposite, following France, but at a much lower score of the index and more steep. Because of the descriptive nature of these considerations, results will not be treated as statistically significant.

Overall model 6's fit improved compared to model 4 (see Section 5.3) and, together with the significance of the findings, this shows that model 6 is the best fitting model of the study, indicating that the interaction between gender equality index and gender is a more valuable explanation of fertility intentions than just the gender equality index or the immigrant status of respondents. These results provide valuable insights that are more deeply discussed in correlation to theory in Section 6.

5.3 Model Comparison and Diagnostics

Model fit was assessed throughout all the six models, reporting Akaike Information Criterion (AIC) as well as Wald tests that assessed the statistical significance of each block added (see Tables D1 and D2, Appendix D).

Results show that adding education in model 2 significantly improved the baseline model ($F(2, 5332)=8.16$, $p<0.001$; $\Delta AIC=-19.2$), but the largest improvement was made by the addition of employment, marital status and parity in the fully adjusted model 4 ($F(5, 5326)=40.62$, $p<0.001$; $\Delta AIC=-347.2$), consistent with the finding of parity having the largest effect on fertility intention. On the contrary, introducing the gender equality index in model 3 didn't significantly improve the model fit ($F(1, 5331)=3.31$, $p=0.069$; $\Delta AIC=-2.5$), which is consistent considering

its non significant association with fertility intention at that stage of the analysis. For the same reason, it's consistent that the addition of the interaction term between gender equality index and immigration status didn't improve model fit compared to model 4 ($F(1, 5328)=0.33$, $p=0.564$; $\Delta AIC=+53.7$), and instead worsened. Model 4 was significantly improved by the interaction term between gender equality index and gender in model 6 ($F(1, 5325)=10.28$, $p=0.001$; $\Delta AIC=-15.8$), which resulted to be the best fitting model overall with the lowest AIC value.

Diagnostics checks were conducted at the end of the analysis on model 4 and 6, which are the two best models obtained. Variance Inflation Factor (VIF) analysis was run to test for multicollinearity. Results (see Tables D3 and D4, Appendix D) report all values below 1.7 in both models, indicating low coefficients of redundancy of the variables; the only high coefficients were observed in age and its quadratic term age^2, which is expected as they are built to be correlated, therefore did not affect the stability of the models. The only other case with an inflated VIF value is the interaction term between gender equality index and gender, considering that it's constructed directly from those two variables, therefore this inflation reflects a construction mechanism, rather than a multicollinearity problem and does not compromise reliability, as supported by a relatively small standard error (0.33).

5.4 Age at Migration Model

The last separate model aimed to test hypothesis 3, whether the length of stay in France affects fertility intentions, by associating the age at migration with the dependent variable, at net of all the controls also included in models 1 to 6: age, gender, region of birth, education, employment, marital status, parity. The logistic regression was only run on the immigrant sub-sample (n=567), as it's only significant for them. The North African sample served as the reference category for region of birth.

Results (see Table C7, Appendix C) found that age at migration is not significantly associated with fertility intention once current age at the moment of the interview is controlled for (p=0.134); instead current age is very significant (p<0.001) and has a negative association with intention: the older the respondent, the more negative the fertility intention, so much that each additional year is associated with around a 13% reduction in odds of intending to have a child, at net of the other variables. This finding aligns with the initial justification of the study to want to include age^2 alongside age, to exactly control for this decreasing of intention with the increasing of the current age. This means that the trend observable in Figure 9 is instead highly associated with age, rather than the age at migration, making the length of stay in France non significant for immigrant sub-sample.

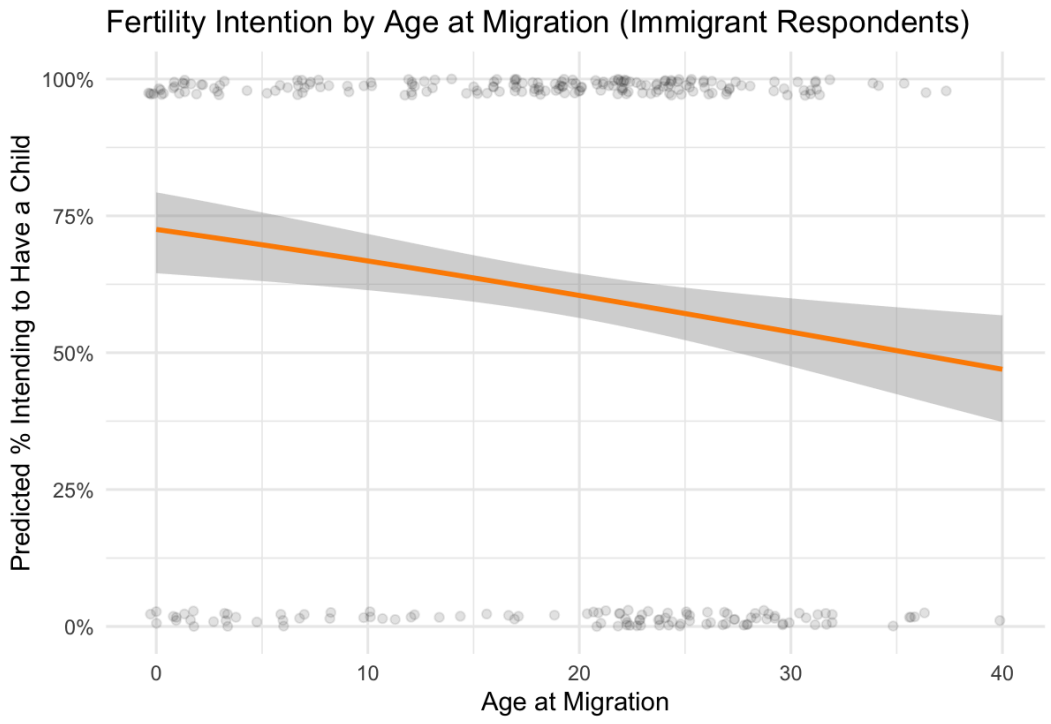

Figure 9. *Fertility Intention by Age at Migration*

Nevertheless, the region of birth remained highly significantly associated with fertility intentions. Even in this model, Sub-Saharan Africans showed substantially higher odds of intending to have a child over the North African respondents (OR=2.74, p=0.006), while Europe showed significantly lower odds (OR=0.40, p=0.017), meanwhile other regions did not differ substantially (OR=0.69, p=0.298). Contrary to what was observed in the additive models 1 to 6, gender does not associate significantly with the dependent variable in the immigrant sub-sample (p=0.505); this could be because of the significantly smaller sample size, possibly showing a limited statistical power rather than an absence of any effect. Among the other control variables, parity showed the biggest association in the model, consistent with previous findings, in fact respondents who already had a child showed substantially lower odds of positive intention (OR=0.31, p<0.001).

For descriptive purposes, the relationship observed in Figure 9 was also represented separately by region of birth (Figure 10). Interestingly, the slope of the relationship between age at migration and fertility intention appears to trend in the opposite direction compared to all the other regions, that are instead negative, consistent with the trend observed in Figure 9. Nevertheless, results should be interpreted cautiously, as sample size groups remain relatively small.

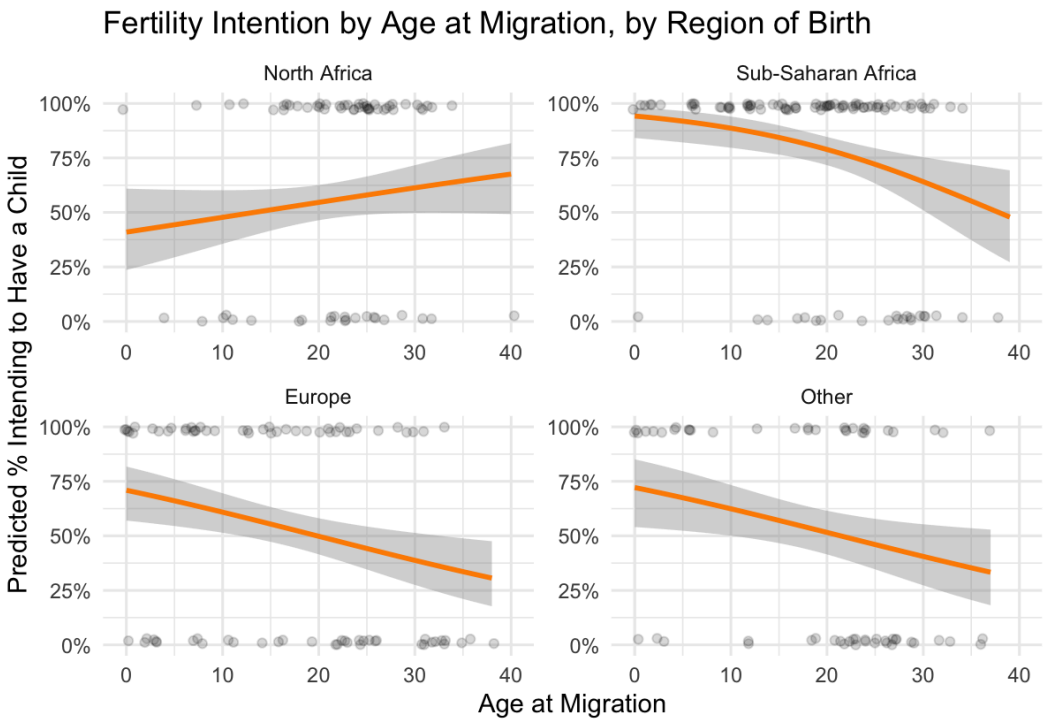

Figure 10. *Fertility Intention by Age at Migration represented by Region of Birth*

Overall, these results provide limited and non-significant findings to hypothesis 3, but further discussions will be carried out in the next chapter.

6. Discussion

6.1 Overview of Findings

This study examined fertility intentions of immigrant and non-immigrant respondents in France, by testing five hypotheses with six nested logistic regression models and one separate model run on the immigrant sub-sample only. Three main trends emerged from the results.

First, region of birth resulted to be significantly associated with fertility intention throughout all the nested models, providing support to hypothesis 1, which tested whether intentions differed between French-born and foreign-born respondents.

Respondents born in Sub-Saharan Africa consistently showed higher odds of intending to have a child than the French respondents, as well as North Africa, although with weaker intensity that strengthened once all the control variables were introduced. In contrast, the European sub-sample resulted the most similar to the French group throughout all the analysis, coherent with the geographic grouping criteria, considering that France would have been included in the same sub-sample, but also consistent with H1's specification that most differences would have emerged from respondents from higher fertility countries.

Second, the prediction that gender equality values would have been a significant individual level factor in affecting fertility intention showed a complex pattern, rather than a straightforward positive association. In fact, its effect only became significant once all the control variables were introduced, supporting H2a, but this effect was later proved to be pooled by gender, with it being driven mainly by men: a higher gender equality index score significantly associated with lower odds of intending to have a child, while women showed no significant association, highlighting a difference by gender, as predicted by H2b. Additionally, no significant differences in this relationship were found among the regions of birth, not supporting statistically H2c.

Last, the length of stay in France for the immigrant sub-sample, measured to test the adaptation and socialization hypotheses (H3), proved to not be significantly associated once current age at the moment of the interview was accounted for, providing limited support for the hypothesis.

Following in this chapter findings are further discussed in independent sections in relation to each research question and then limitations of the study are acknowledged to inspire directions for future research.

6.2 RQ1: Immigrants and Non-Immigrants Fertility Intentions

The first research question aimed to understand the extent to which fertility intentions of immigrants and non-immigrants in France differ. The results showed a strong and consistent support to H1, in fact the variable region of birth remained a significant predictor across all the nested models.

When analysed descriptive statistics, regions of birth differed significantly on almost all the characteristics examined, with age, education, employment, marital status and parity all with a p value <0.1 (see Table 2), highlighting the importance of later controlling for these factors instead of directly attributing the effect on fertility intention to region of birth. The estimated bivariate relationship (Figure 1) showed fertility intentions by region of birth, not including other possible predictors, and identified differences between the groups: Sub-Saharan African respondents reported substantially higher intentions rate of intending to have a child (77.6%), compared to French (54.0%), North Africans (53.4%) and Europeans (50.5%). Other regions reported a moderately high rate (61.1%). As a note, it's important to re-highlight that the respondents born in "Other Regions" represent a highly heterogeneous group, as all regions included were not numerous enough to constitute a group on their own, so it's not built considering coherent criteria and therefore no particular pattern can be considered representative of all the regions included. The same pattern was observed, and partially strengthened, when respondents were further segmented by gender (see Figure 3), in which Sub-Saharan Africans' high intentions held for both women (74.6%) and men (81.0%).

The regression results (see Table 4) further confirmed and expanded the observed pattern in the descriptive analysis. Throughout all the six nested models, respondents born in Sub-Saharan Africa showed overall higher fertility intentions, ranging from an odds ratio of 6.28 in the baseline model (model 1) to 9.10 in the final interaction model (model 6), remaining highly significant at every stage ($p<0.001$). North African respondents also show a significant and positive

association with fertility intention in all six models, which strengthened once employment, marital status and parity were introduced in model 4, indicating that the gap between North African and French respondents in fertility intention is fully revealed only when they're compared at similar employment status and stage of partnership and family formation. Other regions also showed consistent positive associations with intending to have a child, compared to the French group, but lower than African respondents. In contrast, European respondents did not differ significantly from French at any point of the analysis, indicating consistency with descriptive findings, but also that intention for the immigrant sub-sample varies significantly from region of birth.

This regional differentiation of the relationship of immigrants with the intention of having a child directly addresses the specification of H1, according to which the largest differences of intention, compared to French-born respondents, who are the reference group, would be observed from immigrants coming from higher fertility countries, consistent with the socialization hypotheses. In fact, Sub-Saharan Africa, which is currently the region worldwide with the highest fertility rate, proved to be the region of origin with overall higher positive intentions, followed by North Africa, which also has higher rates of fertility than France (see Section 1.1). Because this positive association survived the introduction of all the other variables, this suggests that results reflect a structural difference between the groups rather than being biased by hidden socio-demographic factors. This interpretation is additionally supported by the findings of the separate model run on the immigrant sub-sample only, in which Sub-Saharan African respondents continued to show significantly high positive association with intending to have a child, even when accounting for age at migration.

At the same time, the absence of any significant difference between French and other European respondents, which overall exhibit low fertility, is consistent with the reasoning that France would be included in the Europe group, if it was not the reference group, and this shows that to some extent similar contexts show similar

intention. It's worth noting that McDonald's (2013) policy framework actually doesn't predict uniformity across Europe, since there are many distinct policy regimes. As the study aggregates all respondents from Europe, independently of policy welfare of the country of origin, and specifically looks at individual level factors, rather than contextual policy related macro-factors, this uniformity is accepted with in mind the socialization and adaptation hypotheses in mind, rather than McDonald; in fact similar intentions of European immigrants to France are consistent with both the idea that they could have adapted to French values and fertility conditions, but also that they brought the ideas of fertility learnt in their country of origin through socialization that, because of a similar low fertility context, resulted to be similar to the French.

All the results provide a strong support for hypothesis 1 and its specification. The consistency of the pattern throughout all the models, at net of all the other variables, gives robustness to the findings, indicating that fertility intentions significantly change among regions of birth.

6.3. RQ2: Individual-Level Factors and Gender Equality Values

The second research question asked in what measure individual-level factors associate with fertility intention among immigrant and non-immigrant respondents in France, with the gender equality index serving as the focal variable of this part of the analysis.

Hypothesis 2a predicted that, at net of all the other factors, gender equality would have been significantly associated with fertility intention, without specifying a particular direction. The main effect of the gender equality index was found to be negative and not significant when first introduced in model 3 (OR=0.76, p=0.07), but once other individual-level factors were introduced as controls in model 4, in particular employment, marital status and parity, the effect significantly strengthened (OR= 0.63, $p<0.01$), suggesting that the association was partially hidden by these variables, meaning that it became relevant once the respondents'

employment and family construction situations were considered. The relevance of gender equality values in affecting the intention of having a child, independently of other factors, proved to be consistent with both McDonald's (2000) and Goldscheider et al.'s (2015) theoretical frameworks. For what concerns the negative direction of the association, meaning that more egalitarian values corresponded with less intention of having a child, it could suggest that France is still not in the last phase of the gender equity theory mentioned by McDonald, nor at the end of the "second phase" of the gender revolution. In fact, according to both frameworks, there should be an increase of intention for individuals with more egalitarian values; for McDonald (2013) this corresponds more broadly with an alignment of the received fairness in equity both in the public and in the private spheres, while for Goldscheider et al.'s (2015) this is particularly attributed to the rising of equality between men and women in the private sphere. These results need to be interpreted therefore as coherent with France's current fertility situation, in fact fertility is rapidly declining and not rising, suggesting that gender equality in both the public and private sphere is not completely perceived.

Relevant results were found for what concerns hypothesis 2b, which tested if the association between gender equality value and fertility intention would differ by gender, in fact it proved to be strongly significant when tested in model 6 ($OR=0.34$, $p<0.01$). Separating men and women (see Figure 6) showed a strongly pooled effect towards men, as the association for women was found to be non-significant. At low scores of the gender equality index, men showed substantially higher fertility intention than women, with around a 40% difference, but as the score increased, the gap narrowed significantly, almost converging, indicating that at more equal egalitarian values men and women have a similar intention of having a child. Interpretations can be drawn from this result in relation to Goldscheider et al.'s (2015) intuition that there's a misalignment in time of women's introduction in the job market, which happens early on in the "first phase" of the gender revolution and leads to a progressively lower fertility, and then later a slow introduction of men in more actively participating in the

private sphere, during the "second phase" of the gender revolution, which would have redirected to an overall higher fertility, including both men's and women's. One possible explanation is that because in a context like France the "second phase" of the gender revolution remains at least partially incomplete, it finds itself in a transitional period between the "first phase" and the completion of the "second phase"; in this context it's coherent to observe a wide gap in fertility intentions between men and women that have lower egalitarian values because if men maintain traditional fertility views, women have already gone through the process of entering the job market and therefore experiencing the burden of household and family care, leading to much lower intention to have a child than men that share the same values, whereas men with higher egalitarian views intention tends to converge with that of women with the same values, which although is lower, can represent a first step of the "second phase", later integrated with higher housework parity and institutional support, that could lead to the hypothesised result of the gender revolution.

Hypothesis 2c tested instead whether the association between gender equality values and fertility intention would differ between immigrant and non-immigrant respondents, suggesting the possibility that immigrants' gender equality values could be shaped by the socialization in the country of origin, rather than completed adaptation to French institutions. H2c was not significantly supported when tested in model 5 ($p=0.56$) and the model fit worsened compared to model 4, in fact a similar trend between the two groups is observable in Figure 5. Given the substantially smaller immigrant sample compared to the French, having already collapsed the different regions of birth into one binary category to avoid even more imprecise estimates, results need to be interpreted carefully; nevertheless, it's interesting to notice how the socialization hypothesis does not find a confirmation for what concerns gender values, when instead it was significant in determining differences in overall fertility intentions between the regions of birth. One possible interpretation is that for immigrants fertility intention and gender attitudes could be shaped by two different processes, with

fertility intention continuing to be influenced by the region of birth even after partially adapting in the French context. This is additionally supported by descriptive findings (see Table 2), where gender equality values across the regions of birth showed overall similar mean scores.

Beyond the gender equality index, several other individual-level factors were tested in the models and showed significant associations with fertility intention, consistent with RQ2's overall focus. The strongest predictor across every model, since it was introduced in model 4, was found to be parity, establishing a strong difference in intention to have a first born child and successive children: respondents with already a child exhibited strongly lower fertility intentions. Its omission would have risked confounding other variables' effects, while omitting the sample with already a child would have significantly reduced the full working sample, leading to more unstable estimates. Marital status also showed a robust association with fertility intention: respondents that have a partner and are not married showed higher positive fertility intentions than those with no partner, but also compared to married respondents. An interpretation could be that married respondents could already present a level of parity, although this has not been directly tested, and therefore exhibit lower intention to have a(nother) child. Education instead weakened as a predictor of fertility intention once employment, marital status and parity were controlled for, suggesting that its initial effect in model 2 was instead partly driven by the other variables. Employment status also showed to be non significant in any of the models.

6.4 RQ3: Age at Migration

The third research question asked how the length of stay in France for immigrants was associated with their fertility intentions, directly testing the adaptation and socialization hypotheses (H3). The analysis was run on the immigrant sample only and provided limited support. Age at migration, used as the measurement for the length of stay in France, was not significantly associated with fertility intention at net of control variables ($p=0.134$), in fact the observed trend was attributed to the

age at the moment of the interview, instead highly significant ($p<0.001$). The VIF diagnostics additionally confirmed this result, as no multicollinearity between age and age at migration was found. This finding, because of the non significance of the independent variable, can't confirm the adaptation and neither the socialization hypotheses. Instead, it shows more in general that as the respondents get older, their intention of having a child decreases, coherent with the theoretical choice discussed in Section 4.6.3 of adding Age^2 as a control next to age, as the increment/decrease of intention is not equally distributed through the age range.

Nevertheless, some interesting observations can still be made. Region of birth remained significantly associated with fertility intention, even when comparing between the foreign regions only: Sub-Saharan Africa respondents continued to show the highest odds of intending to have a child, while Europeans the lowest, reinforcing the results discussed in Section 6.2. In fact, consistent with socialization, fertility intention keeps being shaped by the country of origin. Gender instead was not significant in this sub-sample ($p=0.51$), compared to the previous results obtained in Model 6, but it can be attributed to the much smaller sample and very large confidence intervals, reflecting limited statistical power.

A descriptive disaggregation of the age at migration and fertility intention by region of birth (Figure 10), just for exploratory reasons, suggested that the null finding may hide different regional patterns that when tested statistically resulted non-significant because of the small sub-samples. Most regions showed negative trends, except for respondents born in North Africa for which is observable an apparently positive relationship, meaning that the later migrants immigrated, the higher their fertility intentions, which would be consistent with the adaptation theory, as the respondents immigrated at a younger age would have had more time to adapt to French institutions. This pattern, because of its non-significance and the wide confidence interval, should not be treated as a confirmed finding, but as an intuition that could be additionally explored in the future.

Overall, H3 was not supported significantly in either the adaptation or socialization hypotheses , although looking at the findings in more depth suggests that the two scenarios could co-exist in different cases; for example, the socialization theory has been consistent in relation to higher fertility of immigrants from high-fertility countries, while the descriptive statistics showed an intuition that the adaptation hypothesis could be applicable based on context.

6.5 Limitations and Future Research

The study presents several limitations that are addressed in this paragraph, alongside suggestions for directions of future research.

First, although the study of intention is resourceful, as it can unravel mechanisms behind fertility ideals, it precludes causal inference. All findings are correlational and have a margin of instability both in strength and direction, and are not determinant of fertility outcomes. Because of how the GGS Round II is designed, a second Wave of questionnaires will be carried out some years later to the same sample, with follow-up questions that can actually determine outcomes. Future studies using that data will be able to confirm those associations with a greater degre of confidence.

For second, as already widely mentioned throughout the study, the sample sizes for immigrant regional sub-groups after data cleaning resulted to be modest and significantly smaller than the French-born, and although in the beginning of the research design this was accepted with the justification that, in percentage, the relationship is the same as that between the French population and the immigrants in France, during the analysis it ended up affecting the stability of the statistical estimates. Another consideration also needs to be addressed regarding the immigrant sample more in general. This study, in fact, does not distinguish second generation immigrants from French-born respondents with both parents from France, since the region of birth was used as the tool to classify immigrants. This omission could possibly enrich the research and add layers to the complexity of

the findings. Therefore, future studies could possibly focus on a bigger immigrant sample, incorporating specific national surveys, that could lead to more confident results, or explore the association of second generations with fertility intention, exploring the applicability of the adaptation and socialization theories. An important note needs to be made also regarding the terminology used in addressing the immigrant sample, in fact, when referring to them directly as nationals of their birthplace, it's recognised that some individuals specifically could not identify themselves with that terminology and at the same time it's acknowledged that some of the immigrants could identify with being French and some of the foreign-born respondents could actually be born in a foreign country to French parents and then moved back to France. Because of the reduced sample and data limitations, these layers have not been fully explored, but it's recognised the reductive definition of immigrant used throughout the study.

Another limitation is the role of parity in the analysis, which was included as a control variable that was revealed to have a strong and significant negative association with fertility intention throughout all the models. Now having been tested, it's appropriate to understand if it could have been treated differently: Perhaps, the study could have focused on first-born fertility intention, excluding respondents with already at least one child from the sample, but considering the issues raised by very small sub-groups, this decision could have brought to even more unstable estimates in some cases; another possibility could have been that of treating parity as part of the dependent variable and in particular coding it as a positive fertility intention. Future research could explore these possibilities, offering a fuller picture on whether different predictors would act similarly.

Lastly some methodological choices need to be addressed in order to open space for more detailed studies in the future, starting with the coding "unsure" respondents in the dependent variable as intending to have a child. Despite this decision being supported by theory and having run robustness tests to ensure that it would have not compromised on the overall results (see Section 4.6.1), future

studies could test for alternative codings to deeply understand the complexity of the phenomenon. Additionally, using exclusively quantitative methods to study intention is limiting to explain deeper cultural and contextual mechanisms (Szreter, 2011), although it traces clear statistical correlation. It would be adequate, in the future, to incorporate qualitative methods to be able to reach a deeper understanding on the mechanisms behind fertility intention.

7. Conclusion

This study examined the fertility intentions of immigrant and non-immigrant respondents in France using data from the first Wave of the Gender and Generations survey Round 2, to answer three research questions and test five hypotheses, grounded in the Theory of Planned Behaviour (Ajzen, 1991), according to which studying intention reveals motivations that will eventually lead to a behaviour. Fertility intention represented the outcome of the analysis, reflecting the underlying values and motivations that shape reproductive ideals, testing for McDonald's (2000) and Goldscheider et al.'s (2015) theoretical frameworks applied on motivational individual factors, together with migration adaptation and socialization theories. Overall, region of birth emerged as a strong predictor of fertility intention, with the largest gap observed with respondents born in Sub-Saharan Africa, followed by North Africa, which are also high fertility regions, compared to the rest of Europe, which presents low levels of fertility and exhibited no significant differences for French-born respondents, consistent with the heterogeneity of family formation construction trajectories across region of origin (Kulu et al., 2024). Gender equality values showed an association with fertility intention strongly dependent on gender, in fact, it resulted to be non-significant for women, while a strong negative relationship was observed among men, narrowing the gender gap that persists at low levels of egalitarian values. No significant differences were found instead across regions of birth in the association between gender equality values and fertility intention, as

well as age at migration, leaving no space to confirm either the socialization or the adaptation hypotheses.

The thesis' principal contribution to the literature of fertility intentions lies in demonstrating that the association between gender equality and fertility intention, theorised both at the individual and institutional level by McDonald (2000) and Goldscheider et al. (2015), actually operates unevenly based on gender when studied at the individual level in the context of two groups in a single country, rather than in a cross-country approach. This finding adds an additional layer to existing evidence that gender egalitarian values don't operate uniformly across all the population (Neyer et al., 2013). One interpretation to this result, coherent with Goldscheider et al's (2015) gender revolution theory, is that in France, which is in a phase of fertility decline, is not yet in the "second phase" of the revolution, but instead in a period after the first, where women that have entered the job market feel the burden of fertility, while men aren't yet fully participating in domestic work, creating a misalignment between the two groups, where the gap is bigger for low egalitarian values and tends to converge as they increase, suggesting that it could be a first step in the "second phase".

Beyond this contribution to the gender equality theory, the study is also relevant to research on fertility intentions in France, as it uses recently released data and focuses on a new fertility period for France, in which is decreasing significantly. In fact the majority of the most recently available research focuses on a phase in which the country had relatively high fertility, close to replacement levels. The novelty of the analysis lies in looking at immigrants' fertility intention as a possible resource to address a national context which is going through a decline phase divergent from its own recent history.

These findings also carry implications for policy-makers. McDonald's (2013) policy regimes discussion identified France as having a relatively supportive model for family formation, reflected in its history of pro-natalist support through

family benefits, childcare support and parental leave implementation (Toulemon et al., 2008). Yet the recent decline in fertility intention, along with the findings of this study, indicates that perhaps pro-natalist support at the institutional level alone is not sufficient to bring egalitarian values to the private sphere, particularly for what concerns men; in fact, the gender pattern observed in the study suggests that past policies addressing natality overlook individual level factors that actually associate with fertility intention (Philipov, 2009). Specifically, these findings want to redirect the attention of policies beyond institutional support, but to focus more on measures that are able to translate men's egalitarian values into more concrete domestic practice. Additionally, having assessed the relevance of the elevated fertility intention of immigrants from high fertility countries, support policies could be particularly relevant to these groups specifically, to help realize these intentions.

Future research possibilities, widely discussed in Section 6.5, particularly through larger immigrant samples and the second Wave of the GGS, along some methodological cautions and maybe the integration of qualitative methods, would help extend and strengthen patterns identified in this study, and reach a better understanding of the relationship of gender equality values and fertility intention of immigrants and non-immigrants in low fertility contexts.

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9. Appendices

Appendix A - Robustness Checks

Table A1. *Model 4 robustness check coefficients*

```
Call:
svyglm(formula = fert_intention_bin_robust ~ region_birth + age +
    age2 + dem01 + education + gender_eq_index + employment +
    marital_status + parity_bin, design = design_robust, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final_robust)

Coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  -2.190995   1.400805  -1.564 0.117863
region_birthNorth Africa      1.330185   0.304664   4.366 1.29e-05 ***
region_birthSub-Saharan Africa  2.323646   0.339998   6.834 9.31e-12 ***
region_birthEurope           -0.051664   0.390391  -0.132 0.894723
region_birthOther             0.711729   0.354635   2.007 0.044815 *
age                           0.364255   0.084602   4.306 1.70e-05 ***
age2                         -0.008238   0.001316  -6.261 4.16e-10 ***
dem01Male                     0.301403   0.103027   2.925 0.003456 **
educationMedium               0.161159   0.220820   0.730 0.465535
educationHigh                 0.394697   0.217114   1.818 0.069141 .
gender_eq_index              -0.519793   0.174474  -2.979 0.002905 **
employmentUnemployed          0.060713   0.218084   0.278 0.780723
employmentInactive            0.116386   0.169406   0.687 0.492102
marital_statusNot married     0.771459   0.136810   5.639 1.81e-08 ***
marital_statusMarried         0.659134   0.169510   3.888 0.000102 ***
parity_binYes                -1.708737   0.137722 -12.407  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 0.9891839)

Number of Fisher Scoring iterations: 5
```

Table A2. *Model 6 robustness check coefficients*

```
Call:
svyglm(formula = fert_intention_bin_robust ~ region_birth + age +
    age2 + education + employment + marital_status + parity_bin +
    gender_eq_index * dem01, design = design_robust, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final_robust)

Coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  -3.149479   1.422216  -2.214  0.02684 *
region_birthNorth Africa      1.314782   0.307832   4.271 1.98e-05 ***
region_birthSub-Saharan Africa  2.329164   0.340803   6.834 9.31e-12 ***
region_birthEurope           -0.039340   0.399658  -0.098  0.92159
region_birthOther             0.742968   0.355974   2.087  0.03693 *
age                           0.374882   0.084540   4.434 9.45e-06 ***
age2                         -0.008402   0.001315  -6.388 1.84e-10 ***
educationMedium               0.171792   0.221305   0.776  0.43763
educationHigh                 0.414657   0.217451   1.907  0.05660 .
employmentUnemployed          0.069842   0.221218   0.316  0.75223
employmentInactive            0.153679   0.169011   0.909  0.36325
marital_statusNot married     0.763704   0.137128   5.569 2.70e-08 ***
marital_statusMarried         0.664029   0.170047   3.905 9.56e-05 ***
parity_binYes                -1.708846   0.137774 -12.403  < 2e-16 ***
gender_eq_index              -0.063280   0.217413  -0.291  0.77102
dem01Male                     1.976159   0.614315   3.217  0.00131 **
gender_eq_index:dem01Male    -0.984195   0.354222  -2.778  0.00548 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 0.9951752)

Number of Fisher Scoring iterations: 5
```

Appendix B - Polychoric Cronbach's Alpha

Table B1. *Gender Equality Index Polychoric Cronbach's Alpha coefficients*

```
Reliability analysis
Call: alpha(x = poly_cor_combined$rho, n.obs = nrow(gender_items_combined))

  raw_alpha std.alpha G6(smc) average_r S/N    ase median_r
      0.78      0.78    0.78      0.37 3.5 0.0042     0.35

    95% confidence boundaries
         lower alpha upper
Feldt     0.30  0.78  0.96
Duhachek  0.77  0.78  0.78

 Reliability if an item is dropped:
         raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
att07a_r      0.76      0.76    0.76      0.39 3.2   0.0047 0.035  0.36
att07b_r      0.75      0.75    0.75      0.37 3.0   0.0049 0.028  0.34
att07c_r      0.69      0.69    0.68      0.31 2.3   0.0060 0.022  0.32
att07d_r      0.70      0.70    0.68      0.32 2.3   0.0058 0.022  0.33
att07g_r      0.74      0.74    0.73      0.36 2.8   0.0051 0.036  0.36
att03j_r      0.80      0.80    0.80      0.45 4.1   0.0038 0.015  0.43

 Item statistics
            r r.cor r.drop
att07a_r 0.64  0.52   0.45
att07b_r 0.67  0.58   0.50
att07c_r 0.82  0.82   0.71
att07d_r 0.80  0.79   0.69
att07g_r 0.71  0.63   0.55
att03j_r 0.48  0.30   0.26
```

Appendix C - Models Regression Results

Table C1. *Model 1 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01, design = design, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final)

Coefficients:
                                Estimate Std. Error t value Pr(>|t|)
(Intercept)                    -1.397890   1.042467  -1.341  0.18000
region_birthNorth Africa        0.836903   0.301525   2.776  0.00553 **
region_birthSub-Saharan Africa  1.838076   0.345838   5.315 1.11e-07 ***
region_birthEurope             -0.262501   0.344089  -0.763  0.44556
region_birthOther               0.959111   0.367698   2.608  0.00912 **
age                             0.308202   0.068724   4.485 7.46e-06 ***
age2                           -0.007951   0.001100  -7.231 5.47e-13 ***
dem01Male                       0.418436   0.090857   4.605 4.21e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for quasibinomial family taken to be 1.0144)

Number of Fisher Scoring iterations: 4
```

Table C2. *Model 2 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01 + education, design = design, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final)

Coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  -0.825856   1.069281  -0.772 0.439943
region_birthNorth Africa      0.884329   0.300394   2.944 0.003255 **
region_birthSub-Saharan Africa  1.930128   0.350126   5.513 3.70e-08 ***
region_birthEurope           -0.215684   0.329041  -0.655 0.512179
region_birthOther             0.869903   0.359657   2.419 0.015609 *
age                           0.255366   0.068326   3.737 0.000188 ***
age2                         -0.007187   0.001091  -6.588 4.89e-11 ***
dem01Male                     0.456172   0.091415   4.990 6.23e-07 ***
educationMedium               0.131200   0.197607   0.664 0.506753
educationHigh                 0.475630   0.190883   2.492 0.012742 *
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 1.018968)

Number of Fisher Scoring iterations: 4
```

Table C3. *Model 3 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01 + education + gender_eq_index, design = design, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final)

Coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  -0.417117   1.102719  -0.378 0.705251
region_birthNorth Africa      0.858136   0.297451   2.885 0.003930 **
region_birthSub-Saharan Africa  1.925136   0.348096   5.530 3.35e-08 ***
region_birthEurope           -0.226348   0.329311  -0.687 0.491900
region_birthOther             0.866152   0.359837   2.407 0.016115 *
age                           0.258013   0.068372   3.774 0.000163 ***
age2                         -0.007230   0.001091  -6.625 3.83e-11 ***
dem01Male                     0.455507   0.091471   4.980 6.57e-07 ***
educationMedium               0.140879   0.197062   0.715 0.474705
educationHigh                 0.494491   0.190876   2.591 0.009606 **
gender_eq_index              -0.269321   0.147990  -1.820 0.068836 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 1.021272)

Number of Fisher Scoring iterations: 4
```

Table C4. *Model 4 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01 + education + gender_eq_index + employment + marital_status +
    parity_bin, design = design, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final)

Coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                  -2.940206   1.306958  -2.250 0.024511 *
region_birthNorth Africa      1.168976   0.286250   4.084 4.50e-05 ***
region_birthSub-Saharan Africa  2.193386   0.320671   6.840 8.81e-12 ***
region_birthEurope           -0.115398   0.379789  -0.304 0.761256
region_birthOther             0.740048   0.332425   2.226 0.026042 *
age                           0.422964   0.078259   5.405 6.78e-08 ***
age2                         -0.008867   0.001202  -7.376 1.89e-13 ***
dem01Male                     0.331369   0.096198   3.445 0.000576 ***
educationMedium               0.139432   0.202675   0.688 0.491511
educationHigh                 0.342706   0.199568   1.717 0.085994 .
gender_eq_index              -0.465012   0.160468  -2.898 0.003773 **
employmentUnemployed          0.081356   0.202563   0.402 0.687969
employmentInactive            0.129603   0.159179   0.814 0.415566
marital_statusNot married     0.493309   0.125237   3.939 8.29e-05 ***
marital_statusMarried         0.237454   0.152386   1.558 0.119237
parity_binYes                -1.671221   0.124563 -13.417  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 0.9942403)

Number of Fisher Scoring iterations: 4
```

Table C5. *Model 5 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ immigrant_status + age +
    age2 + dem01 + education + employment + marital_status +
    parity_bin + gender_eq_index * immigrant_status, design = design,
    family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final)

Coefficients:
                                           Estimate Std. Error t value Pr(>|t|)
(Intercept)                               -1.522572   1.844850  -0.825 0.409233
immigrant_statusNon-immigrant             -1.610037   1.075468  -1.497 0.134438
age                                        0.428379   0.078841   5.433 5.77e-08 ***
age2                                      -0.008916   0.001208  -7.382 1.79e-13 ***
dem01Male                                  0.308924   0.095708   3.228 0.001255 **
educationMedium                            0.126086   0.204915   0.615 0.538376
educationHigh                              0.305595   0.202056   1.512 0.130483
employmentUnemployed                       0.141463   0.194486   0.727 0.467031
employmentInactive                         0.147096   0.160832   0.915 0.360449
marital_statusNot married                  0.473830   0.124931   3.793 0.000151 ***
marital_statusMarried                      0.226446   0.152794   1.482 0.138389
parity_binYes                             -1.634598   0.124107 -13.171  < 2e-16 ***
gender_eq_index                           -0.776541   0.614715  -1.263 0.206553
immigrant_statusNon-immigrant:gender_eq_index  0.365765   0.633962   0.577 0.563997
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 1.018851)

Number of Fisher Scoring iterations: 4
```

Table C6. *Model 6 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    education + employment + marital_status + parity_bin + gender_eq_index *
    dem01, design = design, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_final)

Coefficients:
                             Estimate Std. Error t value Pr(>|t|)
(Intercept)                 -3.912645   1.317062  -2.971 0.002984 **
region_birthNorth Africa     1.151974   0.287742   4.004 6.33e-05 ***
region_birthSub-Saharan Africa  2.208488   0.322535   6.847 8.38e-12 ***
region_birthEurope          -0.090999   0.389190  -0.234 0.815137
region_birthOther            0.770955   0.332873   2.316 0.020593 *
age                          0.431281   0.078170   5.517 3.61e-08 ***
age2                        -0.008998   0.001201  -7.492 7.90e-14 ***
educationMedium              0.153606   0.202854   0.757 0.448947
educationHigh                0.366010   0.199753   1.832 0.066961 .
employmentUnemployed         0.085590   0.204335   0.419 0.675328
employmentInactive           0.162175   0.158797   1.021 0.307170
marital_statusNot married    0.488594   0.125447   3.895 9.95e-05 ***
marital_statusMarried        0.239177   0.152784   1.565 0.117535
parity_binYes               -1.668062   0.124637 -13.383  < 2e-16 ***
gender_eq_index              0.018838   0.198118   0.095 0.924252
dem01Male                    2.146720   0.577760   3.716 0.000205 ***
gender_eq_index:dem01Male   -1.064449   0.331966  -3.207 0.001352 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 1.002557)

Number of Fisher Scoring iterations: 4
```

Table C7. *Model H3 regression coefficients*

```
Call:
svyglm(formula = fert_intention_bin ~ age_migration + age + dem01 +
    region_birth + education + employment + marital_status +
    parity_bin, design = design_immigrants, family = quasibinomial())

Survey design:
svydesign(ids = ~1, weights = ~weight, data = df_immigrants)

Coefficients:
                              Estimate Std. Error t value Pr(>|t|)
(Intercept)                   4.862225   1.167271   4.165 3.60e-05 ***
age_migration                 0.024376   0.016227   1.502 0.133601
age                          -0.134344   0.028201  -4.764 2.42e-06 ***
dem01Male                     0.197400   0.296010   0.667 0.505128
region_birthSub-Saharan Africa  1.009431   0.369521   2.732 0.006498 **
region_birthEurope           -0.909015   0.380523  -2.389 0.017229 *
region_birthOther            -0.366005   0.351103  -1.042 0.297654
educationMedium              -0.007978   0.443479  -0.018 0.985654
educationHigh                 0.261258   0.378496   0.690 0.490318
employmentUnemployed          0.194941   0.506698   0.385 0.700584
employmentInactive            0.038665   0.399339   0.097 0.922902
marital_statusNot married     0.633386   0.440855   1.437 0.151352
marital_statusMarried         0.357867   0.385324   0.929 0.353420
parity_binYes                -1.162010   0.315950  -3.678 0.000258 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for quasibinomial family taken to be 1.01192)

Number of Fisher Scoring iterations: 4
```

Appendix D - Model Fit and Diagnostics

Table D1. *Akaike Information Criterion (AIC) model fit coefficients*

	Model	AIC
1	Model 1: Region + Age + Gender	5244.963
2	Model 2: + Education	5225.781
3	Model 3: + Gender Equity	5223.244
4	Model 4: + Employment/Marital/Parity	4876.003
5	Model 5: + ImmigrantxGenderEq Interaction	4929.746
6	Model 6: + GenderxGenderEq Interaction	4860.188

Table D2. *Wald tests model fit coefficients*

```
> regTermTest(model2, ~education)
Wald test for education
 in svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01 + education, design = design, family = quasibinomial())
F =  8.155885  on  2  and  5332  df: p= 0.00029064
> regTermTest(model3, ~gender_eq_index)
Wald test for gender_eq_index
 in svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01 + education + gender_eq_index, design = design, family = quasibinomial())
F =  3.311902  on  1  and  5331  df: p= 0.068836
> regTermTest(model4, ~employment + marital_status + parity_bin)
Wald test for employment marital_status parity_bin
 in svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    dem01 + education + gender_eq_index + employment + marital_status +
    parity_bin, design = design, family = quasibinomial())
F =  40.62465  on  5  and  5326  df: p= < 2.22e-16
> regTermTest(model5, ~immigrant_status:gender_eq_index)
Wald test for immigrant_status:gender_eq_index
 in svyglm(formula = fert_intention_bin ~ immigrant_status + age +
    age2 + dem01 + education + employment + marital_status +
    parity_bin + gender_eq_index * immigrant_status, design = design,
    family = quasibinomial())
F =  0.3328728  on  1  and  5328  df: p= 0.564
> regTermTest(model6, ~gender_eq_index:dem01)
Wald test for gender_eq_index:dem01
 in svyglm(formula = fert_intention_bin ~ region_birth + age + age2 +
    education + employment + marital_status + parity_bin + gender_eq_index *
    dem01, design = design, family = quasibinomial())
F =  10.28165  on  1  and  5325  df: p= 0.0013515
```

Table D3. *Variance Inflation Factor (VIF) model 4 diagnostic coefficients*

	GVIF	Df	GVIF^(1/(2*Df))
region_birth	1.123682	4	1.014683
age	103.941820	1	10.195186
age2	98.458613	1	9.922631
dem01	1.041985	1	1.020777
education	1.194091	2	1.045344
gender_eq_index	1.037215	1	1.018437
employment	1.378729	2	1.083602
marital_status	1.547789	2	1.115393
parity_bin	1.592557	1	1.261965

Table D4. *Variance Inflation Factor (VIF) model 6 diagnostic coefficients*

	GVIF	Df	GVIF^(1/(2*Df))
region_birth	1.125974	4	1.014942
age	104.192356	1	10.207466
age2	98.706622	1	9.935121
education	1.197692	2	1.046132
employment	1.385837	2	1.084996
marital_status	1.549875	2	1.115769
parity_bin	1.593991	1	1.262533
gender_eq_index	1.665099	1	1.290387
dem01	35.349820	1	5.945571
gender_eq_index:dem01	36.214901	1	6.017882