Review of Development Economics

WILEY

REGULAR ARTICLE

Optimal Public Sector Premium, Talent Misallocation, and Aggregate Productivity: Evidence From Egypt

Francisco Parro[1] | Jesica Torres[2]

[1]School of Business, Universidad Adolfo Ibáñez, Santiago, Región Metropolitana, Chile | [2]The World Bank, Washington, DC, USA

Correspondence: Francisco Parro (fjparrog@gmail.com)

Received: 1 May 2026 | **Revised:** 15 July 2026 | **Accepted:** 28 July 2026

Keywords: aggregate productivity | female labor force participation | misallocation | public sector employment

ABSTRACT

We develop a tractable general equilibrium model to quantify the long-run aggregate productivity gains from adjusting the public-sector premium and the size of the public sector to their productivity-maximizing levels. The model incorporates an endogenous choice between market and non-market activities for women. We calibrate the model to the Arab Republic of Egypt, a country with a disproportionately large share of workers, especially women, in public employment. Conditional on an elasticity of private output with respect to public goods of 0.1, we find that lowering the average public-sector premium from 22% to its productivity-maximizing level of 13%, and thereby reducing the public-sector employment share, generates long-run gains of 12% in output per worker and 8% in TFP. Notably, a reduced female public-sector premium fosters greater female labor force participation in market activities: female entrepreneurship rises from 16% to 20%, increasing the demand for production labor and driving wages up, while the share of women in home production falls from 52% to 29%.

JEL Classification: E6, H3, J2, O1

1 | Introduction

In many countries, the structure of wages and labor legislation differs between public and private sector employees. For example, substantial evidence shows that a public-private wage gap exists (Tansel 2005; Postel-Vinay and Turon 2007; Depalo et al. 2015; Cavalcanti and Rodrigues dos Santos 2021; Abdallah et al. 2023; among others). In some cases, the pension system also differs between the private and public sectors (Cavalcanti and Rodrigues dos Santos 2021). Moreover, many countries have labor legislation that translates into more secure jobs in the government than in private firms (Clark and Postel-Vinay 2009; OECD 2011; Piketty 2014; He et al. 2018; Cavalcanti and Rodrigues dos Santos 2021).[1] These facts raise some questions: Is the public sector too large? Are public sector workers being overpaid? By how much? What are the efficiency gains from adjusting the public-sector premium to its productivity-maximizing level? What public-sector size maximizes aggregate productivity?

This paper develops a tractable model to quantify the aggregate productivity gains from adjusting the public-sector premium and the size of the public sector to their productivity-maximizing levels. We use the word "optimal" in this productivity sense throughout the paper, not as a welfare statement. We use the term *public-sector premium* rather than *wage premium* to emphasize that the relevant object is the overall compensation advantage associated with public employment. This includes not only monetary wages but also non-monetary benefits such as job stability, working conditions, and other amenities that may affect occupational choices. In our framework, the public-sector premium is therefore interpreted as a reduced-form measure of the total compensation advantage associated with public employment.

Our model delivers the productivity-maximizing public-sector premium, and thus the productivity-maximizing size of the public sector, as a function of the efficiency level of public spending. Key aspects of our model are the existence of a home-production sector and the demand for managerial talent in the public sector.[2] Our paper then helps shed light on the trade-offs involved in the public sector's demand for talent, and how the public-sector premium affects aggregate output and productivity.

Several examples can be found of managerial skills applied in the context of the public sector to effectively lead organizations and serve the needs of the population. Some of these skills include effective communication, strategic planning, budgeting and financial management, policy development and implementation, team leadership, conflict resolution, adaptability and flexibility, among others. Public sector managers endowed with more of these skills produce more of a given public good. In contrast, the lack of managerial skills in the public sector translates into a very poor production of public goods. Therefore, the public sector needs to attract talented managers. However, these types of agents can also use their managerial skills (effective communication, strategic planning, team leadership, etc.) to run businesses privately. In other words, managerial skills are also valuable in the private sector to run private businesses. Then, the government must offer potential public-sector managers a level of total compensation sufficiently high to offset the earnings they could obtain by running their own firms. These potential benefits[3] would be well above the production labor wage for individuals endowed with more managerial skills. Consequently, a premium arises in the public sector to incentivize some individuals with managerial talent to leave their private activities and accept managerial roles in the public sector. Note that managerial talent can also be attracted to the public sector through non-pecuniary job attributes. Accordingly, as explained above, the *public-sector premium* refers to the package of monetized benefits received by public-sector managers relative to the wage paid to production workers.

In our model, public goods enhance the productivity of private activities (e.g., public investment in infrastructure) and talent must be allocated between the public and private sectors. A low public-sector premium attracts less talent to the government, which lowers the amount of public goods that boost private output, but expands the private sector and results in a larger number of firms. On the other hand, a high public-sector premium attracts more talent to the public sector but shrinks the private sector. Fewer firms would produce but with a larger amount of the public good. This trade-off suggests the existence of a productivity-maximizing premium and a productivity-maximizing size for the public sector. Importantly, this productivity-maximizing premium depends on how intensively the public good enhances private sector productivity. The higher the elasticity of private sector output to the public good, the higher the productivity-maximizing premium and the larger the productivity-maximizing size of the public sector.

We consider an economy populated by women and men, each endowed with units of managerial skill. The economy consists of three sectors: the private sector, the public or government sector, and the home production sector (only among women). Individuals make decisions regarding employment in either the private or public sector. Additionally, women have the option to engage in home production. In the private sector, individuals may choose to operate their own businesses or work as production workers for a wage. In the public sector, individuals are employed for a wage, either as production workers or managers. Managerial roles in the public sector receive a gender-specific premium. In equilibrium, the most skilled women operate businesses in the private sector, mid-to-high-skilled women transition between managerial roles in the public sector and home production, mid-to-low-skilled women engage in production at home, while the least skilled join the production labor force. Among men, the lowest-skilled individuals work as production workers, some individuals with intermediate skills assume managerial roles in the public sector, and the most skilled run private businesses.

We calibrate the model to match data from the Arab Republic of Egypt. This country is an interesting case study since it exhibits a disproportionate share of workers in the public sector. Public sector employment is close to 22% of total employment (18% for men and 42% for women), about 7 percentage points higher than the average of 108 non-MENA economies.[4] Many of these employees are highly educated: among workers with college education, around 25% of men and two-thirds of women work in the public sector. Even though the model structure is simple, we show that it is able to match several features of the allocation of talent in the Egyptian economy. Moreover, the tractability of the model makes it straightforward to extend the analysis to several other developing economies.

In Egypt, a combination of factors helps explain both the relatively high compensation associated with public employment and the large share of workers employed by the government.[5] These include longstanding public employment guarantees for educated workers, high levels of job security and employment stability in the public sector, and the use of public-sector jobs as a policy instrument to absorb labor market pressures and pursue social and political objectives. As a result, public employment in Egypt has often provided a bundle of pecuniary and non-pecuniary benefits that exceed those available in much of the private sector, particularly for women.

This institutional context makes Egypt a particularly relevant case study for the mechanism analyzed in this paper. The model is designed to capture how public-sector compensation policies can distort occupational and sectoral choices by reallocating managerial talent away from private entrepreneurship. At the same time, we do not interpret the Egyptian experience as representative of all developing economies. Rather, it serves as a salient example in which the interaction between public-sector premia, talent allocation, and aggregate productivity can be studied in a transparent and empirically grounded way.

We compute long-run aggregate productivity gains, in terms of output per worker and total factor productivity (TFP), from adjusting the current public-sector premium and the size of the public sector to their productivity-maximizing levels. We define the productivity-maximizing public-sector premium as the level that maximizes aggregate productivity, rather than social welfare, in order to isolate the key efficiency trade-off through which public-sector compensation policies affect the allocation of managerial talent across sectors. Under the benchmark assumption that the elasticity of private output to public goods is $\gamma = 0.1$, the model-based counterfactual implies aggregate gains of 12% for output per worker and 8% for TFP. These estimates are therefore conditional on the value of γ and should be interpreted as long-run steady-state gains rather than as short-run transition effects. The lower the value of this elasticity, the higher the productivity gains in our baseline economy from reducing the current public-sector premium and the current share of public-sector employment.

In addition, we show that, in Egypt, a productivity-maximizing talent allocation (assuming $\gamma = 0.1$) requires reducing the average public-sector premium from 22% to 13%, while the premium remains positive for women and close to zero for men. This compensation structure reduces the size of the public sector from 25% to about 8% and fosters female entrepreneurial activity. Moreover, relative to a wage structure in which the premium is equalized across genders, it prevents a significant transition of mid-to-high-skilled women from the public sector to home production and also avoids a contraction of the male entrepreneurial sector. A lower female public-sector premium, together with a lower share of public employment, promotes female labor force participation in market activities. This mechanism operates through the expansion of the female entrepreneurial sector, which increases the demand for production labor and drives wages up. Consequently, low-skilled women are incentivized to transition from home production to the production labor force. This effect more than compensates for the slight increase in the number of mid-to-high-skilled women leaving the public sector and entering home production as a result of the lower public-sector premium. This result reverses the direction of causality between the demand for talent in the public sector and female labor force participation typically emphasized in the literature (Assaad et al. 2020).

The literature frequently associates the existence of a public-private wage premium with an overpaid public sector (e.g., Cavalcanti and Rodrigues dos Santos 2021). Once such evidence is documented, these studies perform a counterfactual analysis that involves an arbitrary decrease of the public-private wage premium from its benchmark value. Moreover, these frameworks discard, by design, the home production sector. Our paper differs from that type of analysis in three dimensions. First, our model allows us to derive a productivity-maximizing public-sector premium. In other words, we show that the existence of a public-private wage premium does not necessarily reflect an overpaid public sector. Second, our counterfactual analysis is not arbitrary; we compute the efficiency gains of bringing the *current* public-sector premium to its *productivity-maximizing* level. Third, our model includes home production carried out by women. Thus, fewer incentives for women to join the public sector might result in their transition to the private sector or the home production sector. Each of these alternatives implies a different pool of talent involved in market activities and, thus, brings different consequences in terms of efficiency levels.

The rest of this paper is organized as follows. Section 2 discusses the related literature. Section 3 develops our framework. Section 4 shows the comparative statics of our model. We present our calibration strategy in Section 5. Section 6 documents the results from some counterfactual experiments. Section 7 presents the productivity-maximizing public-sector premium. We offer some concluding remarks in Section 8.

2 | Literature Review

This paper contributes to three interconnected strands of the literature. First, it relates to empirical work documenting public–private pay differentials and the role of public employment in shaping labor-market outcomes in developing and middle-income economies. Second, it builds on macroeconomic frameworks of talent misallocation based on span-of-control technologies and occupational choice. Third, it connects to the literature on gender gaps, female labor supply, and household production, which provides both motivation and discipline for modeling non-market activity as an outside option.

A large empirical literature documents sizable public–private pay differentials in developing economies. Tansel (2005) documents non-trivial public–private wage differentials in Turkey, with pronounced gender heterogeneity. Panizza and Qiang (2005), using harmonized household surveys for Latin America, show that the public sector often pays a wage premium—particularly for women—and that the magnitude of this premium varies substantially across countries. For Latin America, Mizala et al. (2011) find that while average public premia are often positive, high-earning workers may face a public-sector *penalty*, with direct implications for the state's ability to attract high-skill talent. More recent evidence emphasizes heterogeneity *within* countries across the earnings distribution. Using quantile methods and panel variation for Egypt, Tansel et al. (2020) show that public–private wage differentials differ by gender and vary systematically along the conditional wage distribution.

A related strand studies the broader macroeconomic and policy implications of public-sector hiring and compensation. In the Egyptian context, Assaad (1997) documents how public employment guarantees and compensation policies generate queuing for government jobs and reshape private-sector opportunities, highlighting public employment as a central allocative margin in developing economies. Taken together, this empirical literature establishes that public-sector compensation policies are quantitatively important and potentially distortionary, but it leaves open the question of how these premia affect aggregate productivity through the allocation of talent.

A complementary literature emphasizes that public-sector jobs differ from private-sector jobs not only in wages, but also in job security, incentive structures, working conditions, and exposure to the business cycle. Evidence on job security and job protection (e.g., Clark and Postel-Vinay 2009) and institutional comparisons of public employment (OECD 2011) motivate interpreting the public-sector premium as a broad compensation package rather than a narrow wage differential. This interpretation is also consistent with settings in which workers may accept lower current monetary wages in exchange for greater employment stability or other valued amenities. These considerations are important for our framework because occupational choices depend on the total value of public employment relative to private entrepreneurship and production work.

Our analysis builds on canonical span-of-control models in which heterogeneous entrepreneurial ability determines firm scale and the distribution of establishments (Lucas 1978). Quantitative macroeconomic research has used this framework to study how distortions—including financial frictions, taxes, and policies affecting firm inputs or entry—misallocate resources and reduce aggregate productivity (Cagetti and De Nardi 2006; Guner et al. 2008; Restuccia and Rogerson 2008; Buera and Shin 2013). A central implication of this literature is that aggregate output and TFP are highly sensitive to distortions that alter the selection of talent into entrepreneurship and the allocation of high-ability agents across occupations.

Our paper extends this literature by introducing a public-sector demand for managerial talent and a public-sector wage premium that competes directly with private entrepreneurship for high-skill individuals. The premium acts as a wedge on occupational choice: it can increase public managerial employment at the expense of private entrepreneurial entry, with first-order implications for aggregate productivity. The key trade-off is that greater public-sector managerial input may enhance the provision of productivity-enhancing public goods, while simultaneously shrinking the private entrepreneurial sector. The tractability of the span-of-control structure allows us to characterize equilibrium occupational thresholds and quantify the productivity consequences of compensation policies.

This mechanism relates to a broader strand of macroeconomic research emphasizing that aggregate performance depends on the allocation of *talent* across tasks and occupations (Hsieh et al. 2019). Relative to this literature, we highlight a policy lever that is particularly salient in developing economies—public-sector compensation and employment—and quantify how it can generate misallocation through the re-sorting of high-ability agents.

A closely related contribution is Cavalcanti and Rodrigues dos Santos (2021), who study the macroeconomic consequences of an overpaid public sector in a quantitative general equilibrium framework. They show that public-sector wage premia can generate substantial productivity losses by distorting labor allocation across sectors. Our paper builds on this insight but differs in three important dimensions. First, we focus explicitly on the allocation of *managerial talent* rather than production labor. Second, we allow for *gender-specific* public-sector premia. Third, we incorporate household production as an outside option that shapes occupational choice. These features shift the focus from distortions in firm scale to distortions in occupational and sectoral selection, particularly among high-skill individuals.

A third strand of the literature studies gender differences in labor supply, wages, occupational choice, and time allocation, including the role of non-market production. The household production framework emphasizes that time devoted to home activities is an economically meaningful alternative use of time and can be substituted against market work depending on relative returns (Becker 1965). Macroeconomic models incorporating household production show that non-market time matters for aggregate labor supply and long-run outcomes (Benhabib et al. 1991), while empirical work documents systematic changes in time allocation along the market/non-market margin (Aguiar and Hurst 2007). Blau and Kahn (2017) synthesize evidence on gender wage gaps and the determinants of female labor force participation and occupational sorting.

Our paper integrates these insights into a unified quantitative framework in which home production operates as an outside option affecting female occupational choice at the margin. This margin is essential for interpreting gendered public-sector premia in settings where female market participation is low and non-market activity is prevalent. At the same time, the central aggregate mechanism operates through the allocation of *managerial talent* between public management and private entrepreneurship. Public-sector premia may disproportionately attract high-skill women into public managerial positions and away from private entrepreneurial activity, thereby altering aggregate productivity and the gender composition of entrepreneurship. By combining gender-specific premia with household production, the framework speaks jointly to efficiency (output per worker and TFP) and gender patterns in sectoral employment.

Overall, the paper provides a tractable general-equilibrium framework in which a *public-sector premium*—broadly interpreted as the monetized component of compensation, including job attributes—affects occupational and sectoral choices of heterogeneous managerial talent. In doing so, it offers a disciplined mechanism linking observed public–private compensation differentials and the size of public employment to aggregate productivity and TFP, moving beyond reduced-form estimates and clarifying how compensation policies can generate aggregate efficiency losses through talent misallocation.[6]

3 | Model

Consider an economy populated by women and men, each endowed with s units of managerial skill (or talent) and one unit of time (inelastically supplied). The (given) skill distribution $G(s)$ is the same for women and men, with density $g(s)$ and support in the interval $S = [\underline{s}, \bar{s}]$. There is a mass one of economically active individuals who produce goods either in the market or at home. Women and men account for fractions ϕ_f and ϕ_m of this population, respectively, with $\phi_f + \phi_m = 1$.

There are three sectors in this economy: the private sector, the public (or government) sector, and the home production sector. Agents choose whether to work in the private or public sector. Women additionally have the option of using their talent and time to produce at home. In the private sector, individuals can operate their own firms or work as production workers and earn a wage. In the public sector, individuals are employed for a wage either as production workers or as managers. Public-sector managers receive a gender-specific premium, which we take as given.[7]

3.1 | Private Sector

In the private sector, there is a continuum of firms operated by entrepreneurs with heterogeneous managerial talent. Each firm produces a homogeneous good. Production is organized around a single entrepreneur endowed with managerial skill s, which captures the entrepreneur's ability to organize production, coordinate inputs, and operate the firm efficiently. The entrepreneur supplies managerial talent only and is not counted as production labor. All other individuals hired by the firm supply homogeneous units of production labor and do not contribute managerial skill. Accordingly, managerial talent enters the production technology exclusively through the entrepreneur.[8] Each production unit then produces the homogeneous good by combining labor l, capital k, and managerial skill s according to the following technology:

$$y = s^{1-\eta_e}\left(k^{\alpha} l^{1-\alpha}\right)^{\eta_e} \tag{1}$$

where $\eta_e \in (0,1)$ is the span-of-control parameter and $\alpha \in (0,1)$ denotes the share of capital in the variable factors.[9] As in Gonzalez and Parro (2023), the labor of women l^f and men l^m are combined using a CES aggregator with an elasticity of substitution given by σ[10]:

$$l = \left[\left(l^f\right)^{\frac{\sigma-1}{\sigma}} + \left(l^m\right)^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{2}$$

Entrepreneurs maximize profits, taking wages and the rental price for capital services as given. The maximization problem of a type-i entrepreneur, for $i \in \{f, m\}$, with talent s is:

$$\max_{k_i, l_i^f, l_i^m} \ \pi_i(s) = y_i(s) - w_f l_i^f - w_m l_i^m - R k_i \tag{3}$$

where R is the rental price for capital services, l_i^f the demand for female production labor by a type-i entrepreneur, l_i^m the demand for male production labor, k_i the demand for capital, and w_i is the wage of labor type-i.

The first-order conditions of the maximization problem result in the following system (see the Appendix A):

$$y_i(s) = \Phi_e s \tag{4}$$

$$k_i(s) = \left(\frac{\eta_e \alpha}{R}\right) y_i(s) \tag{5}$$

$$l_i(s) = \left(\frac{\eta_e(1-\alpha)}{\widetilde{w}}\right) y_i(s) \tag{6}$$

$$l_i^f(s) = \left[1 + \left(\frac{w_f}{w_m}\right)^{\sigma-1}\right]^{\frac{\sigma}{1-\sigma}} l_i(s) \tag{7}$$

$$l_i^m(s) = \left[1 + \left(\frac{w_m}{w_f}\right)^{\sigma-1}\right]^{\frac{\sigma}{1-\sigma}} l_i(s) \tag{8}$$

where

$$\Phi_e = \left(\frac{\eta_e \alpha}{R}\right)^{\frac{\eta_e \alpha}{1-\eta_e}} \left(\frac{\eta_e(1-\alpha)}{\widetilde{w}}\right)^{\frac{\eta_e(1-\alpha)}{1-\eta_e}}$$

$$\widetilde{w} = \left[1 + \left(\frac{w_f}{w_m}\right)^{\sigma-1}\right]^{\frac{\sigma}{1-\sigma}} w_f + \left[1 + \left(\frac{w_m}{w_f}\right)^{\sigma-1}\right]^{\frac{\sigma}{1-\sigma}} w_m$$

Note that $\eta_e < 1$ implies diminishing returns in variable inputs, which results in a non-degenerate endogenous size distribution of production units in the economy. Note also that in equilibrium entrepreneurial profits are linear in skill:

$$\pi_i(s) = \left(1 - \eta_e\right)\Phi_e s \tag{9}$$

The total output produced in the entrepreneurial private sector is:

$$Y_e = G^{\gamma} y_E \tag{10}$$

where y_E denotes the sum of production across entrepreneurial private activities, G corresponds to the productivity-enhancing public good produced by the government, and γ denotes the elasticity of aggregate production, Y_e, to changes in the size of the public good G.[11]

3.2 | Public Sector

In the public sector there is a single public firm that produces a good G that increases the productivity in the private sector. The public firm combines managerial talent, production labor, and capital according to the following technology[12]:

$$G\left(Z_p\right) = Z_p^{1-\eta_g}\left(K_p^{\kappa} L_p^{1-\kappa}\right)^{\eta_g} \tag{11}$$

where Z_p is the aggregate amount of managerial talent attracted to the government, L_p denotes aggregate production labor, K_p is the aggregate capital, and $\eta_g \in (0,1)$ is the span-of-control parameter. Female production labor, L_p^f, and male production labor, L_p^m, are combined as in the private sector and with the same elasticity of substitution σ:

$$L_p = \left[\left(L_p^f\right)^{\frac{\sigma-1}{\sigma}} + \left(L_p^m\right)^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{12}$$

To attract managerial talent into the public firm, the government pays a gender-specific premium, τ_f and τ_m, on the competitive wages of production workers w_f and w_m.[13] Notice that this premium is not offered to wage workers in the public firm. In other words, while production workers earn the same rate in the public and private sector, type-i managers in the government earn a premium τ_i in excess of the wage rate. Definition 1 formally states what constitutes a managerial position within the public firm.

Assumption 1. Workers' skill levels s are perfectly observable to both firms and the public sector.

Definition 1. If an agent of type-i for $i \in \{f, m\}$ is hired by the government and earns a wage $\left(1 + \tau_i\right) w_i$, then this agent is in a managerial position in the public firm.

In the maximization problem of the public firm, we assume the government takes the premiums τ_f and τ_m as given. Let $I_i^p\left(s; \tau_i\right) = 1$ be an indicator for a type-i agent with skill s who, given τ_i, is hired by the public firm for a managerial position. Then the supply of managerial talent to the public sector, and therefore the size of the public good, will depend on the premium on managerial positions offered by the government:

$$Z_p = \phi_f \int_{s \in S} I_f^p\left(s; \tau_f\right) s g(s) ds + \phi_m \int_{s \in S} I_m^p\left(s; \tau_m\right) s g(s) ds \tag{13}$$

Taking as given τ_f and τ_m, the maximization problem of the public firm is:

$$\max_{K_p, L_p^f, L_p^m} \quad B = G(Z_p) - (1+\tau_f) w_f \widetilde{L}_p^f - (1+\tau_m) w_m \widetilde{L}_p^m - w_f L_p^f - w_m L_p^m - \mathrm{RK}_p \tag{14}$$

where

$$\widetilde{L}_p^f = \phi_f \int_{s \in S} I_f^p(s; \tau_f) g(s) ds$$
$$\widetilde{L}_p^m = \phi_m \int_{s \in S} I_m^p(s; \tau_m) g(s) ds$$

are the mass of female and male managerial talent hired by the public firm.[14] These individuals take a managerial position in the government and earn a wage $(1+\tau_i)w_i$, while the rest of public workers are employed as production labor and earn w_i.

The first-order conditions of the maximization problem result in the following public demand for inputs and size of the public good (see the Appendix B):

$$G(Z_p) = \Phi_p Z_p \tag{15}$$

$$K_p(Z_p) = \left(\frac{\eta_g \kappa}{R}\right) G(Z_p) \tag{16}$$

$$L_p(Z_p) = \left(\frac{\eta_g (1-\kappa)}{\widetilde{w}}\right) G(Z_p) \tag{17}$$

$$L_p^f(Z_p) = \left[1 + \left(\frac{w_f}{w_m}\right)^{\sigma-1}\right]^{\frac{\sigma}{1-\sigma}} L_p(Z_p) \tag{18}$$

$$L_p^m(Z_p) = \left[1 + \left(\frac{w_m}{w_f}\right)^{\sigma-1}\right]^{\frac{\sigma}{1-\sigma}} L_p(Z_p) \tag{19}$$

where

$$\Phi_p = \left(\frac{\eta_g \kappa}{R}\right)^{\frac{\eta_g \kappa}{1-\eta_g}} \left(\frac{\eta_g (1-\kappa)}{\widetilde{w}}\right)^{\frac{\eta_g (1-\kappa)}{1-\eta_g}}$$

An alternative setup of the public sector problem could have the premiums τ_f and τ_m determined endogenously together with the factors Z_p, K_p, L_p^f, and L_p^m. We keep the premiums as policy objects and allow the public firm to choose the quantity and combination of inputs, and therefore the amount of the public good, conditional on those premiums. This formulation isolates the talent-allocation channel that is central to our analysis. A richer public-finance environment with distortionary taxation, enforcement, and evasion would change the welfare problem and could also affect the productivity-maximizing size of the public sector, but it would introduce additional distortions that are distinct from the compensation wedge studied here. We therefore use lump-sum financing as a transparent benchmark and discuss taxation as a limitation and an avenue for future work.[15]

3.3 | Home Production

Only women work in the home production sector in the benchmark economy. This assumption is intended to capture the Egyptian empirical context, in which women account for the large majority of unpaid household production and female labor force participation is the central margin disciplined by the data.[16] The home production sector consists of activities performed by women who do not participate in the labor market and, thus, choose to produce at home. Home production requires specific skills and female labor, as outlined by the following technology:

$$h(s) = s^{1-\eta_h} \left(l_h^f\right)^{\eta_h} + \overline{h} \tag{20}$$

where $\overline{h}$ is a level of household production that any woman can produce at zero cost. Consequently, more talented or skilled women will produce more of the home good compared to less talented women.[17]

The maximization problem of a (female) home producer with talent s is

$$\max_{l_h^f} \quad \widetilde{\pi}_f(s) = h(s) - w_f l_h^f \tag{21}$$

We refer to $\widetilde{\pi}_f(s)$ as the (net) *value of home-produced goods* or *value of home production* for a woman with skill s. The first-order conditions of the maximization problem result in the following home output and home demand for inputs:

$$h(s) = \Phi_h s + \overline{h} \tag{22}$$

$$l_h^f(s) = \left(\frac{\eta_h}{w_f}\right)^{\frac{1}{1-\eta_h}} s \tag{23}$$

where

$$\Phi_h = \left(\frac{\eta_h}{w_f}\right)^{\frac{\eta_h}{1-\eta_h}}$$

Moreover, the value of home production (for women only) is a linear function of skill:

$$\widetilde{\pi}_f(s) = (1-\eta_h)\Phi_h s + \overline{h} \tag{24}$$

Total output in the home production sector Y_h results from aggregating the activities of women who produce at home.

3.4 | Occupational Choices

To solve for the sorting of talent across both occupations and sectors we need to assume an allocation rule between managerial positions and wage-working positions in the public firm. Assumption 2 states this hiring rule:

Assumption 2. The public firm is willing to hire an agent of type i with skill s for a managerial position if, and only if, $\pi_i(s) \geq w_i$.

The allocation rule in Assumption 2 states that the government can observe the skill of job applicants and selects managerial talent by comparing the profits that an agent would generate as an entrepreneur to the production labor wage. If the former exceeds the latter, the government accepts the agent's job application for a managerial position in the public firm and pays a premium in excess of the production wage rate. Managerial positions in the public firm—those that earn the public-sector premium—are then exclusively filled with workers with the highest managerial talent. Some countries have stringent regulations on the type of position public sector workers can occupy in terms of formal education degrees and experience, which is in line with the allocation rule in Assumption 2 (see for example the *Estatuto Administrativo* for Chile).[18] Moreover, assuming that the most talented public sector employees become public sector managers while the less talented become public sector production workers is a relatively conservative scenario that offers a lower bound for the productivity losses from a large public sector. Alternative allocation rules inside the public firm (e.g., if the less skilled individuals were to become public sector managers) would result in lower amounts of the public good.

For Egypt, this assumption should be interpreted as a tractable representation of public-sector selection based on observable indicators of managerial ability rather than as a literal claim that the government perfectly observes entrepreneurial productivity. In practice, public-sector hiring in Egypt has historically relied on formal educational credentials, eligibility rules, queues for government jobs, and institutional considerations (Assaad 1997). These criteria are likely correlated with managerial ability but are not identical to it. The benchmark assumption therefore provides a transparent upper bound on the effectiveness of public-sector sorting. If the government hired managers using a noisy signal of ability, or randomly from a pool of educated workers, the average managerial skill of public managers would be lower for a given public-sector employment share. Appendix F discusses this imperfect-sorting extension and explains why it would attenuate the productivity benefits of a large public sector without overturning the core reallocation mechanism.

Agents select the occupation that maximizes their earnings. Men compare their profits as entrepreneurs $\pi_m(s)$, their earnings as production workers w_m (whether in the public or the private sector), and their earnings as managers in the government $(1+\tau_m)w_m$ (although these positions are only available for the most skilled men). In equilibrium, a male entrepreneur earns profits greater than the wage offered by the government for managerial talent. Let $I_i^e(s;\tau_i)$ be an indicator for a type-i agent with skills s who optimally becomes an entrepreneur. Then,

$$I_m^e(s;\tau_m)=\begin{cases}1 & \text{if } \pi_m(s)\geq(1+\tau_m)w_m \text{ and } \pi_m(s)\geq w_m\\ 0 & \text{otherwise}\end{cases} \tag{25}$$

Notice that a man for whom $I_m^e(s;\tau_m)=1$ would be eligible for a managerial position in the public firm, but the premium paid by the government is not sufficiently high to reward his (relatively high) talent. In this case, the agent would choose not to become a manager in the public firm and would instead prefer to use their managerial talent in the private sector.

The premium offered by the government can attract some men who have enough talent to become private entrepreneurs. As entrepreneurs, these individuals would generate profits above the production labor wage, but below the compensation offered by the public sector, including the premium. We define $I_i^p(s;\tau_i)$ as an indicator for public-sector managers (see above). Under Assumption 2, these individuals are hired by the public sector to fill managerial positions. Therefore,

$$I_m^p(s;\tau_m)=\begin{cases}1 & \text{if } \pi_m(s)\geq w_m \text{ and } \pi_m(s)<(1+\tau_m)w_m\\ 0 & \text{otherwise}\end{cases} \tag{26}$$

Men who neither become entrepreneurs nor supply their managerial talent to the public firm join the production labor workforce. Let $I_i^w(s;\tau_i)$ be an indicator for an agent who optimally becomes a production worker. Then,

$$I_m^w(s;\tau_m)=1-I_m^e(s;\tau_m)-I_m^p(s;\tau_m) \tag{27}$$

Figure 1 illustrates an equilibrium allocation of male talent across occupations.[19] In equilibrium, there are two cutoffs s_p and s_e in the male skill distribution such that $I_m^e(s;\tau^m)=1$ for $s\in[s_e,\bar{s}]$; $I_m^p(s;\tau_m)=1$ for $s\in[s_p,s_e)$; and $I_m^w(s;\tau_m)=1$ for $s\in[\underline{s},s_p)$. Men with skills $s\in[s_e,\bar{s}]$ are talented managers who earn high profits in the private sector. As a result, the premium τ_m is insufficient to attract this managerial talent to the public sector and these individuals work in the private sector running their own businesses.

Individuals with skills $s\in[s_p,s_e)$ would become entrepreneurs without the public-sector premium. However, the public firm successfully attracts them into public managerial positions over private business ownership (and they are hired according to Assumption 2). The least talented individuals, those with skills $s\in[\underline{s},s_p)$, do not have enough managerial skill to run private businesses or to be hired by the public firm in managerial roles. They become production workers and are employed either in a private business or in the public firm.

Women compare their value of home production $\widetilde{\pi}_f(s)$, their profits as entrepreneurs $\pi_f(s)$, their earnings as production workers w_f (whether in the public, the private sector, or the home production sector), and their earnings as managers in the government $(1+\tau_f)w_f$ (although these positions are only available for the most skilled women).

Women participate in the labor market only when their potential earnings exceed the net value of home-produced goods. More specifically, women become entrepreneurs when they would operate businesses that generate profits higher than the wage paid by the public firm for managerial talent and also higher than the net value of the output they can produce at home:

$$I_f^e(s;\tau_f)=\begin{cases}1 & \text{if } \pi_f(s)\geq(1+\tau_f)w_f \text{ and } \pi_f(s)\geq w_f \text{ and } \pi_f(s)\geq\widetilde{\pi}_f(s)\\ 0 & \text{otherwise}\end{cases} \tag{28}$$

Like their male counterparts, some potential female entrepreneurs hold instead managerial positions in the public firm. These women receive a premium that compensates them enough for both their potential entrepreneurial profits and the value of goods they could produce at home:

$$I_f^p(s;\tau_f)=\begin{cases}1 & \text{if } \pi_f(s)\geq w_f \text{ and } \pi_f(s)<(1+\tau_f)w_f \text{ and } \widetilde{\pi}_f(s)\leq(1+\tau_f)w_f\\ 0 & \text{otherwise}\end{cases} \tag{29}$$

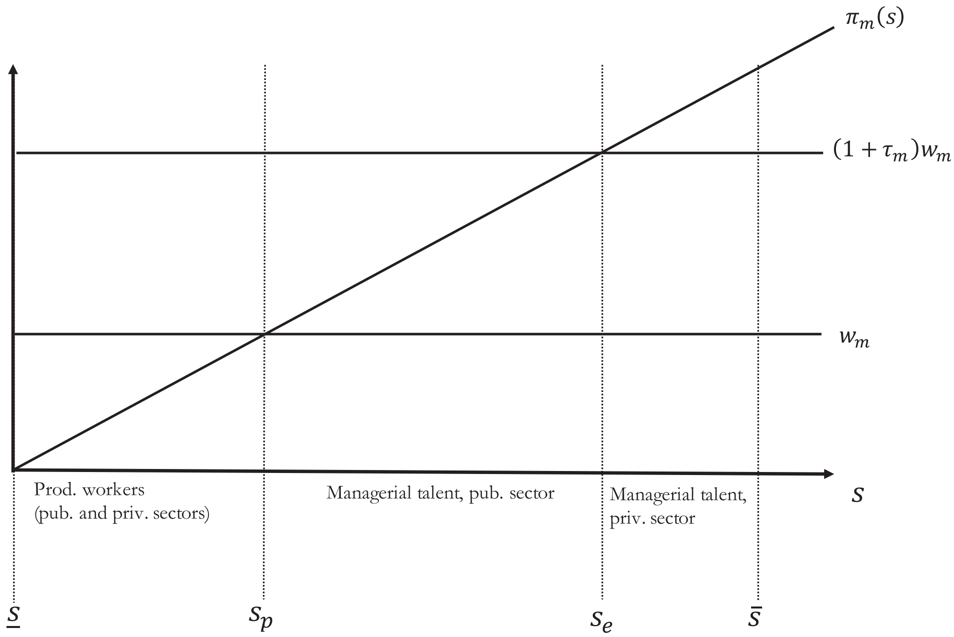

FIGURE 1 | Allocation of male talent.

Define $I_f^{wh}(s;\tau_f) = 1 - I_f^e(s;\tau_f) - I_f^p(s;\tau_f)$. Then $I_f^{wh}(s;\tau_f) = 1$ for a woman who does not supply her managerial talent, either in the private or the public sector; she either becomes a production worker or produces at home. In addition, let $H(s;\tau_f) = 1$ for a woman whose net value of home production exceeds the production labor wage. That is $H(s;\tau_f) = 1$ if $\widetilde{\pi}_f(s) \geq w_f$ and $H(s;\tau_f) = 0$ if $\widetilde{\pi}_f(s) < w_f$. Finally, let $H_f(s;\tau_f)$ be an indicator for a woman who becomes a home producer. Then,

$$H_f(s;\tau_f) = \begin{cases} 1 & \text{if } I_f^{wh}(s;\tau_f) * H(s;\tau_f) = 1 \\ 0 & \text{otherwise} \end{cases} \tag{30}$$

Women who optimally become production workers are then:

$$I_f^w(s;\tau_f) = 1 - I_f^e(s;\tau_f) - I_f^p(s;\tau_f) - H_f(s;\tau_f) \tag{31}$$

Figure 2 illustrates an equilibrium allocation of talent for a case in which $(1-\eta_e)\Phi_e > (1-\eta_h)\Phi_h$ and $\overline{h} < w_f$. The former implies that the dispersion of profits is higher than the dispersion in the value of home production, while the latter means that the value of free home-made output $\overline{h}$ is smaller than the wage earned by production labor workers. Under these conditions, there are three cutoffs s_h, s_p, and s_e in the female skill distribution such that $I_f^e(s;\tau_f) = 1$ for $s \in [s_e, \overline{s}]$ (these women become entrepreneurs); $I_f^p(s;\tau_f) = 1$ for $s \in [s_p, s_e)$ (these women become managers in the public firm); $H_f(s;\tau_f) = 1$ for $s \in (s_h, s_p)$ (these women do not enter the labor force); and $I_f^w(s;\tau_f) = 1$ for $s \in [\underline{s}, s_h]$ (these women become production workers).

In the equilibrium illustrated in Figure 2, only the most talented women run businesses in the private sector. As with their male counterparts, the female premium set by the public firm is not high enough to attract them into the public sector. Additionally, these women are not able to produce a value at home as high as the profits they earn as entrepreneurs in the private sector.

The public firm identifies women with skills $s \in [s_p, s_e)$ as women with managerial talent because, as potential entrepreneurs, they are capable of generating profits greater than the production labor wage. Consequently, the public firm offers a managerial position and they accept because their opportunity cost as entrepreneurs is less than their earnings in the public sector (including the premium).

Women with skills $s \in [s_h, s_p)$ do not participate in the labor market and, instead, engage in home production. These women are not hired by the government for managerial positions since their managerial talent is not high enough (they would not generate profits above the production labor wage and by Assumption 2, the public firm does not recognize them as talented and is not willing to pay them the premium). These women also do not become production workers because the value of their home production exceeds the wage. The least talented women become production workers. These women are not very productive at home, nor are they productive as entrepreneurs. They also lack the necessary talent to be hired by the public firm for managerial positions.[20]

3.5 | Market Clearing

Assumption 2 directly implies that the market clearing conditions for managerial talent in the public sector are[21]:

$$\phi_f \int_{s \in S} I_f^p(s;\tau_f) g(s) ds = \widetilde{L}_p^f \tag{32}$$

$$\phi_m \int_{s \in S} I_m^p(s;\tau_m) g(s) ds = \widetilde{L}_p^m \tag{33}$$

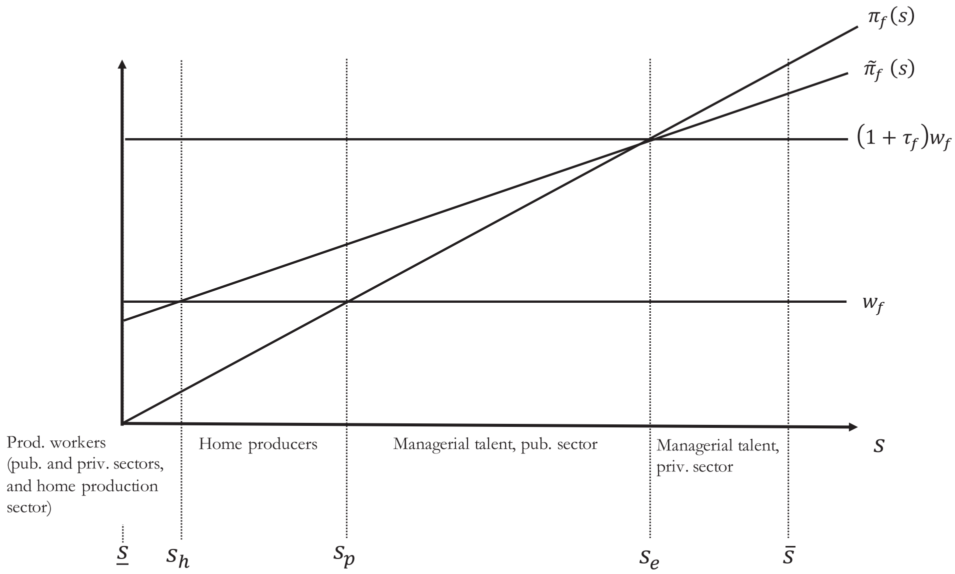

FIGURE 2 | Allocation of female talent.

Male production workers are employed either in a private business or in the public firm. In the case of women, they can also be employed by other women who produce at home. Then, the labor market conditions for female and male production labor are:

$$\phi_f \int_{s\in S} I_f^w\left(s;\tau_f\right)g(s)ds = \phi_f \int_{s\in S} I_f^e\left(s;\tau_f\right)l_f^f(s)g(s)ds + \phi_m \int_{s\in S} I_m^e\left(s;\tau_m\right)l_m^f(s)g(s)ds + \phi_f \int_{s\in S} H_f\left(s;\tau_f\right)l_h^f(s)g(s)ds + L_p^f \tag{34}$$

$$\phi_m \int_{s\in S} I_m^w\left(s;\tau_m\right)g(s)ds = \phi_f \int_{s\in S} I_f^e\left(s;\tau_f\right)l_f^m(s)g(s)ds + \phi_m \int_{s\in S} I_m^e\left(s;\tau_m\right)l_m^m(s)g(s)ds + L_p^m \tag{35}$$

Lastly, we assume an economy that faces an infinitely elastic supply of capital consistent with an interest rate $R = 1/\beta + \delta - 1$. This can be directly derived from the Euler equation that the optimization problem of a representative household must satisfy in the steady state.[22] Then, the aggregate stock of capital is determined by the demand side of the economy:

$$K = \phi_f \int_{s\in S} k_f(s)I_f^e\left(s;\tau_f\right)g(s)ds + \phi_m \int_{s\in S} k_m(s)I_m^e\left(s;\tau_m\right)g(s)ds + K_p \tag{36}$$

3.5.1 | Equilibrium and Market Clearing

Wages adjust endogenously to clear labor markets. Through this adjustment, wages determine both labor demand by firms and individuals' occupational choices across sectors. For notational simplicity, we do not include wages explicitly as arguments in the occupational choice indicators or labor demand functions. Nevertheless, these objects are implicitly wage-dependent, as they are derived from individual optimization and firm profit maximization given equilibrium wages. In equilibrium, individual optimal decisions and market-clearing conditions jointly determine the allocation of labor and managerial talent across sectors. Labor demand functions derived earlier in this section pin down firms' input choices as functions of wages, while occupational choice rules determine the supply of labor and managers to each sector. Equilibrium wages are those that equate these demands and supplies simultaneously across markets. Definition 2 provides the formal concept of equilibrium for our model economy.

Definition 2. The competitive equilibrium of this economy is an allocation $\{K\}$, a set of occupational choices $\left\{I_f^e(s), I_f^p(s), I_f^w(s), H_f(s)\right\}_{s\in S}$ and $\left\{I_m^e(s), I_m^p(s), I_m^w(s)\right\}_{s\in S}$, and a set of prices $\left\{R, w_f, w_m\right\}$ such that, given the premiums τ_f and τ_m, (i) agents choose their occupation to maximize earnings, (ii) entrepreneurs choose the amount of capital and labor to maximize profits, (iii) the government maximizes its surplus (see (14) above), and (iv) labor and capital markets clear.

4 | Comparative Statics

In this section we show some of the qualitative properties of the model in a partial equilibrium context. Specifically, we explore the allocation of female and male talent across the three sectors of the economy when the managerial premium in the public sector falls.

Figure 3 depicts a comparative statics exercise in which the male premium in the public sector decreases. This reduction in the managerial public-sector premium leads to a reallocation of managerial talent from the public sector into the private sector (keeping prices constant). As a result, the size of the public firm falls and the size of the private sector increases. Importantly, the private sector now operates with a smaller quantity of the public good G. Therefore, production in the private sector is carried out by more firms, but the production in these firms is complemented by a smaller amount of the public good.

In contrast, an increase in the premium paid to managers in the public sector would reduce private sector employment, leading to the existence of fewer (but bigger) businesses. These firms, however, would operate with a larger amount of the public good that complements their productive activities since the public firm recruits more managerial talent, resulting in a greater span of control over variable inputs. Combined, these results suggest the existence of a productivity-maximizing public-sector premium. On the one hand, a very high premium would increase the size of the public good that private businesses need to produce but would leave the private sector without enough managerial talent. On the other hand, a very low premium would leave the public firm without enough managerial talent, thus lowering the production of the public good but would increase the size of the private sector. The productivity-maximizing level of the public-sector premium is the one that balances this trade-off and results in an allocation of talent between the private and public sectors that maximizes market output per worker or TFP. Importantly, the productivity-maximizing premium also implies a productivity-maximizing size of the government since, in this economy, it is the premium that determines the amount of talent attracted to the public sector, and thus the size of the public firm. Any premium that deviates from the productivity-maximizing level will therefore distort the allocation of talent in the economy, undermining aggregate output and productivity.

Figure 4 shows the effects of a reduction in the (managerial) public-sector premium on the female allocation of talent. As is the case for male workers, a decrease in the premium results in a reallocation of managerial talent away from public firms. Interestingly, women who leave managerial positions in the public firm do not necessarily transition into another occupation in the labor market but in this example they instead become home producers. Then, a fall in the female public-sector premium triggers two main partial equilibrium effects. First, the amount of the public good decreases as a consequence of the public firm hiring less managerial talent. Then, even though the mass of female entrepreneurs in the private firms in this example remains the same, they produce with a smaller amount of the public input. Second, home production increases. The productivity-maximizing level for the public-sector premium depends therefore not only on the allocation of female talent in the labor market but also on whether home production is considered in the analysis. The empirical section of this paper will revisit this issue in more detail.

Overall, this partial equilibrium analysis offers several insights on the allocation of talent between the public sector, the private sector, and home production. First, a high public-sector premium results in a high employment share in the government among the relatively talented agents. Second, and related to the previous point, a high public premium expands the size of the public sector and shrinks the private sector. Third, changes in the public premium could reallocate women either out of home production into the public sector or from the public sector into home production, that is, in or out of the labor market. Fourth, there exists a productivity-maximizing public-sector premium, and any deviation from that level distorts the allocation of talent in the economy, leading to aggregate consequences for output and productivity. Fifth, the inclusion of the home production sector is indeed relevant for assessing the efficiency gains of a rise or fall in the premium paid in the public sector.

4.1 | The Limiting Case $\gamma = 0$

The case $\gamma = 0$ provides a useful benchmark for understanding the role of public-sector efficiency in the model. When

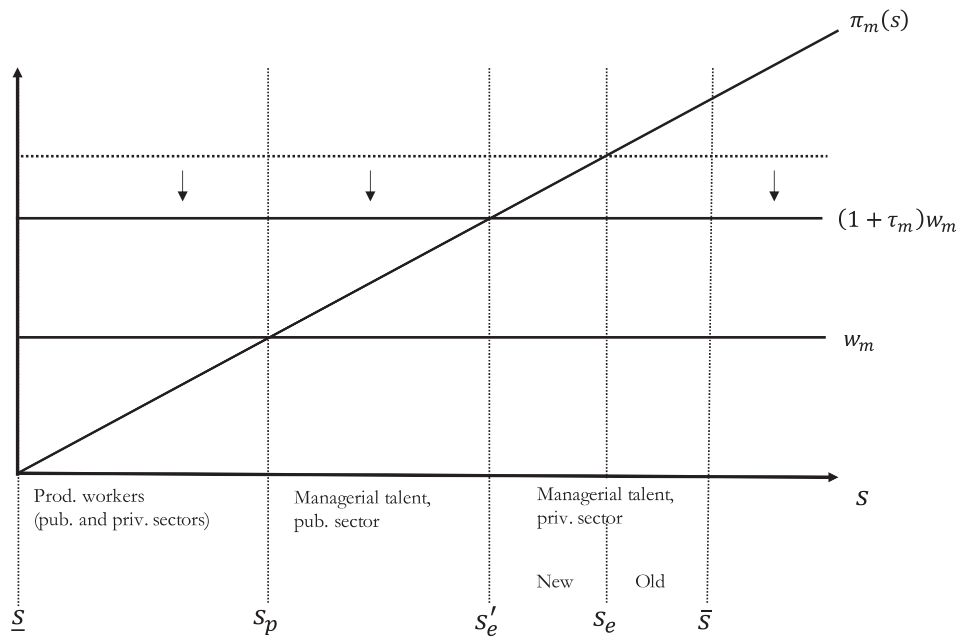

FIGURE 3 | Allocation of male talent, fall in the premium.

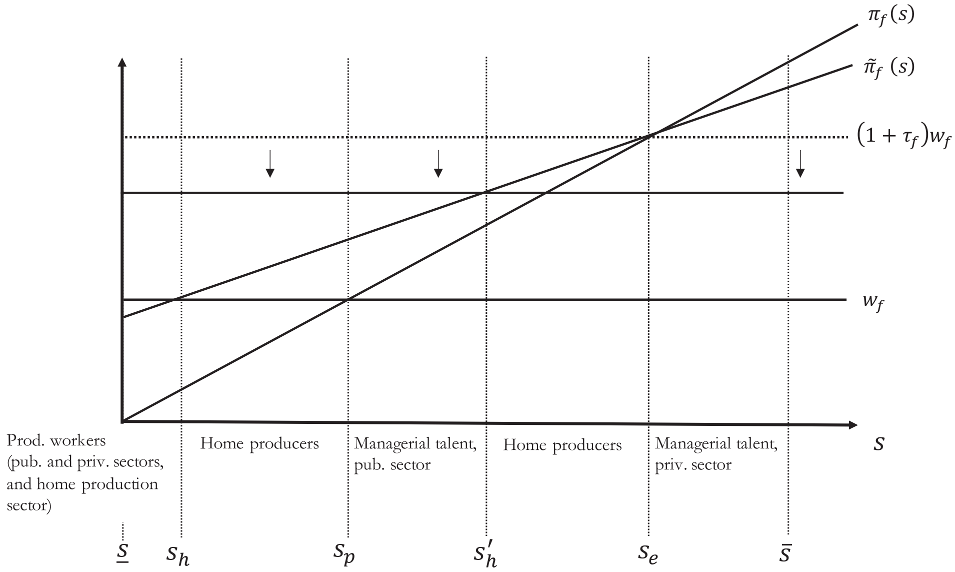

FIGURE 4 | Allocation of female talent, fall in the premium.

$\gamma = 0$, public goods do not enhance private-sector productivity, and public-sector activity therefore generates no indirect efficiency gains. In this environment, the productivity-maximizing public-sector premium is zero, since attracting managerial talent to the public sector yields no productivity benefits that could offset the resulting loss of private entrepreneurial activity. Consequently, the productivity-maximizing size of the public sector collapses to the minimum level required by exogenous production needs, and all managerial talent is allocated to private entrepreneurship. Any positive public-sector premium in this case would generate pure misallocation without compensating productivity gains. This limiting case highlights the central role of γ as a key determinant of productivity-maximizing compensation policy and clarifies why positive public-sector premia arise only when public goods contribute to private-sector productivity.

5 | Calibration Strategy

The calibration strategy combines two complementary components. A first subset of parameters is taken from the existing literature, as these parameters govern technological relationships that are widely viewed as stable over time and not specific to the Egyptian context. A second subset of parameters is calibrated internally to match contemporaneous moments from the Egyptian economy. Importantly, the quantitative results are not driven by any single externally sourced parameter. Rather, they reflect the equilibrium interaction of the model's mechanisms, disciplined jointly by multiple aggregate moments.[23]

In the discussion that follows, we explicitly justify the use of each externally sourced parameter. For every parameter taken from the literature, we explain (i) the economic object it represents, (ii) why it governs technological relationships that are widely viewed as stable across countries and over time, and (iii) why its value is appropriate for our empirical analysis. These parameters are therefore not chosen to match Egyptian outcomes directly, but to discipline the model along dimensions that are well established in the literature and orthogonal to the mechanisms we study.

By contrast, parameters that shape the allocation of labor and managerial talent across sectors are calibrated internally to match contemporaneous moments of the Egyptian economy. This distinction ensures that the quantitative results are driven by the equilibrium interaction of the model's mechanisms rather than by externally imposed values. Overall, the calibration strategy balances empirical grounding with transparency and is designed to quantify the order of magnitude of productivity effects arising from talent misallocation induced by public-sector premia.

Our data are extracted from the ILOSTAT databases.[24] This source provides harmonized labor market statistics that are widely used in cross-country and country-specific analyses, ensuring consistency and comparability of employment and wage moments.

We select the private-sector production parameter α such that the implied capital income share, $\eta_e \alpha$, equals 0.3. This value is standard in the literature and consistent with national income accounts for a wide range of economies (e.g., Gollin 2002). Since our goal is not to model differences in capital intensity between public and private production, we assume that the capital income share in the public sector is the same as in the private sector. Accordingly, we choose κ such that $\eta_g \kappa = 0.3$. This assumption allows us to abstract from sector-specific capital distortions and focus on the allocation of managerial talent, which is the core mechanism of the paper.

The fractions of women and men in the population, ϕ_f and ϕ_m, are taken directly from the data and set to $\phi_f = \phi_m = 0.5$. These figures reflect the balanced gender composition of the working-age population and ensure that differences in labor market outcomes arise endogenously from occupational choices and sectoral incentives rather than from demographic imbalances.

For the intertemporal parameters governing the infinitely elastic supply of capital, we adopt standard values from the literature. We set the discount factor to $\beta = 0.95$ and the depreciation rate to $\delta = 0.06$, following Cagetti and De Nardi (2006) and Buera and Shin (2013).[25] These parameters affect the level of capital but play a limited role in shaping relative returns across occupations, and thus do not drive the key allocation mechanism.

In line with Guner et al. (2008), we assume that log managerial ability follows a (truncated) normal distribution with mean m and standard deviation sd, capturing the bulk of production units with total mass $1 - \hat{p}$. This specification provides a flexible yet parsimonious representation of heterogeneity in managerial talent, which is central to span-of-control models. To account for the upper tail of the firm size distribution, we introduce a top skill level $\hat{s}$ with mass $\hat{p}$, normalized to $\hat{p} = 0.1\,\%$. The value of $\hat{s}$ is chosen to match the observed employment share in firms with 20 or more workers. This approach allows the model to replicate the presence of a small number of large firms without imposing a heavy-tailed distribution throughout.

The parameters m, sd, $\hat{s}$, and the span-of-control parameter η_e jointly determine the distribution of firm sizes and the composition of female and male entrepreneurs. We therefore calibrate these parameters to match multiple moments simultaneously: the employment share in firms with 1–9 workers, the employment share in firms with 20 or more workers, and the proportions of female and male entrepreneurs. Matching this set of moments ensures that the model reproduces key features of the firm-size distribution and gender sorting into entrepreneurship that are central to the analysis.

The elasticity of substitution between female and male labor, σ, is calibrated to discipline relative wages in the benchmark economy. This choice ensures that relative wages reflect observed labor market differentials rather than being imposed exogenously.[26] Similarly, the public-sector span-of-control parameter η_g is calibrated to match the fraction of public employment relative to total employment, disciplining the scale of public production independently of compensation policies.

Home production is characterized by two parameters, η_h and $\overline{h}$, which govern the productivity and scale of non-market activity. These parameters are calibrated to match (i) the fraction of female production workers relative to total female employment and (ii) the share of women engaged in home production. While the former moment is directly observable, the latter requires proxying. We identify women aged 15–64 who are outside the labor force and proxy the number of home producers as one-third of this group. This conservative assumption avoids equating non-participation with home production, recognizing that some women may be in education or otherwise inactive. We then compute the home-production share as the ratio of proxied home producers to the sum of proxied home producers and the female labor force. Under this procedure, the home-production share used as a calibration target is approximately 60%, a figure consistent with time-use evidence and gender gaps in unpaid care work in Egypt.[27]

The public-sector premia τ_f and τ_m are calibrated to match the observed fractions of female and male public employment. These parameters capture the overall compensation advantage of public employment, including both monetary and non-monetary benefits. From these values, we also compute the implied ratios of average public-sector compensation to production labor wages, denoted $\widetilde{\tau}_f$ and $\widetilde{\tau}_m$. Throughout the paper, we refer to τ_i as the *public-sector premium* and to $\widetilde{\tau}_i$ as the *average premium* to maintain clarity.

Finally, the parameter γ, which governs the elasticity of aggregate production with respect to the public good G, is not required for calibration because none of the targeted moments involve aggregate output. The calibrated allocation of talent is therefore consistent with different values of γ. In subsequent sections, we treat γ as a free parameter capturing public-sector efficiency and compute the productivity-maximizing premium for alternative values, highlighting how productivity-maximizing policy depends on the productivity of public goods.

Table 1 reports the calibrated parameters and their sources, while Table 2 summarizes the model's performance relative to the targeted moments. In the baseline economy, the calibrated public-sector premium averages 37% for women and less than 1% for men, yielding an overall average of 22%.[28]

6 | Efficiency Gains From a Reallocation of Talent

One of the primary goals of this paper is to shed light on the consequences for allocative efficiency of different levels of the public-sector premium (and therefore, different sizes of the public sector).[29] The model accommodates several measures of aggregate productivity in the allocation of talent. These measures differ in the way labor and/or output are aggregated. Specifically, home production may or may not be accounted for in aggregate output, while labor could be aggregated in terms of raw units (production labor) or in terms of efficiency units. We focus on productivity measures that are observable for policymakers: output per worker and aggregate TFP, both based on market output and the aggregation of production labor. Home production affects the productivity-maximizing allocation indirectly through women's occupational choices and through the resulting labor supply and wage responses. However, home production is not included in the measure of market productivity. Consequently, the gains reported below should be interpreted as gains in measured market productivity, not as welfare gains that value home-produced goods or non-market time directly.[30]

We define output per worker, q, as:

$$q = \frac{Y_e}{L_1 + L_2} \tag{37}$$

where Y_e is the total production carried out by both female and male entrepreneurs in the private sector:

$$Y_e = G^\gamma \left(\phi_f \int_{s \in S} y_f(s) I_f^e(s; \tau_f) g(s) ds + \phi_m \int_{s \in S} y_m(s) \left(I_m^e s; \tau_m \right) g(s) ds \right) \tag{38}$$

TABLE 1 | Parameters of the model.

Share of capital, private sector ($\eta_e \alpha$)	0.3	Literature, e.g., Gollin 2002
Share of capital, public firm ($\eta_g \kappa$)	0.3	Literature, e.g., Gollin 2002
Fraction of women (ϕ_f)	0.5	Data (exogenous)
Fraction of men (ϕ_m)	0.5	Data (exogenous)
Discount factor (β)	0.95	Literature
Depreciation rate (δ)	0.06	Literature, e.g., Cooley 1995; Stokey and Rebelo 1995; Heathcote et al. 2010; Buera and Shin 2013; Cagetti and De Nardi 2006
CES elasticity (σ)	8.6	Calibrated to match data
Mean log-entrepreneurship skills (m)	−0.4	Calibrated to match data
Standard deviation of log-entrepreneurship skills (sd)	4.3	Calibrated to match data
Highest entrepreneurship ability ($\hat{s}$)	185,000	Calibrated to match data
Mass of highest entrepreneurship ability ($\hat{p}$)	0.1%	Normalized
Span-of-control, private sector (η_e)	0.53	Calibrated to match data
Span-of-control, public sector (η_g)	0.86	Calibrated to match data
Home production parameter I ($\overline{h}$)	42	Calibrated to match data
Home production parameter II (η_h)	0.41	Calibrated to match data
Public sector premium, women (τ_f)	0.76	Calibrated to match data
Public sector premium, men (τ_m)	0.07	Calibrated to match data
Public sector premium, average, women ($\tilde{\tau}_f$)	0.37	Directly computed from the model parameters post-calibration
Public sector premium, average, men ($\tilde{\tau}_m$)	<0.01	Directly computed from the model parameters post-calibration

TABLE 2 | Performance of the model.

Statistic	Data	Model
Gender wage premium	1.03	0.94
Fraction of female entrepreneurs	0.33	0.34
Fraction of male entrepreneurs	0.28	0.25
Employment share in firms with 1–9 employees	0.57	0.6
Employment share in firms with 20 or more employees	0.36	0.39
Fraction of public employment over total employment	0.22	0.25
Fraction of female production workers over total female employment	0.25	0.26
Fraction of women that produce at home	0.6	0.53
Fraction of public employment among women	0.42	0.41
Fraction of public employment among men	0.18	0.18

Note: Appendix D defines the empirical moments and their model-equivalent measures.

and L_1 and L_2 are the total amounts of production labor allocated to the private sector and the public sector, respectively:

$$L_1 = \phi_f \int_{s \in S} \left(l_f^f(s) + l_f^m(s) \right) I_f^e(s; \tau_f) g(s) ds + \phi_m \int_{s \in S} \left(l_m^f(s) + l_m^m(s) \right) I_m^e(s; \tau_m) g(s) ds \tag{39}$$

$$L_2 = L_p^f + L_p^m \tag{40}$$

and L_p^f and L_p^m are the expressions defined in Section 3.2.[31]

In addition, we define TFP as the residual from an aggregate technology under a capital share of $\alpha\eta_e$ and labor share of $1 - \alpha\eta_e$.[32] Then,

$$\text{TFP} = \frac{Y_e / (L_1 + L_2)}{\left(K / (L_1 + L_2)\right)^{\alpha\eta_e}} \tag{41}$$

In this economy, the productivity gains from a change in the public-sector premium, and therefore the size of the public sector, depend critically on the size of γ, the elasticity that captures the responsiveness of aggregate production to changes in the public good. Bom and Ligthart (2014) conducted a systematic meta-regression analysis to quantify the private output elasticity of the stock of public capital, a parameter that in their setup corresponds to the elasticity γ in ours.[33] Bom and Ligthart look at a sample of 578 estimates from 68 studies and find a short-run elasticity of 0.083, which increases to 0.122 in the long run. The average is 0.106. Given that their evidence is from developed economies only, we believe that a value of 0.1 is a conservative estimate (likely an upper bound) for γ in our baseline economy.[34]

Comparable estimates for Egypt, MENA countries, or low- and middle-income economies that map directly into the public-good elasticity in our model are scarce. For this reason, we do not interpret $\gamma = 0.1$ as an unconditional estimate for Egypt. Instead, we use it as a transparent benchmark, report how the results vary with γ, and present all quantitative gains under $\gamma = 0.1$ as conditional model-based estimates.

Tables 3 and 4 below show how talent would reallocate across sectors and across occupations if the premium in our baseline economy were reduced from the calibrated level (averaging 22%) to the productivity-maximizing level (averaging 13%), assuming a level of public efficiency of $\gamma = 0.1$. Among women, reducing the (average) public-sector premium, and therefore the size of the public sector, results in more entrepreneurship, more production workers in the private sector, and less home production. Among men, the reduction in the premium and the size of the public sector results in more production workers in the private sector but the reallocation across occupations is negligible.

A reduction in the public-sector premium for women (to its productivity-maximizing level) prompts mid-to-high-skilled women to move away from the public sector. A fraction of these women transition into entrepreneurship, while others start home production. The expansion of the female entrepreneurial sector drives up the demand for production labor, leading to an increase in wages. This rise in wages encourages the least skilled women, previously engaged in home production, to enter the production labor force. Consequently, the female entrepreneurial sector expands, the number of female production workers increases, and the pool of female managerial talent in the public sector shrinks. Moreover, the home production sector contracts but undergoes a shift in its composition: the proportion of mid-to-high-skilled women relative to low-skilled women engaged in home production rises. Furthermore, with reduced demand from the public sector and the female home production sector, the composition of female production labor changes: labor allocated to the private sector increases, while that allocated to the public sector and the home-production sector decreases. In addition, the higher demand for production labor also pushes male wages up.[35] As male wages increase and the male public sector slightly decreases, the size of the male entrepreneurial sector undergoes

TABLE 3 | Distribution of female talent.

	Baseline	Productivity-max.
Entrepreneurs	0.16	0.20
Managerial talent, pub. sector	0.09	0.04
Production workers	0.22	0.47
Private sector	0.50	0.89
Public sector	0.44	0.07
Home production sector	0.07	0.04
Home producers	0.52	0.29
Home producers, low skill	1	0.95
Home producers, high skill	0	0.05

Note: The baseline scenario corresponds to the calibrated premium. The counterfactual scenario corresponds to the productivity-maximizing premium for $\gamma = 0.1$.

TABLE 4 | Distribution of male talent.

	Baseline	Productivity-max.
Entrepreneurs	0.25	0.26
Managerial talent, pub. sector	0.01	<0.01
Production workers	0.74	0.74
Private sector	0.76	0.93
Public sector	0.24	0.07

Note: The baseline scenario corresponds to the calibrated premium. The counterfactual scenario corresponds to the productivity-maximizing premium for $\gamma = 0.1$.

TABLE 5 | Baseline and productivity-maximizing allocations under $\gamma = 0.1$.

Statistic	Baseline	Productivity-maximizing allocation
Average public-sector premium	0.22	0.13
Public employment share	0.25	0.08
Female entrepreneurs	0.16	0.20
Male entrepreneurs	0.25	0.26
Female labor force participation	0.48	0.71
Women in home production	0.52	0.29
Output per worker q	1.00	1.12
TFP	1.00	1.08

Note: The productivity-maximizing allocation corresponds to the counterfactual premium that maximizes market output per worker and TFP under $\gamma = 0.1$. Female labor force participation is computed as one minus the share of women in home production. Output per worker and TFP are normalized to one in the baseline economy.

minimal change, and male production labor shifts from the public to the private sector. Reducing the public-sector premium from the current to the productivity-maximizing level yields aggregate efficiency gains in our baseline economy of 12% for q (output per worker) and 8% for our measure of TFP.

Table 5 summarizes the main allocation and productivity changes under the benchmark value $\gamma = 0.1$. The table complements Tables 3 and 4 by reporting the central policy objects and aggregate outcomes in one place. Output per worker and TFP are normalized to one in the baseline economy.

Figure 5 provides a visual summary of the mechanism behind the counterfactual. The figure highlights that the reduction in the aggregate public-sector premium reallocates women away from public management and home production toward entrepreneurship and wage work, while the male reallocation is concentrated mainly in the movement of production labor from the public sector to the private sector.

In Figure 6 we show the efficiency gains from a reallocation of talent to the productivity-maximizing allocation for different sizes of the public sector (measured using the share of public sector employment). The figure assumes a level of public sector efficiency γ

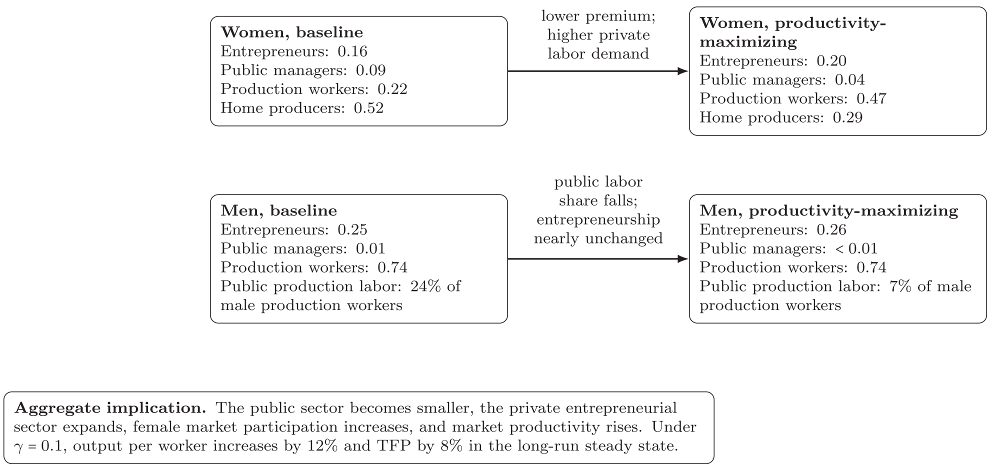

FIGURE 5 | Mechanism: Baseline versus productivity-maximizing allocation. Entries reproduce the allocation shares reported in Tables 3–5. The figure is a schematic flow chart and is not drawn to scale.

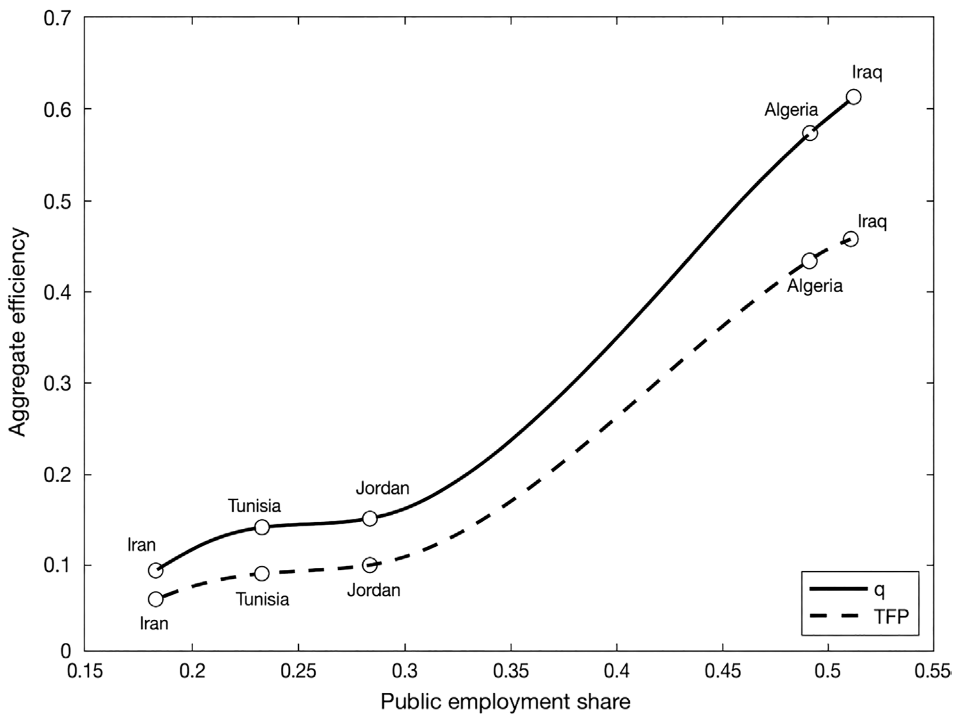

FIGURE 6 | Efficiency gains from a reallocation of talent for different shares of public sector employment. The counterfactual scenario corresponds to the allocation under the productivity-maximizing premium for $\gamma = 0.1$. Circles correspond to values computed for each country. The continuous curve is a visual interpolation between computed points and should not be interpreted as additional country-level evidence or as an estimated cross-country relationship. Shares in the public sector are from ILOSTAT databases.

of 0.1. As a reference, we show the levels of public sector employment (and potential gains from reallocation) in different MENA countries. The figure shows that for a given value of public sector efficiency, the potential efficiency losses from talent misallocation are larger the share of employment in the public sector.[36]

7 | The Productivity-Maximizing Public-Sector Premium

We next compute the productivity-maximizing *average* public-sector premium for different values of the elasticity γ. We do

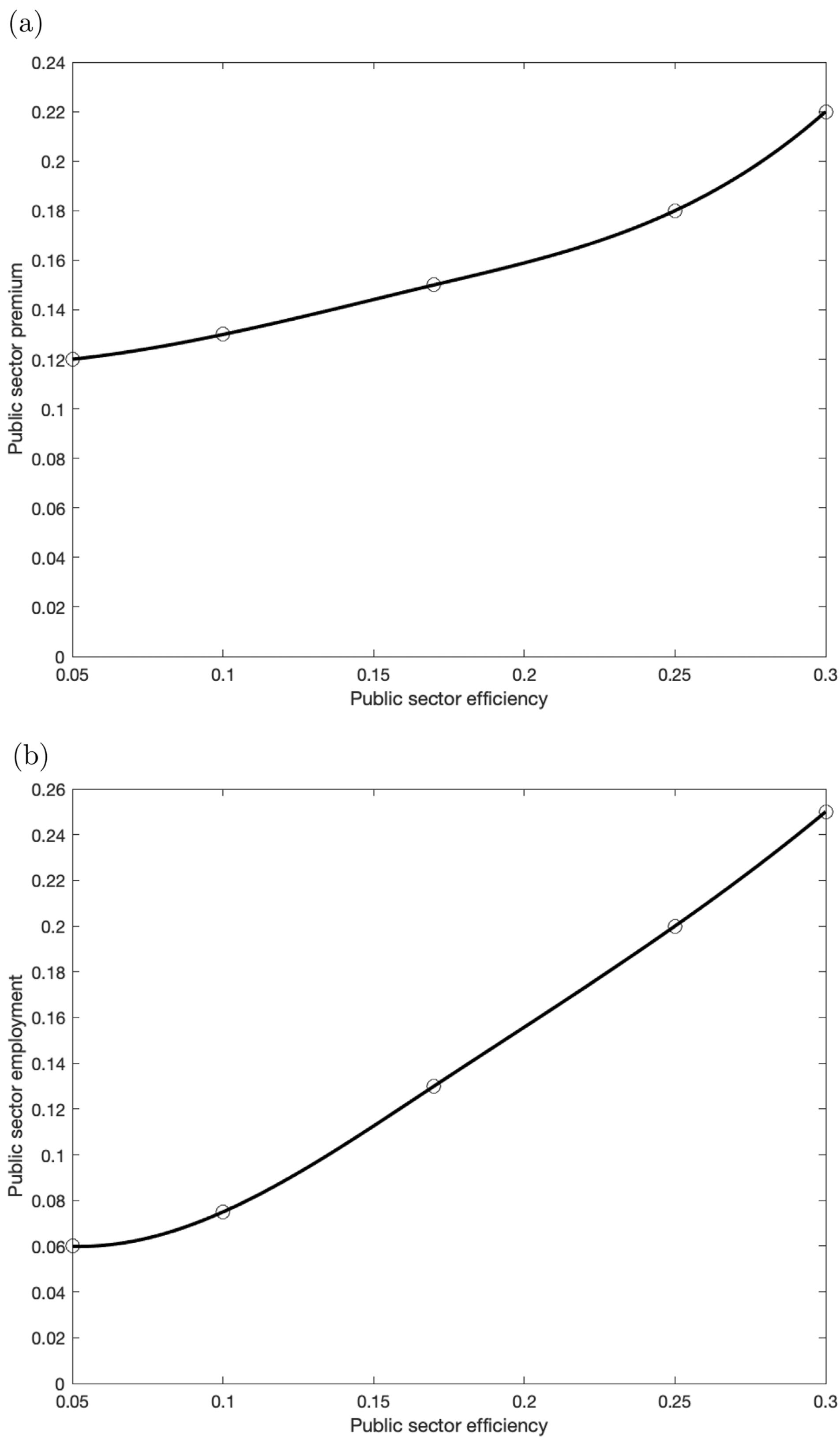

FIGURE 7 | Legend on next page.

FIGURE 7 | Productivity-maximizing average premium and employment share in the public sector. (a) Productivity-max. average premium. (b) Productivity-max. public employment share. In each figure, circles correspond to values computed for specific values of γ, whereas the remaining points on the curve were interpolated. Public sector efficiency is proxied by γ. The productivity-maximizing average public-sector premium is defined as the ratio of the average wage in the public sector to the average wage in the private sector (minus one) that maximizes either q or TFP. The productivity-maximizing average public-sector employment share is defined as the ratio of employment in the public sector to total employment that maximizes either q or TFP. The productivity-maximizing premium and employment share do not differ significantly when q or TFP is maximized. Hence, the average of the premium and employment share implied by the maximization of q and the one implied by the maximization of TFP is displayed in the figure.

so using either output per worker q in Equation (37) or TFP in Equation (41) as the objective. The average public-sector premium is defined as the ratio of the average public-sector wage to the average private-sector wage, minus one. Because the premium affects occupational choices and the allocation of workers across sectors, its productivity-maximizing level also implies a productivity-maximizing size of the public sector.

To be clear, our goal is not to characterize the socially optimal size of the public sector in a normative sense, but rather to isolate the productivity consequences of public-sector compensation policies that affect the allocation of managerial talent across sectors. Accordingly, our object of interest is the public-sector premium that maximizes productivity.

This definition is motivated by the policy question of how governments should set compensation packages to maximize aggregate economic performance. We define the productivity-maximizing premium as the level that maximizes aggregate productivity, taking as given the production technologies, the public-good technology, and the set of occupational choices available to individuals. This criterion captures the central trade-off faced by governments in practice: attracting managerial talent to the public sector to produce productivity-enhancing public goods, while avoiding an excessive reallocation of high-skilled individuals away from private entrepreneurship. In this sense, our notion of optimality can be interpreted as a form of constrained efficiency.[37]

A full welfare analysis could yield a different policy prescription once these additional margins are introduced. In particular, a social planner who internalizes fiscal instruments and distributional objectives would face additional trade-offs, and the resulting allocation need not coincide with the productivity-maximizing one.[38] This distinction clarifies the interpretation of the results and ensures that the subsequent policy discussion remains aligned with the scope and mechanisms of the model.

The top panel in Figure 7 shows the productivity-maximizing average public-sector premium in our benchmark economy (Egypt) for different values of γ, which represents different levels of public sector efficiency.[39] We observe in the figure that the higher the elasticity of private sector output to the public good, the higher the productivity-maximizing premium. In other words, if the observed premium is high, an efficient allocation of talent would require a high elasticity of output to the public sector. At very low levels of public sector efficiency (i.e., $\gamma = 0.05$), the productivity-maximizing premium reaches only 12%. Note that the baseline (calibrated) premium of 22% for Egypt is only productivity-maximizing when γ is close to 0.3. For $\gamma = 0.1$, which is close to the average estimate for developed economies documented by Bom and Ligthart (2014), the calibrated premium in our baseline economy is significantly higher than the productivity-maximizing level (22% vs. 13%).

The bottom panel of Figure 7 depicts the productivity-maximizing size of the public sector (across men and women) as a fraction of total employment. Consistent with our findings for the productivity-maximizing premium, we observe that the higher the elasticity of private sector output to the public good, the higher the productivity-maximizing share of employment allocated to the public sector. The fraction of public sector employment observed in the data (22%) is only productivity-maximizing when the efficiency of the public sector is 0.3. For a value of γ of 0.1, the current size of the public sector is almost three times as large as the productivity-maximizing size.

Figure 8 separates the productivity-maximizing public-sector premium and employment share by gender. The figure shows that the productivity-maximizing allocation of employment in the public sector rises for both men and women for higher levels of government efficiency, although the premium for men is practically negligible across the entire range of γ values under consideration. In panel (a), we observe that the productivity-maximizing premium for women ranges from 19% for $\gamma = 0.05$ to 37% for $\gamma = 0.3$. In contrast, the productivity-maximizing premium for men is close to zero regardless of the level of public-sector efficiency (in the support under consideration). Thus, maximization of aggregate productivity in this economy (either output per worker q or TFP) requires paying a premium in the public sector to women but not to men. Similarly, panel (b) shows that the mass of women in the public sector as a share of total female employment ranges from 9% when the efficiency level of the public sector is low ($\gamma = 0.05$) to 40% when public sector efficiency is high ($\gamma = 0.3$). In the case of men, this share goes from 4% ($\gamma = 0.05$) to 18% ($\gamma = 0.3$). The fraction of employment allocated to the public sector in the productivity-maximizing allocation (adding both men and women) ranges from 6% under low levels of government efficiency ($\gamma = 0.05$) to 25% under high levels of efficiency ($\gamma = 0.3$).

In this economy, maximizing aggregate efficiency requires paying a premium in the public sector to women and not to men, and requires employing a comparatively higher share of women in the public sector compared to men. To understand this result, we consider a hypothetical scenario in which the premium is the same for women and men (i.e., lower than the productivity-maximizing level for women, displayed in

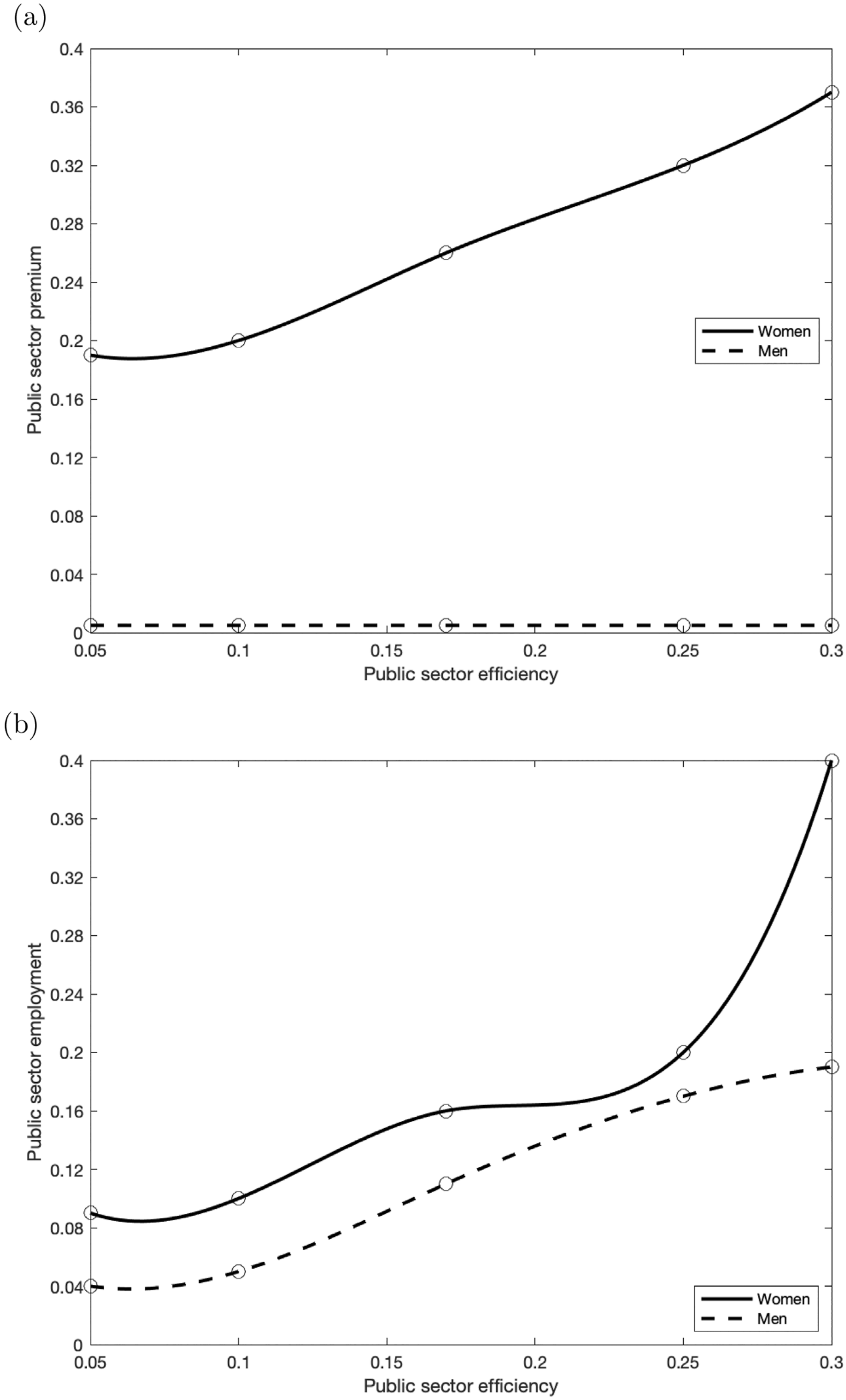

FIGURE 8 | Productivity-maximizing average premium and employment share in the public sector for men and women. (a) Productivity-max. average premium for men and women. (b) Productivity-max. public employment share among men and women. In each figure, circles correspond to values computed for specific values of γ, whereas the remaining points on the curve were interpolated. Public sector efficiency is proxied by γ. The productivity-maximizing average public-sector premium is defined as the ratio of the average wage in the public sector to the average wage in the private sector (minus one) that maximizes either q or TFP. The productivity-maximizing average public-sector employment share is defined as the ratio of employment in the public sector to total employment that maximizes either q or TFP. The productivity-maximizing premium and employment share do not differ significantly when q or TFP is maximized. Hence, the average of the premium and employment share implied by the maximization of q and the one implied by the maximization of TFP is displayed in the figure.

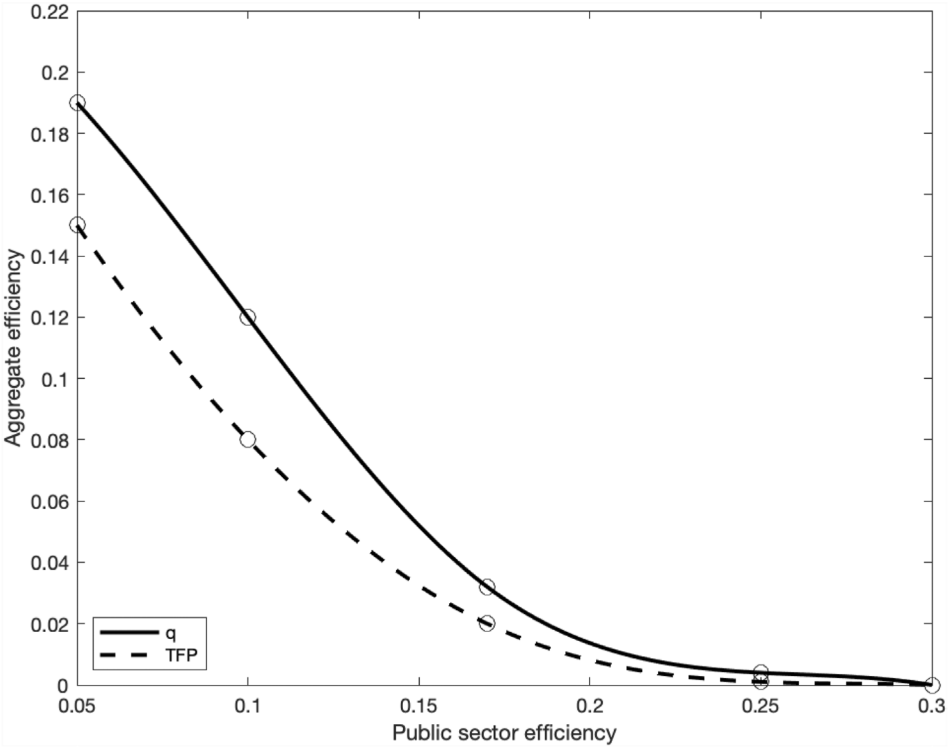

FIGURE 9 | Aggregate efficiency gains. Circles correspond to values computed for specific values of γ, whereas the remaining points on the curve were interpolated.

Figure E3 in Appendix E, and higher than the productivity-maximizing level for men, displayed in Figure E4).[40] Such a wage structure would involve a larger number of women leaving the public sector to begin producing at home (as evident from Figure E3 when the public-sector compensation line $w_f(1+\tau_f)$ shifts downward). Conversely, in the case of men, a mass of men would move from entrepreneurship into the public sector, as depicted in Figure E4 when the public-sector compensation line $w_m(1+\tau_m)$ rises. A mass of women with mid-to-high skills would transition from the public sector into the home production sector, while a mass of men would transition from the entrepreneurial sector into the public sector. That is, offering a (roughly) equal premium for women and men in the public sector would prompt a significant portion of these women to engage in home production, while simultaneously reducing the size of the male entrepreneurial sector. Allocating more women into the public sector and away from the home production sector by increasing their premium, and allocating men into the entrepreneurial sector and away from the public sector by lowering theirs, would then increase aggregate efficiency. The productivity-maximizing public-sector premium must therefore differ between men and women, with women in particular earning a higher premium.

In Figure 9 we compute the efficiency gains achieved by adjusting the current public-sector premium in our baseline economy to its productivity-maximizing level for different values of γ. We show the two efficiency metrics (output per worker q and TFP). The figure shows that the current allocation of talent in our baseline economy is close to productivity-maximizing (aggregate efficiency gains are minimal) when the value of γ (which is a proxy for the efficiency of the public sector in boosting private sector output) is relatively large (above 0.3). The lower the value of γ, the higher the efficiency gains in our baseline economy from reducing the current public-sector premium and the current share of public sector employment (thus reallocating talent away from the public into the private sector).

8 | Concluding Remarks

Extensive evidence shows that wages and certain non-pecuniary benefits favor public sector workers over those in the private sector. The existing literature often interprets this discrepancy as indicative of an overpaid public sector, conducting arbitrary counterfactual analyses to estimate aggregate gains from reducing the public-sector premium. Moreover, these frameworks discard, by design, the possibility for women of engaging in home production. Unlike these frameworks, the productivity-maximizing public-sector premium in our model is contingent upon the efficiency level of public spending. This feature allows us to perform non-arbitrary counterfactual analyses. The model also incorporates a home-production sector, so the decision between market and non-market activities for women is endogenous. Our findings underscore the importance of aligning the public-sector premium with its productivity-maximizing level, as evidenced by the substantial efficiency gains identified through our counterfactual exercises. Specifically, our calibration for Egypt shows that, conditional on the benchmark value $\gamma = 0.1$, adjusting the public-sector premium from the current to the productivity-maximizing level, and lowering the share of public-sector employment accordingly, yields long-run aggregate gains of 12% for output per worker and 8% for TFP. The aggregate productivity gains are significantly larger for lower levels of the elasticity of private-sector output to public goods.

We elucidate the drivers behind these aggregate productivity gains. In Egypt, a productivity-maximizing talent allocation entails a reduction in the average public-sector premium, albeit with differences between women and men. The productivity-maximizing public-sector premium remains positive for women but approaches zero for men. This productivity-maximizing compensation structure reduces the size of the public sector and encourages female entrepreneurial activity. Compared to a scenario where the premium is gender-neutral, it mitigates a significant transition of mid-to-high-skilled women from the public sector to the home production sector and a contraction of the male entrepreneurial sector. Interestingly, we show that a lower female public-sector premium increases female labor force participation in market activities.

An important direction for future work is to integrate the allocation of managerial talent with taxation, enforcement, and tax evasion. In many developing economies, differences in compliance across occupations and firms interact with public-sector compensation and revenue needs, potentially shaping both talent allocation and the productivity-maximizing size of the public sector. Extending the framework to incorporate these public finance considerations would allow for a richer welfare analysis, but would require departing from the parsimonious structure adopted here. We view such extensions as complementary to the present analysis and leave them for future research. In addition, our framework could be leveraged to analyze the efficiency gains from public-sector retrenchment in other regions of the world. We hope that the analysis conducted in this paper serves as a stepping stone to explore these or other research avenues.

Acknowledgments

We have benefited from helpful comments and suggestions from Roberta Gatti, Aart Kraay, Daniel Lederman, Cesar Calderon, and Raul Morales Lema. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Funding

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are openly available from the International Labour Organization (ILO) at https://www.ilo.org/.

Endnotes

[1] We use the terms public sector, public firm, and government interchangeably.

[2] For background literature on the home-production sector, see Becker (1964), Becker (1965), Benhabib et al. (1991), Aguiar and Hurst (2007), Been et al. (2020), among others.

[3] Throughout the paper, we use the term benefits to denote the monetized value of both monetary wages and non-monetary job attributes (e.g., job stability, working conditions, and other amenities).

[4] MENA: Middle East and North Africa. See International Labor Organization (ILO) and https://theforum.erf.org.eg/2020/08/31/public-sector-employment-mena-comparison-world-indicators/.

[5] A public-sector premium is not a universal feature across countries, and its magnitude varies widely with institutional, historical, and political conditions.

[6] Our paper is also closely related to Gonzalez and Parro (2023). That study examines misallocation *within* entrepreneurship arising from gender-specific constraints on access to business resources. In contrast, we analyze a distinct and complementary channel. We explicitly incorporate a public sector that competes for managerial talent, allow for gender-specific public-sector premia, and include household production as an outside option. These additional margins are central to our framework and shift the focus from distortions in firm scale to distortions in occupational and sectoral allocation.

[7] The model abstracts from unemployment, informality, and transition frictions in order to focus on the long-run steady-state allocation of managerial talent across sectors, which is the primary driver of aggregate productivity in our framework. Allowing for unemployment or informal employment would introduce additional extensive margins–such as job search, waiting for public employment, temporary informal activity, or low-productivity outside options–and would attenuate short-run gains from reallocation. The long-run mechanism, however, would remain the reallocation of high-skilled individuals between public employment and private entrepreneurship. Appendix F discusses how imperfect transitions or low-productivity outside options should be interpreted relative to the steady-state counterfactuals reported below.

[8] Managerial skill s should be interpreted as an entrepreneurial attribute rather than a characteristic of hired workers. Production workers supply raw labor units only and are not differentiated by skill in the production technology. This modeling choice is standard in span-of-control frameworks and avoids double-counting entrepreneurial talent as labor input.

[9] Our equilibrium concept involves a steady state and not a balanced growth path. Hence, we normalize aggregate productivity levels to one, which applies to the private, public, and home-production sectors.

[10] We assume a homothetic production technology for tractability and because the focus of the paper is on *talent allocation across sectors*, rather than on within-firm labor composition dynamics. Accordingly, we do not aim to explain changes in gender labor shares driven by output growth or technological bias, but to isolate how public-sector premia distort occupational and sectoral choices given wages. Allowing for non-homothetic technologies would introduce additional margins of adjustment but would not alter the core mechanism of the model, whereby the public-sector premium reallocates high-skill individuals away from private entrepreneurial activity. The use of homothetic production is standard in span-of-control misallocation frameworks (e.g., Cagetti and De Nardi 2006; Buera and Shin 2013).

[11] We keep G outside the individual entrepreneur's optimization problem to preserve tractability. Otherwise, occupational cutoffs would depend on G, while G would itself depend on the talent allocated to the public sector, creating a fixed point between public-good provision and talent allocation. We interpret G broadly as productivity-enhancing public inputs and services—including infrastructure, education and health services, regulation, legal institutions, and

administrative capacity—and abstract from direct utility or welfare effects.

[12] The analysis abstracts from distortionary taxation, tax enforcement, and evasion in order to isolate the role of public-sector premia in shaping the allocation of managerial talent across sectors. Introducing taxation would require modeling public finance instruments, compliance, and heterogeneous evasion opportunities across occupations–margins that have been extensively studied in the literature and that would introduce additional, conceptually distinct distortions. Once taxation and evasion are introduced, the productivity-maximizing size of the public sector and the associated compensation policies would generally depend on additional public finance trade-offs. Abstracting from these margins therefore provides a transparent benchmark that isolates the talent-allocation channel linking public-sector premia to aggregate productivity.

[13] In the model section, the terms *public-sector premium* and *managerial public-sector premium* refer to τ_i, the premium paid to public-sector managers of type $i \in f, m$. The average premium, denoted $\widetilde{\tau}_i$ in the calibration, is the average compensation advantage among all public-sector employees of type i.

[14] Here, Z_p aggregates effective managerial skill units by weighting each public manager by their individual skill level s, whereas $\widetilde{L}_p$ measures the total mass of managers independently of skill intensity.

[15] As is standard in many macro-development analyses of productivity losses from regulations, the implicit assumption is that the government finances the public firm with non-distortionary lump-sum taxes.

[16] It should not be interpreted as a universal technological restriction. In economies where men also perform substantial home production, the model could be extended by giving men an analogous outside option. Such an extension would attenuate the gender asymmetry in productivity-maximizing premia, but it would not change the core mechanism through which public-sector premia reallocate managerial talent between public management, private entrepreneurship, and non-market activities.

[17] The assumption of a skill gradient in home production is grounded in the household production framework developed by Becker (1965) and subsequent work. In this literature, home production is modeled as a productive activity that combines time and skills to generate household goods and services. Under this view, more skilled individuals–particularly more educated women–are more productive in home production because they can organize tasks more efficiently, allocate time better, and apply cognitive and managerial skills to childcare, elder care, and household management. As a result, the opportunity cost of market participation rises with skill, even when market wages are high.

[18] https://www.dt.gob.cl/portal/1626/articles-117137_galeria_36.pdf.

[19] Figures 1 and 2, as well as Figures 3 and 4 below, are intended solely to illustrate what an equilibrium allocation of talent across occupations looks like and to highlight selected qualitative properties of the model in a partial-equilibrium setting. They are not meant to represent actual data or empirical patterns.

[20] Notice that the model predicts that, in the public sector, less skilled managers are more "overpaid" than those with more skills. Specifically, consider the profits an individual can earn as an entrepreneur in the private sector as a proxy for her talent. As observed in Figures 1 and 2, the gap between the total wage earned by public sector managers and their potential profits as private sector entrepreneurs decreases with talent. This prediction is consistent, for example, with the evidence documented by Cerda and Pessino (2018).

[21] Equations (32) and (33) restate the aggregation of individual occupational choices in equilibrium form and do not impose additional restrictions beyond Assumptions 1 and 2.

[22] The Appendix C provides further details.

[23] The goal of the calibration is not point prediction, but to quantify the order of magnitude of aggregate productivity losses associated with talent misallocation induced by public-sector premia.

[24] International Labour Organization (ILO).

[25] This depreciation rate is standard in the business-cycle literature (Cooley 1995; Heathcote et al. 2010). Stokey and Rebelo (1995) show that estimates based on capital consumption allowances and aggregate capital stocks yield an average depreciation rate close to 6%.

[26] The purpose of the paper is not to provide a theory of the gender wage gap, which likely reflects a combination of factors studied elsewhere (e.g., Blau and Kahn 2017).

[27] See https://arabstates.unwomen.org/sites/default/files/Field%20Office%20Arab%20States/Attachments/Publications/2020/12/UNW_ERF_PolicyBriefs_Egypt_final_Dec4_2020.pdf. Nazier and Ezzat (2018) similarly report that Egyptian women allocate roughly 60% of their time to housework.

[28] All replication codes are available from the authors upon request.

[29] We do not aim to estimate causal effects empirically; rather, our goal is to quantify the implications of a structural mechanism within a general-equilibrium framework. The counterfactual exercises should therefore be interpreted as model-based simulations that evaluate how public-sector compensation policies affect occupational choices and the allocation of managerial talent across sectors. In this sense, the analysis provides a disciplined structural interpretation of how public-sector premia can influence aggregate productivity, rather than an econometric identification of causal relationships in the data.

[30] Wage levels are identified only up to a normalization in the model, and aggregate outcomes are driven primarily by relative returns across occupations rather than by absolute wage levels. For this reason, our quantitative analysis focuses on aggregate productivity, output per worker, and the allocation of talent, which are the key objects of interest for evaluating the efficiency consequences of public-sector premia. Throughout the analysis, wage adjustments serve to support the equilibrium reallocation mechanism, even though they are not reported as standalone outcomes.

[31] Home production is excluded from the numerator of q. Consequently, we do not include production labor employed at home in the labor aggregator implied by q. Suppose, in contrast, that production labor at home were included in the labor aggregator. Then, by construction, the output produced by these workers would not be accounted for, but they would be included in the accountable definition of the labor force. This would result in an unconvincing way of computing the efficiency level of the economy.

[32] We maintain consistency in how output and labor are aggregated; that is, home production is excluded from output, and home-employed production labor is excluded from the labor aggregator.

[33] In our model, G corresponds to a flow of services from public goods. These goods increase private sector output Y_e with an elasticity of aggregate production to the size of the public good γ. The parameter estimated in the meta-regression analysis of Bom and Ligthart (2014) is the data-equivalent of our model parameter, but for developed economies. Bom and Ligthart consider studies that estimate the output elasticity of public capital θ in a production function of the form $Y = AK^{\alpha}L^{\beta}G^{\theta}$. The idea behind this approach is that the services of public capital are proportional to the stock of public capital. In most of the studies they consider, public capital includes core infrastructure (roads, railways, airports, utilities), hospitals, educational buildings, and other public buildings. The output measure in many cases is real gross output of the private sector (excluding taxes and subsidies on products) or real GDP exclusive of public sector output.

[34] Several parts of the analysis ahead focus on $\gamma = 0.1$. Given institutional and efficiency constraints in developing economies, we view $\gamma = 0.1$ as a conservative upper bound rather than a central estimate

for the public-good elasticity in our baseline economy. Since lower values of γ imply a lower productivity-maximizing premium and therefore larger gains from moving the calibrated allocation to the productivity-maximizing one, the gains reported under $\gamma = 0.1$ should be interpreted as conservative conditional estimates. Values of γ below this benchmark interpolate smoothly toward the limiting case $\gamma \to 0$ and do not generate qualitatively new insights.

[35] The rise in wages does not need to be large since the distribution of talent is such that the mass of low-skilled individuals is relatively sizable.

[36] The figure should not be interpreted as implying that a larger public sector is associated with higher efficiency per se. Rather, for a given level of public sector efficiency, a larger public sector implies that a greater fraction of managerial talent is allocated to public employment. When the public-sector premium deviates from its productivity-maximizing level, this increases the scope for talent misallocation and, consequently, the potential efficiency losses. As a result, economies with larger public sectors stand to gain more from reallocating talent toward the productivity-maximizing allocation, which is reflected in the increasing efficiency gains shown in the figure.

[37] Changes in the public-sector premium affect aggregate outcomes primarily through their impact on the allocation of managerial talent across sectors, which is the key distortion emphasized in the model. By focusing on aggregate productivity, we abstract from additional considerations—such as redistribution, insurance motives, political economy constraints, or distortionary taxation—that would be relevant for a full welfare analysis but would require a substantially richer public-finance environment.

[38] Once taxation and public-finance constraints are introduced, the welfare-maximizing public-sector premium could differ from the productivity-maximizing level. We view our approach as providing a transparent and policy-relevant benchmark that isolates the core efficiency channel linking public-sector premia, talent allocation, and aggregate productivity.

[39] Recall that γ is the elasticity of private sector output to the public good.

[40] Figures E1 and E2 in Appendix E show the baseline (calibrated) allocation of female and male talent, respectively.

References

Abdallah, C., D. Coady, and L. Jirasavetakul. 2023. "Public-Private Wage Differentials and Interactions Across Countries and Time." IMF Working Paper WP/23/64.

Aguiar, M., and E. Hurst. 2007. "Measuring Trends in Leisure: The Allocation of Time Over Five Decades." *Quarterly Journal of Economics* 122, no. 3: 969–1006.

Assaad, R. 1997. "The Effects of Public Sector Hiring and Compensation Policies on the Egyptian Labor Market." *World Bank Economic Review* 11, no. 1: 85–118.

Assaad, R., R. Hendy, M. Lassassi, and S. Yassin. 2020. "Explaining the MENA Paradox: Rising Educational Attainment, Yet Stagnant Female Labor Force Participation." *Demographic Research* 43, no. 28: 817–850.

Becker, G. S. 1964. *Human Capital: A Theoretical and Empirical Analysis, With Special Reference to Education*. National Bureau of Economic Research; Distributed by Columbia University Press.

Becker, G. S. 1965. "A Theory of the Allocation of Time." *Economic Journal* 75, no. 299: 493–517.

Been, J., S. Rohwedder, and M. Hurd. 2020. "Does Home Production Replace Consumption Spending? Evidence From Shocks in Housing Wealth in the Great Recession." *Review of Economics and Statistics* 102, no. 1: 113–128.

Benhabib, J., R. Rogerson, and R. Wright. 1991. "Homework in Macroeconomics: Household Production and Aggregate Fluctuations." *Journal of Political Economy* 99, no. 6: 1166–1187.

Blau, F. D., and L. M. Kahn. 2017. "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature* 55, no. 3: 789–865.

Bom, P. R. D., and J. E. Ligthart. 2014. "What Have We Learned From Three Decades of Research on the Productivity of Public Capital?" *Journal of Economic Surveys* 28, no. 5: 889–916.

Buera, F. J., and Y. Shin. 2013. "Financial Frictions and the Persistence of History: A Quantitative Exploration." *Journal of Political Economy* 121, no. 2: 221–272.

Cagetti, M., and M. De Nardi. 2006. "Entrepreneurship, Frictions, and Wealth." *Journal of Political Economy* 114, no. 5: 835–870.

Cavalcanti, T., and M. Rodrigues dos Santos. 2021. "(Mis)Allocation Effects of an Overpaid Public Sector." *Journal of the European Economic Association* 19, no. 2: 953–999.

Cerda, R., and C. Pessino. 2018. *How Large Are Fiscal Wage Gaps in Latin America? How Can They be Corrected?* Inter-American Development Bank.

Clark, A., and F. Postel-Vinay. 2009. "Job Security and Job Protection." *Oxford Economic Papers* 61, no. 2: 207–239.

Cooley, T. F., ed. 1995. *Frontiers of Business Cycle Research*. Princeton University Press.

Depalo, D., R. Giordano, and E. Papapetrou. 2015. "Public–Private Wage Differentials in Euro-Area Countries: Evidence From Quantile Decomposition Analysis." *Empirical Economics* 49, no. 3: 985–1015.

Gollin, D. 2002. "Getting Income Shares Right." *Journal of Political Economy* 110, no. 2: 458–474.

Gonzalez, J., and F. Parro. 2023. "Aggregate Costs of a Gender Gap in the Access to Business Resources." *B.E. Journal of Macroeconomics* 23, no. 2: 677–709.

Guner, N., G. Ventura, and Y. Xu. 2008. "Macroeconomic Implications of Size-Dependent Policies." *Review of Economic Dynamics* 11, no. 4: 721–744.

He, H., F. Huang, Z. Liu, and D. Zhu. 2018. "Breaking the "Iron Rice Bowl": Evidence of Precautionary Savings From the Chinese State-Owned Enterprises Reform." *Journal of Monetary Economics* 94: 94–113.

Heathcote, J., K. Storesletten, and G. L. Violante. 2010. "The Macroeconomic Implications of Rising Wage Inequality in the United States." *Journal of Political Economy* 118, no. 4: 681–722.

Hsieh, C.-T., E. Hurst, C. I. Jones, and P. J. Klenow. 2019. "The Allocation of Talent and U.S. Economic Growth." *Econometrica* 87, no. 5: 1439–1474.

Lucas, R. E. 1978. "On the Size Distribution of Business Firms." *Bell Journal of Economics* 9, no. 2: 508–523.

Mizala, A., P. Romaguera, and S. Gallego. 2011. "Public–Private Wage Gap in Latin America (1992–2007): A Matching Approach." *Labour Economics* 18, no. Supplement 1: S115–S131.

Nazier, H., and A. Ezzat. 2018. "Gender Differences in Time Allocation: A Comparative Analysis of Egypt and Tunisia." Economic Research Forum Working Paper No. 1217.

OECD. 2011. *Government at a Glance 2011*. OECD Publishing.

Panizza, U., and C. Z.-W. Qiang. 2005. "Public–Private Wage Differential and Gender Gap in Latin America: Spoiled Bureaucrats and Exploited Women?" *Journal of Socio-Economics* 34, no. 6: 810–833.

Piketty, T. 2014. *Capital in the Twenty-First Century*. Belknap Press of Harvard University Press.

Postel-Vinay, F., and H. Turon. 2007. "The Public Pay Gap in Britain: Small Differences That (Don't?) Matter." *Economic Journal* 117, no. 523: 1460–1503.

Restuccia, D., and R. Rogerson. 2008. "Policy Distortions and Aggregate Productivity With Heterogeneous Establishments." *Review of Economic Dynamics* 11, no. 4: 707–720.

Stokey, N. L., and S. Rebelo. 1995. "Growth Effects of Flat-Rate Taxes." *Journal of Political Economy* 103, no. 3: 519–550.

Tansel, A. 2005. "Public–Private Employment Choice, Wage Differentials, and Gender in Turkey." *Economic Development and Cultural Change* 53, no. 2: 453–477.

Tansel, A., H. I. Keskin, and Z. A. Ozdemir. 2020. "Public-Private Sector Wage Gap by Gender in Egypt: Evidence From Quantile Regression on Panel Data, 1998–2018." *World Development* 135: 105060.

Appendix A: Solution to the Problem of an Entrepreneur

The maximization problem of a type-i entrepreneur, for $i \in \{f, m\}$, with talent s is:

$$\max_{k_i, l_i^f, l_i^m} \ \pi_i(s) = y_i(s) - w_f l_i^f - w_m l_i^m - Rk_i \tag{A1}$$

The first-order conditions are:

$$[k_i(s)] : \eta_e \alpha \frac{y_i(s)}{k_i(s)} = R \tag{A2}$$

$$\left[l_i^f(s)\right] : \eta_e(1-\alpha)\left(\frac{y_i(s)}{l_i(s)}\right)\left(\frac{l_i(s)}{l_i^f(s)}\right)^{\frac{1}{\sigma}} = w^f \tag{A3}$$

$$\left[l_i^m(s)\right] : \eta_e(1-\alpha)\left(\frac{y_i(s)}{l_i(s)}\right)\left(\frac{l_i(s)}{l_i^m(s)}\right)^{\frac{1}{\sigma}} = w^m \tag{A4}$$

Then, using (A2) we get Equation (5). In addition, from (A3) and (A4), we get:

$$l_i^f(s) = \left(\frac{\eta_e(1-\alpha)}{w^f}\frac{y_i(s)}{l_i(s)}\right)^{\sigma} l_i(s) \tag{A5}$$

$$l_i^m(s) = \left(\frac{\eta_e(1-\alpha)}{w^m}\frac{y_i(s)}{l_i(s)}\right)^{\sigma} l_i(s) \tag{A6}$$

Plugging (A5) and (A6) in (2), we get Equation (6). Then, using (5) and (6) in (1), we get Equation (4).

Finally, from (A3) and (A4), we get:

$$\frac{l_i^m(s)}{l_i^f(s)} = \left(\frac{w^f}{w^m}\right)^{\sigma} \tag{A7}$$

and from (2), we get:

$$\frac{l_i(s)}{l_i^f(s)} = \left[1 + \left(\frac{l_i^m(s)}{l_i^f(s)}\right)^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{A8}$$

$$\frac{l_i(s)}{l_i^m(s)} = \left[1 + \left(\frac{l_i^f(s)}{l_i^m(s)}\right)^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{A9}$$

Plugging (A7) into (A8) and (A9), we get Equations (7) and (8).

Appendix B: Solution to the Problem of the Public Firm

The maximization problem of the public firm is:

$$\max_{K_p, L_p^f, L_p^m} \ B = G(Z_p) - (1+\tau_f)w_f\widetilde{L}_p^f - (1+\tau_m)w_m\widetilde{L}_p^m - w_f L_p^f - w_m L_p^m - \mathrm{RK}_p \tag{B1}$$

The first-order conditions are:

$$[K_p(Z_p)] : \eta_g \kappa \frac{G(Z_p)}{K_p(Z_p)} = R \tag{B2}$$

$$\left[L_p^f(Z_p)\right] : \eta_g(1-\kappa)\left(\frac{G(Z_p)}{L_p(Z_p)}\right)\left(\frac{L_p(Z_p)}{L_p^f(Z_p)}\right)^{\frac{1}{\sigma}} = w^f \tag{B3}$$

$$\left[L_p^m(Z_p)\right] : \eta_g(1-\kappa)\left(\frac{G(Z_p)}{L_p(Z_p)}\right)\left(\frac{L_p(Z_p)}{L_p^m(Z_p)}\right)^{\frac{1}{\sigma}} = w^m \tag{B4}$$

Then, using (B2) we get Equation (16). Then, using (B3) and (B4), we derive:

$$L_p^f(Z_p) = \left(\frac{\eta_g(1-\kappa)}{w^f}\frac{G(Z_p)}{L_p(Z_p)}\right)^{\sigma} L_p(Z_p) \tag{B5}$$

$$L_p^m(Z_p) = \left(\frac{\eta_g(1-\kappa)}{w^m}\frac{G(Z_p)}{L_p(Z_p)}\right)^{\sigma} L_p(Z_p) \tag{B6}$$

Plugging (B5) and (B6) in (12), we get Equation (17). In addition, using (16) and (17) in (11), we get Equation (15).

Finally, from (B3) and (B4), we get:

$$\frac{L_p^m(Z_p)}{L_p^f(Z_p)} = \left(\frac{w^f}{w^m}\right)^{\sigma} \tag{B7}$$

and from (12), we derive:

$$\frac{L_p(Z_p)}{L_p^f(Z_p)} = \left[1 + \left(\frac{L_p^m(Z_p)}{L_p^f(Z_p)}\right)^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{B8}$$

$$\frac{L_p(Z_p)}{L_p^m(Z_p)} = \left[1 + \left(\frac{L_p^f(Z_p)}{L_p^m(Z_p)}\right)^{\frac{\sigma-1}{\sigma}}\right]^{\frac{\sigma}{\sigma-1}} \tag{B9}$$

Then, plugging (B7) into (B8) and (B9), we get Equations (18) and (19).

Appendix C: Euler Equation

The representative household gets flow utility from a sequence of per capita consumption, $\{c_t\}_{t=0}^{\infty}$, and maximizes:

$$U\left(\{c_t\}_{t=0}^{\infty}\right) = \sum_{t=0}^{\infty} \beta^t \ln \ c_t \tag{C1}$$

where $\beta \in (0,1)$ is the discount factor.

The representative household takes as given all prices and the occupational choices of its members and chooses a sequence of per capita consumption and aggregate capital to solve.

$$\begin{gathered} \max_{\{c_t, K_{t+1}\}_{t=0}^{\infty}} \sum_{t=0}^{\infty} \beta^t L_t \ln \ c_t \\ \text{s.t.} \quad L_t c_t + K_{t+1} = W_t + R_t K_t + (1-\delta)K_t \\ K_0 > 0, L_0 > 0 \end{gathered} \tag{C2}$$

The first-order conditions for per capita consumption and aggregate capital imply.

$$\frac{c_{t+1}}{c_t} = \beta(R_{t+1} + 1 - \delta) \quad \text{for all } \ t \geq 0 \tag{C3}$$

Equation (C3) is the standard Euler equation. In steady state, we have: $R = 1/\beta + \delta - 1$.

Appendix D: Calibration Moments and Model Counterparts

This appendix defines the empirical moments reported in Table 2 and the corresponding objects computed in the model.

i. *Gender wage premium*. In the data, the gender wage premium is the ratio of average earnings of men to average earnings of women. In the model, the corresponding measure is the ratio of male to female production-labor wages, w_m / w_f.

ii. *Fraction of entrepreneurs*. In the data, the fraction of female or male entrepreneurs is the ratio of individuals whose remuneration depends directly on the profits derived from the goods and services they produce to total female or male employment. In the model, the corresponding measure is the mass of female or male entrepreneurs divided by the mass of individuals of the same gender who are employed as production workers, public-sector managers, or entrepreneurs.

iii. *Employment share by firm size*. In the data, the employment share in firms with x employees is the ratio of workers employed in firms with x employees to total employment. In the model, the corresponding measure is constructed from the distribution of production labor employed by private entrepreneurs across the same firm-size categories.

iv. *Public employment share*. In the data, the public employment share is the ratio of workers employed in the public sector to total employment. In the model, the corresponding measure is the mass of production labor employed by the public firm plus the mass of public-sector managers, divided by the total mass of production workers, public-sector managers, and entrepreneurs.

v. *Female production workers*. In the data, the fraction of female production workers over total female employment is computed as the female private-employment share minus the female entrepreneurship share. In the model, the corresponding measure is the mass of female production workers outside the public firm divided by the mass of employed women, defined as female production workers, female public-sector managers, and female entrepreneurs.

vi. *Women in home production*. In the data, the number of women who produce at home is proxied by one-third of working-age women outside the labor force. The corresponding share is the ratio of women in home production to the sum of women in home production and the female labor force. In the model, the corresponding measure is the mass of female home producers divided by the mass of female production workers, female public-sector managers, female entrepreneurs, and female home producers.

vii. *Public employment by gender*. In the data, the fraction of public employment among women or men is the ratio of female or male workers employed in the public sector to total female or male employment. In the model, the corresponding measure is the mass of female or male production labor employed by the public firm plus the mass of female or male public-sector managers, divided by the mass of production workers, public-sector managers, and entrepreneurs of the same gender.

Appendix E: Additional Figures

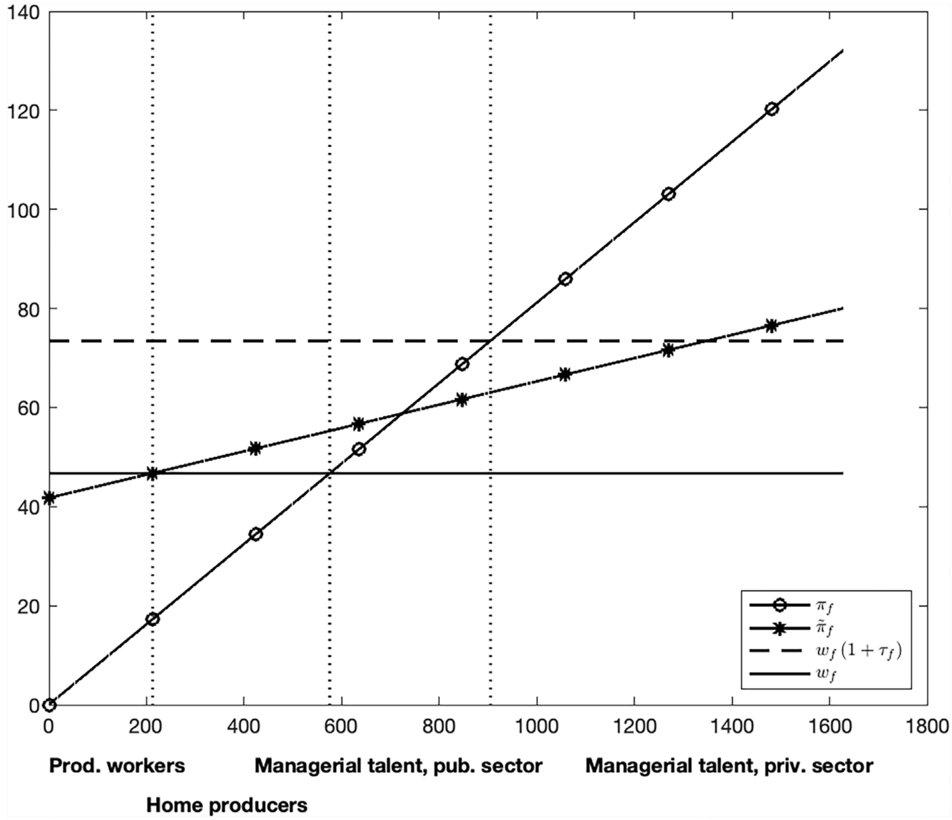

FIGURE E1 | Equilibrium allocation of female talent, baseline. π_f is the profits accrued by entrepreneurs in the private sector; $\widetilde{\pi}_f$ is the net value of home production; w_f is the wage paid to production labor; τ_f is the public-sector premium. The baseline scenario corresponds to the calibrated premium.

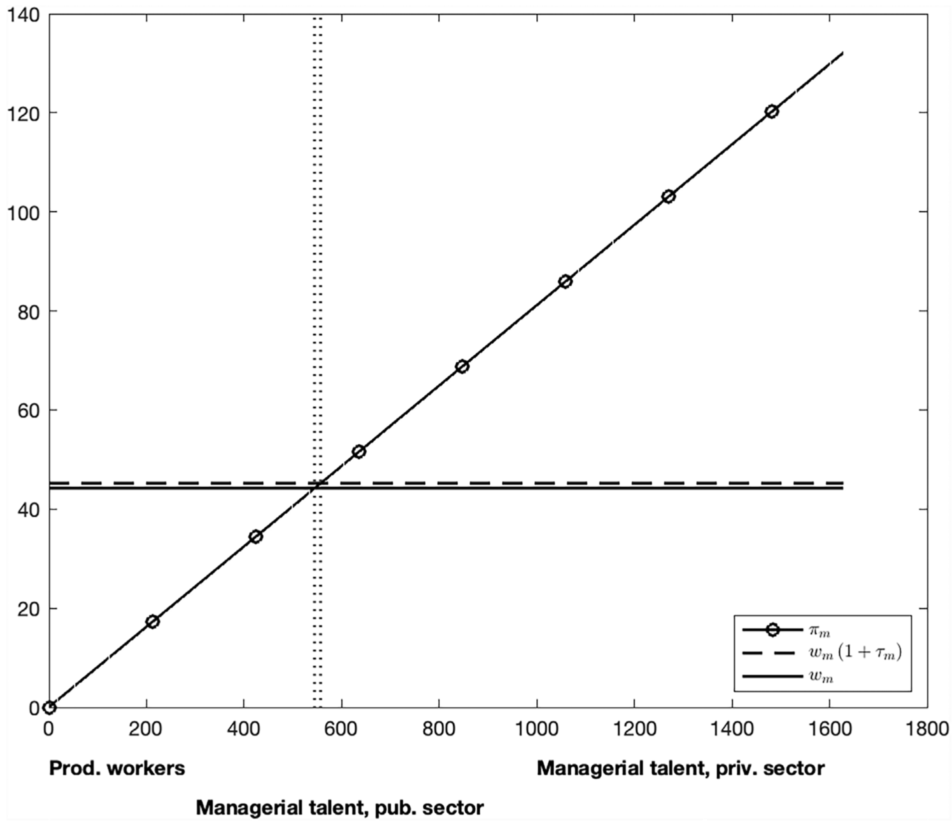

FIGURE E2 | Equilibrium allocation of male talent, baseline. π_m is the profits accrued by entrepreneurs in the private sector; w_m is the wage paid to production labor; τ_m is the public-sector premium. The baseline scenario corresponds to the calibrated premium.

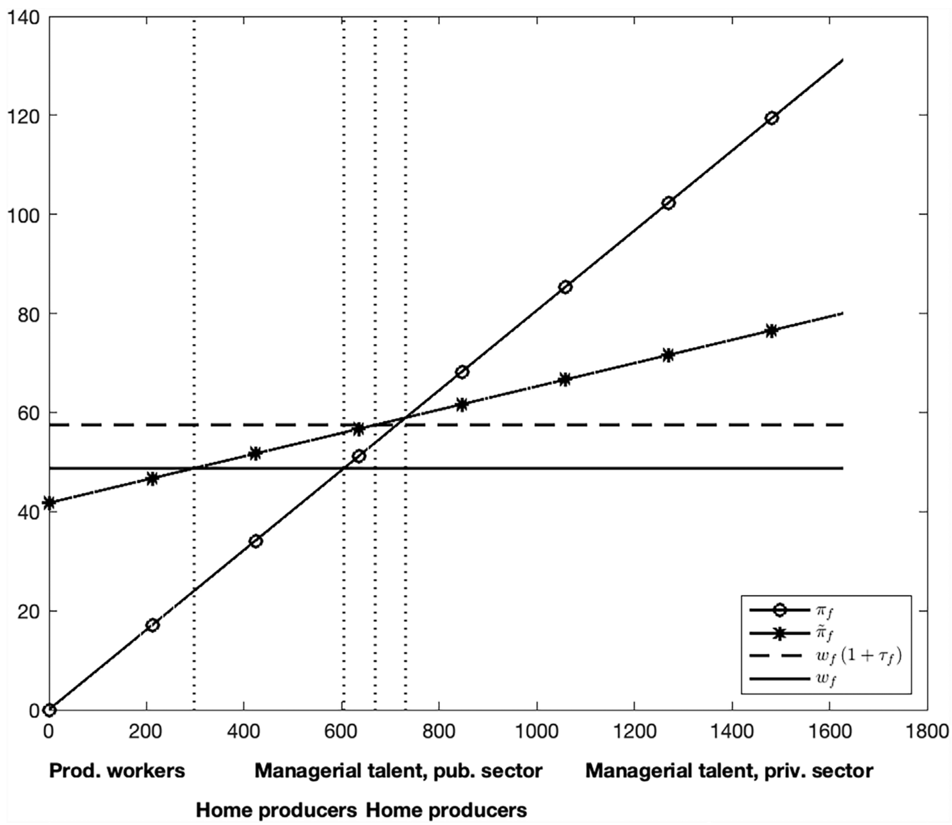

FIGURE E3 | Optimal allocation of female talent, counterfactual. π_f is the profits accrued by entrepreneurs in the private sector; $\widetilde{\pi}_f$ is the net value of home production; w_f is the wage paid to production labor; τ_f is the public-sector premium.

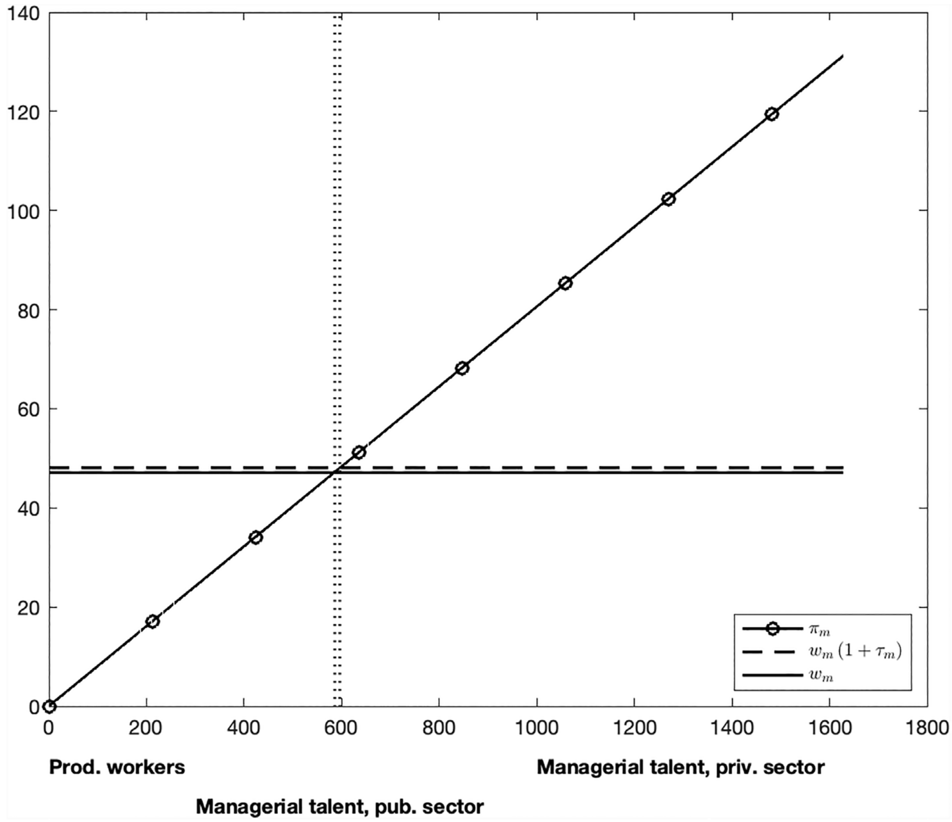

FIGURE E4 | Optimal allocation of male talent, counterfactual. π_m is the profits accrued by entrepreneurs in the private sector; w_m is the wage paid to production labor; τ_m is the public-sector premium.

Appendix F: Robustness and Interpretation of Model Extensions

This appendix collects robustness and interpretation exercises that clarify how the main results should be read when selected simplifying assumptions are relaxed. These exercises are not meant to replace a full recalibration of alternative economies. Rather, they show how the key mechanisms in the benchmark model extend to settings with imperfect public-sector sorting, transition frictions, and broader home-production margins.

Imperfect Public-Sector Sorting

The benchmark model assumes that the public sector observes managerial talent perfectly. A simple way to relax this assumption is to suppose that the government observes a noisy signal.

$$\tilde{s} = s\varepsilon$$

where ε is an idiosyncratic noise term with mean one. Public managerial hiring would then be based on $\tilde{s}$ rather than on true managerial talent s. For a given public-sector employment share, selection on a noisy signal weakly lowers the expected true talent of public managers relative to selection on s itself. Hence, the aggregate managerial input Z_p associated with any given mass of public managers would be lower than in the benchmark allocation. This extension attenuates the productivity benefits from a large public sector and therefore does not strengthen the case for a high public-sector premium. If anything, imperfect sorting reduces the productivity-maximizing premium and makes the productivity costs of excessive public employment larger. The benchmark perfect-sorting case should therefore be interpreted as an upper bound on the effectiveness of public-sector managerial recruitment.

Transition Frictions and Low-Productivity Outside Options

The counterfactual exercises in the paper compare steady-state allocations. They should therefore be interpreted as long-run productivity gains. If workers leaving public employment face search frictions, delayed transitions, or temporary informal employment, the short-run gains would be smaller than the steady-state gains reported in the main text. A simple reduced-form representation is to let $\lambda \in [0, 1]$ denote the fraction of the long-run reallocation that is completed during the transition period. If the steady-state gain in output per worker is g^{ss}, the corresponding transitional gain is approximately λg^{ss}, with the remainder realized only as workers move into their long-run occupations. This extension changes the timing of the gains but not the long-run comparison between the calibrated allocation and the productivity-maximizing allocation.

Home Production by Men

The benchmark assumes that only women engage in home production because the calibration is designed to match the Egyptian labor market, where unpaid household production is predominantly carried out by women. In economies where men also devote substantial time to home production, the framework can be extended by introducing a male home-production technology analogous to Equation (20). This extension would reduce the starkness of the gender asymmetry in occupational choices and could generate a positive outside option for some men as well. However, the central mechanism would remain unchanged: public-sector premia affect aggregate productivity by changing the allocation of managerial talent between public management, private entrepreneurship, production work, and non-market activities.

Sensitivity to Public-Good Efficiency

The parameter γ determines the strength of the productivity spillover from public goods to private production. The main text reports the allocation and productivity gains for $\gamma = 0.1$ and shows how the productivity-maximizing premium, public employment share, and efficiency gains vary across values of γ. The limiting case $\gamma = 0$, discussed in Section 4, provides the lower-bound benchmark: when public goods do not raise private productivity, the productivity-maximizing premium is zero and any positive premium generates pure talent misallocation. Thus, the quantitative magnitude of the gains varies with γ, but the qualitative reallocation mechanism is stable across the range considered.