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INEGALITES DE GENRE ET INTEGRATION DES FEMMES SUR LE MARCHE DU TRAVAIL EN AFRIQUE

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par

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INTRODUCTION GENERALE

1. Motivation

« Le monde a dans les femmes le potentiel le plus important et le moins exploité pour le développement et la paix » Ban Ki-moon.

L'Afrique abrite une bonne partie des économies les plus dynamiques avec les taux de croissance les plus rapides au monde. Sa population jeune et en croissance perpétuelle est une aubaine dans un monde vieillissant. La nouvelle génération africaine, de plus en plus urbaine et férue de technologies, représente aujourd'hui un vrai potentiel pour les entreprises à la recherche de croissance et de nouveaux marchés. Pourtant, malgré tout le dynamisme du continent, les femmes ne partagent pas de manière égale son cheminement vers le développement. Les progrès vers l'égalité des sexes sont au ralenti voire au point mort et les femmes africaines, dans plusieurs domaines, restent à la traîne par rapport aux autres femmes dans la plupart des autres régions du monde. Il est devenu primordial d'intensifier les efforts pour embarquer la femme africaine, dans sa diversité, sur le chemin menant vers l'avenir prometteur de l'Afrique, sinon, le continent atteindra difficilement son plein potentiel. La poursuite de l'égalité des sexes est un thème transversal clé dans les Objectifs de développement durable (ODD). Ce constat trouve un écho dans la désormais célèbre déclaration du Secrétaire général des Nations Unies : « … investir dans les femmes n'est pas seulement la bonne chose à faire ; c'est la chose intelligente à faire… ». En effet, l'égalité des sexes, que ce soit dans le domaine économique, social, politique ou juridique, est une valeur qui favorise la paix et la prospérité inclusive pour les nations. Les femmes, ont des caractéristiques, des comportements et des préférences spécifiques qui peuvent stimuler le développement de l'économie lorsqu'elles sont impliquées dans la prise de décision à l'intérieur et à l'extérieur des foyers. En effet, plusieurs études ont montré que l'autonomisation des femmes est la politique qui est plus à même d'accroître la productivité économique, l'accès à l'éducation des nouvelles générations, de réduire la mortalité infantile et maternelle, d'améliorer la nutrition et de promouvoir la santé (Ashraf et al. 2010 ; Mutume 2004 ; Duflo et Udry 2003).

Partout en Afrique, des progrès remarquables ont été accomplis pour réduire l'écart entre les sexes et les inégalités dans les domaines politique, social et économique. Pourtant, les disparités entre les hommes et les femmes sont encore visibles et ces dernières restent désavantagées par rapport aux hommes dans de nombreux domaines. Pour cause, les obstacles à leur autonomisation économique

commencent depuis l'enfance ou l'adolescence. Environ 37 % des filles en Afrique subsaharienne (ASS) se marient avant l'âge de 18 ans (UNICEF 2020a) et 19 % ont leur premier enfant entre 15 et 19 ans (données DHS). En outre, on estime qu'une fille sur quatre âgée de 15 à 19 ans, contre près d'un garçon sur sept, n'est ni scolarisée, ni employée, ni en formation (OIT 2020). Ces écarts et différences entre les sexes au cours de l'adolescence s'inscrivent dans des systèmes qui perpétuent l'inégalité entre les sexes et persistent jusqu'à l'âge adulte. Ce qui fait que les femmes adultes africaines ont beaucoup moins d'opportunités économiques que les hommes. En effet, plus d'hommes que de femmes travaillent dans la plupart des pays africains. Quand elles le font, elles sont plus susceptibles de travailler à temps partiel, dans le secteur informel ou dans des professions les moins bien rémunérées. Ces inconvénients se traduisent par des écarts importants entre les sexes dans les revenus, qui à leur tour diminuent le pouvoir de négociation et la voix des femmes.

Figure 0-1: Différences de situation matrimoniale des jeunes femmes selon leur statut d'activité en Afrique subsaharienne

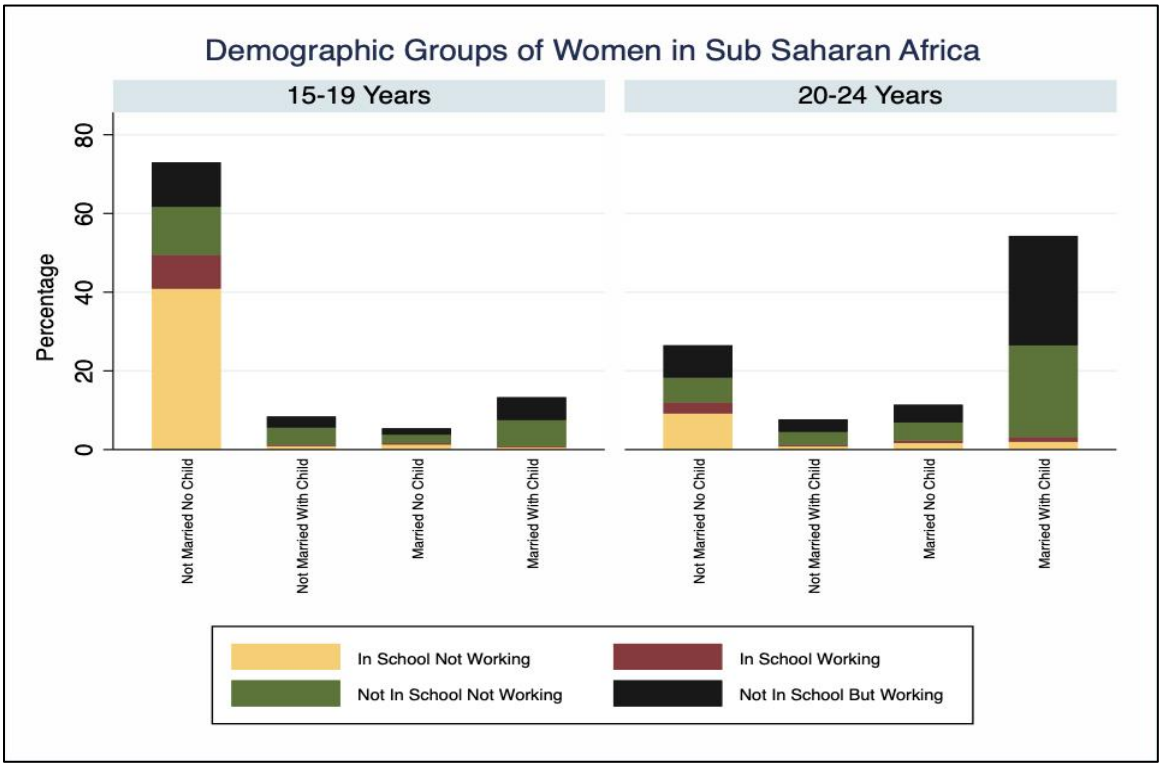
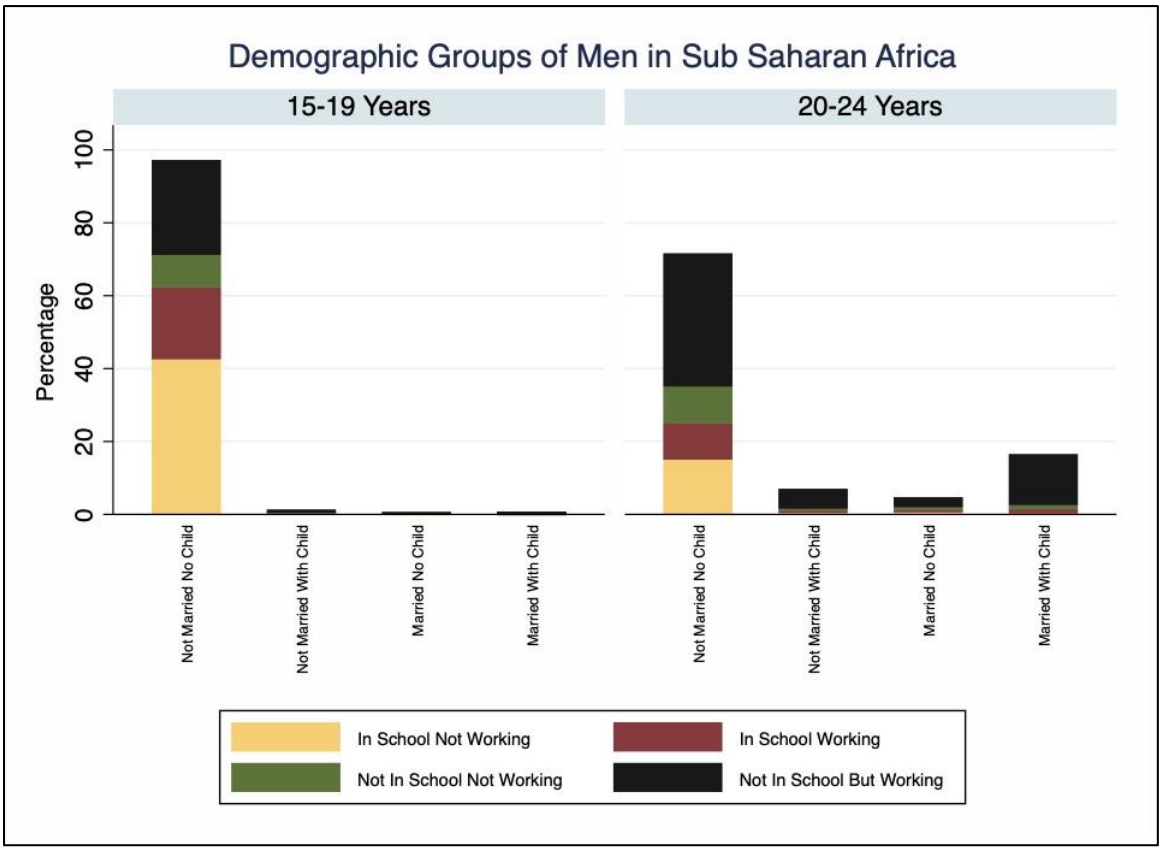


Figure 0-2: Différences de situation matrimoniale des jeunes hommes selon leur statut d'activité en Afrique subsaharienne



Note : Pour ces graphiques les données DHS ont été utilisées pour 36 des 48 pays de la région (voir annexe pour les pays et les années couvertes). Au-delà de l'analyse agrégée, une segmentation de cette population selon quatre dimensions démographiques et une présentation de la part des jeunes femmes scolarisées, actives, mariées et avec enfants, en mettant en évidence les intersections entre ces quatre expériences a été faite.

Les femmes et les filles sont également confrontées à des risques plus élevés de violence à la maison, au travail et dans les espaces publics. Leur voix et leur libre arbitre sont souvent moins considérés que ceux des hommes, que ce soit à la maison, au travail ou dans les institutions nationales. En conséquence, l'énorme contribution économique potentielle des femmes reste inexploitée dans un certain nombre de pays. L'équité entre les sexes est en soi un objectif social important, mais son absence impose également un coût économique élevé car elle entrave la productivité et pèse sur la croissance (Loko et Diouf 2009 ; Dollar et Gatti 1999 ; Aguirre et al. 2012 ; McKinsey Global Institute 2015 ; Cuberes et Teignier,2012, 2016). L'inégalité entre les sexes a également un certain nombre d'autres conséquences macroéconomiques négatives, telles qu'une plus grande inégalité des revenus et une moindre diversification économique. Selon le

rapport 2019 de l'Institut McKinsey intitulé *Power of Parity Report : Advancing Women's Equality in Africa*, l'Afrique pourrait ajouter 316 milliards de dollars ou 10 % à son PIB d'ici 2025 si chaque pays faisait des progrès en matière d'égalité de genre pour égaler le pays de la région qui a réalisé le plus de progrès vers la parité. Cependant, à ce jour, ce scénario « best-in-region » semble difficilement réalisable. Au rythme actuel des progrès, l'Afrique pourrait prendre plus de 140 ans avant d'atteindre la parité entre les sexes. L'indice d'inégalité de genre (IIG), qui mesure l'inégalité de genre sur la base de la santé reproductive, de l'autonomisation et de l'activité économique, montre que parmi les 45 pays africains pour lesquels des données sont disponibles, le meilleur score est de 0,4 pour le Rwanda (PNUD,2016). Le IIG est mesuré sur une échelle allant de 0 à 1, la valeur la plus élevée indiquant une plus grande inégalité entre les sexes. La mauvaise performance des pays africains sur le IIG indique que la plupart des pays de cette région n'ont pas encore atteint l'égalité des sexes et leur plein potentiel pour un développement humain plus élevé et durable.

2. Inégalité de genre et éducation en Afrique

L'inégalité entre les sexes dans l'éducation est bien établie dans la littérature économique. L'éducation étant définie comme un investissement dans le capital humain, par conséquent, les choix d'investissement éducatif résultent d'un processus de maximisation des ménages qui consiste à avoir un investissement optimal tenant compte des contraintes financières. Dans ce contexte, le souci de choix optimaux et efficaces conduit à des investissements éducatifs inégaux aux dépens des filles. En effet, les coûts plus élevés de l'éducation des filles, pour des rendements plus faibles dus à la discrimination sur le marché du travail, affectent la décision de scolariser les filles par rapport aux garçons. Un grand nombre de recherches soulignent la pauvreté comme le déterminant le plus puissant des inégalités en matière d'éducation. Cependant, lorsqu'on parle d'inégalité de genre, cette inégalité reflète des disparités plus larges avec des normes sociales qui guident les comportements des hommes et des femmes et déterminent le rôle de chacun dans la société (Koissy-Kpein 2008, 2010, 2015).

Cinq années de scolarité, c'est le volume d'éducation auquel les filles africaines peuvent s'attendre en moyenne, selon l'UNESCO[1]. Malgré des progrès lents mais réels, les filles font face à une forte

[1] http://uis.unesco.org/apps/visualisations/no-girl-left-behind

discrimination dans l'accès et leur maintien à l'école dans la plupart des pays africains. Malgré des progrès majeurs, l'Afrique subsaharienne (ASS) est la région qui est confrontée aux plus grands défis en matière d'éducation des filles. Si certains pays ont réussi à éliminer les disparités entre les sexes dans l'enseignement primaire, les statistiques en général suggèrent des niveaux de réussite et de scolarisation des filles, au niveau secondaire, inférieurs à ceux des garçons. En effet, les filles sont plus vulnérables au décrochage scolaire, incapables de terminer un cycle complet d'études. Les taux d'abandon scolaire des filles, associés à de faibles taux de transition du primaire au secondaire, réduisent la représentation des filles dans l'enseignement secondaire et supérieur et entravent leurs acquis d'apprentissage**.** Toutefois, des progrès importants ont été réalisés. Par exemple, selon les données de l'Institut de statistique de l'UNESCO (ISU 2020), les inscriptions mondiales dans l'enseignement supérieur ont augmenté de dix points de pourcentage pour atteindre 41 % entre 2010 et 2018. La même tendance à la hausse peut être observée en Afrique subsaharienne, bien qu'à partir d'une base faible, à 8,3 % en 2019 contre 6,1 % en 2009.

3. Inégalité de genre et marché du travail en Afrique

Les femmes qui représentent un peu plus de la moitié de la population mondiale sont responsables de 60 % du travail effectué dans le monde, mais ne gagnent que 10 % des revenus et ne possède que 1 % des biens. En Afrique, 70 % des femmes ne sont pas financièrement indépendantes. Le continent a un écart de financement entre les hommes et les femmes de 42 milliards de dollars (PME, 2019). En effet, les contributions des femmes à l'activité économique, à la croissance et au bien-être sont bien en deçà de leur potentiel, avec de graves conséquences économiques et sociales. Malgré des progrès significatifs au cours des dernières décennies, les marchés du travail, à travers le monde, restent divisés en fonction du sexe, et l'égalité entre les sexes reste un objectif qui semble insaisissable. L'inégalité des genres dans l'arène économique se manifeste de plusieurs manières : la participation des femmes au marché du travail est inférieure à celle des hommes ; les femmes représentent la plupart des travaux non rémunérés ; et lorsqu'elles sont employées dans un travail rémunéré, elles sont surreprésentées dans le secteur informel et parmi les plus pauvres (Elborgh-Woytek et al. 2013). Elles sont également confrontées à des écarts salariaux importants par rapport à leurs collègues masculins parce qu'elles passent généralement moins de temps sur le marché du travail, ce qui entraine des retraites plus faibles et un risque plus élevé de pauvreté chez les femmes âgées. Dans toutes les régions du monde et particulièrement en ASS, les distorsions et la

discrimination sur le marché du travail restreignent les options des femmes pour un travail rémunéré, et parmi celles qui travaillent, peu accèdent à des postes de direction (Morrison et Von Glinow 1990 ; Belghiti et Kartochian 2008). Les femmes assument également une part plus importante du travail non rémunéré au sein de la famille, y compris la garde des enfants et les tâches domestiques, ce qui limite leur possibilité d'exercer un travail rémunéré et restreint leurs options lorsqu'elles choisissent de le faire (Becker 1985 ; Drobnic et al.˝1999 ; Ferrant et al. 2014 ; Cáceres-Delpiano 2012 ; Cooke et Hook 2018). Les défis de la promotion de la croissance, de la création d'emplois et de l'amélioration de la participation des femmes au marché du travail sont étroitement liés. La croissance et la stabilité économiques sont nécessaires pour élargir les opportunités d'emploi des femmes, mais en même temps, leur participation au marché du travail est un moteur important de croissance et de stabilité.

4. Les bénéfices économiques d’une plus grande autonomisation des femmes

Une plus grande capacité des femmes à contrôler leurs revenus et leurs actifs peut contribuer à une croissance économique plus forte dans les pays émergents et les économies à faible revenu, et une telle croissance peut à son tour favoriser de plus grandes améliorations des conditions de vie des femmes (Stotsky 2006). Le travail des femmes, rémunéré et non rémunéré, peut être le facteur de réduction de la pauvreté le plus important dans les économies en développement (OIT 2020 ; Heintz 2006). En effet, de plus grandes opportunités pour les femmes peuvent contribuer à un développement économique plus large, par exemple les femmes sont plus susceptibles que les hommes d'investir une grande partie du revenu de leur ménage pour éduquer leurs enfants. En conséquence, une plus grande participation au marché du travail et des revenus plus élevés pour les femmes pourrait entraîner des dépenses plus élevées pour la scolarisation des enfants, y compris des filles, ce qui pourrait déclencher un cercle vertueux où les femmes instruites deviennent des modèles pour les jeunes filles (Aguirre et al 2012 ; Miller 2008 ; Alderman et King 1998 ; Flouri et Hawkes 2008 ; Wang et Cheng 2021).

L'élimination des écarts entre les sexes en matière d'emploi et de salaires permettrait aux entreprises de mieux utiliser le vivier de talents disponibles, avec des implications potentielles pour la croissance (Barsh et Yee 2012 ; Miller 2008). Il est prouvé que le fait d'avoir des femmes dans des

conseils d'administration et dans les postes de direction a un impact positif sur la performance et la rentabilité des entreprises. Par exemple, les entreprises qui emploient des femmes cadres peuvent être mieux placées pour servir les marchés de consommation dominés par les femmes, et celles étant plus diversifiés en termes de genre dans leurs conseils d'administration peuvent améliorer la gouvernance d'entreprise en incluant un plus large éventail de perspectives (OCDE 2012 ; Lord Davies 2013). Dans les entreprises financières, impliquer davantage de femmes dans les postes de décision peut tempérer la tendance de nombreux commerçants masculins à entreprendre des transactions financières à haut risque (Coates et Herbert 2008).

5. Clin d'œil sur le Sénégal

Le Sénégal a beaucoup progressé en ce qui concerne l'éducation des filles. L'indice de parité est en faveur des filles du primaire au collège et est égal à 1 dans le secondaire, traduisant une parité.[2] Les taux d'achèvement du primaire des filles sont actuellement supérieurs à ceux des garçons, grâce aux efforts de l'État et des organisations de la société civile. Cependant, la tendance observée jusqu'alors dans les cycles précédents s'inverse au niveau du secondaire avec des statistiques en défaveur des filles. Le taux de réussite est favorable aux garçons et la situation est plus accentuée au baccalauréat avec un taux de réussite de 38,84% chez les garçons, contre 34,48% chez les filles.[3] Après avoir réalisé des progrès significatifs dans la lutte contre les inégalités entre les sexes (réduction des inégalités subies par les filles) au cours de la dernière décennie, les filles obtiennent désormais de meilleurs résultats que les garçons dans la plupart des domaines tels que l'inscription, l'achèvement et les évaluations des apprentissages dans les cycles primaire et moyen**.** La parité totale entre les filles et les garçons a été atteinte en 2007 pour le TBS du primaire et en 2012 pour le TBS du secondaire inférieur (ISU 2012). Il convient également de noter que le travail domestique des enfants constitue toujours un défi majeur pour le maintien des jeunes filles à l'école. En effet, les enfants travailleurs domestiques sont parmi les plus vulnérables à l'abandon scolaire. Au Sénégal, la prévalence du travail domestique des enfants est élevée (12%) et les filles sont 3,5 fois plus susceptibles que les garçons d'être impliquées dans le travail domestique (GMR,2019).

[2] Ministère de l'Education Nationale, 2019
[3] Ministère de l'Enseignement Supérieur de la Recherche et de l'Innovation (MESRI), 2019

L'autonomisation économique des femmes au Sénégal reste un défi de taille même si la participation des femmes dans la population active a augmenté au cours des deux dernières décennies à un rythme plus rapide que dans le reste de l'ASS[4]. Pourtant, malgré ces progrès, le taux de participation des femmes au marché du travail dans le pays reste faible en 2020 (35,1 %), inférieur à la moyenne de l'ASS (61,4%) [5] et le chômage est élevé (24,1% des femmes sont au chômage contre 6% des hommes)[6]. Les femmes représentent 33,3% des salariés et 25,6% des travailleurs permanents et 27,7% des travailleurs saisonniers. Les femmes sont principalement actives dans le secteur informel et dans l'agriculture. De 2007 à 2013, la part totale des entreprises détenues par des femmes est passée de 23,8 % à 32,1 %. Les femmes sénégalaises représentent 31,3% des entrepreneurs. Elles sont majoritaires dans les secteurs de la restauration (72,8 %) et très visibles dans les activités de coiffure et de commerce (38,9 %). Les femmes entrepreneurs du secteur formel ont tendance à avoir un niveau d'éducation secondaire ou supérieur, ont plus de 50 ans et ont souvent entre un et trois enfants. En comparaison, les femmes qui opèrent dans le secteur informel ont tendance à être analphabètes (46,0 %), à avoir plus de trois enfants et à être plus jeunes (entre 25 et 50 ans).[7] Les femmes sénégalaises ont encore un accès limité à la terre en raison des mœurs et de la tradition. Ceci à son tour a un impact sur leur accès au crédit par manque de garanties pour emprunter.[8] Le Sénégal se distingue des autres pays d'Afrique subsaharienne par sa forte proportion de femmes propriétaires de micro-entreprises agricoles (56 %) alors que la proportion de femmes propriétaires dans les autres secteurs reste très faible.[9] Dans les zones rurales, la répartition de l'emploi dans différents secteurs économiques révèle l'implication des femmes dans l'agriculture, l'élevage et l'environnement, où elles représentent 70 % de la main-d'œuvre. Elles sont très actives dans la transformation et la commercialisation des produits agricoles, de l'élevage et de la pêche.[10]

Les inégalités de genre restent un défi de taille pour le Sénégal en raison de la complexité de l'environnement socioculturel. Même si le processus de déconstruction des mentalités est en cours,

[4] Vivian Malta, Angélica Martínez Leyva, and Marina M. Tavares, A quantitative analysis of female employment in Senegal, IMF working paper, November 2019.
[5] Organisation Internationale du Travail (OIT), base de données ILOSTAT. Données récupérées le 21 septembre 2021.
[6] Selon l'Agence Nationale de la Statistique et de la Démographie (Agence Nationale de la Statistique et de la Démographie, ANSD), le taux de chômage au Sénégal pour les personnes âgées de 15 ans et plus était estimé à 14,3% au quatrième trimestre 2018.
[7] OIT 2019.
8 Ahmadou Aly Mbaye, supporting small informal businesses to improve the quality of jobs in Africa, Brookings, October 2019
9 Cruz, Marcio, Mark Dutz and Carlos Rodríguez-Castelán, 2021, Inclusive digital Senegal: Technological transformation for better and more jobs, World Bank.
10 ONUfemmes-Sénégal.

les relations de genre au Sénégal sont façonnées par des normes et des coutumes socioculturelles qui établissent des relations hiérarchiques dans lesquelles les hommes sont dominants et les femmes sont subordonnées. Bien que ces relations varient en fonction du lieu de résidence (urbain ou rural), du niveau de revenu, de l'ethnie et de la religion, la société sénégalaise attend généralement des femmes qu'elles soient des épouses et des mères, effectuant des tâches ménagères et domestiques (non rémunérées), notamment la procréation et l'éducation des enfants, les soins et l'entretien du foyer et l'agriculture de subsistance. Ces normes de genre se traduisent par un accès privilégié des hommes aux opportunités de leadership dans les postes officiels des secteurs public et privé. Les institutions sociales reflètent et soutiennent les préférences et les styles de leadership masculins, créant souvent des environnements de travail peu propices, voire hostiles, à l'autonomisation des femmes par le biais d'opportunités de leadership, de promotion ou d'égalité salariale. Par conséquent, du non-accès à la terre au manque d'éducation, en passant par des normes sociales défavorables, les femmes sénégalaises sont confrontées à plusieurs obstacles pour accéder à des emplois de bonne qualité ou pour développer des entreprises à forte valeur ajoutée.

6. Contributions de la thèse

Le combat de ces dernières années pour l'augmentation du niveau d'éducation des filles n'a pas eu l'impact escompté sur la participation des femmes sur le marché du travail et sur la prise en compte de leur opinion dans la sphère privée et publique. Ce qui laisse penser que l'amélioration du niveau d'éducation des filles à elle seule n'est pas nécessairement suffisante pour garantir qu'elles puissent entrer et s'épanouir aussi bien dans la société que dans le monde du travail. Le Partenariat mondial pour l'éducation (PME, 2019), l'une des organisations internationales majeures dans le domaine de l'éducation, a déclaré qu'une approche transformatrice de l'égalité des genres dans l'éducation est nécessaire ; une approche qui transcende le simple fait de se focaliser sur l'expansion de l'éducation des filles pour une approche qui examine tous les aspects du système éducatif. Cela suggère qu'une variété d'interventions et d'initiatives sont nécessaires pour améliorer le bien-être des femmes et des filles. Ainsi, il est essentiel d'étudier les problèmes complexes qui ont un impact sur les femmes et leur capacité à rejoindre le marché du travail de manière compétitive. Cette thèse contribue à combler ces lacunes. Cette thèse est composée de trois essais empiriques sur les différences de genre en termes de préférence politique, de rendements de l'éducation et de revenus sur le marché du travail.

Le premier chapitre présente de nouvelles preuves sur la façon dont les normes et les traditions peuvent affecter les préférences des femmes en matière de demande en bien public en Afrique. À l'aide des données d'Afrobaromètre pour 36 pays africains, ce chapitre vise à déterminer si les préférences des hommes et des femmes diffèrent et, le cas échéant, à explorer la source des différences observées entre les sexes. Les résultats montrent que les normes traditionnelles de genre jouent un rôle important dans l'explication des différences de préférences en biens publics entre les hommes et les femmes. Les femmes africaines manifestent systématiquement une préférence pour une augmentation des dépenses publiques sociales (éducation, santé) et demande moins d'investissement dans les infrastructures, quel que soit leur niveau d'autonomisation ou les normes sur le rôle des hommes et des femmes en vigueur dans la société. Les résultats montrent également que les femmes réclament moins d'investissements en agriculture comparées aux hommes. Cependant, dans les pays où les normes de genre sont moins favorables aux femmes, ces dernières ont des préférences plus élevées pour les dépenses agricoles.

Le second chapitre de la thèse contribue au débat en cours sur les avantages relatifs de l'Enseignement et formation technique et professionnel (EFTP) et de l'enseignement général, en mettant l'accent sur les différences entre les sexes. Les hommes et les femmes sont susceptibles de choisir des domaines d'EFTP différents avec des rendements différents sur le marché du travail. En outre, les rares éléments de preuve sur les déterminants de la participation à l'EFTP dans les pays en développement dans la littérature ont fourni des conclusions ambiguës sur les rendements de l'EFTP. Dans les pays développés comme dans les pays en développement, la recherche a eu tendance à ignorer des questions telles que qui s'inscrit dans les programmes d'EFTP et si les réformes atteignent les groupes cibles qu'elles sont censées servir. Compte tenu des extensions actuellement envisagées pour l'EFTP au Sénégal, certaines questions critiques doivent être soulevées. Quels facteurs motivent la participation à l'EFTP ? Les déterminants de la participation à l'EFTP sont-ils différents pour les hommes et les femmes ? Quels sont les rendements économiques de l'EFTP pour les hommes et les femmes ? A notre connaissance, aucune recherche publiée au Sénégal n'aborde ces questions. Pour combler cette lacune, nous utilisons les données de la dernière enquête nationale sur l'emploi au Sénégal (ENES-2015) pour examiner les choix en fonction du genre et les rendements de l'EFTP. Ce chapitre montre que l'EFTP augmente les chances des femmes de trouver un emploi mais n'améliore pas leurs résultats sur le marché du travail. Pour les hommes, avoir un diplôme d'EFTP est associé à des salaires plus élevés et à une

plus grande probabilité d'obtenir un contrat à durée indéterminée et de travailler dans le secteur formel.

Le troisième et dernier chapitre de cette thèse étudie l'écart salarial entre les hommes et les femmes au Sénégal et l'interconnexion de la ségrégation entre les secteurs et les professions dans la formation de cet écart. Peu d'études en Afrique se sont intéressées à cette question, probablement en raison du manque de données. Ce chapitre aboutit à cinq principaux résultats qui pourraient contribuer aux réflexions pour mieux comprendre l'intégration des femmes sur le marché du travail au Sénégal, et plus généralement en Afrique : i) les écarts de salaire femme-homme sont élevés, les hommes gagnent en moyenne 62% de plus que les femmes, mais seule une faible part de cet écart s'explique par les caractéristiques des travailleurs. ii) la ségrégation entre les sexes au sein des secteurs est élevée et plus importante que la ségrégation au sein des professions ; les femmes étant surreprésentées dans les secteurs les moins rémunérateurs. iii) les écarts de salaire entre les sexes sont plus élevés pour les travailleurs indépendants, et plus faibles pour les travailleurs salariés et qualifiés. iv) le temps de travail est le facteur qui contribue le plus à expliquer l'écart salarial entre les sexes. v) avoir des enfants est un facteur influent qui contribue à accroître l'écart salarial entre les sexes.

Cette analyse empirique est complétée par une analyse qualitative permettant d'approfondir les mécanismes à l'origine des différences de salaire. Les résultats issus d'entretiens individuels auprès de 45 femmes réparties dans plusieurs localités du Sénégal confirment certains résultats de l'analyse empirique. Le désir des femmes d'avoir des horaires de travail flexibles, le fardeau de la parentalité et d'autres tâches domestiques sont des facteurs clés expliquant l'écart salarial entre les sexes.

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Appendix

Table 0-1: Pays couverts et années couverts par les données DHS (Enquête Démographique et de Santé) dans les figures 1 et 2

DHS CODE	COUNTRY	LATEST STANDARD DHS	DATA AVAILABLE	ACCESS RECIEVED	WOMEN SAMPLE
AO	Angola	2015-16	Yes	Yes	15-19
BJ	Benin	2017-18	Yes	Yes	15-19
BT	Botswana	1988	Data Restricted	No	
BF	Burkina Faso	2010	Yes	Yes	15-19
BU	Burundi	2016-17	Yes	Yes	15-19
CV	Cabo Verde	2005	Not distributed	No	
CM	Cameroon	2018	Yes	Yes	15-19
CF	Central African Republic	1994-95	Yes	Yes	15-19
TD	Chad	2014-15	Yes	Yes	15-19
KM	Comoros	2012	Yes	Yes	15-19
CD	Congo, Dem. Rep.	2013-14	Yes	Yes	15-19
CG	Congo, Rep	2011-12	Yes	Yes	15-19
CI	Côte d'Ivoire	2011-12	Yes	Yes	15-19
EK	Equatorial Guinea	2011	Not in Public Domain	No	
ER	Eritrea	2002	Data Restricted	No	
SZ	Eswatini	2006-07	Yes	Yes	15-19
ET	Ethiopia	2016	Yes	Yes	15-19
GA	Gabon	2012	Yes	Yes	15-19
GM	Gambia	2019-20	Yes	Yes	15-19
GH	Ghana	2014	Yes	Yes	15-19
GN	Guinea	2018	Yes	Yes	15-19

-	Guinea-Bissau	No DHS	-		
KE	Kenya	2014	Yes	Yes	15-19
LS	Lesotho	2014	Yes	Yes	15-19
LB	Liberia	2019-20	Yes	Yes	15-19
MD	Madagascar	2008-09	Yes	Yes	15-19
MW	Malawi	2015-16	Yes	Yes	15-19
ML	Mali	2018	Yes	Yes	15-19
MR	Mauritania	2018-19	On- Going	Could Not download	
-	Mauritius	No DHS	-		
MZ	Mozambique	2018	Yes	Yes	15-19
NM	Namibia	2013	Yes	Yes	15-19
NI	Niger	2012	Yes	Yes	15-19
NG	Nigeria	2018	Yes	Yes	15-19
RW	Rwanda	2019-20	Yes	Yes	15-19
ST	São Tomé and Principe	2008-09	Yes	Yes	15-19
SN	Senegal	2019	Yes	Yes	15-19
-	Seychelles	No DHS	-		
SL	Sierra Leone	2019	Yes	Yes	15-19
-	Somalia	No DHS	-		
ZA	South Africa	2016	Yes	Yes	15-19
-	South Sudan	No DHS	-		
SD	Sudan	1989-90	Yes	Yes	15-19
TZ	Tanzania	2015-16	Yes	Yes	15-19
TG	Togo	2013-14	Yes	Yes	15-19
UG	Uganda	2016	Yes	Yes	15-19
ZM	Zambia	2018	Yes	Yes	15-19
ZW	Zimbabwe	2015	Yes	Yes	15-19

Chapter 1 : WOMEN'S PUBLIC GOOD PREFERENCES IN AFRICA: DO GENDER NORMS MATTER? [11]

Abstract

A substantial literature has examined the determinants of gender differences in political attitudes and many existing works have found a gender gap in men's and women's public good preferences. However, few studies attempt to explain this gap. Using Afrobarometer data for 36 African countries, I aim to investigate whether the preferences of men and women in Africa differ, and if so, to explore the source of the observed gender differences. The choice of Africa is meaningful as very few works on gender preferences have been done in this region where tradition regarding the role of men and women in society persists. The results show that traditional gender norms play a significant role in explaining differences in gender preferences. Women in Africa systematically report a preference for additional public spending on social issues (education, healthcare) and less preference for investment in infrastructure, regardless of their level of empowerment or the prevailing gender role norms. However, in countries where gender norms are less favorable to women, women report higher preferences for spending on agriculture, closing the gender gap with men.

Keywords: gender gap, social norms, tradition, policy priorities,

JEL: H41, J16, O15, O55,

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1. Introduction

Differences in values and political behavior between men and women have long been subjects of research in Western societies and in India, but few studies have been done on Africa. A well-established literature supports the notion that women's preferences and choices tend to differ automatically from those of men. Women are more likely to request government spending on social issues, such as health, child support, social protection, etc. (Abrams and Settle, 1999; Lott and Kenny, 1999; Besley and Case, 2000; Toke and Dallal, 2008; Funk and Gathmann, 2010). However, there is little in the academic literature that investigates these gender differences in policy preferences. Are women more socially oriented because of innate factors or rather because of their environment or level of empowerment Potential candidates to explain this gender gap include the greater risk aversion of women (Jianakoplos and Bernasek, 1998; Byrnes et al., 1999), implying a stronger desire for security, and women's lower expected incomes, which lead to redistributive support. In a sample of African countries, Gottlieb et al. (2018) show that the gender gap in policy preferences is smaller when women are less vulnerable and participate more in the labor market. Conversely, in a multi-country study, Cavalcanti and Tavares (2011) argue that the rise in female labor participation leads women to demand additional government spending in social services (education, healthcare, care for the elderly). In this paper, I hypothesize that gender norms and the global view of gender roles in society might be a mechanism that explains gender differences in public good preferences in Africa. The weight of social norms and traditions is particularly strong in Africa. Gender roles in the family or community may be considered as key factors contributing to a gender gap in several dimensions observed in Africa. The objective of the paper is to provide some empirical evidence on the interaction between socially constructed gender roles in Africa and the gender gap in public good preferences.

Gender norms are interpreted as social and cultural constructions of the ways women and men are expected to behave. They influence the living conditions of men and women and determine their position in society and their access to both material resources, such as credit, land, training, etc., and immaterial resources, such as power. The implications of gender norms in everyday life are multiple and impact education levels, opportunities for professional advancement, the distribution of domestic and extra-domestic work and family responsibilities, access to power structures and the capacity for negotiation and decision-making, etc. Gender norms governing the

definition of appropriate behavior of women and men are closely linked to socially constructed concepts of family altruism and self-interest. The academic literature has shown that women are more likely than men to endorse policies that support the provision of social services for disadvantaged groups (Goertzel,1983; Shapiro & Mahajan, 1986; Schlesinger & Heldman, 2001), in particular childcare, educational opportunity and access to housing and welfare. Some studies (Goertzel, 1983; Sapiro, 2003; T. W. Smith, 1984) have found that women are also more hostile to violence, in particular, warfare, the death penalty and domestic violence and tend to advocate protections from violence, such as gun control (Goertzel, 1983; Sapiro, 2003; T. W. Smith, 1984). Moreover, Swim, Aiken, Hall, and Hunter (1995) and Twenge (1997a) noted that women are more favorable than men toward equal rights for women and also for gays and lesbians (Herek, 2002; Kite & Whitley, 1996). As suggested by Oliver & Hyde (1993) and Seltzer et al. (1997), women also condemn more severely than men behaviors traditionally considered immoral, for example, casual sex and pornography.

To my knowledge, there are very few studies that investigate women's political behavior in Africa, either to understand differences of attitude between men and women in terms of political priorities or the impact of the gender gap in the development process. Africa is currently undergoing rapid change. Societies and the role that women play within them are also changing. Today in Africa, women have greater freedom of behavior and expression in their families and in society. This trend is reflected in particular by the increase in the average age of marriage, better social and legal recognition of the various forms of unions, a drop in the birth rate, women being better able to choose whether and how many children they want to have, and an overall increase in women's economic independence, all of which are both causes and consequences of large-scale demographic, normative and ideological changes and increased access to education and employment of women and girls, as well as of legal reforms, sometimes inspired by women's activism. These changes have shifted the balance of power within households and have strengthened women's economic security and their weight in decision-making. All these factors make the issue of how gender norms affect gender differences in public good priorities an important research question.

To answer this question, I use data from the last round of the Afrobarometer surveys conducted between 2014 and 2016 in 36 African countries. Using multilevel models to consider

gender norms at the country level and to account for the correlation of preferences within a given country, I find that preferences in public goods are indeed very gendered. On average, men and women with the same characteristics have different preferences; women prefer additional public investment in education and health while men prefer investment in infrastructure and agriculture. To capture gender norms, I construct a measure of the perception of gender roles through a question in the survey on the opinion of women leadership. I also use as robustness tests the Social Institutions and Gender Index (SIGI), developed by the Organisation for Economic Co-operation and Development (OECD), as an alternative measure of gender norms. My results suggest that gender norms in Africa play a role only in preferences for agriculture and do not affect gender preferences in education, healthcare or infrastructure. More women living in countries with a traditional view of gender roles request additional investment in agriculture. This finding is driven by respondents in rural areas and is consistent with mechanisms related to the feminization of agriculture and women farmers' limited access to productive resources, both of which are prevalent in more conservative countries.

The paper is organized as follows: Section 2 provides a literature review, Section 3 presents the data and some descriptive statistics, Section 4 describes the empirical strategy, Section 5 reports and discusses the results, Section 6 provides a brief discussion on some mechanisms explaining the results and Section 7 concludes.

2. Related literature

Differences in values and political behavior between men and women have long been subjects of study in Western societies. Several economic studies on gender preferences show that women are more concerned about social policy issues (Funk and Garthmann, 2006, 2010, 2007; Oskarson and Wängnerud, 2013). In their respective studies, Lott and Kenny (1999), Abrams and Settle (1999) and Toke and Dallal (2008) also show that women have a preference for social spending relative to other types of public spending. The literature on women's representativeness/representation has examined the impact of the gender composition of the electorate by using the introduction of suffrage as an exogenous change in the composition of the constituency. These studies have shown an effect of a strong representation of women on public spending choices. For example, Besley and Case (2003) use US state panel data and show that an increase in women's representation in

decision-making improves homemaker spending and reinforces the child support benefit. In the same vein, a study conducted on Sweden by Esaiasson and Holmberg (1993) find that women parliamentarians are significantly more receptive than men to family and environmental laws. Funk and Gathmann (2010) show that the policies of female leaders in Switzerland affect the composition of public expenditure by increasing spending on health and social protection. Svaleryd (2007) shows from survey data in Sweden that women have a greater preference than men for public social spending. Thus, the demand for public social spending tends to increase when women's level of representation in parliament increases. Women's suffrage in the United States has led policymakers to focus on juvenile and maternal health and has helped reduce child mortality (Miller 2008).

A large part of the literature has confirmed the role of women in politics, especially on bills/legislation in the United States. From an empirical analysis, Thomas (1991) shows that states with higher female representation tend to introduce and pass bills/legislation dealing primarily with women, children and families. In a study based on 12 states, Thomas and Welch (1991) also find that, compared to men, women attach more importance to legislation concerning their status, family issues and children. Besley and Case (2000) show that policies on workers' compensation and child support are more likely to be introduced in states with high rates of women in parliament.

Literature in developing countries

Further studies of the effect of women's representation in decision-making on policy choices have been conducted in developing countries, such as India. Clots-Figueras (2008a, 2008b) finds that female elected representatives have a completely different influence on political decisions and public spending from that of their male counterparts. Indeed, he shows that women invest more than men in children's education and healthcare. In addition, female elected representatives who occupy the seats reserved for castes and disadvantaged tribes invest more in health and education. Chattopadhyay and Duflo (2004) also study the importance of women's political representation on local public spending choices in a province of India. They use political seats reserved for women in India to study the impact of women's leadership on political decisions and show that the occupation of a council seat affects the types of public goods provided. More specifically, female leaders will invest more in goods linked to their own concerns, such as access to safe drinking

water, maternity and health. Iyer et al. (2011) find that an increase in the representation of women in local government significantly reduces crimes against women in India, thus promoting access to justice for women.

Causes of gender differences

A complementary literature has sought to test and understand the causes of these differences in gender preferences. Edlund and Pande (2002) and Edlund, Pande and Haider (2005) focus on the role of marriage models in explaining why women demand more social goods than men. For several years, the number of marriages has been declining. This decline is due both to the increase in the number of divorces and to the increasing practice of other types of unions including pacs (civil solidarity pact) and concubinage. These arrangements have enriched men, while women have become poorer and confronted with greater economic uncertainty. Economic theory implies that this leads to greater income redistribution and more family-based social spending, which may explain changes in public spending. Edlund and Pande (2002) find that after divorce, women become more socially oriented. On the other hand, Cavalcanti and Tavares (2011) explain the increase of social expenses by the opening of the labor market to women. In fact, greater participation of women in the labor market increases their demand for public goods that can reduce the burden of housework, for example, childcare. The data seem to corroborate both hypotheses in a sample of countries as well as at the individual level. All these results show that the socio-economic environment in which women live can affect the gap between their political preferences and those of men. Gottlieb and al. (2018) find that the absence of women in the labor market and their social vulnerability are the main causes of the differences in preferences between men and women.

3. Data and descriptive statistics

- **The Afrobarometer surveys**

To carry out my empirical analysis, I use data from Round 6 of the Afrobarometer survey, which was conducted in 36 African countries between 2014 and 2016. In total 53,935 individuals were interviewed in the following countries: Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Cote d'Ivoire, Egypt, Gabon, Ghana, Guinea, Kenya, Lesotho, Liberia,

Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, São Tomé and Príncipe, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe. Face-to-face interviews were conducted in the local language. Samples are randomly drawn to be nationally representative and stratified by gender to ensure a well-balanced sample by gender.

- **Dependent variable: Priority for investment**

The main dependent variable is the respondent's priority for government investment. To build this variable, I use question Q65A of the survey, which is: "If the government of this country could increase its spending, which of the following areas do you think should be the top priority for additional investment?" Each respondent was asked to give one of the following seven responses: 1= Education, 2=Infrastructure, such as roads and bridges 3= Security, such as the police and military, 4=Healthcare, 5=Agricultural development, 6=Energy supply, 0=None of the above. In this paper, I keep the four most reported priorities, which are education, healthcare, infrastructure and agriculture. The other policy areas appear in very low proportions in the data. Table 1 presents the distribution of respondents' public good priorities as a function of their gender. For each of the four public goods, the priority variable is equal to 1 if the respondent has selected the given public good as the top priority for additional investment and 0 otherwise. Education and healthcare are by far the most requested public goods. 36.7% of respondents prefer that the state invests more in education and 20.8% favor more investment in healthcare. Infrastructure and agriculture are less popular than education and healthcare but a significant share of the respondents ranked them as a top priority (14.0% and 12.9%, respectively).

In regard to the distribution of public good preferences by gender, a striking point is that all the differences are strongly significant at the 1% level, suggesting that men and women do not rank public priorities in the same way. Women more often request investment in education and health: 1.4% more women request investment in education and 2.7% more women request investment in healthcare than do men. Conversely, 1.6% more men request investment in infrastructure than and 1.9% more men request investment in agriculture than do women.

Table 1-1 : Top priority for additional investment, by gender

	Total (%)	Female (%)	Male (%)	Difference (%): Female - Male
Education	36.7	37.4	36.0	1.4***
Healthcare	20.8	22.2	19.5	2.7***
Infrastructure	14.0	13.2	14.8	-1.6***
Agriculture	12.9	11 .9	13.8	-1.9***

* p<0.1, ** p<0.05, *** p<0.01

As robustness checks, I consider the top two investment priorities as dependent variables rather than only the first priority. This allows me to account for a broader pattern of respondents' viewpoints. I use question Q65A, which refers to the first priority, and question Q65B, which refers to the second priority. In this case, the dependent variable takes 1 if the respondent has selected the given public good as their first or second priority and 0 otherwise. Table 2 shows the distribution of public good preferences, across gender, according to this second indicator. The general pattern is close to what we observe in Table 1. Women more often request spending in education and health and less often spending in infrastructure and agriculture. Furthermore, the differences between men and women shown in Table 2 are greater than those shown in Table 1.

Table 1-2: Top priority for additional investment, by gender – First and second priorities

	Total (%)	Female (%)	Male (%)	Difference (%): Female - Male
Education	54.7	55.8	53.5	2.3***
Healthcare	50.2	52.4	48.0	4.4***
Infrastructure	27.2	25.6	28.9	-3.3***
Agriculture	28.9	27.3	30.5	-3.2***

* p<0.1, ** p<0.05, *** p<0.01

- **Explanatory variables**

The key explanatory variable is gender. In the sample, 49.7% are men and 50.3% are women. The choice of the additional explanatory variables is based on the previous literature in this field. As standard independent variables, I include age, education, residence area, employment status and income.

Education is divided into four categories: "no formal education", which includes 19.0% of the people, "primary" (28.9%), "secondary" (42.1%) and "university", which represents the lowest proportion (9.8%) of the sample. Employment status has four categories: employed full-time (27.0%), employed part-time (11.9%) unemployed (37.5%) and seeking employment (23.2%). I expect education and access to employment to significantly reduce the gender gap in public good preferences because educated and empowered women have a greater interest in policies such as infrastructure investment compared to women whose livelihoods primarily depend on their spouse or extended family (Gottlieb et al. 2018). To look at whether the public good preferences are associated with the respondent's personal experience/background, I group individuals into the following four age categories: 25 or below, 26-35, 36-50 and over 50 years old. Regarding the place of residence, I distinguish people living in rural areas (57.9%) versus urban areas (42.1%). I build an income index using a multiple correspondence analysis (MCA) with variables reflecting the wealth of the respondent's household, such as ownership of certain goods (radio, TV, car, mobile phone), the source of water, the location of toilet, and the type of shelter. I also use a variable indicating the respondent's perception of his/her living conditions compared to other people in the country. 35.1% believe that their living conditions are worse and 30.3% believe they are better off than others.

A special emphasis is put on the opinions regarding the role of women in the society. This variable is measured with question Q18 of the Afrobarometer survey. In this question, the respondent is asked to choose the statement which is closest to his/her view between:

i. "Men make better political leaders than women and should be elected rather than women"
ii. "Women should have the same chance of being elected to political office as men"

In this paper, I use the response to this question to create a variable indicating a positive perception of women's role. It takes 1 for the second statement and 0 for the first statement. 66.3% of the sample believe that women should have the same chance to be elected as men while 31.2% believe that men make better political leaders. Women are more likely to have a positive view of their role. 74.6% of women believe that women can be as good as men while this proportion is only 61.3% for men. The difference of mean is significant at the 1% level. The difference between men and women in this gender opinion is even greater than the difference between those of residents of urban and rural areas. This evidence demonstrates the significance of the gender gap. Unsurprisingly, people in urban areas have a more modern view of gender roles compared to people

in rural areas. 70.9% of people living in urban areas have a positive opinion of women leadership compared to 65.9% in rural areas.

The proportion of people with a positive opinion of female leadership is very heterogeneous among the 36 countries of the study sample (Table 3). On average, 67.7% of the respondents have a positive opinion on women leadership in a given country. Countries such as Algeria, Sudan, Egypt and Niger have the lowest proportion of individuals with a positive opinion of female leadership. Cabo Verde has the highest proportion (92.7%).

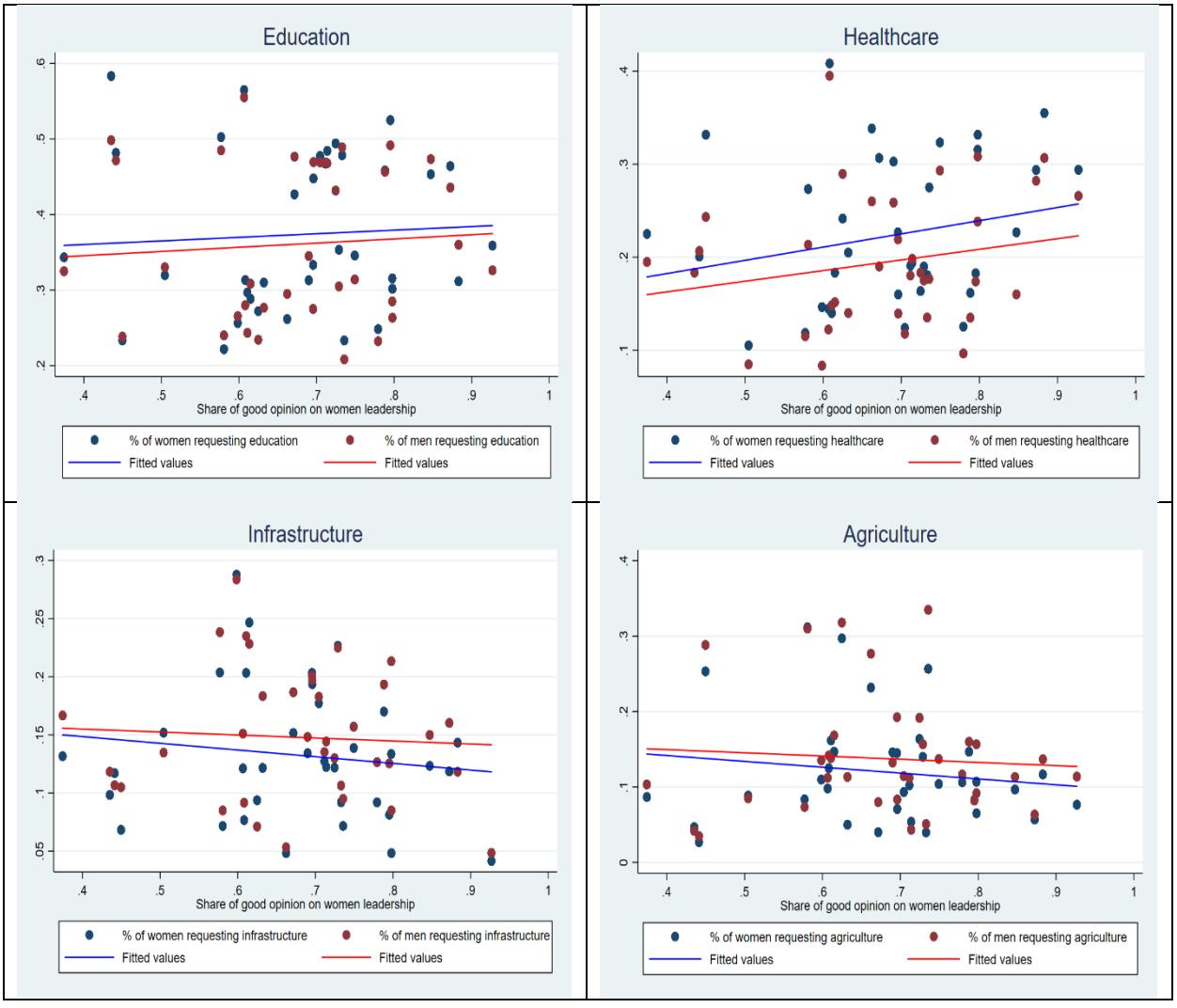
Table 1-3: Proportion of individuals with a positive opinion of women leadership, by country

Country	**Proportion of respondents with a positive opinion of women leadership (%)**	**Country**	**Proportion of respondents with a positive opinion of women leadership (%)**
Algeria	37.4	Cameroon	69.6
Sudan	43.5	Ghana	70.5
Egypt	44.1	Sao Tome and Principe	71.2
Niger	45.0	Mozambique	71.4
Nigeria	50.5	Zambia	72.5
Liberia	57.7	Benin	72.9
Mali	58.1	South Africa	73.3
Lesotho	59.9	Burundi	73.6
Sierra Leone	60.7	Uganda	74.9
Burkina Faso	60.8	Kenya	77.9
Madagascar	61.1	Swaziland	78.8
Guinea	61.5	Namibia	79.5
Malawi	62.5	Cote d'Ivoire	79.8
Tunisia	63.2	Mauritius	79.8
Senegal	66.2	Botswana	84.7
Morocco	67.2	Gabon	87.3
Tanzania	69.0	Togo	88.3
Zimbabwe	69.6	Cape Verde	92.7

Figure 1 shows how the perception of women leadership in the country shifts the gender gap in policy preferences. With the exception of education, gender norms in a country appear to be

correlated with the gender gap in policy preferences. For the preferences for healthcare, infrastructure and agriculture, the gender gap increases when the share of positive opinions of women leadership is high. This descriptive evidence suggests that the preferences of women are more distant than that of men in countries with progressive gender norms, i.e., gender norms favorable to women. Education is the only policy domain in which the gender gap does not appear to be related to the level of gender norms in the country.

Figure 1-1: Gender gap in policy preferences according to gender norms



4. Empirical strategy

To measure the impact of gender on the four investment priorities, I follow recent developments in the literature and use a multilevel model. Given the research question and the data used in this paper, a multilevel model has several advantages over a classical regression model. First, the data are collected with a multilevel structure. Surveys are done separately for each country and sometimes in different years. A multilevel model is a natural way to account for this data structure. Second, a multilevel model offers a convenient way to account for the correlation of individuals within the same country. Finally, the multilevel level model provides a coherent framework to include variables in different levels (typically individual and country level variables).

The basic equation estimated in this paper is written as follows:

$$y_{ij} = \alpha_{0j} + \beta_1 female_{ij} + \beta_2 X_{ij} + \varepsilon_{ij}$$

$$\alpha_{0j} = \beta_0 + u_j \qquad (1)$$

Index i denotes the individual and j the country.

y_{ij} is a binary variable indicating whether a given public good is reported among the top priorities for additional government spending. Recall that four public goods are studied in this paper: education, healthcare, infrastructure and agriculture. I aim to measure the impact of gender for each priority for government spending; therefore, four different equations are estimated. For instance, for the regression on education, y_{ij} takes the value 1 if for respondent i in country j, education is a priority for government spending and 0 otherwise.

$female_{ij}$ is the main variable of interest and is equal to 1 for female respondents and 0 for male respondents.

X_{ij} is a set of individual characteristics including the respondent's age, residence area (urban vs rural), employment status, education level, wealth index and perception of living conditions compared to other people's in the country.

ε_{ij} is an error term at the individual level.

α_{0j} is a term reflecting the hierarchical feature of the model. It denotes the fact that each country j has its own intercept. α_{0j} can be broken down into a simple intercept β_0 and a country-varying

intercept u_j. u_j is a random effect and is assumed to be independent of the individual error term ε_{ij}.

Since the dependent variable is binary, a multilevel logistic regression is used to estimate the impact of gender on priorities for public spending. The coefficient β_1 indicates how likely women answer that a given policy area should be the top priority for government spending. β_1 positive indicates that women request more additional investment in a given area than men and β_1 negative denotes that women prefer less additional investment in that area.

A second step of this study is to highlight which factors explain the potential difference in preferences between men and women. Particular interest is given to the opinion on gender roles in the society. The question of interest is how the impact of gender on political preferences depends on the country's attachment to conservative views on gender roles. The main variable used to capture this aspect is the opinion of people in a given country on whether women can be as good political leaders as men. To measure the impact of this variable on the difference in political preferences between men and women, an interaction term is introduced in equation (1):

$$y_{ij} = \beta_0 + u_j + \beta_1 female_{ij} + \beta_2 X_{ij} + \beta_3 women\_leader_j + \beta_4 female_{ij} * women\_leader_j + \varepsilon_{ij} \quad (2)$$

The variable $women\_leader_j$ is measured as the proportion of individuals in the country j who choose the following statement: "Women should have the same chance of being elected to political office as men" rather than "Men make better political leaders than women, and should be elected rather than women".

The coefficient β_1 captures the direct effect of gender on political preferences; β_3 is positive if a favorable opinion on women leadership which reflects a sense of a modern or progressive view is associated with a high likelihood to report that the given policy domain is a top priority. β_4 indicates how the impact of gender on political preferences depends on living in a country with modern or archaic views about the role of women in the society. Typically, the same signs for β_1 and β_4 imply that in modern (or less conservative) societies, women are more distant from men in term of preferences. Conversely, opposite signs for β_1 and β_4 suggest that in modern societies, women are more likely to have the same preferences as men.

5. Results

In the following subsection, I present the impact of gender on public good preferences with some heterogeneity analysis. In the second subsection, I introduce the analysis on the role of gender and document how it may affect the basic impact of gender estimated in the first subsection. Some robustness checks are then presented in subsections 5.3 and 5.4.

5.1. Impact of gender on public good preferences

The first set of results is reported in Table 4 and confirms the findings in the descriptive statistics. With all control variables included, significantly more women request additional spending in education and health. These public goods are often referred to as social goods. On the other hand, more men request additional investment in infrastructure and agriculture. All these effects are significant at the 1% level. This pattern of results is usually found in the literature (Gilligan, 1982; Hutchings et al., 2004). Women are depicted as caring more for others and of exhibiting a general disposition to protect the vulnerable. This would be due to the gendered norm of the society which spurs women to develop these traits throughout their education process and refers to the ethics of care theory. This result is illustrated in Figure 2, which represents the marginal effects of the probability of women to choose a particular policy domain over men as a priority for additional investment.

Regarding the control variables, a clear pattern appears in the relationship between age and policy priorities. Young people request more spending in education while individuals over 25 request more spending in healthcare and agriculture. People living in urban areas request more spending in education and healthcare while those in rural area are more concerned about infrastructure and agriculture. Compared to individuals who are inactive in the labor market, unemployed individuals and those employed in part-time jobs are less likely to request additional spending in education. The unemployed population requests more investment in healthcare and those in part-time jobs are more concerned about agriculture. A respondent's education level is strongly related to their policy priorities. More educated people (primary level or higher) are more likely to mention education as their top priority and less likely to mention agriculture. People who have a good perception of their living conditions compared to others request more spending in education and less in healthcare and agriculture. The income index follows a similar pattern; it is positively associated to the preference in education and negatively associated to the preference in infrastructure and agriculture.

Table 1-4: Gender differences in public good preferences

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Female	0.0684***	0.178***	-0.138***	-0.194***
	(0.0255)	(0.0342)	(0.0341)	(0.0336)
Age (reference=25 or below)				
26 - 35	-0.134***	0.0961***	0.0246	0.135***
	(0.0283)	(0.0343)	(0.0387)	(0.0496)
36 - 50	-0.163***	0.123***	0.0536	0.202***
	(0.0329)	(0.0360)	(0.0409)	(0.0449)
Above 50	-0.346***	0.202***	0.115*	0.293***
	(0.0546)	(0.0481)	(0.0636)	(0.0570)
Residence Area (reference=Rural)				
Urban	0.0969***	0.143***	-0.295***	-0.324***
	(0.0337)	(0.0357)	(0.0518)	(0.0609)
Occupation status (reference=Inactive)				
Unemployed	-0.0680**	0.0532	0.0121	0.0354
	(0.0329)	(0.0488)	(0.0538)	(0.0448)
Part-time job	-0.139***	0.0533	0.0765	0.0915
	(0.0468)	(0.0582)	(0.0506)	(0.0661)
Full-time job	-0.149**	0.0328	0.0562	0.0806
	(0.0719)	(0.0493)	(0.0591)	(0.0881)
Education (reference=No formal education				
Primary	0.172***	-0.0723*	0.0575	-0.109*
	(0.0607)	(0.0409)	(0.0580)	(0.0638)
Secondary	0.396***	-0.138**	-0.0499	-0.316***
	(0.0667)	(0.0546)	(0.0665)	(0.0696)
University	0.537***	-0.296***	-0.0230	-0.369***
	(0.0976)	(0.0748)	(0.0990)	(0.0926)
Living conditions compared to others (reference=Worse)				
Same	0.0186	-0.0727***	0.0438	-0.0134
	(0.0309)	(0.0265)	(0.0372)	(0.0489)

Table - continued

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Better	0.0564*	-0.117***	0.0511*	-0.0722
	(0.0336)	(0.0375)	(0.0291)	(0.0457)
Income index	0.310	0.308*	-0.563***	-0.881***
	(0.189)	(0.168)	(0.202)	(0.183)
Constant	-0.856***	-1.633***	-1.536***	-1.398***
	(0.129)	(0.117)	(0.147)	(0.155)
No. of observations	53935	53935	53935	53935
No. of countries	36	36	36	36

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Gender differences in public good preferences may be due to the relative vulnerability of women, causing them to desire more investment in social goods, such as education and healthcare. Therefore, empowered women who are well educated with good jobs may not be different from men in terms of public good preferences (Gottlieb et al., 2018). This thesis is explored with estimations presented in Tables 5 and 6 which display the impact of gender by education level and employment status. Clearly, the results do not support the thesis of a narrowing gap when women are empowered. In Table 5, the sample is divided into three groups according to the level of education: no education, primary education and secondary or higher. The gender gaps in public good preferences are nearly the same among the three groups. For education and healthcare, the point estimate of being female is significant (at least at the 10% level) in all three education groups and the magnitudes of the effect are very close in the three subsamples. Interestingly, the effect of gender on policy preferences is never linear across the education level. For education, the marginal effect is higher for the primary education group (4.2%) and lower for the secondary and higher education groups (2.3%). For health, the marginal effect is higher for the no formal education group and lower for the primary education group. The gender gap is not significant either in the lower education group's preference for infrastructure or in the middle education group's preference for agriculture. Also, there is no clear pattern indicating that the gender gap decreases (or increases) with the education level. Results on the gender gap according to employment status: inactive, unemployed and employed (Table 6), are in line with the previous results by education level. For the preference for education investment, the gender gap appears to be higher among employed

individuals, which is not consistent with a narrowing gender gap when women become less vulnerable. For the other policy domains, there is no evidence of a change in the gender gap according to employment status.

These results suggest that education and employment status – which are indicators of empowerment – do not explain gender differences in public good preferences. Women ask for more additional spending in education and health and less in infrastructure and agriculture regardless of their level of education and employment status.

Figure 1-2: Marginal effects of being female on public good preferences

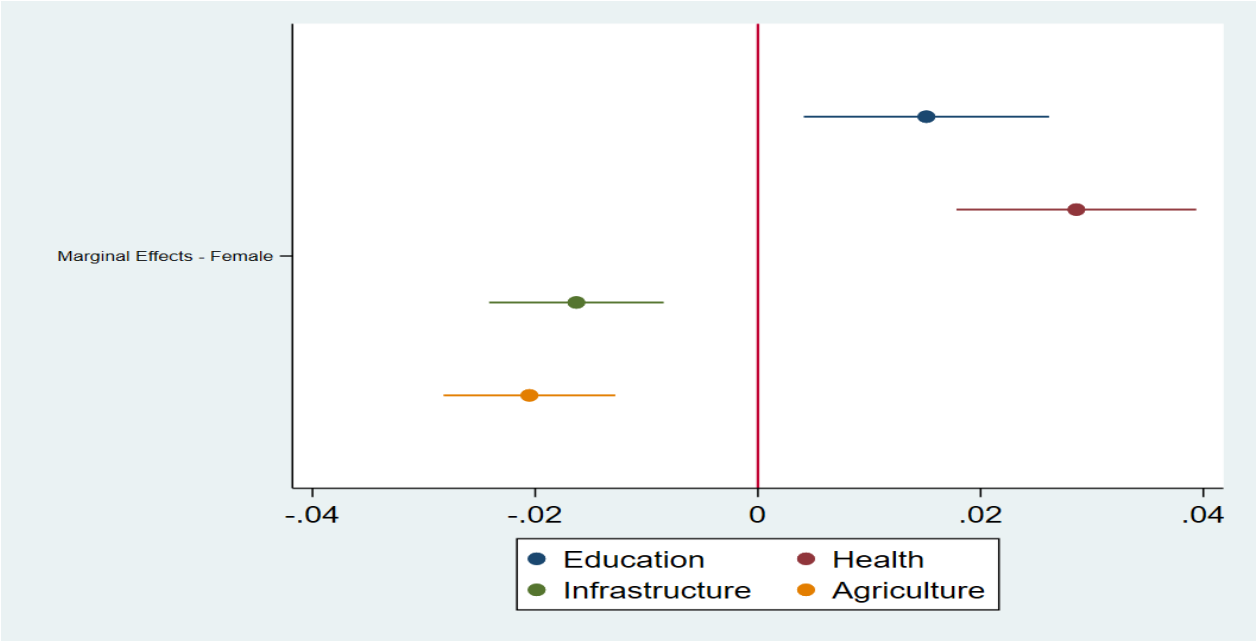


*Table 1-5: Gender differences in public good preferences, by education level**

Preferences for education investment

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	0.0677*	0.0917*	0.0748**
	(0.0374)	(0.0497)	(0.0381)
No. of observations	10223	15574	27983
No. of countries	36	36	36

Preferences for healthcare investment

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	0.211***	0.164***	0.171***
	(0.0523)	(0.0574)	(0.0368)
No. of observations	10223	15574	27983
No. of countries	36	36	36

Preferences for infrastructure investment

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	-0.0220	-0.250***	-0.123**
	(0.0645)	(0.0481)	(0.0488)
No. of observations	10223	15574	27983
No. of countries	36	36	36

Preferences for agriculture investment

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	-0.184***	-0.0896	-0.302***
	(0.0330)	(0.0640)	(0.0469)
No. of observations	10223	15574	27983
No. of countries	36	36	36

* All the control variables shown in Table 4 are included

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

*Table 1-6: Gender differences in public good preferences, by occupation**

Preferences for education

	(1) Inactive	(2) Unemployed	(3) Employed
Female	0.0363	0.0480	0.116***
	(0.0333)	(0.0432)	(0.0438)
No. of observations	20221	12503	20967
No. of countries	36	36	36

Preferences for health

	(1) Inactive	(2) Unemployed	(3) Employed
Female	0.201***	0.228***	0.114***
	(0.0476)	(0.0624)	(0.0415)
No. of observations	20221	12503	20967
No. of countries	36	36	36

Preferences for infrastructure

	(1) Inactive	(2) Unemployed	(3) Employed
Female	-0.138**	-0.0526	-0.173***
	(0.0539)	(0.0532)	(0.0543)
No. of observations	20221	12503	20967
No. of countries	36	36	36

Preferences for agriculture

	(1) Inactive	(2) Unemployed	(3) Employed
Female	-0.164***	-0.315***	-0.153**
	(0.0379)	(0.0623)	(0.0720)
No. of observations	20221	12503	20967
No. of countries	36	36	36

* All the control variables shown in Table 4 are included

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

5.2. Opinion on women leadership

In this subsection, I further investigate which factors make women more socially oriented than men. As seen previously, women's empowerment fails to explain the gender gap in public policy preferences. The results presented above imply that women, regardless of their empowerment (measured by education level and employment status), prefer social goods (education and healthcare) over public goods related to infrastructure or agriculture. I test another potential explanation of why women are more socially focused than men. Gender norms in the society could be a key factor in explaining gender differences. In fact, women may prefer social goods because the education they've received and the ideas/perspectives that have shaped their ideals and principles make them more interested in social affairs. I test this hypothesis using a variable measuring the perception of whether women could be good leaders and should be elected to political office. This variable is introduced in the empirical model to assess how it might shift the gender gap in public good preferences.[12]

Results are presented in Table 7. The share of individuals in the countries in which a majority of respondents agree that women can be good leaders has no impact on one's individual preferences for public goods.[13]

The results for the interaction term between gender and view of women's role suggest that women in more progressive countries – those in which a favorable view of women leadership is prevalent/high – are not different from other women in terms of preferences for education, health and infrastructure spending. However, for agriculture, the interaction term is negative and significant at the 5 percent level. Therefore, women living in countries with a positive opinion of women leadership are less likely to mention agriculture as a priority for government spending. This suggests that women in conservative countries are more concerned about additional spending in agriculture and have preferences closer to those of men in this particular policy domain. Based on the descriptive evidence presented in Figure 1, we could expect a significant effect of the interaction terms for healthcare and infrastructure. Indeed, Figure 1 shows an increasing gender

[12] This variable is centered in the regression equation so that the main effect of gender measures the impact of being female when the share of positive opinion on women leadership is equal to its mean.
[13] However, the individual variable indicating whether one individual supports the notion that women can be good leaders is positively related to education and negatively related to infrastructure and agriculture. These results are available upon request.

gap in healthcare and infrastructure (in addition to agriculture) when the gender norms are favorable to women. However, this pattern appears non-significant in the econometric analysis for healthcare and infrastructure. One potential explanation of this closing gap in agriculture between men and women is that women in conservative countries are more likely to maintain a traditional relationship with their husband, and with men in general. This may lead them to conform to the prevalent opinions of men. The closing gender gap in agriculture may also be related to some specific issues on the place of women in the agricultural sector. These issues will be discussed in the next section.

The result on agriculture leads me to investigate the heterogeneity between rural and urban areas as agriculture is much more widely practiced in rural areas. This heterogeneity analysis, shown in Table 8, reveals that the closing gender gap is only observed in rural areas. This result suggests that the closing gender gap in preferences for agriculture is driven by an increasing demand for investment in agriculture from women in rural areas.

Figure 3 displays the marginal effects of being female on public good preferences by the share of a positive opinion on women leadership in one's country. The marginal effect, which measures the difference between the probability of women and men to pick one public good as a top priority, is calculated for each quintile of the share of positive opinions on women leadership. The results are presented in Table 7. For education preferences, the gender gap is completely flat, suggesting that the gender gap in preferences for education is not related to norms on the role of women in society. For healthcare preferences, the gender gap increases when the country has a progressive view of the role of women. However, this increase is not high enough to find a significant difference between the marginal effects for each quintile. A similar result is observed in the preference for infrastructure. The gender gap increases when the country is more progressive on gender norms, but the marginal effects are not significantly different among quintiles. In preferences for agriculture, the increase in the gender gap is sharp; it increases from 1.7% for the 1st quintile of the proportion of people with a positive opinion of women's leadership to 2.8% for the last quintile, a more than one percentage point difference. Moreover, the gender gap is significantly different from one quintile to another at the 5% level.

Table 1-7: Gender differences in public good preferences - Impact of the opinion about women leadership

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Female	0.0683***	0.178***	-0.139***	-0.196***
	(0.0256)	(0.0347)	(0.0321)	(0.0328)
Positive opinion of women leadership	0.0058	0.758	-0.194	0.519
	(0.467)	(0.542)	(0.616)	(0.756)
Female * Positive opinion of women leadership	0.0146	0.0608	-0.375	-0.502**
	(0.184)	(0.228)	(0.327)	(0.199)
Age (reference=25 or below)				
26 - 35	-0.134***	0.0962***	0.0243	0.136***
	(0.0283)	(0.0343)	(0.0389)	(0.0494)
36 - 50	-0.163***	0.124***	0.0526	0.202***
	(0.0329)	(0.0362)	(0.0409)	(0.0448)
Above 50	-0.346***	0.201***	0.116*	0.295***
	(0.0547)	(0.0480)	(0.0639)	(0.0567)
Residence area (reference=Rural)				
Urban	0.0969***	0.142***	-0.294***	-0.325***
	(0.0337)	(0.0357)	(0.0519)	(0.0610)
Occupation status (reference=Inactive)				
Unemployed	-0.0681**	0.0521	0.0140	0.0377
	(0.0328)	(0.0485)	(0.0538)	(0.0450)
Part-time job	-0.139***	0.0525	0.0798	0.0949
	(0.0470)	(0.0581)	(0.0510)	(0.0661)
Full-time job	-0.149**	0.0316	0.0598	0.0836
	(0.0722)	(0.0489)	(0.0603)	(0.0879)
Education (reference=No formal education)				
Primary	0.172***	-0.0739*	0.0585	-0.110*
	(0.0607)	(0.0408)	(0.0582)	(0.0636)

Table (continued)

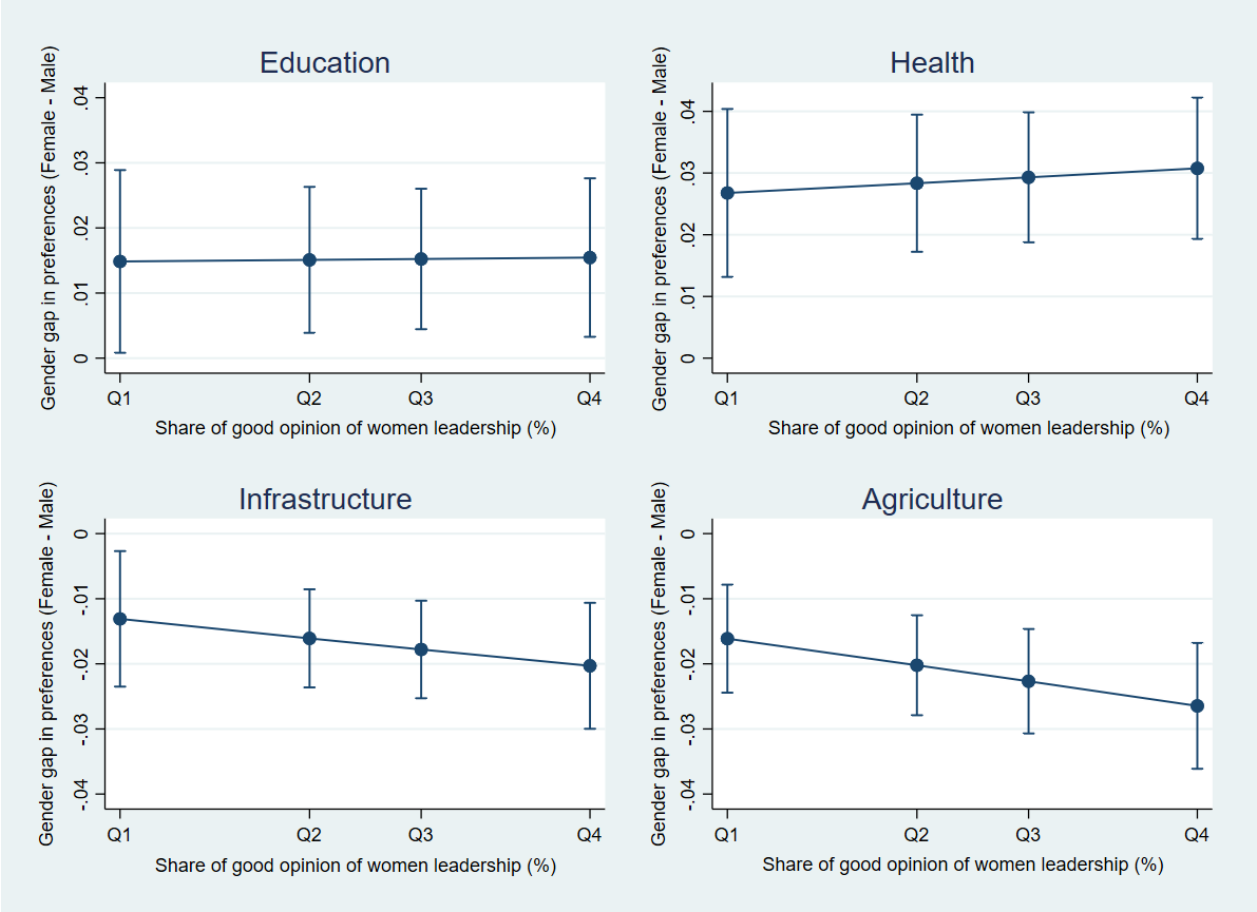
	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Secondary	0.396***	-0.140**	-0.0494	-0.318***
	(0.0666)	(0.0551)	(0.0666)	(0.0695)
University	0.536***	-0.297***	-0.0234	-0.370***
	(0.0975)	(0.0753)	(0.0991)	(0.0930)
Living conditions compared to others (reference=Worse)				
Same	0.0186	-0.0725***	0.0431	-0.0141
	(0.0309)	(0.0265)	(0.0373)	(0.0488)
Better	0.0564*	-0.117***	0.0507*	-0.0723
	(0.0336)	(0.0375)	(0.0291)	(0.0455)
Income index	0.310	0.311*	-0.566***	-0.878***
	(0.190)	(0.169)	(0.203)	(0.184)
Constant	-0.856***	-1.630***	-1.536***	-1.399***
	(0.128)	(0.112)	(0.147)	(0.156)
No. of observations	53935	53935	53935	53935
No. of countries	36	36	36	36

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

5.3. Robustness checks

As robustness checks, I include country-level variables in the model to assess how these variables may change the results (Table 9). The macro level variables included are: the proportion of seats held by women in national parliament, the fertility rate, the logarithm of GDP per capita and the unemployment rate by gender. Controlling for these variables does not change the results. The interaction term between gender and the opinion of women's leadership remains negative and significant at the 5 % level for the preference for agriculture; the point estimate is roughly the same. For the other public goods, the interaction term is not significant. Interestingly, the proportion of seats held by women in national parliament is positively associated with preferences for healthcare and negatively associated with preference for infrastructure. This corroborates our result of the main effect of gender and suggests that countries where women are more involved in political life are those in which women prefer more investment in healthcare and less in infrastructure.

*Figure 1-3: The impact of the country's opinion on women leadership on the differences between men and women in public good preferences**



* The y-axis represents the marginal effects of being female on preferences for additional investment in education, healthcare, infrastructure and agriculture. The x-axis displays the quintiles of the share of individuals with a positive opinion of women leadership in the country. These quintiles are respectively equal to 59.8%, 67.2%, 71.4% and 77.9%.

In countries with a high male unemployment rate, people are more likely to choose infrastructure as a top priority and less likely to choose healthcare. Countries with a high female unemployment rate do not consider agriculture as a top priority. The other country-level variables included in the regression (GDP per capita and fertility rate) are not significantly related to any of the four public goods.

*Table 1-8: Gender differences in public good preferences, by residence area - Impact of the view of women leadership**

	Education		Health		Infrastructure		Agriculture	
	(1) Rural	(2) Urban	(3) Rural	(4) Urban	(5) Rural	(6) Urban	(7) Rural	(8) Urban
Female	0.0545*	0.0844***	0.158***	0.198***	-0.125***	-0.153***	-0.149***	-0.314***
	(0.0308)	(0.0272)	(0.0425)	(0.0387)	(0.0351)	(0.0505)	(0.0360)	(0.0529)
Positive opinion of women leadership	0.0657	-0.238	1.005*	0.601	-0.335	-0.203	0.846	0.517
	(0.478)	(0.502)	(0.530)	(0.614)	(0.633)	(0.691)	(0.793)	(0.828)
Female*Positive opinion of women leadership	-0.344	0.365**	0.239	-0.125	0.0416	-0.934**	-0.698**	-0.0052
	(0.270)	(0.166)	(0.326)	(0.254)	(0.389)	(0.415)	(0.294)	(0.303)
No. of observations	31246	22689	31246	22689	31246	22689	31246	22689
No. of countries	36	36	36	36	36	36	36	36

* All the control variables in Table 6 are included

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

I implement another robustness test to check whether the main results are sensitive to a different measure of the dependent variables. The results presented so far only consider the first priority for increased public spending. In this robustness analysis, I consider the first two priorities. For example, a given individual is considered to have a preference for education, if he/she has chosen education as one of his/her top two priorities. Results of this robustness test presented in Table 10 are essentially the same as the main results (Table 7). Women request additional investments in education and health more often and infrastructure and agriculture less often. The norm on gender roles is not related to the gender gap in public good preferences except for those for agriculture. For agriculture, the interaction term is negative and significant at the 1% level, implying that the gender gap in preferences for agriculture is very different according to the level of gender norms in the country. Women request more spending in agriculture in conservative countries compared to progressive countries (countries with a positive opinion of women leadership). Results of this robustness analysis, by education group and employment status, are reported in Appendices 4 and 5. The findings confirm previous results that indicate the gender gap in policy preferences is not related to education level or employment status.

Table 1-9: Gender differences in public good preferences – Controlling for across-country characteristics

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Female	0.0682***	0.178***	-0.139***	-0.195***
	(0.0256)	(0.0347)	(0.0322)	(0.0327)
Positive opinion of women leadership	-0.0866	1.326***	-0.615	0.696
	(0.478)	(0.499)	(0.627)	(0.616)
Female * Positive opinion of women leadership	0.0145	0.0615	-0.375	-0.505**
	(0.184)	(0.228)	(0.327)	(0.199)
Age (reference=25 or below)				
26 - 35	-0.134***	0.0960***	0.0245	0.135***
	(0.0283)	(0.0344)	(0.0389)	(0.0493)
36 - 50	-0.163***	0.124***	0.0527	0.202***
	(0.0329)	(0.0361)	(0.0409)	(0.0449)
above 50	-0.347***	0.202***	0.115*	0.297***
	(0.0548)	(0.0479)	(0.0641)	(0.0570)
Residence area (reference=Rural)				
Urban	0.0971***	0.141***	-0.293***	-0.327***
	(0.0338)	(0.0356)	(0.0518)	(0.0613)
Occupation status (reference=Inactive)				
Unemployed	-0.0688**	0.0530	0.0133	0.0386
	(0.0326)	(0.0482)	(0.0538)	(0.0449)
Part-time job	-0.139***	0.0512	0.0802	0.0947
	(0.0468)	(0.0577)	(0.0512)	(0.0660)
Full-time job	-0.149**	0.0302	0.0600	0.0827
	(0.0721)	(0.0486)	(0.0603)	(0.0877)
Education (reference=No formal education				

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Primary	0.172***	-0.0751*	0.0593	-0.108*
	(0.0606)	(0.0410)	(0.0583)	(0.0634)
Secondary	0.395***	-0.141**	-0.0486	-0.317***
	(0.0667)	(0.0552)	(0.0670)	(0.0695)
University	0.536***	-0.299***	-0.0216	-0.368***
	(0.0974)	(0.0748)	(0.0993)	(0.0932)
Living conditions compared to others (reference=Worse)				
Same	0.0183	-0.0723***	0.0432	-0.0140
	(0.0309)	(0.0267)	(0.0372)	(0.0488)
Better	0.0562*	-0.117***	0.0510*	-0.0733
	(0.0335)	(0.0375)	(0.0289)	(0.0456)
Income index	0.308	0.323*	-0.579***	-0.846***
	(0.190)	(0.169)	(0.205)	(0.185)
Country-level variables				
Percentage of women in parliament	-0.0051	0.0124**	-0.0124*	-0.0023
	(0.0059)	(0.0051)	(0.0071)	(0.0094)
Fertility rate	0.0518	0.0993	-0.132	0.0881
	(0.0854)	(0.0822)	(0.110)	(0.0969)
Log GDP per capita	0.0401	0.0705	-0.0795	0.0031
	(0.140)	(0.141)	(0.137)	(0.168)
Unemployment rate of males/Male unemployment rate	0.0197	-0.0562***	0.0305*	0.0223
	(0.0200)	(0.0207)	(0.0170)	(0.0248)
Unemployment rate of females/Female unemployment rate	0.0029	0.0263	-0.0182	-0.0342*
	(0.0165)	(0.0178)	(0.0134)	(0.0185)
Constant	-1.502	-2.735*	-0.0960	-1.555
	(1.489)	(1.410)	(1.515)	(1.659)
No. of observations	53935	53935	53935	53935
No. of countries	36	36	36	36

Standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 1-10: Gender differences in public good preferences – Robustness checks: the first two public good preferences

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
Female	0.116***	0.193***	-0.182***	-0.177***
	(0.0231)	(0.0255)	(0.0216)	(0.0265)
Positive opinion of women leadership	0.189	0.535	-0.0431	-0.0744
	(0.477)	(0.609)	(0.667)	(0.581)
Female * Positive opinion of women leadership	0.0180	0.256	-0.0644	-0.491***
	(0.184)	(0.191)	(0.199)	(0.139)
Age (reference=25 or below)				
26 - 35	-0.122***	0.0308	0.00877	0.112***
	(0.0391)	(0.0325)	(0.0292)	(0.0401)
36 - 50	-0.148***	0.0412	0.0284	0.176***
	(0.0379)	(0.0342)	(0.0355)	(0.0419)
Above 50	-0.321***	0.128***	0.0436	0.261***
	(0.0553)	(0.0429)	(0.0513)	(0.0516)
Residence area (reference=Rural)				
Urban	0.128***	0.191***	-0.302***	-0.318***
	(0.0380)	(0.0344)	(0.0455)	(0.0533)
Occupation status (reference=Inactive)				
Unemployed	-0.0599*	0.0585**	-0.0124	0.0100
	(0.0335)	(0.0292)	(0.0441)	(0.0255)
Part-time job	-0.124***	-0.0170	0.0256	0.0830*
	(0.0388)	(0.0338)	(0.0458)	(0.0426)
Full-time job	-0.118	-0.0193	-0.0197	0.0821
	(0.0754)	(0.0343)	(0.0438)	(0.0677)
Education (reference=No formal education				
Primary	0.167***	0.0238	0.0597	-0.0956*
	(0.0512)	(0.0379)	(0.0428)	(0.0506)

	(1) Education	(2) Health	(3) Infrastructure	(4) Agriculture
		Table - continued		
	(1) Education	**(2) Health**	**(3) Infrastructure**	**(4) Agriculture**
Secondary	0.437***	0.0494	-0.0407	-0.279***
	(0.0532)	(0.0503)	(0.0591)	(0.0573)
University	0.531***	-0.0133	-0.0166	-0.235***
	(0.0827)	(0.0652)	(0.0814)	(0.0766)
Living conditions compared to others (reference=Worse)				
Same	0.0429**	-0.0512**	0.0117	-0.0158
	(0.0193)	(0.0256)	(0.0295)	(0.0310)
Better	0.0725**	-0.108***	0.0333	-0.0534*
	(0.0312)	(0.0328)	(0.0328)	(0.0304)
Income index	0.441**	0.207	-0.460***	-0.660***
	(0.196)	(0.138)	(0.175)	(0.147)
Constant	-0.234*	-0.264***	-0.629***	-0.385***
	(0.122)	(0.0929)	(0.132)	(0.143)
No. of observations	53935	53935	53935	53935
No. of countries	36	36	36	36

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

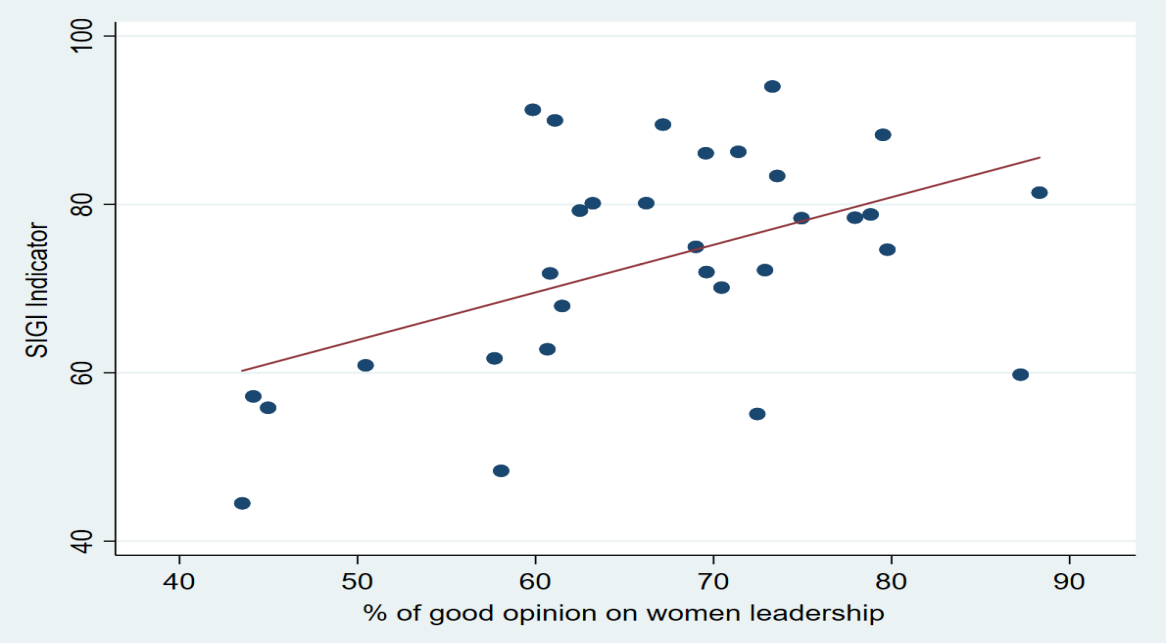
5.4. Results from a different indicator of gender norms

The results presented so far are based on a unique measure of gender norms. One might question whether these results would hold with a different measure. I use the 2014 Social Institutions and Gender Index (SIGI), developed by the OECD, to assess whether the main result of an increasing gender gap in preference for agriculture when norms are favorable to women is still valid. The SIGI measure is particularly adapted to capture gender norms. Unlike measures of gender inequality based on outcome-focused dimensions, such as education, health, political participation, etc., the SIGI captures the social roots of gender inequality based on "codes of conduct, norms, traditions, informal and formal laws that might contribute to gender inequalities in all spheres of life" (Branisa et al., 2009). By construction, the SIGI indicator varies between 0 and 1. In this paper, a value of 0 in the SIGI measure reflects the highest level of gender inequality in social

institutions and 1 reflects no inequality.[1] The SIGI indicator is recorded in 31 countries among the 36 African countries in the sample.[2] Unsurprisingly, the SIGI indicator is positively correlated with the main measure of the gender norm: "the proportion of respondents with a positive opinion of women leadership" (Figure 4). However, the correlation coefficient between these two measures is not so high (49.15%), suggesting that they partially measure different aspects of gender norms.

The gender gap in policy preferences appears to be correlated with the gender gap in social institutions measured by the SIGI indicator (Appendix 6). This descriptive pattern is consistent with that observed in Figure 1. The gender gap in policy preferences is high when gender inequality is low, except in education, in which we observe the opposite trend.

Figure 1-4: Correlation between the main measure of gender norms (perception of women leadership) and the SIGI indicator



I run the same regression as in Table 7, replacing the measure of the perception of women leadership by the SIGI indicator. Results presented in Table 11 lead to the same conclusions as the main results (Table 7). The interaction term between gender and the SIGI indicator is only significant (at the 10% level) for the preference for agriculture. As previously, the point estimate

[1] In the original SIGI measure, 0 refers to no inequality and 1 to high inequality. I use the opposite values in this paper to allow for an easier comparison with the main measure of gender norms for which a higher value reflects progressive or favorable gender norms.
[2] The five countries in which the SIGI indicator is missing are: Algeria, Botswana, Cape Verde, Mauritius and Sao Tome and Principe.

is negative, suggesting that the gender gap in the preference for agriculture widens when gender norms are more favorable to women. In countries with more gender inequality in social institutions, more women request additional investment in agriculture. Therefore, the gender gap in preference for agriculture is smaller in countries with a high level of gender inequality.

*Table 1-11: Gender differences in public good preferences - Measuring gender norms with the SIGI indicator **

	(1) Education	(2) Healthcare	(3) Infrastructure	(4) Agriculture
Female	0.0696**	0.181***	-0.132***	-0.189***
	(0.0283)	(0.0383)	(0.0362)	(0.0370)
SIGI indicator	-0.617	-0.145	0.662	0.196
	(0.596)	(0.520)	(0.534)	(1.050)
Female * SIGI indicator	-0.0790	0.231	-0.0783	-0.454*
	(0.232)	(0.316)	(0.251)	(0.249)
No. of observations	47939	47939	47939	47939
No. of countries	31	31	31	31

* All the control variables shown in Table 4 are included
Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

6. Discussion

My findings reveal that agriculture has a certain particularity compared to other policy preferences studied in this paper. In fact, agriculture is the only field where the gender gap in preferences is affected by gender norms after controlling for observable individual characteristics. The gender gap in preferences for agriculture is smaller in conservative countries, those where gender role norms are less favorable to women. I offer some insights below to attempt to understand this singularity of agriculture.

The closing gender gap in preferences for agriculture in conservative countries is driven by respondents in rural areas (Table 8). In countries with negative gender norms, women in rural areas may face higher inequality. Indeed, they generally own and work in smaller farms and have smaller or less productive livestock and less access to credit, inputs, technology, and mechanization. Women farmers consistently have limited access to productive resources compared to their male counterparts (Oxfam, 2013). In addition, they are less educated and have limited access to

agricultural training and extension services and more difficulty enforcing their rights (FAO, 2011). In addition to these constraints, dominant sex-based norms and discrimination often result in women drowning in excessive workloads, while much of their work remains unpaid and unrecognized (FAO, 2016). As such, it makes sense that agriculture is a priority for these women, who are likely to feel more concerned about positive changes in this sector.

The gender gap reduction in conservative societies may also be due to the "feminization of agriculture". Available data on the agricultural labor force in Africa show that women account for up to 52% of the total population in this sector and are responsible for about 50% of agricultural work in sub-Saharan Africa (FAO, 2016). Indeed, a review of the existing data and literature supports the hypothesis of the "feminization of agriculture". There is convincing evidence that in many countries, particularly in Africa, agriculture is tending to become more feminized, either because men are leaving the agricultural sector or because women are becoming more and more integrated in the labor force in rural areas. Indeed, the situation is particularly disastrous in some contexts in which social changes such as migration (rural exodus or migration abroad), which are more prevalent among men, add to the burden of women, who bear the responsibility of ensuring food security in their household. Emigration is a key factor that directly and rapidly changes the role of women in agriculture through the loss of a valid male labor force, especially since younger men are more likely to migrate (Mueller et al., 2015a). In farming systems that rely heavily on family labor, the loss of male family members can cause a substantial farm shock, generating necessary adjustments of the labor force within the household. To maintain the same level of agricultural production, women left behind must increase their own work contributions, hire workers or rely on other family members to compensate for the loss of male labor (FAO, 2016).

7. Conclusion

I attempt to contribute to a better understanding of the gender gap in public good preferences in Africa and to explore the role of gender norms on these differences. In Western countries, it is well established that women's choices and preferences differ consistently from those of men. However, this observed gap is shrinking with the increasing empowerment of women within the home and society. Several studies in developed countries and in some developing countries, such as India, show that positive changes in the economic and social situation of women

will likely close the gender gap in political attitudes and priorities. However, in the case of Africa, the weight of tradition and norms raise some doubt on this analysis/outcome. Results found in this paper suggest that, regardless their level of education and employment status, women always/overwhelmingly exhibit preferences for social goods: education and health. These results strongly support the ethics of care theory, which states that women are more likely to take responsibility for caring for others and protecting the most vulnerable in society, due to differentiated socialization patterns. My findings imply that this responsibility assigned to women remains unchanged when women are more empowered. Furthermore, I study whether the gender gap in policy preferences could be narrowed when considering constructed gender role norms. This paper shows that the gender gap still exists among people with a traditional view of gender roles – those who believe that women cannot or should not be good leaders – for all policy preferences except those for agriculture. Indeed, women in countries with a traditional opinion on gender roles exhibit higher preferences for agriculture, narrowing the gap with men's preferences. A potential explanation lies in the fact that more traditional women may be more likely to comply with men's preferences.

The evidence shown in this paper strongly advocates for a better representation of women in the political sphere in Africa. Indeed, the gender gap in political preferences seems more rooted in Africa than in other regions and may not be explained by the economic and social conditions of women. In addition, women's preferences might deviate even more from men's preferences when gender norms become more modern and favorable to women. My findings predict that differences in men's and women's preferences may become even greater in the future in conjunction with a positive evolution of socially constructed gender norms in Africa. These results highlight the importance of fully involving women in the political decision-making process in order to account for the wide range of policy preferences of the population.

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Appendix

Appendix 1-1: Descriptive Statistics - Categorical Variables

Variable	Number of observations	Mean (%)
Gender		
Female	53935	50.31
Male	53935	49.69
Age		
Under 25	53935	20.29
25 - 30	53935	20.43
31 - 38	53935	19.80
39 - 50	53935	20.78
Above 50	53935	18.70
Residence Area		
Rural	53935	57.93
Urban	53935	42.07
Employment Status		
Inactive	53935	37.49
Unemployed	53935	23.18
Part-time Job	53935	11.91
Full-time Job	53935	26.96
Missing	53935	0.45
Education Level		
No formal Education	53935	18.95
Primary	53935	28.88
Secondary	53935	42.07
University	53935	9.81
Missing	53935	0.29
Living Conditions compared to others		

Worse	53935	35.09
Same	53935	32.09
Better	53935	30.30
Missing	53935	2.52

Appendix 1-2: Descriptive Statistics - Continuous Variable

Variable	Mean	Standard Error	Minimum	Maximum
Income Index	53935	0.46	0	1

Appendix 1-3: Gender differences in observable characteristics

	Total (%)	Female (%)	Male (%)	Difference (Female-male) (%)
25 or below	24.2	25.6	22.9	2.5***
26 - 35	29.8	31.2	28 .4	2.8***
36 - 50	27.4	27.5	27.1	0.3
Above 50	18.6	15.8	21.4	-5.6***
Inactive	37.5	42.9	31.9	11.0***
Unemployed	23.2	23.7	22.7	1.0***
Part-time job	11.9	10.3	13.6	-3.3***
Full-time job	26 .9	22.5	31.5	-9.0***
No formal education	18.9	21.9	15.9	6.0***
Primary	28.9	30.4	27.3	3.1***
Secondary	42.0	38.8	45.4	6.6***
University	9.8	8.5	11.2	2.7***
Urban	42.1	42.0	42.1	0.1
Worse	35.1	35.1	35.0	0.1
Same	32.1	31.9	32.2	0.2
Better	30.3	30.2	30.4	0.2
Income index	46.4	45.1	47.6	2.5

* p<0.1, ** p<0.05, *** p<0.01

*Appendix 1-4: Gender differences in public good preferences by education level - Robustness checks: the first two public good preferences**

Preferences for Education

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	0.115***	0.175***	0.103***
	(0.0447)	(0.0565)	(0.0373)
No. of Observations	10223	15574	27983
No. of Countries	36	36	36

Preferences for Health

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	0.215***	0.164***	0.208***
	(0.0414)	(0.0524)	(0.0259)
No. of Observations	10223	15574	27983
No. of Countries	36	36	36

Preferences for Infrastructure

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	-0.160***	-0.249***	-0.166***
	(0.0534)	(0.0395)	(0.0269)
No. of Observations	10223	15574	27983
No. of Countries	36	36	36

Preferences for Agriculture

	(1) No formal education	(2) Primary education	(3) Secondary education or higher
Female	-0.145***	-0.140***	-0.230***
	(0.0451)	(0.0491)	(0.0385)
No. of Observations	10223	15574	27983
No. of Countries	36	36	36

* All the control variables in table 3 are included

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

*Appendix 1-5: Gender differences in public good preferences by occupation - Robustness checks: the first two public good preferences**

Preferences for Education

	(1) Inactive	(2) Unemployed	(3) Employed
Female	0.101***	0.0922**	0.147***
	(0.0336)	(0.0379)	(0.0379)
No. of Observations	20221	12503	20967
No. of Countries	36	36	36

Preferences for Health

	(1) Inactive	(2) Unemployed	(3) Employed
Female	0.203***	0.223***	0.163***
	(0.0431)	(0.0398)	(0.0278)
No. of Observations	20221	12503	20967
No. of Countries	36	36	36

Preferences for Infrastructure

	(1) Inactive	(2) Unemployed	(3) Employed
Female	-0.195***	-0.120***	-0.200***
	(0.0351)	(0.0417)	(0.0369)
No. of Observations	20221	12503	20967
No. of Countries	36	36	36

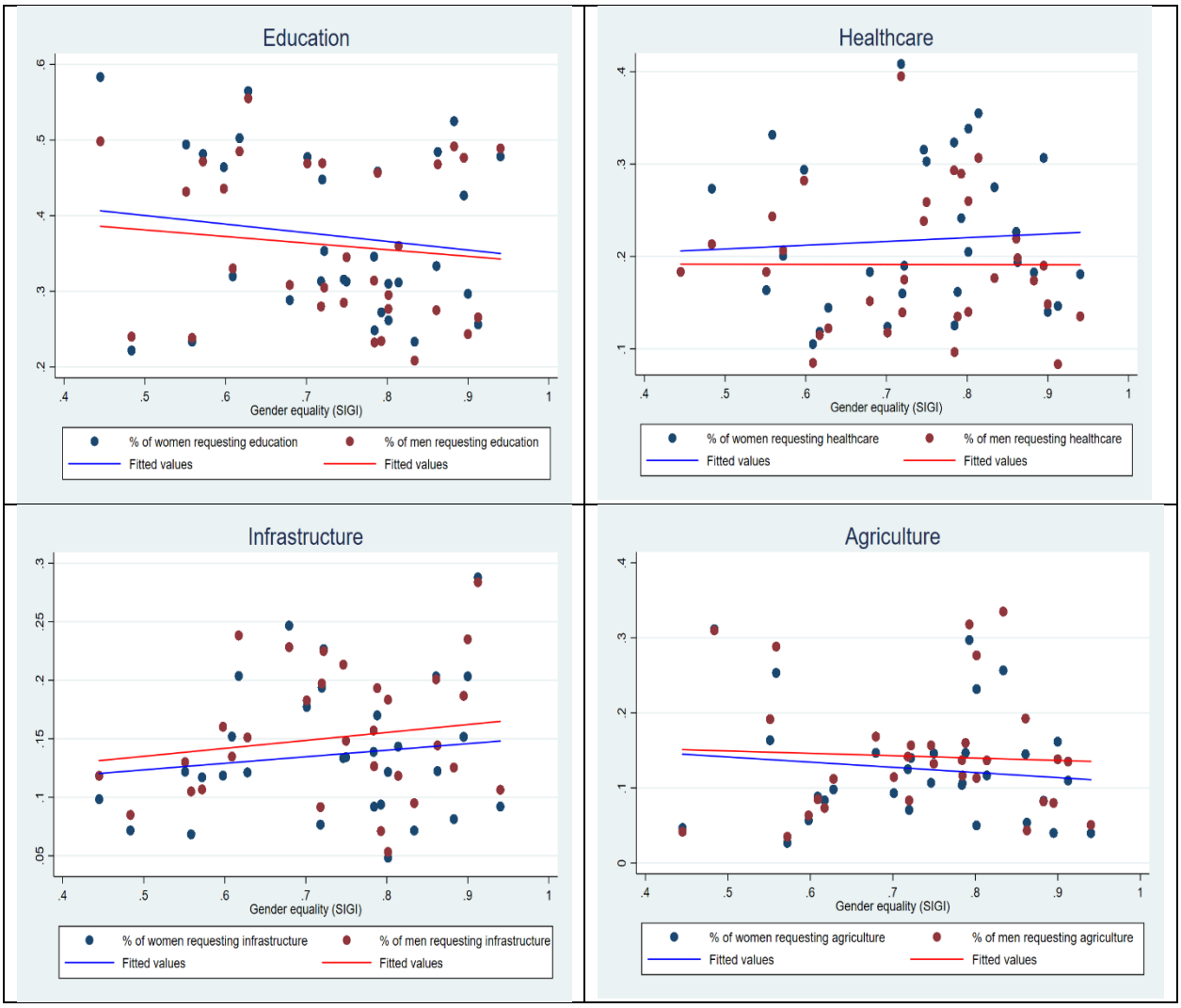
Preferences for Agriculture

	(1) Inactive	(2) Unemployed	(3) Employed
Female	-0.186***	-0.268***	-0.124**
	(0.0353)	(0.0477)	(0.0517)
No. of Observations	20221	12503	20967
No. of Countries	36	36	36

* All the control variables in table 3 are included

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Appendix 1-6: Gender gap in policy preferences according to the SIGI indicator



Chapter 2 : TVET LABOR MARKET RETURNS IN SENEGAL: A GENDERED PERSPECTIVE [1]

Abstract

A major shortcoming of labor markets in many developing countries is an observed mismatch between the training of workers and job seekers and the needs of employers. Technical and vocational education and training (TVET) is a potential solution to this problem. However, empirical evidence on TVET is scarce in Africa. In addition, men and women likely choose different TVET fields, which could lead to different returns. This paper attempts to fill this gap for the case of Senegal. I show that TVET increases women's chances of finding a job but does not improve their labor market outcomes. For men, having a TVET degree is associated with higher wages and a greater likelihood of obtaining a permanent contract and working in the formal sector. These findings could pave the way for future research to understand the mechanisms that lead women to choose less profitable TVET fields.

Keywords: School choice, TVET, educational returns, gender gap, Senegal

JEL: I20, I21, I28, O55

[1] This chapter was produced during a research visit at the "Skills for life and the world of work" cluster of the Unesco regional office in Dakar. I would like to thank Olivier Pieume and Modou Mar for hosting me and for their valuable comments and guidance during this research visit.

1. Introduction

In recent years, a recurring topic in policy discussions in developing countries concerns the types of education and training opportunities that must be provided to better meet the needs of labor market developments. Senegal, like other African countries, faces enormous challenges in creating relevant education and employment opportunities for their young and rapidly growing populations. Since the 2000s, the country has been facing an employment crisis affecting mainly women, youth and the most highly educated people. In 2018, the unemployment rate for people aged 15 and over was estimated at 14.3%. An alarming statistic is that the unemployment rate of women (24.1%) is four times higher than that of men (6.2%) (ANSD, 2018). This unemployment situation is partially due to the mismatch that exists between the skills demanded by the labor market and those acquired by young people through their academic studies. Indeed, when they leave school, many young Senegalese fail to either find a job in the formal sector or to become self-employed. The demand for jobs largely exceeds the growth in job opportunities. Each year, about 300,000 new job seekers enter Senegal's labor market, many of whom have little or no qualifications (ANSD, 2015). While most of the jobs available are in technical and professional fields, technical and vocational education and training (TVET) is generally not exploited effectively for a variety of reasons, including the negative perception in households of TVET and the underestimation of its returns in the labor market. Indeed, TVET is often seen as a fallback solution for students who have not succeeded in general education. In addition, outdated programs, insufficient public-private partnerships and a lack of legislative and policy support from the state do not help to increase the attractiveness of TVET or its labor market returns. Another reason why TVET enrollment is very low is that the international community and the United Nations Millennium Development Goals (MDGs) have long focused on funding/supporting basic education, particularly primary education, in developing countries. This emphasis on the first cycle of education has strongly contributed to the neglect of post-elementary education and training, including technical and vocational education and training (Fluitman, 2005). Bennell (1999) shows that TVET is/has been largely absent from most poverty reduction strategies of governments and donors in developing countries. This lack of investment has led to the marginalization of TVET.

This paper contributes to the ongoing debate on the relative advantages of technical and vocational education and general education, with an emphasis on gender differences. Men and women are

likely to choose different TVET fields with different labor market returns. Furthermore, the scarce evidence on the determinants of TVET participation in developing countries in the literature has provided ambiguous conclusions on the returns of TVET. In developed and developing countries alike, the research has tended to ignore questions such as who enrolls in TVET programs and whether reforms reach the target groups they purport to serve. Considering the current expansions envisioned for TVET in Senegal, some critical questions must be raised. What factors motivate participation in TVET? Are the determinants of TVET participation different for males and females? What are the economic returns of TVET for men and women? To our knowledge, no published research from Senegal or sub-Saharan Africa addresses these questions. To fill this gap, we use data from the last national survey on employment in Senegal (ENES-2015) to examine gendered choices and TVET returns. We show that TVET returns in the labor market are higher for men and limited for women. TVET allows only men to earn higher wages and occupy high-quality jobs. For women, our findings suggest that TVET labor market returns are not statistically different from those of a general education. These findings could pave the way for future research to explore the mechanisms that lead women to choose less profitable TVET fields.

The paper is organized as follows: Section 2 provides a literature review, Section 3 presents an overview of the TVET sector in Senegal, Section 4 describes the empirical strategy, Section 5 presents the data and some descriptive statistics, Section 6 reports and discusses the results and Section 7 concludes.

2. Literature review

2.1. What is TVET ?

The term TVET has various forms such as: vocational education, technical education, technical-vocational education (TVE), vocational education and training (VET), skill development education, apprenticeship training (AP) etc. However, technical, vocational education and training (TVET) seems to be the most comprehensive term. According to UNESCO-UNEVOC (2015), TVET consists of relevant work-oriented learning experiences and may occur in educational institutions and/or the workplace. TVET has been widely recognized for furnishing skills required

to improve productivity and access to employment opportunities (Bennell, 1999), providing youth and women with economic empowerment. TVET is an all-embracing comprehensive education and training (lifelong learning) program, aimed at promoting responsible citizenship, environmentally sound development and social transformation. In the rapidly changing knowledge economy, TVET empowers people, increasing their resilience, sustainable livelihoods and socio-economic development. It involves initial and continuous education and training that enables individuals to update their skills and acquire new ones for professional career development or career mobility. The main target of any formal or informal TVET program is to help participants acquire the practical skills, know-how and understanding needed to attain and succeed in an occupation or trade.

2.2. Theoretical considerations

Most theoretical models of investment in education and training have been conceptualized within an economic or sociological framework or within a combination of the two. Economic models, and the human capital model especially (Becker, 1962; Schultz, 1961), have been applied to research on educational decision-making since the human capital theory was first proposed in the 1960s. The human capital model posits that individuals (or households) make *rational* choices regarding investments in education and training, with the goal of balancing direct costs and foregone earnings against the benefits that will be accrued from the education/training. These models assume that information regarding (perceived) wages is especially important but that nonmonetary factors are also important (Becker, 1993). This suggests that other things equal, the demand for education will be stronger when benefits are expected to accrue over a longer period and when the discount rate is relatively low.

2.3. Determinants of participation in TVET

A review of the literature on the determinants of participation in TVET programs shows that there are various limitations in seeking consensus on the factors associated with the demand for TVET, especially in developing countries. In addition to the scarcity of works on the subject, the nature of TVET particularly complicates research in this area. However, the TVET literature provides some guidance on the factors that are potentially more likely to influence TVET enrollment decisions. Agodini and al., 2004; Aypay, 2003; Curtis, 2008; Moenjak and Worswick, 2003, look

more at the education level and aspirations of students. Chandrashekhar and Mukhopadhyay, (2006); Grubb, (1988); Kremer and al., (2004), find that the perceived costs and benefits of TVET programs are the main factors explaining the demand for TVET. Parental education (Curtis, 2008; Fullarton, 2001; Moenjak and Worswick, 2003), household income (Sandefur and al., 2006), indicators of the quality of TVET options (Grubb, 1988) and macroeconomic parameters (Grubb, 1988; Walstab, 2008) are all factors associated with the decision to participate or not in TVET. These different avenues are useful for building a conceptual model of a study on the performance of TVET in a country like Senegal, where the TVET sector is relatively nascent and constitutes a new essential development axis. Given the data we have at our disposal, we will focus on the hypothesis that socio-economic factors, such as parental education or the standard of living of individuals, could explain the decision to participate or not in TVET.

- **Parental education and occupation**

Research on the influence of parents and the family on children's career choices and development indicate that there are links between career development and factors such as socioeconomic status, parents' educational and occupational attainment and cultural background (Kerka, 2000). Parental involvement and guidance can include specific career or educational support as well as experiences that indirectly support career development, such as family vacations, provision of resources, such as books and modelling of paid and nonpaid work roles (Kerka, 2000). Parental background can be an important factor in determining student participation in vocational education and training. Parents' level of education and occupation were related to students' enrollments in vocational education and training in Australia (Miralles, 2004). In his study, he found that a quarter of the students whose parents had only completed secondary school participated in vocational programs, compared with 14 percent of those with tertiary-educated parents. Similarly, a lower proportion (15 percent) of those students whose parents were in professional occupations participated in vocational education, compared with 27 percent of those whose parents were employed in manual occupations. In addition, maternal and paternal education appears to have slightly different effects on the education and training decisions of boys and girls (Behrman, 1999; Birdsall, 1982; Dostie and Jayaraman, 2006). The results of these studies are generally consistent with one another and show that the father's education positively influences enrollment decisions for boys and girls, while the mother's education has a stronger positive influence on schooling for girls in the household.

These differences have been explained based on negotiation models (Kambhampati and Pal, 2001), which argue that male and female heads of household have different utilities and budget constraints and therefore make different decisions. Creamer and Laughlin (2005), in their study in the US, conducted interviews of 40 college women in Virginia and found that women were more likely to turn to their parents than to other sources for advice and direction about career choice and that their trust in their parents seemed to override their trust in others. The influence of parents is also evident in the kinds of careers students eventually follow. A longitudinal study by Jacobs, Chin and Bleeker (2006) on parents' expectations and their children's gender-type occupations found that in the US, parents' early gender-typed occupational expectations for their children were highly related to the actual occupational decisions made by their adult children.

- **Household income and standard of living**

Most studies examining the relationship between household income, education and labor market outcomes have found that household income exerts a positive, albeit small, influence on enrollment decisions (Behrman and Knowles, 1997; 1999; Behrman and al., 1994; Duraisamy, 2002; Psacharopoulos, 1989). Sandefur et al. (2005) found that students from high-income households have a higher probability of enrolling in four-year college and a lower probability (although positive and significant) of enrolling in certificate programs and two-year colleges. However, the true effect of household income on TVET enrollments has been difficult to isolate and studies show ambiguous results (Foley, 2007; Perna and Titus, 2005; Sandefur and al., 2005; Teese and Walstab, 2008). Thus, although household income is an important determinant on the demand side, it needs to be examined carefully. There are several challenges in establishing causal relationships between family income and various educational outcomes, including education. In their review of over 40 studies, Behrman and Knowles (1999) noted that the main problems are endogeneity and multicollinearity. Since household income is correlated with unobservable items, such as parental preferences for investment in human capital, OLS estimates of household income are likely to be biased (Mani et al., 2009).

2.4. TVET returns

In the field of education economics, the literature on education returns is huge and has received significant attention (Bennell, 1995; 1996; Psacharopoulos and Patrinos, 2004; Schultz, 2004;

Patrinos and al., 2006; Kingdon and al., 2008). Several studies have discussed issues associated with estimating the market returns of education in developed and developing countries (Schultz, 2004; Maluccio, 2003; Card, 1999; 2001). However, research on TVET returns (Grubb, 1992; Long and Shah, 2008;) are relatively rare, particularly in developing countries (Duraisamy, 2002; Grootaert; 1990; Moenjak and Worswick, 2003; Psacharopoulos and Patrinos, 1993). Studies examining TVET returns in developing countries have estimated returns of TVET in general (Duraisamy, 2002) and of secondary-level TVET (Moenjak and Worswick, 2003; Psacharopoulos and Patrinos, 1993) as well as returns of formal and informal training. As noted by Griliches (1977), OLS estimates of returns often suffer from self-selection bias and omitted variable bias that must be accounted for in wage equations. Gri identified each control for self-selection using Heckman's (1979) two-stage procedure, which allows for estimating participation in wage work and estimating wages in a simultaneous equation framework. Duraisamy (2002) uses nationally representative survey data at two time points (1983 and 1993) to estimate the returns to academic education and TVET in India. The model is estimated separately for males and females and urban and rural residents but does not control for any household or context level factors. The findings indicate that, controlling for years of education, the returns of "technical diploma/certificate" programs are higher than the returns of college education. Further, the returns are highest for those in the youngest age cohort (15 to 29-years old) and TVET returns for rural residents are higher than for TVET participants in urban areas. Moenjak and Worswick's (2003) estimate returns TVET at the higher secondary level in Thailand, controlling for several individual and family characteristics including migration and marital status, parents' occupation, parental education, location and household size. They also find statistically higher returns to secondary TVET than general education at the same level. Psacharapoulos and Patrinos (1993) found similar results for secondary TVET in seven out of 11 Latin American countries. Grootaert's (1990) analyzes the formal and informal TVET sectors in Cote d'Ivoire by adopting a more nuanced approach and estimates wage returns conditional on the sector of employment. He uses a large-scale survey of 1,600 households in Cote d'Ivoire. Controlling for several demographic and household characteristics, as well as for TVET costs, the results show that in contrast to formal TVET, the private returns to informal TVET are significantly lower. Furthermore, his examination by employment sector finds that schooling and postsecondary formal TVET are significantly associated with employment in the public sector. He also finds that degree attainment is more

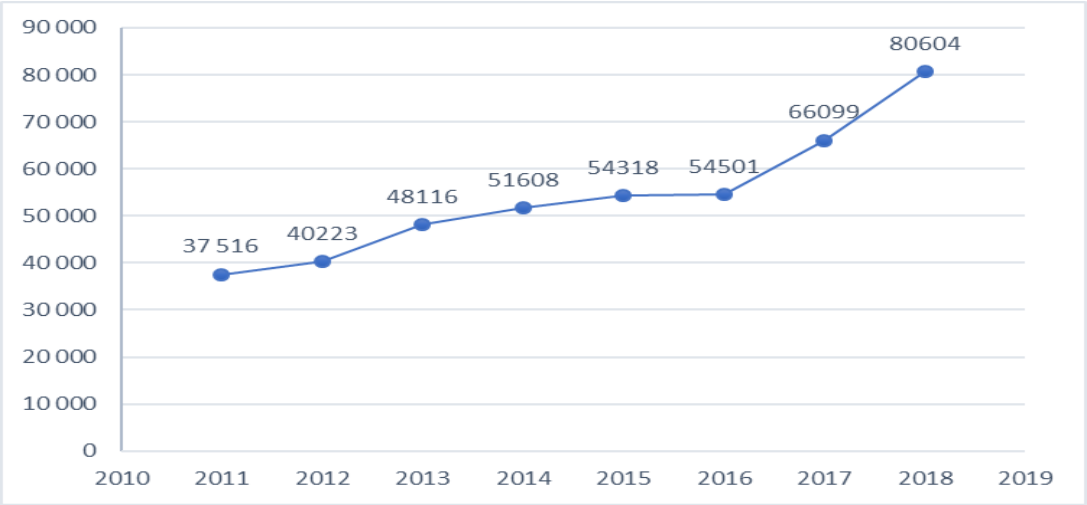
strongly associated with public sector employment than with years of education. In contrast, he finds that the private sector considers the type of TVET in employment decisions. Thus, those receiving informal TVET are more likely to obtain work in the informal sector. In general, the study estimates that the returns for both types of TVET (formal and informal) are about 10 percent for each year of TVET. The studies reviewed show positive significant returns of TVET programs. However, the lack of research in this area limits the generalizability of these findings. Furthermore, data constraints in several developing countries imply that reported estimates may suffer from some degree of bias and must be interpreted with caution.

3. Overview of Senegal's TVET sector

3.1. Institutional framework

In Senegal, where the education system is dominated by classical education, the Ministry of Vocational Training, Learning and Handicrafts (MFPAA) oversees TVET. Even if the overall number of learners increased from 37,516 in 2011 to 80,604 in 2018, only 5% of the workforce receives/obtains technical education and vocational training, which does not meet the needs of firms (MFPAA, 2018). In terms of distribution by sex, there is a predominance of boys in the public sector, which is quite different from the private sector, where girls are more numerous. The number of vocational and technical training learners in training structures is made up of 54% girls and 46% boys**.**

Figure 2-1: Global evolution of TVET enrollments

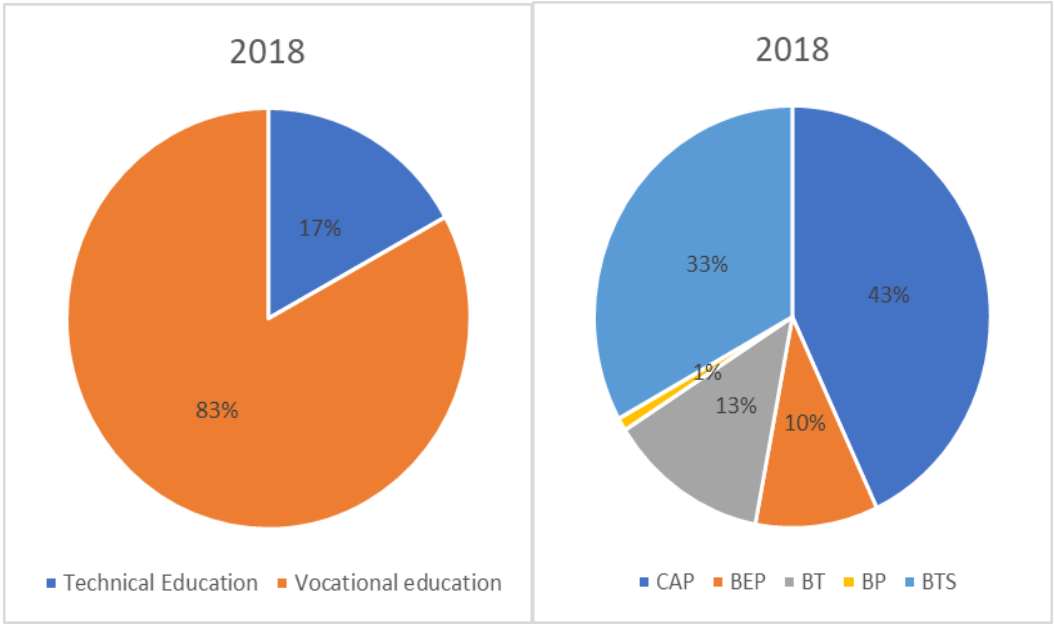


Source: Statistical Yearbook of the Ministry of Vocational Training, Apprenticeship and Crafts

TVET programs are offered to Senegalese youth at the secondary and tertiary levels. At the secondary level, TVET is provided in technical high schools as well as vocational education and training centers (CFP) and prepares students for a profession or vocational training at the higher level. The private sector occupies an important place in TVET, with 288 establishments out of 407 opened by private promoters (i.e., 71%) who welcome more than 55% of learners (MFPAA, 2018). TVET training structures are unevenly distributed between the regions. 52% of vocational and technical education establishments are concentrated in the capital Dakar, 10% in Thiès and 7% in Ziguinchor. All the structures of the 11 remaining regions represent only 31% of the national network. The predominance of structures in these three regions is constant and can be explained by the high concentration of the school-going population in these areas. Higher vocational training schools are establishments whose access is conditioned by obtaining the baccalaureate (high school diploma) or an equivalent diploma and whose programs allow the acquisition of skills and qualifications to exercise a trade or profession. Initial vocational and technical training is organized in vocational and technical training establishments, as well as in companies, and includes basic, general culture and specialty training. As for continuing vocational training, its purpose is to promote professional integration or reintegration, contribute to job retention and internal promotion and promote skills development and professional mobility. There is also a large volume of informal TVET in Senegal; most young people and adults who do not have access to formal or non-formal education are trained on the job in workshops or by local artisans (UNESCO, 2015).

In recent years much effort has been made to improve TVET. The country has developed a national TVET strategy that aligns with the overall educational development plan and aims to improve access to and relevance, quality and management of TVET. In addition, Senegal has been trying for some years now to integrate the traditional apprenticeship system into the TVET system to provide 300,000 TVET learners (compared to about 1.1 million secondary school students, UIS 2015) opportunities to gain on-the-job experience/training. The government has also introduced short-term certified training for young people excluded from the education system and who do not have the necessary qualifications to get a job or work in professions that have important responsibilities but lack regulation, such as taxi driver. This is a significant policy innovation in the country due to high school exclusion rates and relatively low primary and lower secondary completion rates (UNESCO 2017). However, the long-term goal should be to ensure that all students obtain a quality lower secondary education before moving on to any form of TVET.

Figure 2-2: Distribution of the number of apprentices in vocational and technical training in Senegal



Source: Statistical Yearbook of the Ministry of Vocational Training, Apprenticeship and Crafts

In 2018, 83% of learners were enrolled in vocational training versus only 17% in technical training. In addition, an examination of the structure of training levels shows that it is marked by a strong

presence in BTS[2] (33%) and more accentuated in CAP (43%). The share of learners in vocational training by type of qualification represents 13% for BT and 10% for BEP. BP has the lowest number of learners enrolling only 1% of the workforce. This is to some extent because BP only exists in the banking finance sector.

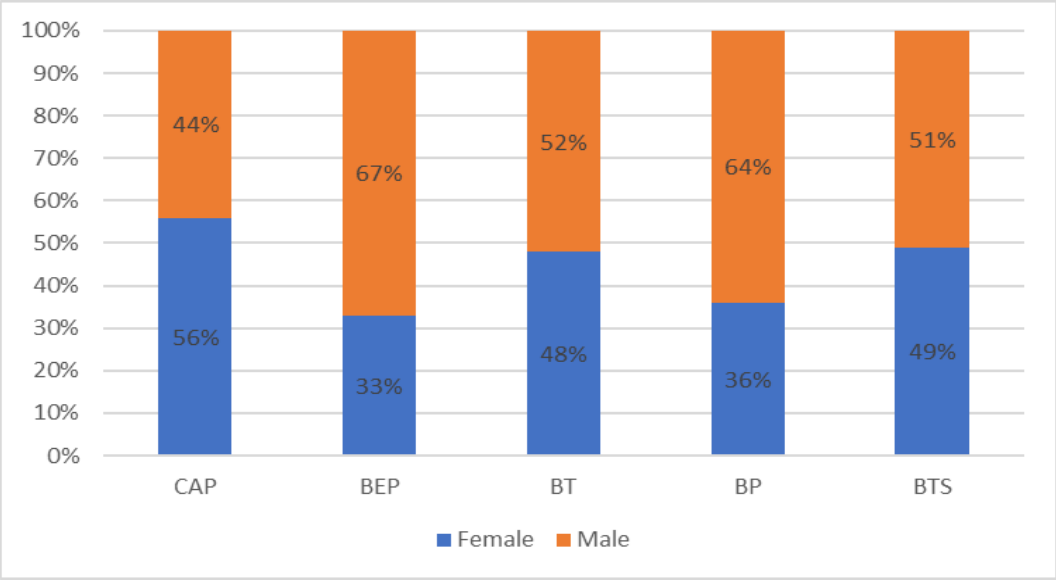
3.2. Women participation in TVET

From earliest childhood, children are conditioned by initial reactions of their parents and those around them to adopt different attitudes depending on their gender. These gender norms only grow stronger throughout childhood development and schooling, conditioning future career choices. Vocational education and apprenticeship are sectors which still bear the mark of their initial vocation to train men (Moreau, 2000). The specialties open to boys are much more diverse and numerous than those dedicated to girls; the proportion of boys in so-called feminine domains is greater than that of girls in male strongholds. In Senegal, fifty-four (54) percent of TVET students are girls, but women and men enter very different TVET fields, with women often choosing (and being offered) skills training and occupations with lower average returns. Most women are enrolled in traditional female occupations, often in areas characterized by low pay (MFPAA, 2018). Indeed, most females are enrolled in sewing, hairdressing, catering, hospitality and commerce-oriented courses, with a small proportion enrolled in industrial and technical (mechanics, electronics, construction…) related courses (MFPAA, 2018). According to the 2017-2018 Vocational and Technical Training report, the distribution of technical training students by sector and gender shows a predominance of boys in the technical and scientific fields. In fact, girls represent less than 5% of learners in the industrial and technical fields. On the other hand, girls are in the majority in the commerce and accounting sectors and therefore represent more than 63% of learners (ibid). These differences matter for future earnings. Women who cross into male-dominated sectors make as much as men and three times more than women who stay in female-dominated sectors (Campos et al 2015). Today, the main challenges revolve around the promotion

[2] The BTS is a bac+2 level diploma offered in various sectors of activity and accessible directly after passing the baccalaureate.
The certificate of professional aptitude (C.A.P.) gives a qualification as a skilled worker or employee in a specific trade.
The Professional Certificate (BP) requires the prior obtaining of a CAP and offers training that is even more focused on professional practice for a level of qualification equal to the vocational baccalaureate. The professional certificate is prepared in two years after the CAP and is only carried out under an apprenticeship contract.
The Technician's Certificate (BT) is a level IV diploma. It offers by its qualification an intermediate position between the BEP/CAP and the BTS. It is said to be more advanced than the techno baccalaureate. It allows to quickly train in a very specific job.

of access for young girls and women to sectors traditionally considered male and in the craft sector and new training channels for promising trades (such as ICT and others). The Ministry of Vocational Training, supported by donors, is trying to break down these gender divides in favor of increased gender integration in TVET. The ministry's Learning Development and Integration Support Project is working toward sectoral gender parity in enrollment. This program has succeeded in enrolling girls in auto repair, cooling and refrigeration and metalwork courses/programs.

Figure 2-3: Distribution of VET enrollment, by type of diploma sought, and by gender



Source: Statistical Yearbook of the Ministry of Vocational Training, Apprenticeship and Crafts, 2018

The above graph shows a predominance of boys in BEP, BP, BT and BTS courses, i.e., 67%, 64%, 52% and 51% of learners, respectively. On the other hand, girls are in the majority at the CAP level, representing 56% of the workforce, due to the training courses most coveted by women (sewing, hairdressing, catering, etc.). Because the fields coveted by girls are limited to CAP, the level of training should be raised. Overall, 58% of the workforce of vocational training students for the state diploma are boys.

4. Empirical strategy

To evaluate the return to TVET in the labor market, our empirical strategy is based on the comparison between individuals with a TVET diploma and individuals with the same education level. Our sample only includes graduates at the secondary level and the first-grade university level who are concerned by vocational training. General education at secondary level includes individuals who have obtained the "baccalauréat" (the high-school diploma) or "bac" as their highest diploma. Graduates of first-grade university level are individuals who hold a diploma corresponding to two or three years post-high school (bac + 2 or bac + 3). BTS is the only TVET diploma at the university level and is equivalent to a "bac +2 qualification". The remaining TVET diplomas are at the secondary level.

The study focuses on individuals who are 15 years old or over and who are not enrolled in school during the survey.

4.1. Probit choice model and variable definitions

This part of the study focuses on how men and women make decisions regarding participation in vocational education. Our dependent variable takes the value 1 if the individual's choice of education is a vocational one and 0 if general education is chosen. The explanatory variables included in the model are parental education, parental occupation, area of residence, household size, age group, household asset index and the number of students enrolled in a vocational education in the region. The latter captures the capacity of TVET schools for each region. The household asset index is constructed using multiple correspondence analysis (MCA) with variables reflecting the wealth of the respondent's household, such as type of dwelling, type of neighborhood, source of water supply, type of toilets available in household, etc. Parental education is potentially a key variable that can influence an individual's choice of education. The variable relating to parents' education takes the value of 1 if the parents' level of education is higher than the primary level and 0 otherwise. In their work, Behrman and Wolfe (1984), Chiswick (1986) and Heckman and Hotz (1986) have all argued that a mother's (rather than a father's) education may have a greater impact on individual decision-making in terms of education because it is often the mother who provides the learning environment for her children. In addition to parental education, parental occupation can reflect the socio-economic status of the household and can

influence the choice between vocational training and general education. We classify different categories of professions declared in the active population of our sample as follows: managers and intermediate professions, skilled workers, farmers and elementary professions.

4.2. Vocational training returns

The estimation of TVET returns is based on Mincer's (1975) standard approach to estimating wage functions with a focus on gender differences. We estimate the following equation:

$$\boldsymbol{Y_i = a_0 + a_1 Woman_i + a_2 Woman_i * TVET_i + a_3 Man_i * TVET_i + a_4 X_i + \varepsilon_i} \quad \textbf{(1)}$$

Where:

- Y_i is the labor income or another labor market outcome of individual i.
- $Woman_i$ is a dummy indicating whether/that individual i is a woman.
- $TVET$ is a dummy equal to 1 if individual i's TVET degree is their highest degree and 0 if a general education degree is the highest degree held.
- X_i is a set of control variables including the level of education (secondary vs first-grade university), which allows for comparing TVET and non-TVET graduates of the same education level, age and age-squared as a proxy of the worker's experience and residence area.

We also conduct a heterogeneity analysis to examine the TVET return at each level of education. This leads to the following equation:

$$\boldsymbol{Y_i = a_0 + a_1 Woman_i + a_2 Woman_i * TVET\_S_i + a_3 Man_i * TVET\_S_i + a_2 Woman_i * TVET\_U_i + a_3 Man_i * TVET\_U_i + a_4 X_i + \varepsilon_i} \quad \textbf{(2)}$$

Where $TVET\_S$ and $TVET\_U$, respectively, indicate possession of a vocational education degree at the secondary and university levels.

Ordinary Least Squares (OLS) provide unbiased estimates of the coefficient of vocational education if the error term is not correlated with any of the regressors. However, in the case of salary functions à la Mincer, OLS estimates may overestimate or underestimate the effect of education on wages. As wages are observed only for employed persons, estimates of vocational

training returns are based on a non-random sample of the population. This type of sample selection bias has been shown to be similar to omitted variable bias and, therefore, can be addressed by the least squares method (Heckman, 1979). The existing literature on return to education has used various techniques to correct for inconsistencies in OLS estimates due to sample selection. Card (2001) analyzed 115 studies on this topic and reported that 15% of the studies reviewed used Heckman's two-step correction, while 80% used instrumental variables. In this paper, we use the Heckman correction method to estimate the return to vocational training in the labor market.

Beyond the analysis of returns in terms of wages, we took the analysis further by looking at the impact of vocational training on the quality and stability of the employment obtained after leaving school. Indeed, it would be interesting to see whether, in addition to providing a higher level of salary, vocational training also provides more decent and secure jobs than general education at the same level. We, therefore, also focused our analysis on three variables measuring the quality of employment. The first is having a "suitable job". This variable reflects the fact that the training received during studies is adapted to the job held by the individual at the time of the interview. The second variable to measure the quality of employment reflects "having a permanent written contract". This is a binary variable measuring job security and takes the value 1 if the individual has a permanent written contract (CDI) and 0 otherwise. The third variable reflects "working in the formal sector".

4.3. Heckman selection correction

Selection is a problem quite often encountered in sampling. Participating in activities such as schooling or entering the labor market is most often not random. In our case, the worker's wage is observed while that of the inactive worker is not. Several factors, such as the level of education or the type of training, can explain an individual's participation in the labor market. The family structure (number of children, marital status...) may particularly impact the participation of women in the labor market. As a result, employed individuals may, on average, be more educated and have different family structures than those who are not. This selection bias leads to an overestimation of the returns of vocational training. In addition, there are certainly unobservable variables that influence both the fact of being employed and one's salary. This selection mechanism means that any estimation model of the salary equation that does not consider selection can be potentially

biased. The intuition behind Heckman's correction for sample selectivity or selection bias is to construct a model that jointly estimates the wage equation, as well as the process that determines whether the dependent variable is observed.

$$\begin{cases} E_i = bV_i + u_i \\ Y_i = aW_i + \varepsilon_i \end{cases} \quad (3)$$

Where E_i is dummy equals 1 when individual i is employed and 0 when (s)he is unemployed or inactive. Y_i is the wage or another labor market outcome. W_i is the set of explanatory variables defined in equation 1. V_i is a vector of explanatory variables used in the selection equation. It includes all the variables in W_i in addition to factors correlated with the likelihood of an individual to have a job but is not correlated to wages. We then include in V_i the following variables: parents' occupation, marital status, number of children and household size.

A correlation between u_i and ε_i indicates the presence of selection which biases the OLS estimate.

4.4. Propensity score matching

In previous sections, we assume that TVET is not endogenous, i.e., not related to unobservable factors affecting wages or other labor market outcomes. In the absence of a credible instrumental variable, we use the propensity score matching method as a robustness analysis. This method can reduce the potential endogeneity bias by comparing similar individuals in the TVET group (treatment) and in the general education group (control).

Following the conceptual framework by Rosenbaum and Rubin (1983), let us say Y_{i0} represents the individual's wage if (s)he graduates from a general training and Y_{i1} is the individual's wage if (s)he graduates from vocational training. The average treatment effect on the treated (ATT) is written as:

$$ATT = Y_{i1} - Y_{i0} \mid TVET = 1 \quad (4)$$

However, it is impossible to observe an individual wage both in the treatment and control groups. One way to get a correct estimate of the ATT is to find a counterfactual in the control group for each individual in the treatment group. The goal is to compare a TVET graduate with the closest

non-TVET graduate, according to certain characteristics. Let us say Y_{it} represents the wage of a TVET graduate and Y_{ic} the wage of a graduate of general education. An estimated value of ATT can then be defined as follows:

$$ATT = Y_{it} - Y_{ic} \mid TVET = 1, ps(X) \quad (5)$$

The wage difference between the treatment and control groups is now conditioned with the propensity score $ps(X)$, which is the predicted probability of an individual having a TVET degree. Each TVET graduate is compared with an individual or a group of closest non-TVET graduates according to the estimated propensity score called the "nearest neighbors". The standard errors of the estimated ATT need to be adjusted to account for the fact that the propensity score itself is estimated from a different equation. We, therefore, use the adjusted Abadie-Imbens robust standard errors.

5. Data and descriptive statistics

5.1. Data

To investigate the factors affecting the choice of enrolling in a vocational training and its labor market returns, we use data from the National Survey on Employment in Senegal (ENES-2015). The 2015 National Employment Survey is conducted throughout the country of ordinary households and individuals aged 10 and over. Collective households or populations counted separately are excluded from the scope of the survey, i.e., people without a fixed address and those living in specialized institutions, such as barracks, hospitals, prisons, *daaras* and other similar places where visits require special authorization. This survey allows us to obtain data on employment, unemployment, underemployment, education and living conditions of workers. We have a sample of 6,000 households. The size of the sample is chosen to guarantee representativeness at the regional level regarding key labor market variables (in particular activity rate). Indeed, on the basis of the auxiliary variables resulting from the ESPS-II, which is the activity rate, the households are drawn at random from primary sampling units which are the enumeration areas or district censuses (CD) containing 12 households per CD in urban areas and 18 households per CD in rural areas. The survey data contains several outcome variables of interest pertaining to labor market participation and earnings. First, the survey includes questions on

educational participation for all members in sampled households. This includes information on "current attendance" as well as "highest level of education completed". Second, the survey captures information on educational participation, detailing the kind of education (general, technical or vocational) that was accessed. Third, the survey collects detailed information on employment outcomes of all household members over 10 years of age, including occupational and wage details and unemployment spells. Background and demographic information from the survey is linked to household characteristics, educational participation and employment outcomes using unique household and person identifiers. In addition to the data described above, one additional source of data was accessed. Information on the supply of TVET institutions and enrollment trends was gathered from Senegal's national TVET report (MFPAA,2018). These data include information on the number of institutions (public and private) in each district of the country.

5.2. Descriptive statistics

The sample for the empirical analysis is restricted to women and men aged 15 and over. The lower bound of 15 years was motivated by the fact that TVET programs in Senegal can be accessed as early as secondary school. The sample only includes individuals with a secondary or first-grade university level as their highest degree. Cases with missing information on key variables (age and sex) were removed from the sample. Thus, the final size of the analytic sample was 1,343 individuals.

Table 2-1: Proportion of TVET participants, by gender (15 years old and over)

	Women		**Men**	
	Number	**Proportion (%)**	**Number**	**Proportion (%)**
General education	218	43,6	392	46,5
TVET education	282	56,4	451	53,5
Total	500	100	843	100
General secondary	186	48,1	329	51,73
TVET secondary	201	51,9	307	48,27
Total	387	100	636	100
General 1st-grade university	32	28,32	63	30,4
TVET 1st-grade university	81	71,68	144	69,6
Total	113	100	207	100

Source: 2015 National Survey on Employment in Senegal

Participation rates for TVET and general education, by gender, is presented in Table 1. Overall, technical and vocational education and training programs in Senegal show relatively low

participation rates. However, in our sample, we have a much higher TVET participation rate than the national average because we compare TVET graduates with a small group of general education graduates. Indeed, in our analysis we made the choice to compare individuals with the same number of years of study. Thus, graduates of secondary vocational education are only compared to individuals whose highest qualification is the baccalaureate. Likewise, men and women with higher vocational education qualifications are only compared with those with bac + 2 or bac + 3. Females participate in TVET at higher rates than males.

Table 2-2: Differences between TVET versus general education on labor market outcomes

Variable	Women				Men			
	(1)	(2)	(3)	t-test	(1)	(2)	(3)	t-test
	General	TVET	Total	Difference	General	TVET	Total	Difference
	Mean/SD	Mean/SD	Mean/SD	(1)-(2)	Mean/SD	Mean/SD	Mean/SD	(1)-(2)
Employed	0.817	0.903	0.874	-0.086**	0.892	0.921	0.910	-0.029
	[0.388]	[0.296]	[0.332]		[0.310]	[0.270]	[0.286]	
Adequacy of training	0.703	0.924	0.876	-0.222***	0.798	0.877	0.853	-0.079**
	[0.463]	[0.266]	[0.331]		[0.403]	[0.329]	[0.355]	
Written permanent contract	0.366	0.614	0.555	-0.248***	0.421	0.668	0.591	-0.246***
	[0.488]	[0.489]	[0.498]		[0.496]	[0.472]	[0.492]	
Own or work in a formal firm	0.511	0.650	0.617	-0.139*	0.362	0.527	0.474	-0.166***
	[0.506]	[0.479]	[0.487]		[0.482]	[0.500]	[0.500]	
Labor income	131000	165000	157000	-33600**	144000	189000	175000	-45100***
	[80737]	[78032]	[79793]		[77469]	[123000]	[112000]	

The table above compares individuals (women on the one hand and men on the other) who hold a vocational training diploma (CAP, BT, BTS) to individuals who hold a general education diploma (bachelor's degree, DEUG[3], license). Having a vocational training degree seems to have a positive impact on the likelihood of women finding a job compared to those who have received a general education. Women with vocational training have an employment rate of over 8.6 percentage points higher than women with general education and this difference is statistically significant at 5%. On the other hand, taking a vocational training course seems to have no impact on men's employment. It would also seem that vocational training gives access to more secure and more suitable jobs in the formal sector. In fact, 92.4% of the women in our sample who have completed vocational

[3] The diploma of general university studies (DEUG) is a former national diploma of Senegalese higher education, at bac+2 level.

training believe that their studies are more suited to their current job, compared to only 70.3% of women who have a general education degree. This constitutes a difference of 22.2 percentage points and is significant at 1%. The same result is observed for men who have taken vocational training, although the difference (7.9 percentage points) is smaller. In addition, doing a vocational training course strongly increases the likelihood of obtaining a permanent written employment contract, thus providing some job security. Women with vocational training are 24.8 percentage points more likely to have a permanent written contract than women with general education. Likewise, men with vocational training are more than 24.6 percentage points more likely to obtain a permanent written contract than men with a general education; these differences are significant at 1%. In terms of wages, vocational training seems to be more profitable for both men and women with vocational education qualifications. A woman with a vocational education degree earns an average of 33,600 FCFA per month more than a woman with a general education degree. Likewise, a man with a vocational education diploma earns on average 45,100 FCFA more than those with a general education.

Table 2-3: Differences between TVET versus general education at the secondary level on labor market outcomes

Variable	Women				Men			
	(1)	(2)	(3)	t-test	(1)	(2)	(3)	t-test
	General secondary	TVET secondary	Total	Difference	General secondary	TVET secondary	Total	Difference
	Mean/SD	Mean/SD	Mean/SD	(1)-(2)	Mean/SD	Mean/SD	Mean/SD	(1)-(2)
Employed	0.824	0.891	0.866	-0.067	0.904	0.930	0.919	-0.026
	[0.383]	[0.313]	[0.341]		[0.295]	[0.256]	[0.273]	
Adequacy of training	0.615	0.915	0.843	-0.299***	0.761	0.852	0.821	-0.091*
	[0.496]	[0.281]	[0.366]		[0.429]	[0.356]	[0.384]	
Written permanent contract	0.233	0.634	0.527	-0.401***	0.426	0.693	0.600	-0.268***
	[0.430]	[0.485]	[0.502]		[0.497]	[0.462]	[0.491]	
Own or work in a formal firm	0.455	0.571	0.540	-0.117	0.351	0.492	0.440	-0.141**
	[0.506]	[0.498]	[0.500]		[0.480]	[0.501]	[0.497]	
Labor income	104000	160000	145000	-55900***	137000	181000	165000	-43500***
	[64184]	[75660]	[76642]		[81602]	[132000]	[11800]	

In this table, we compare TVET graduates at the secondary level and those graduating from general secondary education. At the secondary level, TVET does not seem to give a higher rate of professional integration than general education. However, having a high school TVET diploma greatly increases the likelihood of both men and women obtaining a permanent written contract. This gives them higher job security than those with a general secondary education. Indeed, female TVET graduates are 40.1 percentage points more likely to have a permanent written contract than female baccalaureate graduates. Likewise, the difference in the probability of obtaining a permanent written contract between men graduating from secondary TVET and those with the baccalaureate as their highest diploma is equivalent to 26.8 percentage points in favor of TVET graduates. TVET graduates, especially women, find their training more in line with their current job. As for salaries, individuals with secondary vocational education have, on average, a higher salary than those with a general secondary education.

Table 2-4: Differences between TVET versus general education at the first-grade university level on labor market outcomes

	Women				**Men**			
	(1)	(2)	(3)	t-test	(1)	(2)	(3)	t-test
Variable	General 1st-grade university level	TVET 1st-grade university level	Total	Difference	General 1st-grade university level	TVET 1st-grade university level	Total	Difference
	Mean/SD	Mean/SD	Mean/SD	(1)-(2)	Mean/SD	Mean/SD	Mean/SD	(1)-(2)
Employed	0.792	0.930	0.895	-0.138*	0.849	0.903	0.888	-0.054
	[0.415]	[0.258]	[0.309]		[0.361]	[0.297]	[0.317]	
Adequacy of training	0.909	0.940	0.934	-0.031	0.926	0.924	0.924	0.002
	[0.302]	[0.240]	[0.250]		[0.267]	[0.267]	[0.266]	
Written permanent contract	0.727	0.580	0.607	0.147	0.407	0.620	0.571	-0.212*
	[0.467]	[0.499]	[0.493]		[0.501]	[0.488]	[0.497]	
Own or work in a formal firm	0.667	0.788	0.766	-0.122	0.400	0.592	0.549	-0.192*
	[0.492]	[0.412]	[0.427]		[0.498]	[0.494]	[0.499]	
Labor income	205000	172000	179000	32724	169000	205000	197000	-35800*
	[77220]	[82070]	[81606]		[54126]	[104000]	[96153]	

In the table above, we compare individuals who have obtained a higher vocational education diploma and those with a level of study in general education equivalent to bac + 2 or bac + 3. We

cannot overstate the results of this table because the differences for the most part are not significant. We can still see that women with a higher level of vocational education have a higher probability of obtaining a job than those with a general higher education, even if this gap seems statistically quite small. Men with a higher level of vocational education seem to have a greater probability of obtaining a permanent written job, of working in a formal company and of having higher salaries than men with a bac + 2 or bac + 3 level without professional training. These different results obtained in these three descriptive statistics tables seem to indicate a greater TVET returns compared to those of general education in Senegal.

6. Results

6.1. Determinants of TVET choice

We begin the econometric analysis by examining the factors which determine an individual's choice to enroll in vocational training instead of general training. An initial striking result is that the determinants of this training choice are different for men and women. The mother's education does not play a role in the training choice, while the father's education does, but only for women. A woman whose father has a primary level education or higher is 14% more likely to hold a TVET diploma. The importance of the father's education compared to the mother's is stressed in the academic literature on Senegal and may be related to the fact that the father often holds the decision-making authority in the household (Dumas and Lambert, 2011). Therefore, whether he is educated or not may be more influential than the mother's education. Parents' occupation also affects the training choice of men and women differently. Having one parent working in agriculture reduces the chances of their child enrolling in vocational training. When the father is a skilled manual worker, women are more likely to follow vocational training, while this decreases the likelihood of men to pursue/enroll in vocational training. Men are more likely to hold a TVET diploma both at the first-grade university level and when the capacity of TVET structures in the region is greater. Both men and women of older generations are more likely to follow vocational training. Living in a larger household reduces the chances of an individual pursuing vocational training.

Table 2-5: Determinants of training choice: TVET vs general education – Marginal effects

Dependent variable: Holding a TVET diploma – Probit model

	(1) Women	(2) Men
Mother's education (Ref=no diploma)		
Primary or higher	0.135 (0.0955)	0.0252 (0.111)
Father's education (Ref=no diploma)		
Primary or higher	0.137* (0.0739)	0.0962 (0.0589)
Mother's occupation (Ref=Elementary professions)		
Higher grade	-0.0326 (0.105)	-0.0667 (0.0975)
Agriculture	-0.152 (0.137)	-0.135* (0.0800)
Skilled manual workers	-	-
Father's occupation (Ref=Elementary professions)		
Higher grade	0.0130 (0.118)	-0.125 (0.0816)
Agriculture	0.0395 (0.136)	-0.150* (0.0802)
Skilled manual workers	0.289** (0.133)	-0.189* (0.104)
Education level (Ref=Secondary)		
1st-grade university	0.0383 (0.0551)	0.0785** (0.0396)
Age group (Ref=Under 25)		
25 - 35	0.179* (0.0951)	0.172 (0.126)
Over 35	0.352*** (0.0958)	0.350*** (0.126)
Household size (Ref=1 – 4)		
5 - 7	-0.0263 (0.0615)	0.0265 (0.0475)
8 - 11	-0.183*** (0.0668)	-0.0524 (0.0509)
12 or higher	-0.214** (0.0842)	-0.132** (0.0614)

	(1) Women	(2) Men
Mother's education (Ref=no diploma)		
Residence area (Ref=Urban Dakar)		
Urban - other	-0.0511 (0.0881)	0.0485 (0.0684)
Rural	-0.0872 (0.110)	0.0558 (0.0745)
Log number of enrolled in TVET per 100,000 inhabitants in the region	0.0391 (0.0370)	0.0906*** (0.0259)
Number of observations	337	667
Pseudo R2	13.43	9.03

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

6.2. TVET labor market returns

In this subsection we analyze the role of TVET in an individual's ability to obtain a job. The result of the first column of Table 6, where no control variables are included except for TVET and gender, displays a positive and significant impact of TVET for women but not for men. However, this positive effect for women is not robust to the addition of control variables. The point estimate is positive for women but no longer significant. The heterogeneity analysis by the level of TVET yields the same results. When taking into account the differences in individual and household characteristics, both secondary and university TVET levels have no significant impact on access to employment.

Regarding the result of control variables, age is positively associated with the likelihood to have a job, suggesting that younger people are more likely to be employed. A mother's occupation has a significant impact on the probability of being employed while the father's occupation does not. Having a mother with a high-grade occupation reduces the likelihood of being unemployed. The number of children and the household size have a non-linear effect on the probability of being employed. Having between four and six children raises the likelihood of being employed, while having between five to seven members in the household decreases this likelihood. The area of residence, marital status and household asset index have no significant impact on the access to employment.

Table 2-6: Impact of TVET on access to employment

Dependent variable: Access to employment – Probit model

	(1)	(2) With controls	(3)	(4) With controls
TVET * Woman	0.0691**	0.0350		
	(0.0312)	(0.0295)		
TVET * Man	0.0303	-0.0002		
	(0.0243)	(0.0235)		
TVET secondary level * Woman			0.0571*	0.0198
			(0.0334)	(0.0316)
TVET secondary level * Man			0.0408	0.0076
			(0.0271)	(0.0256)
TVET 1st-grade university level * Woman			0.0993**	0.0660
			(0.0461)	(0.0439)
TVET 1st-grade university level * Man			0.0104	-0.0196
			(0.0320)	(0.0309)
Woman	-0.0586*	-0.0321	-0.0585*	-0.0316
	(0.0302)	(0.0286)	(0.0302)	(0.0286)
Education level (Ref=Secondary)				
1st-grade university		-0.0203		
		(0.0215)		
Age		0.0093*		0.0091*
		(0.0052)		(0.0052)
Age squared		-0.0000		-0.0000
		(0.0001)		(0.0001)
Residence area (Ref=Urban Dakar)				
Urban - other		0.0280		0.0286
		(0.0285)		(0.0286)
Rural		0.0605		0.0616
		(0.0385)		(0.0383)
Mother's occupation (Ref=Elementary professions)				
Higher grade		0.0783**		0.0751**
		(0.0354)		(0.0355)
Agriculture		-0.0194		-0.0183
		(0.0481)		(0.0479)

	(1)	(2) With controls	(3)	(4) With controls
TVET * Woman	0.0691**	0.0350		
Skilled manual workers		-0.188		-0.159
		(0.188)		(0.177)
Father's occupation (Ref=Elementary professions)				
Higher grade		0.0097		0.0071
		(0.0495)		(0.0490)
Agriculture		0.0159		0.0134
		(0.0521)		(0.0518)
Skilled manual workers		-0.0879		-0.0868
		(0.0742)		(0.0737)
Marital status (Ref=Single)				
Married		0.0226		0.0245
		(0.0289)		(0.0286)
Divorced/widowed		0.0249		0.0290
		(0.0560)		(0.0543)
Number of children (Ref = 0)				
1 - 3		0.0008		0.0010
		(0.0309)		(0.0303)
4 - 6		0.0716**		0.0728**
		(0.0314)		(0.0302)
7 or higher		-0.137		-0.138
		(0.0893)		(0.0885)
Household size (Ref= 1 – 4)				
5 - 7		-0.0632**		-0.0629**
		(0.0256)		(0.0257)
8 - 11		-0.0257		-0.0258
		(0.0233)		(0.0233)
12 or higher		-0.0422		-0.0411
		(0.0279)		(0.0279)
Household asset index		0.0070		0.0016
		(0.0606)		(0.0607)
Number of observations	1011	1010	1011	1010
Pseudo R2	1.43	13.57	1.69	13.71

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

In this section, we explore the returns of TVET in the labor market/TVET labor market returns. This analysis focuses only on individuals already in the labor market, which creates a selection bias. In all the tables, we compare the regression results from a simple Ordinary Least Squares and the results using the Heckman method, which corrects for the selection into employment. This allows us to assess how this selection bias affects the results. We analyze the role of TVET on a selection of labor market outcomes measuring the quality of employment as well as on wages or labor income.

Table 7 shows the regression results on the respondent's opinion regarding the alignment between their training and their work. Both the OLS and the selection specifications show a positive and significant impact of TVET on the perception of alignment between training and job, but only for women. The coefficient is three times lower in the selection model for women and is significant at the 10% level. Women with vocational training are 6% more likely to have a good opinion on the match between their training and their job compared to women with a general education. This effect is particularly driven by the vocational training at the secondary school level. People with a university vocational degree are not more likely to have a better opinion on the match between training and job than people with a general university degree. The worker's age has a U-shaped relationship with the perception on match between training and job. This perception decreases with age but this trend is reversed at older ages. Living in urban Dakar has a negative impact on the perceived match between training and job.

Having a written permanent contract is an indication of the stability of employment. The OLS and the Heckman method yield different results (Table 8). In the OLS regression, TVET is associated with a higher likelihood to have a permanent contract, both for men and women. With the selection model, the impact of TVET is no longer significant for women. For men, this impact narrows substantially but remains significant. With the heterogeneity analysis on the level of education, we see a positive and significant effect of TVET only at the secondary level, significant at the 5% level for men and at the 10% level for women. Overall, we observe a positive and substantial effect of TVET (more than 10%) on the likelihood of an individual having a written permanent contract, and this is more robust for men. No control variable included in this regression has a significant impact on the probability of an individual having a permanent contract.

Table 2-7: Impact of TVET on match between training and job

Dependent variable: Alignment between job and training – Probit model

	(1) OLS	(2) Heckman selection model	(3) OLS	(4) Heckman selection model
TVET * Woman	0.187***	0.0615*		
	(0.0570)	(0.0330)		
TVET * Man	0.0485	0.0011		
	(0.0346)	(0.0187)		
TVET secondary level * Woman			0.177***	0.0609*
			(0.0615)	(0.0362)
TVET secondary level * Man			0.0314	-0.0059
			(0.0369)	(0.0197)
TVET 1st-grade university level * Woman			0.236***	0.0660
			(0.0771)	(0.0462)
TVET 1st-grade university level * Man			0.130***	0.0316
			(0.0487)	(0.0272)
Woman	-0.0526	-0.0112	-0.0449	-0.0061
	(0.0533)	(0.0258)	(0.0531)	(0.0255)
Education level (Ref=Secondary)				
1st-grade university	0.0945***	0.0333**		
	(0.0273)	(0.0152)		
Age	0.0239***	-0.0090**	0.0255***	-0.0083*
	(0.0077)	(0.0045)	(0.0077)	(0.0046)
Age squared	-0.0003***	0.0001**	-0.0003***	0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Residence area (Ref=Urban Dakar)				
Urban - other	0.138***	0.0483*	0.134***	0.0458*
	(0.0493)	(0.0267)	(0.0495)	(0.0261)
Rural	0.153***	0.0534*	0.149***	0.0497
	(0.0580)	(0.0320)	(0.0576)	(0.0315)
Number of observations	556	1342	556	1342
Pseudo R2	10.16	17.42	9.03	5.70

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 2-8: Impact of TVET on the stability of employment

Dependent variable: Having a permanent contract – Probit model

	(1) OLS	(2) Heckman selection model	(3) OLS	(4) Heckman selection model
TVET * Woman	0.206**	0.107		
	(0.0800)	(0.0769)		
TVET * Man	0.193***	0.102*		
	(0.0491)	(0.0573)		
TVET secondary level * Woman			0.215**	0.136*
			(0.0852)	(0.0800)
TVET secondary level * Man			0.216***	0.126**
			(0.0525)	(0.0630)
TVET 1st-grade university level * Woman			0.183*	0.0330
			(0.0944)	(0.0939)
TVET 1st-grade university level * Man			0.141**	0.0441
			(0.0627)	(0.0650)
Woman	-0.0005	0.0268	-0.0022	0.0266
	(0.0832)	(0.0694)	(0.0826)	(0.0696)
Education level (Ref=Secondary)				
1st-grade university	-0.0269	-0.0605		
	(0.0426)	(0.0378)		
Age	0.0669***	0.0034	0.0665***	0.0044
	(0.0121)	(0.0204)	(0.0121)	(0.0213)
Age squared	-0.0007***	0.0000	-0.0007***	-0.0000
	(0.000145)	(0.0002)	(0.0001)	(0.0002)
Residence area (Ref=Urban Dakar)				
Urban - other	-0.0441	-0.0654	-0.0477	-0.0691
	(0.0526)	(0.0444)	(0.0527)	(0.0451)
Rural	0.138**	0.0774	0.135**	0.0770
	(0.0654)	(0.0565)	(0.0653)	(0.0572)
Number of observations	562	1342	562	1342
R2	10.48	22.35	10.65	23.91

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

Table 2-9: Impact of TVET on working in the formal sector

Dependent variable: Working in the formal sector – Probit model

	(1) OLS	(2) Heckman selection model	(3) OLS	(4) Heckman selection model
TVET * Woman	0.0984	0.0286		
	(0.0822)	(0.0750)		
TVET * Man	0.120**	0.0608		
	(0.0499)	(0.0515)		
TVET secondary level * Woman			0.0313	-0.00703
			(0.0873)	(0.0751)
TVET secondary level * Man			0.104*	0.0564
			(0.0534)	(0.0531)
TVET 1st-grade university level * Woman			0.258**	0.123
			(0.102)	(0.114)
TVET 1st-grade university level * Man			0.190***	0.105
			(0.0614)	(0.0726)
Woman	0.156*	0.158**	0.163**	0.167**
	(0.0823)	(0.0674)	(0.0820)	(0.0691)
Education level (Ref=Secondary)				
1st-grade university	0.116***	0.0613		
	(0.0422)	(0.0436)		
Age	0.0117	-0.0342**	0.0138	-0.0309
	(0.0119)	(0.0170)	(0.0119)	(0.0188)
Age squared	-0.0001	0.0004**	-0.0001	0.0004*
	(0.0001)	(0.0002)	(0.0001)	(0.0002)
Residence area (Ref=Urban Dakar)				
Urban - other	-0.138***	-0.133***	-0.135**	-0.132***
	(0.0520)	(0.0415)	(0.0525)	(0.0431)
Rural	-0.135*	-0.128**	-0.133*	-0.129**
	(0.0704)	(0.0576)	(0.0702)	(0.0588)
Number of observations	623	1342	623	1342
R2	5.39	48.42	5.51	46.04

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

In Table 9, we estimate the impact of TVET on the propensity to work in the formal sector. In OLS regressions, TVET has positive significant effects, particularly for men, but those effects

completely disappear with the Heckman selection model. Interestingly, women have a substantially higher probability of working in the formal sector than men. Age again displays a U-shaped relationship with having a formal job. This suggests that younger people are less likely to work in the formal sector, but this effect is reversed or stagnant with age for people of older generations. As expected, living in Dakar considerably increases the probability of one's having formal work.

An OLS regression on labor income suggests a positive and significant impact of TVET both for men and women (Table 10). However, accounting for the selection bias into employment reduces both point estimates. The effect of TVET for men remains statistically significant at the 5% level. Controlling for gender, education, age and residence area, a man with vocational training earns 18% higher than a man with a general education. For women, the effect of TVET turns out to be non-significant when the selection bias is accounted for. This is consistent with the academic literature showing that women's participation in the labor market is lower than men's, resulting in greater selection into employment. In fact, women observed in the labor market have non-observable characteristics positively related to income. This is also true for men but to a lesser extent. Once this selection bias is accounted for with the Heckman method, women with vocational training do not earn more than women with general training.

These results are also valid regarding the level of the vocational training. Both at the secondary and university levels, TVET has a positive and significant impact on labor income for men. The positive effect observed for women in the OLS model disappears when controlling for the selection into employment. The premium of TVET on income is much larger at the university level than at the secondary level. Men with vocational training at the first-grade university level earn 28% more than men with an equivalent general education. The impact of TVET for men with a secondary level education is also high (16%) but smaller than the effect for men with a university level education. Control variables have the expected signs regarding the classical Mincer model. Having a first-grade university degree is positively associated with higher labor income compared to a secondary degree. The worker's age has an inverted U relationship with labor income, with a threshold at 49 years old.[1] Labor income increases with age until 49 years old, when it begins to decrease.

[1] The threshold is computed in column 2 with the coefficients of age and age squared.

Table 2-10: Impact of TVET on labor income

Dependent variable: Log labor income – Linear model

	(1) OLS	(2) Heckman selection model	(3) OLS	(4) Heckman selection model
TVET * Woman	0.239**	0.191		
	(0.104)	(0.116)		
TVET * Man	0.216***	0.179**		
	(0.0769)	(0.0729)		
TVET secondary level * Woman			0.208*	0.177
			(0.116)	(0.121)
TVET secondary level * Man			0.190**	0.158**
			(0.0826)	(0.0770)
TVET 1st-grade university level * Woman			0.345***	0.247
			(0.119)	(0.151)
TVET 1st-grade university level * Man			0.342***	0.284***
			(0.0907)	(0.0959)
Woman	-0.0151	0.0165	-0.0035	0.0292
	(0.117)	(0.113)	(0.122)	(0.114)
Education level (Ref=Secondary)				
1st-grade university	0.213***	0.179***		
	(0.0509)	(0.0620)		
Age	0.125***	0.0814**	0.128***	0.0830**
	(0.0178)	(0.0364)	(0.0179)	(0.0369)
Age squared	-0.0013***	-0.0008**	-0.0014***	-0.0009**
	(0.0002)	(0.0004)	(0.0002)	(0.0004)
Residence area (Ref=Urban Dakar)				
Urban - other	-0.0437	-0.0722	-0.0519	-0.0815
	(0.0604)	(0.0737)	(0.0605)	(0.0748)
Rural	0.0624	0.0329	0.0482	0.0185
	(0.0793)	(0.0967)	(0.0795)	(0.0975)
Constant	8.946***	10.03***	8.954***	10.05***
	(0.334)	(0.870)	(0.339)	(0.876)
Mills' ratio		-0.210		-0.212
		(0.156)		(0.157)
Number of observations	616	1342	616	1342
R2	18.55	28.78	17.32	24.96

Robust standard errors in parentheses
* p<0.1, ** p<0.05, *** p<0.01

6.3. Robustness analysis

We conducted a robustness analysis by using a propensity score matching method to estimate the returns of TVET in the labor market. To assess the sensitivity of the results, we ran different specifications using one, two and three nearest neighbors to estimate the average treatment effect of TVET (see Section 4 on empirical strategy). To make the results comparable, we used the same explanatory variables as in the previous regressions on labor market outcomes to estimate the propensity score.

Results with the matching approach are very similar to the main results (Table 11). TVET returns in the labor market are stronger for men and limited for women. Men with vocational training earn a higher wage and are more likely to have a permanent contract and to work in the formal sector. The latter result is the only difference with the main results in which we have found no effect of TVET on working in the formal sector. Results from the matching approach suggest that men with a TVET degree are 14 to 16% more likely to work in the formal sector than men with a general education degree. These effects are significant at the 5% level. The magnitudes of the effects are also higher with the matching approach. For labor income, the effect of TVET is not significant when using one nearest neighbor. However, when using two or three nearest neighbors, men with TVET earn 22 to 26% higher than men with a general education. This is higher than the 18% effect found in the main results. Similarly, the effect of having a permanent contract is higher in the matching approach than in the main results. This robustness analysis also confirms the result that women with vocational training are more likely to respond that their training was suitable for their job.

Table 2-11: Average treatment of effect on the treated (ATT) of TVET on labor market outcomes

Propensity score matching method

Outcome	**Number of nearest neighbors**	**Women**	**Men**
Log labor income	1	0.0924 (0.2197)	0.1526 (0.0938)
	2	0.1834 (0.1846)	0.2227** (0.1038)
	3	0.1664 (0.1454)	0.2559** (0.1216)
	1	0.0454	0.0501

		(0.0622)	(0.0596)
Match between training and job	2	0.1319**	0.0313
		(0.0660)	(0.0500)
	3	0.1351*	0.0327
		(0.0719)	(0.0426)
Having a permanent contract	1	0.0947	0.2648***
		(0.0729)	(0.0666)
	2	0.0795	0.2267***
		(0.0774)	(0.0636)
	3	0.0941	0.2373***
		(0.0721)	(0.0607)
Working in the formal sector	1	0.0909	0.1597**
		(0.1061)	(0.0620)
	2	0.0862	0.1469**
		(0.0911)	(0.0605)
	3	0.1066	0.1432**
		(0.0933)	(0.0619)

Abadie-Imbens robust standard errors in parentheses.

* p<0.1, ** p<0.05, *** p<0.01

7. Conclusion

In this paper, we attempt to contribute to the debate on the relative advantages of technical and vocational education over general education, with a focus on gender differences. We attempt to understand how men and women make decisions regarding participation in vocational education and to compare the return of investment of TVET training and general education. We use micro-level data from the last national survey on employment in Senegal (ENES 2015), which allows us to explore the role of gender in TVET returns and choice of participation. We find that a father's education and occupation are important determinants of TVET participation for both men and women. A mother's education and occupation do not a priori play any role in their children's education choices. This result is fully in line with the study of Dumas and Lambert (2011) in the context of Senegal. Our results also suggest that vocational training is becoming less and less popular among the younger generations, as we see an increased preference for general education with younger people as opposed to older ones. In terms of return, there are marked differences between the impact of TVET of men and women. After considering selection into employment,

we show that TVET has no impact on access to employment. However, it allows men to earn between 15 and 20% more than men with a general education at the same level. Participating in TVET also allows men to increase their chances of obtaining a permanent contract and working in the formal sector. For women, on the other hand, their participation in TVET has no impact on their salary or on other labor market outcomes. However, women with TVET diplomas more often report having a job that matches their training compared to women with a general education. Therefore, this article highlights another problem of the gender gap in the labor market. Even though women participate as much as men in TVET, the TVET labor market returns for women are much more limited than those for men. In Senegal, like in several other African countries, females and males enter very different TVET fields, with women often choosing (or being offered) skills training and occupations with lower average returns. Indeed, women are enrolled in traditional female occupations, often in areas characterized by less valued and lower paid jobs. Several researchers and development actors agree that TVET provides better access to employment and should be generalized. However, the private return of TVET could clearly be improved by promoting fields traditionally occupied by women and by fostering innovations to develop and modernize sectors with low returns.

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Chapter 3 : GENDERED SEGREGATION IN THE LABOR MARKET AND THE GENDER WAGE GAP: EVIDENCE FROM SENEGAL

This chapter is a joint work with Ababacar S. Gueye (Université Cheikh Anta Diop de Dakar, ESEA)

Abstract

We seek to measure and understand the gender wage gap in Senegal. We first examine gender segregation within sectors and occupations. We then use the Oaxaca-Blinder decomposition method to analyze the gender wage gap. Our findings can be summarized as follows: i. The gender wage gap is high; men earn on average 62% more than women and only 17% of this gap is explained by worker characteristics, ii. Women are overrepresented in low-paid sectors, but the gender wage gap within these sectors is also high, iii. The gender wage gap is smaller among salaried and skilled workers and larger among the self-employed, iv. Number of hours worked, and parenthood are the primary factors that explain the gender wage gap. Finally, a qualitative survey of working women complements results and highlights social barriers, particularly the gendered division of labor, as key drivers of the gender wage gap.

Keywords: Gender wage, segregation, occupation, sector

JEL: D63, J16, J31, J71

1. Introduction

The issue of gender differences in the labor market is a challenging issue around the world and particularly in developing countries. A labor market in which women are fully integrated has real potential to foster economic growth and spur productivity and innovation. Unfortunately, the economic literature has widely documented the fact that women are being left behind in the labor market in terms of participation, productivity, wages, etc. Women in developing countries are concentrated in the worst jobs, with the lowest wages, the poorest working conditions, and the most precarious contracts (World Bank, 2011; Borrowman and Klasen, 2019).

According to official data of Senegal's National Agency of Statistics (ANSD, 2016), women's participation in the Senegalese labor market is significantly low. The women's employment rate is 38% while that of men reaches 57%, a difference of nearly 20 percentage points. The unemployment rate for women is more than double that of men (23% vs 10%). Time related underemployment is 39% for women and 20% for men. This extreme picture of gender differences in the Senegalese labor market reveals the importance of studying this topic in order to better understand why women's integration into the labor market is so hindered.

Young Senegalese girls are becoming better and better educated. This development could herald major changes in the country's future labor market. The gender parity index for the gross enrollment ratio in primary and secondary education has considerably improved in favor of girls. This index computed as the ratio of girls to boys enrolled in primary and secondary schools, went from 0.82 in 2000, from 1 in 2010 and from 1.15 in 2020, indicating that between 2000 to 2020 [1] girls' enrollment went from being 18% lower than that of boys to exceeding boys' enrollment by 15%. This positive trend should not hide an overall lack of improvement in school enrollment over in the past 10 years and the fact that girls remain less likely to enroll in science and math learning. Yet, this trend of girls catching up to boys in school enrollment and learning raises questions about the future of Senegal's labor market. A generation of skilled young women fully integrated in the labor market could lead to huge progress and radical changes in worker productivity, technological progress, and economic growth. However, the success of this new generation of skilled women is necessarily dependent on addressing the obstacles and barriers women face and will continue to face in the future of work.

[1] Data are drawn from the World Development Indicators (WDI) website of the World Bank.

The gender wage gap issue is widely documented in developed countries but has barely been studied in the developing world, least of all in Africa. Although all countries may share common features of the foundation of gender inequality in the labor market, substantial differences in the developing world make it essential to strengthen understanding of this issue in the particular context of developing countries. First, the structure of developing economies and labor markets is thoroughly different from that of developed countries. In African countries, as in most developing countries, the agricultural sector makes up a large share of the workforce, self-employment is widespread, and the majority of workers are employed in the informal sector. Female participation in the labor market is low and concentrated in self-employment activities in the trade sector. The share of women engaged in entrepreneurial activities in Africa is higher than in any other region (Hallward-Driemeier, 2011). Second, social barriers and gender norms hampering women's employment and productivity are likely higher in developing countries (Borrowman and Klasen, 2019), influencing family constraints, career progression, discrimination at the workplace, etc.

This paper studies the interconnection of occupational and sectoral segregation in the formation of the gender wage gap in Senegal. Few studies have focused on the gender wage gap in Africa, likely due to lack of data and fewer still have examined both sectoral and occupational segregation to explain this gap. We first study gender segregation through sectors and occupations and their relationship to wages and the gender wage gap. Next, we use the Oaxaca-Blinder decomposition method to examine which factors contribute to the wage gap and to attempt to identify the share of the unexplained gap. Finally, we look specifically at the role parenthood plays on the wage gap.

Our analysis yields five main findings which could contribute to a better understanding of women's integration in the labor market in Senegal, and more generally, in Africa.

i. Wage gaps are high: men earn 62% more than women but only a small share (17%) is explained by worker' characteristics. Compared to the evidence in developed countries, the total wage gap and the unexplained share of this gap are substantially higher, suggesting key differences in the respective labor market environments.
ii. Gender segregation within sectors is high and greater than segregation within occupations. Women are overrepresented in the three sectors with the lowest wages: household activities, accommodation/food service, and trade. However, contributions to the total gender wage gap of sectors and occupations are rather small. This is illustrated by the fact that within the trade sector, where women account for 63% of

workers, the gender wage gap is higher than in any other sector, suggesting that other non-sector-related factors are at play in explaining the gender wage gap.

iii. The gender wage gap is smaller among salaried and skilled workers and larger among self-employed.

iv. The number of hours worked is the factor that contributes most to explaining the gender wage gap.

v. Parenthood is an influential factor that contributes to increasing the gender wage gap. The number of children is negatively associated with the amount of women's wages but positively associated with the size of men's wages.

Although some factors contributing to the gender wage gap are identified in the empirical analysis, we remain unclear as to what explains the greatest share of the wage gap. We have therefore conducted a qualitative survey of45 young working women in different cities in Senegal. Findings from the qualitative survey confirm some results highlighted in the empirical analysis. Women's desire for flexible work hours, along with the burdens of parenthood and other household chores are key factors explaining the gender wage gap and the lower salary progression for women in Senegal. The broad literature on the gender wage gap in developed countries has also highlighted these factors in explaining the gender wage gap. However, their magnitude appears to be much larger in Senegal, as evidenced by the small share of the wage gap explained by standard observable workers' characteristics.

This paper is organized as follows. Section 2 presents a literature review. Section 3 describes the data and presents some descriptive statistics. Section 4 discusses the methodology. Section 5 presents the empirical results and discusses the findings from the qualitative survey. Section 6 concludes.

2. Literature Review

The gender wage gap is a problematic phenomenon that is occurring across the world and a burgeoning literature seeks to determine the underlying causes (Blau and Khan, 2007; 2017).

Empirical evidence of the gender wage gap is scarce in Africa. Glick and Sahn (1997) estimate the gender wage gap in favor of men in Guinea at 120% in self-employment and only 20% in the public sector after accounting for differences in observable characteristics. In the private

sector, however, women earn slightly higher wages than men. The authors also show that more than half of the gender gap is unexplained by observable characteristics.

In a study on seven West African cities Nordman, Robilliard and Roubaud (2011) show that the gender wage gap varies significantly across cities (from 49% in Niamey to 78% in Lomé) and that about 40% of this gap is explained by differences in observables characteristics. The authors also show that the gender gap is higher in the informal sector and that sectoral allocation accounts for one third of the gap.

Campos et al. (2015) have studied the gender gap in the profits of a sample of entrepreneurs in urban Uganda. They find that on average men earn more than women but that there is no gender gap in profits in a subsample of women who cross-over into male dominated sectors.

Existing theories suggest that gender pay gaps are driven by four principal factors. First, women's and men's differences of preferences may bring them to make different job choices, or to behave differently on the job market (Flory et al., 2010; Azmat and Ferrer, 2017; Cook et al., 2021). There is a large amount of behavioral economics literature highlighted gender differences in preferences particularly regarding propensity to take risks, social preferences, reaction to competition, and other personality traits that lead to different labor market decisions (Eckel and Grossman 2002, 2008; Croson and Gneezy 2009; Bertrand 2010; Blau and Kahn 2017). Much of this literature concludes that women tend to be more "risk-averse" than men. As a result, women will self-select for occupations and sectors perceived as less risky and/or they are less likely to risk bargaining for higher remuneration or advancement, resulting in gendered segregation in the labor market and gender wage gaps. Another well-known evidence in the social psychology literature is that women are less likely than men to initiate negotiations with their employer (Babcock and Laschever, 2003; Bowles, Babcock and Lai, 2007), they are also typically less successful negotiators. In addition, other studies as Dohmen et al. (2011) show a positive relationship between average occupational earnings and occupational earnings volatility. This potentially mean that women stay away from occupations or jobs that pay more on average (and stay away from educational tracks that lead into occupations or jobs that pay more on average) because they dislike more than men the associated greater earnings risks. Many high-profile, high-earning occupations often take place in highly competitive settings where winners and losers are singled out and winners are disproportionately rewarded. A few recent experimental papers have proposed a new explanation for why women may be relatively underrepresented in these "winner-take-all" or "winner-take-most" occupations. These papers suggest that women may systematically underperform relative to men in competitive

environments and that many women, even among the most able, may simply prefer to stay away from such environments.

Second, women may be subject to greater constraints on their choices of, or flexibility within, jobs, due to, for example, household and family constraints or social norms (Bertrand et al., 2010; Black, 1995; Card et al., 2016; Noonan and al., 2005; Goldin, 2014; Hardy and Kagy, 2020; Manning, 2013). Gender norms may directly affect work effort and career ambitions of workers of both sexes. Azmat and Ferrer (2017) in their study found that social norms affect women aspiration early in their lives. Relatedly, Bertrand et al. (2015) find that many women in the U.S. curtail their career ambition so that they do not earn more than their spouses. There is growing robust empirical evidence supporting the intuition that women value work flexibility more than men does due to the greater additional pressures on their time as they try to balance market and non-market work commitments. A particularly important component of this non-market work involves taking care of children. Bertrand et al. (2010) find that one key factor explaining why women with MBAs work shorter hours than men with MBAs and have fewer years of accumulated labor market experience is children. In particular, the MBA sample reveals that women without kids do not differ much from men (whether or not they themselves have kids) in terms of their labor supply. The group that has the lowest labor supply (and hence the lowest earnings) is women with children.

Many of the higher-paying jobs in the economy involve long hours and inflexible schedules. Also, those financially more rewarding careers require continuous labor force attachment in order to stay on the "fast track," which makes it difficult to combine those careers with job interruptions (motherhood...). Because women remain the dominant providers of childcare as well as of other forms of nonmarket work, these various job features might be particularly detrimental to them. In a study of the earnings trajectories of male and female graduates of the University of Chicago Booth School of Business, Bertrand et al. (2010) find that, ten years post-graduation, employed female graduates earn about 50 percent less than their male counterparts. The authors also document that most of this gender gap in earnings ten years out can be accounted for by differences in labor supply between men and women. Female graduates work shorter hours; they also have fewer years of actual labor market experience, as they are more likely to have taken some time out of the workforce since graduation from business school. In a very influential contribution, Goldin (2014) more generally demonstrates that much can be understood about the gender pay gap within occupations by accounting for the elasticity of earnings in that occupation with respect to hours worked. Goldin first shows that there is a

systematic relationship between the gender pay gap within a given occupation and the mean full-time, full year earnings (wage and business income) among men in that occupation: in higher paying occupations, women's earnings constitute a lower percentage of men's earnings. Goldin (2014) further shows that those high earnings occupations where women experience a particular large deficit compared to men are also occupations where the elasticity of annual income with respect to weekly hours worked is particularly great.

Third, the pay gap may reflect outright discrimination (Boring, 2017; Card et al., 2016; Goldin and Rouse, 2000; Hengel, 2018; MacNell and al., 2015; Mengel et al., 2018; Sarsons, 2017; Biasi and Sarsons 2021). Adesina-Uthman (2017) show that women have a high level of dissatisfaction due to the unfair treatment at work which leads to a decrease in their efficiency at work and consequently their career development and wages.

Finally, occupational segregation may also explain the gender pay gap. Several recent studies show that occupational segregation is a phenomenon common to both high- and low-income settings. Blau and Kahn (2017), for example, find that observed gender differences in occupations and industries are the most important factors underlying the gender wage gap in the United States. In contrast to literature from developed countries, Borrowman and Klasen (2020) demonstrated the persistence of both occupational and sectoral segregation in developing countries. They find that it is increasing in more developing countries than it is decreasing. Their study also shows that neither economic growth, greater openness to trade, higher female education, or decline in fertility will not do much to erode this persistent segregation. Rising female labor force participation appears to increase occupational segregation, although it reduces sectoral segregation. Thus, we cannot expect segregation to decline with these broad development trends.

3. Data and descriptive statistics

3.1. Data

We use data from the National Survey on Employment in Senegal (ENES-2015), a nationally representative survey with a sample size of 6000 households. Data were collected between June and July 2015. This paper uses the data of the 2847 individuals who declared wages (or profits for self-employed workers) during the survey.

Data on sectors are collected using the United Nations' nomenclature of economic activities ISIC (International Standard Industrial Classification). To study gender segregation, some sectors with low frequencies are aggregated. Sectors are aggregated by considering the standard classification into agriculture, secondary sector, and services as well as the average wage levels in the different sectors. Therefore, the sectors of mining, manufacturing, electricity, water supply and construction are all grouped into the secondary sector. The sectors of information and communication, financial activities, real estate activities, professional, scientific and technical activities, and public administration and defense are grouped in the high-end service. Finally, eight sectors are considered in this paper: agriculture, secondary sector, trade, accommodation/food service, high-end service, education/health/social work, other services, activities of households (see Table 1).

Similarly, we study gender segregation in occupations. Eight occupation groups are considered in this paper: higher grade professionals, employers, intermediate professionals, low-skilled professionals, agricultural self-employed workers, non-agricultural self-employed worker, family worker/apprentices/trainers, and undefined occupations (see Table 1).

3.2. Descriptive Statistics

Table 1 show basic descriptive statistics. The average monthly labor income in the sample is 80 759 FCFA. In the remainder of the paper, the term "wage" will be used to designate the labor income of both salaried and self-employed workers. 40% of workers in the sample are women. The average age is 40 years and workers have on average 3.5 years of education. Only 9% of workers in the sample are in the formal sector. 29% of workers in the sample have a wage job (salaried workers) and 71% are self-employed.

Among the eight sector groups, the trade sector is the largest comprising 34% of the workers, followed by the secondary sector (18%), the agriculture sector (15%), and the other services sector (15%). Accommodation/food service and high-end service are the smallest sector groups comprising less than 3% of the workers.

Regarding the occupations, about 50% of workers in the sample are self-employed in the non-agricultural sector. Self-employed in the agricultural sector make up 14% of workers in the sample.

Table 3-1: Summary statistics

Variable	Number of observations	Mean	Std. Dev.
Monthly wage (FCFA)	2,847	80759	198289
Age	2,847	39.5	13.3
Years of education	2,847	3.5	4.9
Woman	2,847	0.396	
Formal job	2,847	0.092	
Wage job (ref=Self-employed)	2,847	0.290	
Education level			
No education	2,847	0.560	
Some primary	2,847	0.208	
Primary	2,847	0.101	
Middle-school	2,847	0.050	
High school/university	2,847	0.082	
Residence area			
Urban Dakar	2,847	0.112	
Urban - other	2,847	0.569	
Rural	2,847	0.319	
Sector			
Agriculture	2,847	0.152	
Secondary	2,847	0.176	
Trade, repair of vehicles	2,847	0.344	
Accommodation/food service	2,847	0.025	
High-end service	2,847	0.026	
Education, health and social work	2,847	0.073	
Other services	2,847	0.147	
Activities of households	2,847	0.057	
Occupation			
Higher grade professionals	2,847	0.047	
Employer	2,847	0.047	
Intermediate professionals	2,847	0.068	
Low skilled professionals	2,847	0.073	
Agricultural self-employed worker	2,847	0.138	
Non-agricultural self-employed worker	2,847	0.495	
Family worker/apprentices/trainers	2,847	0.069	
Undefined occupation	2,847	0.062	

Table 3-2: Gender differences and T-test on key variables

Variable	(1) Women		(2) Men		T-test Difference
	N	Mean	N	Mean	(2)-(1)
Monthly wage (FCFA)	1128	53,779	1719	98,463	44,684
Age	1128	39.6	1719	39.4	-0.2
Years of education	1128	2.7	1719	3.9	1.2***
Formal job	1128	0.063	1719	0.111	0.048***
Wage job (ref=Self-employed)	1128	0.172	1719	0.368	0.196***
Education level					
No education	1128	0.619	1719	0.521	-0.098***
Some primary	1128	0.208	1719	0.207	-0.001
Primary	1128	0.081	1719	0.114	0.033***
Middle-school	1128	0.043	1719	0.054	0.011
High school/university	1128	0.049	1719	0.104	0.055***
Residence area					
Urban Dakar	1128	0.109	1719	0.113	0.004
Urban - other	1128	0.613	1719	0.540	-0.072***
Rural	1128	0.278	1719	0.346	0.068***
Industry					
Agriculture	1128	0.084	1719	0.197	0.113***
Secondary sector	1128	0.080	1719	0.239	0.159***
Trade, repair of vehicles	1128	0.547	1719	0.211	-0.336***
Accommodation/food service	1128	0.049	1719	0.009	-0.040***
High-end service	1128	0.017	1719	0.032	0.015**
Education, health and social work	1128	0.043	1719	0.092	0.049***
Other services	1128	0.081	1719	0.191	0.110***
Activities of households	1128	0.099	1719	0.030	-0.070***
Occupation					
Higher grade professionals	1128	0.034	1719	0.056	0.023***
Employer	1128	0.020	1719	0.065	0.045***
Intermediate professionals	1128	0.038	1719	0.088	0.050***
Low skilled professionals	1128	0.040	1719	0.095	0.056***
Agricultural self-employed worker	1128	0.090	1719	0.169	0.078***
Non-agricultural self-employed worker	1128	0.659	1719	0.387	-0.271***
Family worker/apprentice/trainer	1128	0.048	1719	0.083	0.035***
Undefined occupation	1128	0.071	1719	0.056	-0.015

The value displayed for t-tests are the differences in the means across the groups. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Low-skilled workers and the group of family workers/apprentices/trainees each represent 7% of the sample. The least representative occupations in terms of numbers are high-skilled professionals and employers, each of which represents less than 5% of the sample.

Differences between men and women are examined in Table 2. As expected, men earn more than women. The difference between the men's and women's wages is about 45,000 CFA FCFA per month. This difference is significant at the 1% level and represents 45% of the men's average wage. Male workers are more educated, and more likely to work in the formal sector and to have a salaried job. All these differences are significant at the 1% level. More than half (55%) of the female workers in the sample work in the trade sector, while this share is 21% for the male workers. Men are more represented than women in the agriculture and the secondary sector, while women are more represented in the activities of households. Regarding occupations, about two-third of the female workers are self-employed in the non-agricultural sector, while this share is 39% for the male workers. In all other occupations, men are more represented than women.

4. Methodology

4.1. Measure of gender segregation

To measure gender segregation in sectors and occupations, we use the index of dissimilarity developed by Duncan and Duncan (1955). This index is known as the most common index to measure segregation in the labor market.

The dissimilarity index is calculated as follows:

$$D = \frac{1}{2} \sum_{i=1}^{s} \left| \frac{m_i}{M} - \frac{f_i}{F} \right| \quad (1)$$

Where:

s is the number of sectors

m_i the number of male workers in sector i

f_i the number of female workers in sector i

M and F denote respectively the total number of male and female workers in the sample.

The same index can also be computed to measure gender segregation in occupation.

The value of the index is always between 0 and 1 and represents a percentage. A value of 0 reflects an equitable distribution between sectors (occupations) while a value of 1 corresponds to a maximum level of segregation. A value of x of the index is interpreted as follows: x% of female workers would need to swap sectors with male for there to be zero segregation.

This relative ease in its calculation and interpretation makes the dissimilarity index widely used. However, one of its main limitations is its sensitivity to the number of categories (Hakim, 1993). In this paper, this index will be used mainly to compare segregation at the sector and occupation levels, both of which having the same number of categories (8). The dissimilarity index will also be used to cross-analyze the level of segregation within sectors and occupations. The limitation on the sensitivity to the number of categories will therefore have little influence on the analyses performed in this paper.

4.2. Decomposition of the gender wage gap

This paper uses a decomposition technique popularized by Blinder (1973) and Oaxaca (1973) and commonly called the Oaxaca-Blinder decomposition. This method allows for a decomposition of the wage gap into two components: a first component, the explained part, which is the share of the gap explained by worker characteristics, and a second component, the unexplained wage gap, considered as a measure of discrimination or/and unobservable factors.

To illustrate the decomposition method, two wage regressions are estimated separately for men and women:

$$lnY_i^m = \alpha^m + \beta^m X_i^m + u_i^m \qquad (2)$$

$$lnY_i^w = \alpha^w + \beta^w X_i^w + u_i^w \qquad (3)$$

The difference of the estimated equations (2) and (3) can be written as follows:

$$\overline{lnY_{\mathrm{i}}^m} - \overline{lnY_{\mathrm{i}}^w} = \widehat{\beta^m}\overline{X_{\mathrm{i}}^m} - \widehat{\beta^w}\overline{X_{\mathrm{i}}^w} \qquad (4)$$

By adding and subtracting the term $\widehat{\beta^m}\overline{X_{\mathrm{i}}^w}$, equation (3) becomes:

$$\overline{lnY_{\mathrm{i}}^m} - \overline{lnY_{\mathrm{i}}^w} = \widehat{\beta^m}(\overline{X_{\mathrm{i}}^m} - \overline{X_{\mathrm{i}}^w}) + \overline{X_{\mathrm{i}}^w}(\widehat{\beta^m} - \widehat{\beta^w}) \qquad (5)$$

Equation (5) summarizes the decomposition technique of the wage gap. The first term $\widehat{\beta^m}(\overline{X_i^m} - \overline{X_i^w})$ reflects the wage gap resulting from the difference in characteristics ("endowments") between men and women. This part is the explained gender wage gap. The second term $\overline{X_i^w}(\widehat{\beta^m} - \widehat{\beta^w})$ expresses how men's returns evaluated with women's characteristics differ from women's returns evaluated with women's characteristics. This term indicates the unexplained part of the wage gap.

A known limitation of this decomposition methodology is the index number problem stated in Oaxaca (1973). Basically, Equation (5) could be written with the women's coefficients in the explained gap. The index number problem means that the results of the wage decomposition are sensitive to the choice of using men or women coefficients. In this paper, we use the recommendation by Neumark (1988) to use the coefficients from a pooled regression $\widehat{\beta^*}$ to avoid the arbitrariness of using men or women coefficients.

The concepts of the explained and unexplained gender wage gap depend on which individual characteristics are accounted for in the decomposition regressions. We distinguish two class of characteristics. Some characteristics can be considered as straightforward and essential to measure the gender wage gap. This is the case for education level, experience measured by age and age squared, and place of residence (urban and rural). Another class of individual characteristics are considered as endogenous because they can be influenced by gender and determined by the nature of the discrimination itself. This is typically the case of variables measured after entering the labor market. In this paper we consider three labor market variables in decomposing the gender wage gap: a dummy for working in the formal or informal sector, sectors (in 8 categories) and occupations (in 8 categories). These variables are considered to be relevant because a large share of the gender wage differentials is expected to come from these three labor market dimensions. The decomposition technique allows for estimating the contribution of each characteristic to the wage gap. The total of all the contributions is the share of the explained gender wage gap.

4.3. Qualitative survey

In addition to the empirical analysis, a qualitative study was carried out in six large cities of Senegal: Dakar and its suburbs, Kaolack, Mbour, Richard-Toll, Saint-Louis and Thiès. This qualitative survey was funded by the African Center for Economic Transformation (ACET) in a multi-country research project to better understand the barriers that young women in Senegal

face in the world of work. 45 young women were interviewed from three selected sectors: agriculture, business process outsourcing and hotel/tourism. The objective of this qualitative analysis was to dig in depth, questioning the factors and obstacles that perpetuate gender disparities in the labor market. The survey took place in December 2020. The data collected was analyzed using the grounded theory methodology (Glaser and Strauss, 2017). This method allows for the collection of information without prior assumptions, and all conclusions are drawn directly from the data collected. This method is deemed appropriate for identifying the major factors facilitating or hindering the career paths of the young women interviewed.

Although the data are collected as part of a broader study, they are analyzed in this paper specifically to better understand the roots of the gender wage gap in the Senegalese labor market.

5. Results

5.1. Occupational and sectoral segregation

The segregation indices are calculated with data in Tables 3 and 4 and are equal to half the sum of the absolute differences between the share of men and women in each sector or occupation (see the methodology section). Results show that sectoral segregation is greater than occupational segregation. The dissimilarity index is 44.5% for sectoral segregation and 28.6% for occupational segregation, suggesting a greater horizontal than vertical segregation in the labor market.

The larger sectoral segregation can be depicted through Table 3. Women are overrepresented in the trade sector (55%) while the distribution of men is fairly even across the four most male-dominated sectors: agriculture, secondary, trade and other services. Furthermore, women are fairly well represented in sectors where there are very few men: respectively 10% and 5% of female workers work in activities of households and in the accommodation/food service sector. These two sectors have the fewest share of male workers, respectively 3% and 1%.

The gender segregation in occupation is less pronounced. Yet, nearly two-thirds of women work as self-employed in a non-agricultural activity compared to 39% of men (Table 4). However, the ranking of occupation by size is roughly similar between men and women. Self-employment in a non-agricultural activity is the most dominated occupation for both men and women, followed by self-employment in an agricultural activity. Family workers, low-skilled and

intermediate professionals are the next most prevalent occupations for both men and women. Similarly, the occupations of higher-grade professionals and employers are the least prevalent for both sexes.

Table 3-3: Share of workers by sex and sectors

	Share of female workers	**Share of male workers**
Agriculture	8.4%	19.7%
Secondary	8.0%	23.9%
Trade, repair of vehicles	54.7%	21.1%
Accommodation/food service	4.9%	0.9%
High-end service	1.7%	3.2%
Education, health and social work	4.3%	9.2%
Other services	8.1%	19.1%
Activities of households	9.9%	3.0%
Total	100%	100%

Table 3-4: Share of workers by sex and occupations

	Share of female workers	**Share of male workers**
Higher-grade professionals	3.4%	5.6%
Employer	2.0%	6.5%
Intermediate professionals	3.8%	8.8%
Low skilled professionals	4.0%	9.5%
Agricultural self-employed worker	9.0%	16.9%
Non-agricultural self-employed worker	65.9%	38.7%
Family worker/apprentice/trainer	4.8%	8.3%
Undefined occupation	7.1%	5.6%
Total	100%	100%

The greater sectoral segregation appears to be related to the gender wage gap. The three sectors with relatively high shares of women and low shares of men are those with the lowest wages: trade, accommodation and food service, and activities of households (Table 5). The average monthly wages in these three sectors are respectively: 59,600 FCFA, 56,900 FCFA and 40,100 FCFA, and women represent between 63% and 78% of workers in these three sectors. The gender wage gaps in these sectors are also high particularly in the trade and the

accommodation/food sectors where men earn respectively about 61% and 48% more than women. The wage gap is notably high in the secondary and the agricultural sectors which are male-dominated sectors. on average, men's wage is 56% higher than women's wage in the secondary sector and 42% higher in the agricultural sector.

Differences in education level between men and women partly explain the observed gender wage gap within sectors. The gender wage gap is higher in sectors where men have more completed years of education is higher than women (secondary, trade, accommodation and food service). The high-end service sector is the only sector where women earn more than men, but women in this sector are also more educated in this sector.

Education is not the only factor explaining the gender wage gap. This is particularly true in the activities of households' sector where women are more educated (8% more completed years of education than men) but earn less (men earn 32% more). The agricultural sector is also a typical example where education does not greatly influence the gender wage gap. The gender gap in education is small albeit in favor of men, but men earn 42% more than women (Table 5).

As expected, wages are closely related to occupation: they are higher among higher grade professionals and managers, and lower among family-workers and apprentices (Table 6). However, the pattern of the gender wage gap is more complex. The gender wage gaps are low in the most skilled occupations and high in the least skilled. Within the lower-skilled occupations, wage gaps are significantly higher in the low-skilled professionals' category and among the self-employed. Among the least skilled occupations and those with the lowest levels of education (agriculture and family workers), the gaps are high in favor of men but lower than the average. The trend in wage differentials thus takes the form of an inverted U:

- In the most skilled occupations, the gender wage gap is low or even in favor of women among employers and intermediate professionals.
- In the least skilled occupations, wage gaps are slightly high but below average.
- The wage gap is at its widest in the low-skilled and self-employed occupations, which have a low level of education, but require more qualifications than the agricultural and family worker occupations.

Table 3-5: Wage, wage gap and education gap by sectors

Industry	Share of women (%)	Wage		Number of completed years of education	
		Average wage (FCFA)	Gender wage gap (%)	Average years of education	Gender gap in education (%)
Agriculture	21.9	62248	42.2	1.7	3.7
Secondary sector	18.0	73988	56.2	3.3	36.6
Trade, repair of vehicles	63.0	59599	61.2	2.2	33.7
Accommodation/food service	77.5	56915	48.4	3.2	36.5
High-end service	25.7	379453	-39.8	11.3	-5.0
Education, health and social work	23.7	174266	10.6	11.1	-4.6
Other services	21.7	78368	3.2	3.8	-5.4
Activities of households	68.7	40086	32.3	2.3	-8.3
Total	39.6	80759	45.4	3.4	26.2

Table 3-6: Wage, wage gap and education gap by occupations

Occupation	Share of women (%)	Wage		Number of completed years of education	
		Average wage (FCFA)	Gender wage gap (%)	Average years of education	Gender gap in education (%)
Higher grade professional	28.1	267344	12.3	13.4	3.8
Employer	17.0	213367	-56.2	5.2	-11.6
Intermediate professional	22.1	139315	-16.6	8.3	-20.8
Low skilled professional	21.5	93524	73.0	3.0	33.4
Agricultural self-employed worker	26.0	55783	32.0	1.5	-6.0
Non-agricultural self-employed worker	52.7	56758	52.7	2.5	33.5
Family worker/apprentice/trainer	27.6	33885	28.2	2.4	26.8
Undefined occupation	45.5	55858	45.0	3.1	45.1
Total	39.6	80759	45.4	3.5	31.6

5.2. Decomposing the gender wage gap

Table 7 shows the share of the explained and unexplained gender wage gap as well as the estimated contributions of each individual characteristic. The full regression results are shown

in Appendices 1 and 2. On average, women earn 62% less than men. This total gender wage gap is particularly high compared to usual values documented in develop countries: 26% in France (Chamkhi and Toutlemonde, 2015), 24% in Denmark (Kleven, Landais, Sogaard, 2019), 36% in the United States (Mandel and Semyonov, 2014).

A small share of this high wage gap is explained by observable workers' characteristics. In panel A of Table 7, only essential variables are accounted for: education, age and area of residence. These variables are not directly influenced by gender discrimination in the labor market and are thus considered as exogenous. When these characteristics are taken into account in the wage decomposition, only 7% of the 62% total wage gap is explained. The remaining 55% is unexplained. This means that, only 12% of the total gender wage gap is explained, and 88% are unexplained. This high portion of the unexplained gender wage gap is one of the main findings of the paper.

The inclusion of relevant labor market variables in a second step is expected to increase the share of the explained gender wage gap. Working in the formal sector, sectors and occupations are assumed to be one of the main drivers of the gender wage gap as women work predominantly in the less profitable sectors and occupations. The explained wage gap increases by only 3 points in the full specification (Table 7, panel B) compared to the basic specification. The explained gap reaches 10% of the overall gap of 62%. Therefore, the unexplained wage gap remains notably high: 83% of the total gender wage gap in Senegal is unexplained even when accounting for a large set of worker characteristics including sectors and occupations.

The decomposition of the explained gap shows that education and occupation are the most impactful variables to explain the gender wage gap. 7% of the total gender gap is explained by differences in education between men and women. This contribution is estimated at 5% for occupations, 4% for sectors and 3% for working in the formal sector. Age and area of residence are the least impactful variables in explaining the gender wage gap.

We further extend the Oaxaca-Blinder wage decomposition method to explore the heterogeneity of the gender wage gap by education level. Table 8 presents a summary of this heterogeneity analysis. We observe a U-shaped relationship between the gender wage gap and the education level. The gender wage gap is smallest among the least and the most educated workers. On average, women even earn more than men in the high school/university education group. Overall, the greatest part of the observed gender wage gap occurs among less-educated workers (those with a primary education or less).

Table 3-7: Decomposition of the gender wage gap: main results

Variables	Log points	Contribution in the gender gap explained (%)
Panel A: Basic specification		
Education	0.087	14.0
Age	-0.007	- 1.1
Area of residence	-0.008	-1.3
Total explained	0.072	11.6
Total unexplained	0.548	88.4
Total wage gap	0.620	100
Panel B: Full specification		
Education	0.041	6.6
Age	-0.005	-0.8
Area of residence	-0.006	-1.0
Formal sector	0.018	2.9
Industries	0.023	3.7
Occupations	0.032	5.2
Total explained	0.104	16.8
Total unexplained	0.516	83.2
Total wage gap	0.620	100

The share of the wage gap unexplained by observable characteristics decreases with education level. Among workers who have never been to (formal) school, the unexplained share of the wage is greater than the gross wage gap, 110% of the total wage gap is unexplained. This suggests that characteristics included in the regression are overall in favor of women who should have higher wages. The unexplained share of the gap is lower among the most educated workers.

Table 3-8: Heterogeneity of the Oaxaca-Blinder wage decomposition by education level

	No education	Some primary	Primary	Middle school	High school/ University
Men's wage	45529	48387	58087	81745	167745
Women's wage	26043	26526	28430	57342	203231
Difference	55.9%	60.1%	71.4%	35.5%	-19.2%
Explained	-5.9%	6.4%	15.6%	5.4%	-7.9%
Unexplained	61.7%	53.7%	55.8%	30.0%	-11.3%
Share unexplained	110.5%	89.3%	78.1%	84.7%	58.8%

5.3. Understanding the unexplained wage gap

5.3.1. Wage job vs self-employment

A first avenue for understanding the gender pay gap relies on the heterogeneity analysis between salaried job and self-employment. A first observation is that wages are higher among salaried individuals than among the self-employed. The latter are known to have less skilled and more precarious jobs. For instance, female salaried employees earn 2.4 times more than self-employed women. The second observation is that the gender pay differentials are clearly driven by the self-employed. Self-employed women earn 64% less than their male counterparts while this gender gap is only 24% among salaried workers (Table 9).

The structure of the wage decomposition is also different between these two groups. Among salaried employees, the share of pay differentials explained by characteristics is even negative (-3.8%). This means that salaried women have characteristics that should allow them to earn higher wages than men. Notably, salaried women are more educated and work more often in the formal sector. Among the self-employed, the gender pay gap is very high, but the share of the gap explained by observable characteristics is low (only 8%). 92% of the difference is not explained by these characteristics.

5.3.2. The role of the gender gap in hours worked

An important explanatory factor for the gender wage gap often put forward in the literature on developed countries is that women work fewer hours than men. Unfortunately, time worked is often not well captured in surveys in developing countries. In our data, we can calculate the number of hours worked per week, but only for the self-employed. Questions on working time were not asked to salaried workers. In Africa, with the scale of the gender gap and the weight of social norms resulting in an extreme division of labor, working hours can be expected to be a major determinant of the gender wage gap. Thus, the fact that women earn less can be largely explained by their lower working time compared to men. The rest of their time being devoted to domestic work and/or childcare.

When the weekly working time is included in the Oaxaca-Blinder decomposition, it becomes the most influential characteristic of the decomposition (Table 10). The contribution of working time to the wage gap is 8.6%. This is higher than the sum of the contributions of occupation and education combined, which are the two other most influential variables. When working time is accounted for, the explained part of the wage gap goes from 92% to 82%.

Table 3-9: Decomposition of the gender wage gap: wage workers vs self-employed

Variables	Log points	Contribution in the gender gap explained (%)
Panel A: Wage workers - full specification		
Education	-0.019	-0,08
Age	0.022	0,09
Area of residence	-0.012	-0,05
Formal sector	-0.018	-0,08
Industries	0.022	0,09
Occupations	-0.030	-0,13
Total explained	-0.038	-16,0
Total unexplained	0.276	116,0
Total wage gap	0.238	100
Panel B: Self-employed - full specification		
Education	0,020	3,1
Age	-0,001	-0,2
Area of residence	0,002	0,3
Formal sector	0,007	1,1
Industries	-0,002	-0,3
Occupations	0,025	3,9
Total explained	0,053	8,2
Total unexplained	0,590	91,8
Total wage gap	0,643	100

Table 3-10: Decomposition of the gender wage gap among the self-employed: impact of working time

Variables	Log points	Contribution in the gender gap explained (%)
Education	0,021	3,3
Age	0	0,0
Area of residence	0,004	0,6
Formal sector	0,007	1,1
Industries	0,004	0,6
Occupations	0,025	3,9
Hours worked per week	0,055	8,6
Total explained	0,118	18,4
Total unexplained	0,525	81,6
Total wage gap	0,643	100

5.3.3. The impact of children

In the recent economic literature on developed countries, children are one of the key factors highlighted to explain the gender wage gap (Kleven, Landais and Sogaard, 2019; Adda, Dustmann and Stevens, 2017, Angelov, Johansson and Lindahl, 2016). In Africa, although studies on the gender wage gap is scarce, one would expect the impact of children to be a determinant factor in explaining gender gaps due to the weight of social norms.

The Oaxaca-Blinder decomposition method does not allow us to accurately assess the impact of parenthood on the gender wage gap. Adding the number of children in the Oaxaca-Blinder decomposition model, raises the unexplained gender gap from 51.6% to 53.1%. This impact on the unexplained gap is rather small and goes in the opposite direction than expected. The reason for this can be twofold. First, the differences in the number of children between men and women are quite small. In the sample, the men have 3.3 children, and the women have 3.6 children on average. This small difference translates into a low explanatory power of the number of children in the wage decomposition. Second, the direction of the impact of the number of children on wages is ambiguous and strongly depends on gender. In a regression where men and women are pooled, the number of children has no significant impact on wages, unlike characteristics such as education, occupation or working time which have a significant impact on wage with the same direction regardless of gender.

A better way to examine the impact of having children on the gender wage gap is to estimate a linear wage regression model with interaction terms between gender and having children. Table 11 shows two sets of regressions: a first set showing the impact of having at least one child on wage (columns 1 and 2) and a second one looking at the impact of the number of children (columns 3 and 4). Results show a clear differential pattern on the impact of parenthood on men and women. With all controls included, having at least one child reduces women's monthly wage by 14% but increases men's monthly wage by 15%. Results on the impact of the number of children show that one additional child reduces women's monthly wages by 3%. For men, the impact of the number of children on wage is non-significant.

These results highlight strong correlations between having children and women's wages but cannot be interpreted as causal effects. As is well known in the empirical literature, endogeneity is a real issue when estimating the impact of parenthood on wage. Two endogeneity issues are highlighted in the literature. First, women with lower wages or lower career progression expectations are more likely to choose to have (more) children (double causality). Second,

having a mentality/attitude advocating the importance of family and the priority of caring for children is correlated with both the number of children and salary or career progression.

However, these endogeneity issues cannot explain the differentiated impact between men and women. Although the point estimates cannot be interpreted as causal effects, this striking difference in impact between men and women tend to prove that having children is a major factor in explaining the gender pay gap in Senegal.

Table 3-11: Linear regression on the impact of children on wage. Dependent variable: Log monthly wage

	(1)	(2)	(3)	(4)
Have at least one child * woman	-0.201**	-0.136*		
	(0.080)	(0.071)		
Have at least one child * man	0.280***	0.150***		
	(0.048)	(0.055)		
Number of children * woman			-0.052***	-0.030***
			(0.010)	(0.009)
Number of children * man			0.000	0.003
			(0.006)	(0.007)
Woman	-0.258***	-0.303***	-0.428***	-0.409***
	(0.083)	(0.062)	(0.057)	(0.047)
Education level (Ref=No education)				
Some primary		-0.019		-0.026
		(0.039)		(0.039)
Primary		0.064		0.054
		(0.056)		(0.056)
Middle school		0.262***		0.247***
		(0.074)		(0.075)
High school/university		0.680***		0.674***
		(0.099)		(0.099)
Age		0.017***		0.022***
		(0.007)		(0.006)
Age squared		-0.000**		-0.000***
		(0.000)		(0.000)
Area of residence (Ref=Urban Dakar)				
Urban - other		-0.537***		-0.528***
		(0.047)		(0.047)
Rural		-0.666***		-0.654***
		(0.055)		(0.055)
Own or work in a formal firm		0.365***		0.364***
		(0.069)		(0.069)
Industries (Ref=Agriculture)				
Secondary sector		-0.053		-0.061
		(0.080)		(0.080)
Trade, repair of vehicles		-0.037		-0.043

		(0.079)		(0.079)
Accommodation/food service		-0.065		-0.065
		(0.123)		(0.123)
High-end service		0.367**		0.363**
		(0.149)		(0.149)
Education, health and social work		0.133		0.124
		(0.107)		(0.107)
Other services		-0.015		-0.022
		(0.081)		(0.080)
Activities of households		-0.083		-0.079
		(0.087)		(0.087)
Occupations (Ref=Higher grade)				
Employer		-0.185		-0.175
		(0.132)		(0.132)
Intermediate professionnals		-0.342***		-0.328***
		(0.091)		(0.091)
Low skilled professionals		-0.550***		-0.531***
		(0.110)		(0.110)
Agricultural self-employed worker		-0.749***		-0.742***
		(0.119)		(0.119)
Non-agricultural self-employed worker		-0.619***		-0.608***
		(0.096)		(0.096)
Family worker/apprentices/trainers		-0.840***		-0.833***
		(0.107)		(0.107)
Marital status (Ref=Single)				
Married		0.089*		0.147***
		(0.050)		(0.046)
Divorced/widowed		0.059		0.100
		(0.077)		(0.076)
Constant	10.741***	11.371***	10.933***	11.307***
	(0.038)	(0.185)	(0.031)	(0.185)
Observations	2,844	2,844	2,844	2,844
R-squared	0.105	0.373	0.101	0.372
T-test Woman - Man	-0.482***	-0.287***	-0.0523***	-0.0330***

5.4. Findings from a qualitative survey

Results from the qualitative survey have highlighted the constraints faced by Senegalese women in the world of work which could influence their career trajectory and wages.

First, we find that spoken, and unspoken traditional norms and social stereotypes still exert strong influence on women's career choices and evolution and therefore on the gender wage gap. Patriarchy, traditional rules, and silent gate keeping rules that dictate what women should or should not do, all play a key role in job and career choices, career evolution, and wages. Women we interviewed informed us that there are some no-go careers, for instance, in the

banking sector; none of them aspires to fill roles such as systems administrator, as this requires working at night, which would make it impossible to combine work with family responsibilities. As shared by a 33-year-old woman in Dakar: *"Some positions are too stressful; I don't feel ready for all these responsibilities at the moment".* Similarly, more than 50% of women interviewed in our sample affirm that they can't (do not want to) have high positions of responsibility in their companies because it would harm the stability of their family life due to their disproportionate share of domestic work particularly caring for children and elderly parents**.** Young women thus prefer to staying in the same position, even if it means not having a wage progression (at least until their children grow up). Because of these cultural norms and gender roles, women are less likely to be able to handle the extreme work pressures required by positions of responsibility. As a result, a large share of the women interviewed occupy positions with low levels of responsibility, which implies lower wages than those of their male colleagues. This issue of female prevalence in low positions contributes immensely to the gender pay gap. A 32-year-old woman in Kaolack told us *"I am frustrated that I cannot develop professionally. But I must be reasonable because at home I take care of the children and my in-laws, so having additional responsibilities at work will prevent me from fulfilling my responsibilities at home. This can be frowned upon in our society and could even have serious repercussions on my marriage".* The study also recorded instances of young women who, despite having been given opportunities similar to their husband's, still hold subservient attitudes because they performed particular roles in the family which influenced their expectations in terms of their abilities and aspirations. *"Most of the house chores are done by me before and after my office hours. That is a typical Senegalese home."* (a 30-year-old woman in Dakar). Still on gender roles, some women therefore grow up accepting to be subservient to men even in their careers. In instances where the family is led by traditional gender norms, our study traced the impact to greatly influence women's workplace mobility as these women are not free to take up roles far from their homes, unlike men who are free to commute to work no matter the distance because they have no domestic chores or care work. A 33-year-old woman in Thiès said: *" It is very difficult combining career, marriage and children. For example, two years ago, I was offered a better paying job in a subsidiary of the company where I work but I could not take this opportunity because of my children and my husband who did not agree. The funny thing is that a year later my husband got an offer for a better paying job in another city and unlike me he was able to take this opportunity.".* This result is more consistent with general gendered norms limiting female's workers access to, and movement within the labor market. Such norms are still widespread in the Senegal context and are often motivated by concerns for

the safety or "vulnerability" of women in the world outside the household. In fact, women are encouraged to pursue certain types of work and discouraged from pursuing others. Such gender role expectations can be very subtle, such as when the mass media promotes stereotypes about what is considered appropriate behavior for women, or they can be profound, such as when women enter traditionally male-dominated fields and encounter hostile work environments**.** *" One day I had a fight with a waiter to whom I was giving instructions. He replied that he would not receive orders from a woman*" (A 29-year-old woman in Mbour).

Secondly, women find it more difficult to progress in their careers and earn as good wages as men in certain occupations. Indeed, the long hours and inflexibility required for some of the highest-paid occupations which are incompatible with Senegal's historically gendered family roles can also explain the large gender wage gap. In Senegal, social norms and expectations exert pressure on women to bear a disproportionate share of the domestic work, particularly caring for children and elderly parents. This can make it particularly difficult for them (relative to their male peers) to be available at the drop of a hat on a Sunday evening after working a 40-hour week. To the extent that availability to work long and atypical hours makes the difference between getting a promotion or seeing one's career stagnate, women are disadvantaged, and this disadvantage is reinforced in a vicious circle. It would appear that wage differences can be caused by the twin facts that women frequently and for longer periods work less hours than men, and that they tend to interrupt their careers. Men, by contrast tend to have longer working hours and can avoid career breaks. Such unbroken longer work experience contributes to higher incomes. The big differences emerge when men opt for longer working hours and are promoted, whereas women reduce their working hours and refrain from building their careers. A 30-year-old in Saint-Louis declared: *"Marriage and family life are very important to me, so I limit myself to my current position which allows me to finish early".*

Thirdly, discrimination against young women is alive and real across the labor market. The inequalities are financial, technological, informational, or managerial. On the financial front, access to resources to start and develop business is limited for women due to lack of recognized collateral such as land title deeds, and unequal pay for the same job done was recorded. On the technological front, most of the high paying technical jobs preferred to engage men due to stereotypes. In terms of information, due to social norms, women found that they did not get much information on opportunities, as their networks are not as strong as compared to that of their male counterparts. Lastly, on management issues, we noted that Senegal does not have a well-developed labor market welfare system. For example, the interviewees shared the fact that

they do not have nurseries at the workplace or flexible working hours when they are lactating mothers. Thus, young women shy away from aspiring for high managerial positions due to expectations which compete with family responsibilities. The above issues severely limit the activities of young women relegating them to the informal sector where inequalities are even more exacerbated.

Finally, we find that the barriers and inequalities in terms of access, development and wages are even greater for unskilled women with low levels of education. In fact, we find that young women who are exposed to quality education and training are much more prepared to navigate the patriarchal labor market with its day-to-day challenges. This study found that young women who received the necessary career support and quality technical and managerial training, were able to compete effectively in the labor market. Some of them stated that they did not observe any difference in salaries between themselves and their male colleagues for the same position held. Women who have felt greater gender pay gaps are those with the lowest level of education.

At the end of this analysis, we can conclude that young Senegalese women face many barriers and are not yet well enough prepared to succeed in the current and future labor market. These barriers, especially the persistence of certain gender and societal norms, and societal prejudices to the detriment of women, gender norms, as well as labor market inflexibility and lack of education, may explain the large gender gap in labor market participation and wages.

6. Conclusion

Our paper contributes to filling the gap on a topic widely studied in developed countries but barely explored in Africa. We find that gender segregation within sectors is a key feature of the Senegalese labor market and needs to draw the attention of researchers as well as policymakers. Women are widely overrepresented in the lowest paying sectors typically trade, accommodation/food service and the sector of activities of households. Male workers are dominant in the highest-paying sectors: high-end service, education, health, social work, and manufacturing. However, this high gender segregation is not enough to explain the large gender wage gap. Wage gaps within sectors are also high, and even higher in female-dominated sectors (particularly in trade). This suggests that the deep causes or mechanisms behind the gender wage gap should also be sought in factors other than sectoral segregation. The wage decomposition exercise reveals that the number of working hours is the most influential

observable characteristic in explaining the gender wage gap, and that the share of the gap unexplained by workers characteristics is notably high. Further analysis has shown the critical importance of parenthood in the formation of the gender wage gap. The number of children decreases women's wages but increases men's wages. This paper has shown that the drivers of the gender wage gap in Senegal are not well known and difficult to identify in empirical data. However, in line with the findings highlighting the role of working hours and parenthood, gender norms and social barriers appear as strong candidates to explain the large gender wage gap in Senegal. Our empirical findings are complemented with results from a qualitative survey that confirms the major influence of the gendered division of labor in the Senegalese society, shedding some light on the possible mechanisms behind the gender wage gap.

With the rapid changes in the world of work and the future generation of better educated young women entering the labor market, there is an urgent need for future research to further explore and better understand the mechanisms, in particular the role of social barriers, that drive the gender wage gap.

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Appendix

Appendix 3-1: Oaxaca-Blinder decomposition: Basic specification

VARIABLES	(1) overall	(2) explained	(3) unexplained
Highest education level (ref=No education)			
Some primary		-0.000	-0.002
		(0.000)	(0.016)
Primary		0.005*	0.010
		(0.002)	(0.011)
Middle-school		0.006	-0.016*
		(0.005)	(0.008)
High school/university		0.076***	-0.049***
		(0.014)	(0.010)
Age		-0.007	1.464***
		(0.020)	(0.431)
Age squared		0.000	-0.631***
		(0.017)	(0.231)
Residence area (Urban Dakar)			
Urban - other		0.037***	0.034
		(0.010)	(0.059)
Rural		-0.045***	-0.028
		(0.012)	(0.033)
Men	10.933***		
	(0.024)		
Women	10.313***		
	(0.027)		
Difference	0.620***		
	(0.036)		
Explained	0.072***		
	(0.018)		
Unexplained	0.548***		
	(0.031)		
Constant			-0.233
			(0.240)
Observations	2,847	2,847	2,847

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 3-2: Oaxaca-Blinder decomposition: Full specification

VARIABLES	(1) overall	(2) explained	(3) unexplained
Highest education level (ref=No education)			
Some primary		0.000	-0.001
		(0.000)	(0.016)
Primary		0.001	0.008
		(0.002)	(0.010)
Middle-school		0.003	-0.013
		(0.002)	(0.008)
High school/university		0.037***	-0.046***
		(0.008)	(0.013)
Age		-0.005	0.871*
		(0.013)	(0.457)
Age squared		0.000	-0.349
		(0.011)	(0.238)
Residence area (Urban Dakar)			
Urban - other		0.038***	0.033
		(0.011)	(0.058)
Rural		-0.044***	-0.015
		(0.012)	(0.035)
Formal sector (ref=informal)		0.018***	0.005
		(0.005)	(0.011)
Sectors (ref=agriculture)			
Secondary sector		-0.010	0.015
		(0.013)	(0.021)
Trade, repair of vehicles		0.018	0.035
		(0.026)	(0.069)
Accommodation/food service		0.003	-0.005
		(0.005)	(0.007)
High-end service		0.005*	0.001
		(0.003)	(0.007)
Education, health and social work		0.006	-0.005
		(0.005)	(0.012)
Other services		-0.003	-0.008
		(0.009)	(0.019)
Activities of households		0.004	0.001
		(0.006)	(0.012)
Occupation (ref= Higher grade professionals)			
Employer		-0.008	-0.014
		(0.006)	(0.010)
Intermediate professional		-0.017***	-0.014
		(0.005)	(0.010)
Low skilled professional		-0.031***	-0.002
		(0.008)	(0.012)
Agricultural self-employed worker		-0.058***	-0.042
		(0.013)	(0.029)
Non-agricultural self-employed worker		0.167***	-0.121
		(0.029)	(0.124)
Family worker/apprentice/trainer		-0.031***	-0.020

		(0.009)	(0.013)
Undefined occupation		0.010	-0.020
		(0.006)	(0.015)
Men	10.933***		
	(0.024)		
Women	10.313***		
	(0.027)		
Difference	0.620***		
	(0.036)		
Explained	0.104***		
	(0.025)		
Unexplained	0.516***		
	(0.034)		
Constant			0.223
			(0.376)
Observations	2,847	2,847	2,847

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix 3-3: Oaxaca-Blinder decomposition: Wage workers

VARIABLES	(1) overall	(2) explained	(3) unexplained
Highest education level (ref=No education)			
Some primary		-0.000	-0.064**
		(0.001)	(0.028)
Primary		0.001	0.006
		(0.004)	(0.014)
Middle-school		-0.009	-0.077***
		(0.008)	(0.029)
High school/university		-0.011	-0.219***
		(0.023)	(0.059)
Age		0.045	1.493**
		(0.030)	(0.683)
Age squared		-0.023	-0.718**
		(0.022)	(0.359)
Residence area (Urban Dakar)			
Urban - other		0.027	0.412***
		(0.018)	(0.132)
Rural		-0.039	0.152**
		(0.024)	(0.062)
Formal sector (ref=informal)		-0.018	0.036
		(0.013)	(0.047)
Sectors (ref=agriculture)			
Secondary sector		-0.002	-0.001
		(0.024)	(0.023)
Trade, repair of vehicles		-0.004	0.027*
		(0.005)	(0.015)
Accommodation/food service		-0.001	-0.001
		(0.002)	(0.005)
High-end service		-0.008	0.048*
		(0.009)	(0.026)
Education, health and social work		-0.003	-0.030
		(0.005)	(0.063)
Other services		-0.004	0.004
		(0.006)	(0.045)
Activities of households		0.044	-0.025
		(0.028)	(0.053)
Occupation (ref= Higher grade professionals)			
Employer		0.002	-0.027**
		(0.011)	(0.013)
Intermediate professionals		-0.005	-0.087**
		(0.010)	(0.044)
Low skilled professionals		-0.014	-0.059
		(0.019)	(0.056)
Agricultural self-employed worker		-0.005	-0.003
		(0.005)	(0.003)
Non-agricultural self-employed worker		0.005	-0.004
		(0.006)	(0.011)
Family worker/apprentices/trainers		-0.029	-0.089**

		(0.027)	(0.042)
Undefined occupation		0.016	-0.055**
		(0.016)	(0.026)
Men	11.085***		
	(0.041)		
Women	10.846***		
	(0.079)		
Difference	0.238***		
	(0.089)		
Explained	-0.038		
	(0.071)		
Unexplained	0.276***		
	(0.057)		
Constant			-0.444
			(0.496)
Observations	826	826	826

Appendix 3-4: Oaxaca-Blinder decomposition: Self-employed workers

VARIABLES	(1) overall	(2) explained	(3) unexplained
Highest education level (ref=No education)			
Some primary		0.000	0.019
		(0.000)	(0.019)
Primary		0.001	0.008
		(0.002)	(0.013)
Middle-school		0.002	-0.003
		(0.002)	(0.007)
High school/university		0.017***	-0.011*
		(0.006)	(0.006)
Age		0.025*	0.660
		(0.015)	(0.632)
Age squared		-0.026*	-0.237
		(0.015)	(0.326)
Residence area (Urban Dakar)			
Urban - other		0.054***	-0.025
		(0.013)	(0.064)
Rural		-0.052***	-0.047
		(0.014)	(0.042)
Formal sector (ref=informal)		0.007*	0.003
		(0.004)	(0.005)
Sectors (ref=agriculture)			
Secondary sector		-0.009	0.022
		(0.015)	(0.030)
Trade, repair of vehicles		-0.007	0.075
		(0.037)	(0.103)
Accommodation/food service		0.002	-0.005
		(0.007)	(0.010)
High-end service		0.004	-0.006
		(0.004)	(0.005)
Education, health and social work		0.003	0.001
		(0.004)	(0.002)
Other services		0.004	-0.000
		(0.012)	(0.023)
Activities of households		0.001	0.003
		(0.005)	(0.011)
Occupation (ref= Higher grade professionals)			
Employer		0.000	0.044**
		(0.000)	(0.021)
Intermediate professionals		0.000	0.000
		(0.000)	(0.000)
Low skilled professionals		0.000	0.000
		(0.000)	(0.000)
Agricultural self-employed worker		-0.101***	0.097
		(0.022)	(0.063)
Non-agricultural self-employed worker		0.106***	-0.113
		(0.022)	(0.166)
Family worker/apprentices/trainers		0.007	-0.007

		(0.005)	(0.005)
Undefined occupation		0.013**	-0.015
		(0.007)	(0.016)
Men	10.845***		
	(0.029)		
Women	10.202***		
	(0.027)		
Difference	0.643***		
	(0.039)		
Explained	0.053**		
	(0.025)		
Unexplained	0.590***		
	(0.042)		
Constant			0.128
			(0.436)
Observations	2,021	2,021	2,021

Appendix 3-5: Oaxaca-Blinder decomposition: Wage workers. Impact of the number of hours worked

VARIABLES	(1) overall	(2) explained	(3) unexplained
Highest education level (ref=No education)			
Some primary		-0.000	-0.059**
		(0.001)	(0.028)
Primary		0.001	0.005
		(0.004)	(0.014)
Middle-school		-0.009	-0.076***
		(0.008)	(0.028)
High school/university		-0.010	-0.216***
		(0.023)	(0.057)
Age		0.048	1.638**
		(0.031)	(0.676)
Age squared		-0.025	-0.802**
		(0.023)	(0.351)
Residence area (Urban Dakar)			
Urban - other		0.026	0.426***
		(0.018)	(0.127)
Rural		-0.037	0.156***
		(0.023)	(0.061)
Formal sector (ref=informal)		-0.017	0.040
		(0.012)	(0.046)
Sectors (ref=agriculture)			
Secondary sector		-0.011	0.008
		(0.024)	(0.024)
Trade, repair of vehicles		-0.006	0.032**
		(0.006)	(0.016)
Accommodation/food service		-0.000	0.002
		(0.002)	(0.006)
High-end service		-0.007	0.054**
		(0.008)	(0.026)
Education, health and social work		-0.000	-0.012
		(0.004)	(0.064)
Other services		-0.007	0.029
		(0.007)	(0.047)
Activities of households		0.063**	0.009
		(0.029)	(0.057)
Occupation (ref= Higher grade professionals)			
Employer		0.002	-0.027**
		(0.010)	(0.013)
Intermediate professional		-0.005	-0.082*
		(0.010)	(0.042)
Low skilled professional		-0.014	-0.062
		(0.018)	(0.054)
Agricultural self-employed worker		-0.006	-0.003
		(0.006)	(0.003)
Non-agricultural self-employed worker		0.005	-0.006
		(0.005)	(0.011)
Family worker/apprentice/trainer		-0.029	-0.095**

		(0.027)	(0.041)
Undefined occupation		0.016	-0.058**
		(0.015)	(0.026)
Working time (ref=full time)			
Daily contract		0.000	0.007
		(0.004)	(0.018)
Part-time job		-0.011	0.003
		(0.007)	(0.015)
Seasonal		0.003	0.012
		(0.005)	(0.016)
Men	11.085***		
	(0.041)		
Women	10.846***		
	(0.079)		
Difference	0.238***		
	(0.089)		
Explained	-0.032		
	(0.072)		
Unexplained	0.270***		
	(0.057)		
Constant			-0.653
			(0.504)
Observations	826	826	826

Appendix 3-6: Oaxaca-Blinder decomposition: Self-employed workers. Impact of number of hours worked

VARIABLES	(1) overall	(2) explained	(3) unexplained
Highest education level (ref=No education)			
Some primary		0.000	0.018
		(0.000)	(0.019)
Primary		0.001	0.010
		(0.002)	(0.013)
Middle-school		0.002	-0.004
		(0.002)	(0.007)
High school/university		0.018***	-0.010*
		(0.007)	(0.006)
Age		0.026*	0.709
		(0.015)	(0.624)
Age squared		-0.026*	-0.239
		(0.015)	(0.324)
Residence area (Urban Dakar)			
Urban - other		0.051***	-0.011
		(0.013)	(0.063)
Rural		-0.047***	-0.033
		(0.013)	(0.042)
Formal sector (ref=informal)		0.007*	0.002
		(0.004)	(0.005)
Sectors (ref=agriculture)			
Secondary sector		-0.007	0.021
		(0.015)	(0.030)
Trade, repair of vehicles		-0.001	0.050
		(0.037)	(0.103)
Accommodation/food service		0.000	-0.005
		(0.007)	(0.010)
High-end service		0.004	-0.006
		(0.004)	(0.005)
Education, health and social work		0.004	0.001
		(0.004)	(0.003)
Other services		0.003	-0.002
		(0.012)	(0.023)
Activities of households		0.001	0.001
		(0.005)	(0.011)
Occupation (ref= Higher grade professionals)			
Employer		0.000	0.032
		(0.000)	(0.020)
Intermediate professional		0.000	0.000
		(0.000)	(0.000)
Low skilled professional		0.000	0.000
		(0.000)	(0.000)
Agricultural self-employed worker		-0.095***	0.068
		(0.022)	(0.060)
Non-agricultural self-employed worker		0.101***	-0.173

		(0.022)	(0.158)
Family worker/apprentice/trainer		0.006	-0.006
		(0.004)	(0.004)
Undefined occupation		0.013**	-0.020
		(0.006)	(0.016)
Number of hours worked per week		0.055***	0.127
		(0.011)	(0.098)
Men	10.845***		
	(0.029)		
Women	10.202***		
	(0.027)		
Difference	0.643***		
	(0.039)		
Explained	0.118***		
	(0.028)		
Unexplained	0.525***		
	(0.043)		
Constant			-0.005
			(0.439)
Observations	2,021	2,021	2,021

CONCLUSION GENERALE

Conclusion Générale

Les femmes du monde entier particulièrement celles d'Afrique subsaharienne continuent d'être confrontées à des inégalités culturelles, socio-économiques et juridiques qui les empêchent de participer pleinement à la marche de la société et à son rayonnement. Elles sont souvent surreprésentées dans les structures informelles, supportent la majeure partie du fardeau des foyers (corvées de la maison, soins des enfants et des personnes âgées…). Un nombre disproportionné de femmes vivent dans des conditions précaires et dangereuses et des obstacles importants subsistent à leur accès et leur maintien dans le système éducatif, leur accès à des emplois décents, et au contrôle des actifs. Mais le changement est possible ! L'objectif de cette thèse était de tenter d'apporter des connaissances supplémentaires sur la persistance des inégalités de genre en Afrique subsaharienne. La littérature existante à ce sujet est certes large, mais beaucoup de choses restent inconnues. Les trois chapitres de la thèse concourent donc à examiner de manière empirique les déterminants des différences de genre observées en Afrique et d'identifier les caractéristiques socio-économiques individuelles et les barrières sociétales difficiles à éliminer qui empêchent les femmes du continent de réaliser leur plein potentiel. Il s'est agi tout au long des trois chapitres de contribuer à une meilleure compréhension des raisons de la persistance des inégalités de genre en Afrique en mettant l'accent sur les différences de comportements et des préférences entre les hommes et les femmes et aussi les inégalités observées dans leur formation et sur le marché de l'emploi.

Le premier chapitre tente de contribuer à une meilleure compréhension de l'écart entre les sexes dans les préférences en matière de biens publics en Afrique et d'explorer le rôle des normes de genre sur ces différences. Dans les pays occidentaux, il est bien établi que les choix et les préférences des femmes diffèrent systématiquement de ceux des hommes. Cependant, cet écart observé se réduit avec l'autonomisation croissante des femmes au sein du foyer et de la société. Les résultats trouvés dans cet article suggèrent que, quel que soit leur niveau d'éducation et leur statut d'emploi, les femmes affichent toujours/majoritairement des préférences plus importantes pour les biens sociaux : *l'éducation et la santé*. Ces résultats soutiennent fortement la théorie de ‘'l'éthique du care'', qui stipule que les femmes sont plus susceptibles d'assumer la responsabilité de prendre soin des autres et de protéger les plus vulnérables de la société, en raison de modèles de socialisation différenciés. Les conclusions de ce chapitre impliquent que cette responsabilité

attribuée aux femmes reste inchangée lorsque les femmes sont plus autonomes ou lorsque les normes de genre sont plus progressistes. Cependant, les femmes des pays ayant une opinion traditionnelle de leurs rôles affichent des préférences plus élevées pour l'agriculture, ce qui réduit l'écart avec les préférences des hommes. Une explication potentielle réside dans le fait que les femmes plus traditionnelles peuvent être plus susceptibles de se conformer aux préférences des hommes.

Le deuxième chapitre, contribue au débat sur les avantages relatifs de l'enseignement technique et professionnel par rapport à l'enseignement général, en mettant l'accent sur les différences entre les sexes. En effet, nous essayons de comprendre comment les hommes et les femmes prennent des décisions concernant la participation à l'Enseignement et la formation technique et professionnel (EFTP) et de comparer ses rendements sur le marché de l'emploi avec ceux de l'enseignement général. Nous utilisons des données microéconomiques de la dernière enquête nationale sur l'emploi au Sénégal (ENES 2015), ce qui permet d'explorer le rôle du genre dans les rendements de l'EFTP et le choix de participation. Les résultats montrent que l'éducation et la profession du père sont des déterminants importants de la participation à l'EFTP, tant pour les hommes que pour les femmes. L'éducation et la profession de la mère ne jouent a priori aucun rôle dans les choix scolaires des enfants. Ce résultat est tout à fait conforme à l'étude de Dumas et Lambert (2011) dans le contexte du Sénégal. Les résultats suggèrent également que la formation professionnelle devient de moins en moins populaire auprès des jeunes générations, car on observe une préférence accrue pour l'enseignement général chez les jeunes. En termes de rendement, il existe des différences marquées entre l'impact de l'EFTP sur les hommes et les femmes. L'EFTP n'a pas d'impact sur l'accès à l'emploi. Elle permet toutefois, aux hommes de gagner entre 15 et 20 % de plus que ceux qui ont un diplôme de l'enseignement général de même niveau. Participer à l'EFTP permet également aux hommes d'augmenter leurs chances d'obtenir un CDI et de travailler dans le secteur formel. Pour les femmes, en revanche, leur participation à l'EFTP n'a aucun impact sur leur salaire ou sur les autres "outcomes" du marché du travail. Cependant, les femmes diplômées de l'EFTP déclarent plus souvent avoir un emploi correspondant à leur formation que celles de l'enseignement général. Par conséquent, ce chapitre met en évidence un autre problème de l'écart entre les sexes sur le marché du travail. Même si les femmes participent autant que les hommes à l'EFTP, les rendements du marché du travail de l'EFTP pour les femmes sont beaucoup plus limités que ceux des hommes. Au Sénégal, comme dans plusieurs autres pays africains, les femmes et les

hommes entrent dans des domaines d'EFTP très différents, les femmes choisissant souvent (ou se voient proposer) des formations qualifiantes et des professions à rendement inférieur. En effet, les femmes sont inscrites dans des métiers traditionnels féminins, souvent dans des domaines caractérisés par des emplois moins valorisés et moins bien rémunérés. Plusieurs chercheurs et acteurs du développement s'accordent à dire que l'EFTP offre un meilleur accès à l'emploi et devrait être généralisé. Toutefois, le rendement privé de l'EFTP pourrait clairement être amélioré en valorisant les domaines traditionnellement occupés par les femmes et en favorisant les innovations pour développer et moderniser les secteurs à faible rendement. Ces résultats pourraient ouvrir la voie à de futures recherches pour comprendre les mécanismes qui poussent les femmes à choisir des domaines d'EFTP moins rentables.

Le troisième et dernier chapitre contribue à combler le vide sur un sujet largement étudié dans les pays riches mais peu exploré en Afrique. Nous constatons que la ségrégation entre les sexes au sein des secteurs est une caractéristique clé du marché du travail sénégalais et doit attirer l'attention des chercheurs ainsi que des décideurs politiques. Nous trouvons que les femmes sont largement surreprésentées dans les secteurs les moins rémunérateurs, notamment le commerce, l'hébergement/la restauration et le secteur des activités des ménages. Les travailleurs masculins dominent dans les secteurs les mieux rémunérés : services haut de gamme (finance, information et communication, activités scientifiques), éducation, santé, travail social et industrie. Cependant, cette forte ségrégation entre les sexes ne suffit pas à expliquer l'important écart salarial entre les sexes. Les écarts salariaux au sein des secteurs sont également élevés, et encore plus élevés dans les secteurs à prédominance féminine (en particulier dans le commerce). Cela suggère que les causes profondes ou les mécanismes à l'origine de l'écart salarial devraient également être recherchés dans des facteurs autres que la ségrégation sectorielle. L'exercice de décomposition des salaires révèle que le temps de travail est la caractéristique observable la plus influente pour expliquer l'écart salarial entre les sexes, et que la part de l'écart inexpliquée par les caractéristiques des travailleurs est particulièrement élevée. Une analyse plus poussée a montré l'importance cruciale de la parentalité dans la formation de l'écart salarial. Le nombre d'enfants diminue le salaire des femmes mais augmente celui des hommes. Ce chapitre montre en effet que les moteurs des différences salariales entre les sexes au Sénégal sont mal connus et difficiles à identifier avec les données empiriques. Conformément aux résultats soulignant le rôle du temps de travail et de la parentalité, les normes de genre et les barrières sociales apparaissent comme de solides candidats

pour expliquer le grand écart salarial entre les sexes au Sénégal. Nos résultats empiriques sont ensuite complétés par les résultats d'une enquête qualitative confirmant l'influence majeure de la division genrée du travail dans la société sénégalaise pour comprendre les mécanismes à l'origine de l'écart salarial entre les sexes.

Les preuves présentées dans le premier chapitre plaident fortement pour une meilleure représentation des femmes dans la sphère politique en Afrique. En effet, l'écart entre les genres dans les préférences politiques semble plus ancré en Afrique que dans d'autres régions du monde et peut ne pas s'expliquer par les conditions économiques et sociales des femmes. En outre, les préférences des femmes pourraient s'écarter encore plus de celles des hommes lorsque les normes de genre deviennent plus modernes et plus favorables aux femmes. Nos résultats prédisent que les différences dans les préférences des hommes et des femmes pourraient devenir encore plus grandes à l'avenir en conjonction avec une évolution positive des normes de genre socialement construites en Afrique. Plusieurs études menées dans des pays développés et dans certains pays en développement, comme l'Inde, montrent que des changements positifs dans la situation économique et sociale des femmes réduiront probablement l'écart entre les sexes dans les choix et dans le monde du travail. Cependant, pour le cas de l'Afrique, le poids de la tradition et des normes soulève un doute sur ce résultat. Ce qui nous pousse à réfléchir sur des questions de recherche futures sur le modèle d'égalité de genre qu'on propose à l'Afrique et son potentiel inadéquation par rapport aux sociétés africaines. L'Afrique ne devrait-elle pas réfléchir et développer sa propre stratégie sur les questions de genre qui se concilierait au mieux avec ses traditions et coutumes qui ont contribué à l'équilibre des sociétés africaines jusqu'ici ? Toutes ces questions semblent légitimes et sachant à quel point le poids de la culture est important, dans le continent, il serait aberrant de penser que ce qui a marché en occident pourrait aussi marcher en Afrique sans être réadaptée au contexte des sociétés africaines.

Les résultats obtenus dans les chapitres 2 et 3 montrent qu'avec les changements rapides dans le monde du travail et l'entrée sur le marché du travail de la future génération de jeunes femmes mieux éduquées, il est urgent que la recherche se penche sur les mécanismes qui permettront aux femmes de lever des barrières sociales auxquelles elles sont confrontées. Par exemple quelles politiques et mécanismes afin de permettre plus de flexibilité et d'adaptabilité dans le monde du

travail grâce au télétravail, à l'aménagement du congé de maternité et aux crèches d'entreprise pour les jeunes mères qui travaillent etc.