

Rethinking Baumol's model through a feminist economics perspective

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Abstract:

In 1967, Baumol argued that a widening gap between productivity gains in economic sectors would inevitably impede growth and cause an increase in relative costs of lower productivity activities. The current rise in education and health costs shows how contemporary Baumol's contribution is. Nevertheless, while he considers the implication of his work on health and education, his research does not incorporate gender-related issues. By leveraging the recent literature on care by feminist economists, this paper aims to analyse Baumol's theory from a renewed perspective.

To do so, I focus on including care and gender in the model's formal framework to demonstrate its positive impact on productivity gains and, thus, on growth. This approach aims to redefine the role of the 'stagnant sectors', which are not supposed to contribute to productivity gains. Including a feminist economics perspective also questions Baumol's leading solution: the reallocation of production factors between sectors. It is argued that gender segregation between economic sectors, gender norms and inequalities could undermine the possibility of transferring labour from one sector to another.

Keywords: feminist economics, Baumol, care, macroeconomics, productivity, gender, feminist macroeconomics, growth

JEL code: B540

0. Introduction: why should we come back to Baumol's model?

In a conference held at Sciences Po Paris in 2018, Bruno Palier, suggested that Baumol's theory, by highlighting the difference of productivity gains between economics sectors, contributed to devaluing the care sector wages (Sciences Po, 2018).

Indeed, when Baumol considered care services such as education and health in his analysis, almost 30 years after his initial theory (Baumol, 1993a, 1993b, 1996); he included them in the so-called stagnant sector. This sector, contrary to the progressive one, does not benefit from productivity gains. The widening productivity gap is doomed to lead to a costs difference between sectors that will ultimately undermine growth. This idea is at the core of what is often referred to as 'Baumol's cost disease'. From this perspective, it is quite easy to understand how the activities included in the stagnant sector could be undervalued and perceived negatively. However, Baumol does not himself question the value of the stagnant sector's activity. On the opposite, he aims to understand how to preserve growth, employment as well as "essential services" which are education and health care.

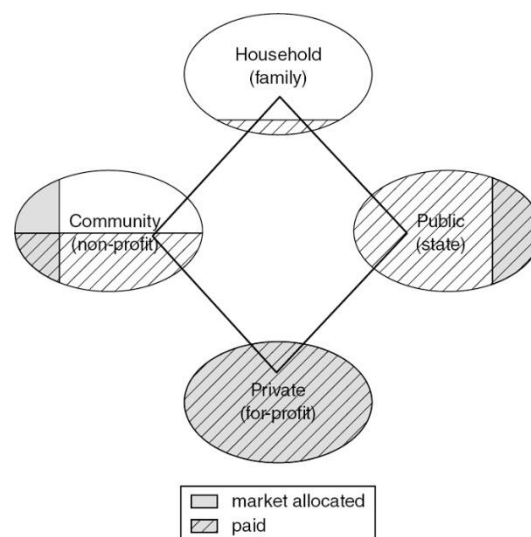
Despite his understanding that education and health are essentials to the economy, Baumol does not leverage the notion of care in his paper. Furthermore, Baumol does not change his model (nor formal neither theoretical) to better reflect the specificities of education and health. The reason for that is simple: Baumol does not provide a new analysis to account for care's specific characteristics. He only includes healthcare and education in the stagnant sector and then focuses on how to maintain the level of production of these activities despite their rising relative costs.

At the same time Baumol wrote these articles, feminist macroeconomics emerged and heavily focused on how economist should pay more attention to care when they model the economy. In fact, care is an umbrella term often used to designate various concepts and activities like domestic work, unpaid care, reproductive work, the health care system or the care economy (Esquivel 2013 in Esquivel 2014). The diversity of these definitions reflects evolutions and debates on the notion of care (Esquivel 2014). Thus, the concept of care from a feminist economics point of view seems too complex to be reduced to education and health services.

In this paper, we will leverage England’s definition of care: “*The range of activities that strengthen health, safety and physical, intellectual and emotional capacities of the recipient of care*” (England 2002 in Esquivel 2014 p3). This definition is large enough to encompass a wide range of activities, while taking into consideration the particularities of care. Care services can be both paid (performed in a formal work context) and unpaid (like domestic work) and involves a direct relationship between the caregiver and the recipient of care.

Moreover, England’s definition avoids a common hurdle of care’s definition, which is to limit the care recipients to children, the elderly and dependant people, as do Daly and Lewis (Daly and Lewis, 2002 in Esquivel 2014 p3). This restriction would prevent us from understanding the impact care can have on the current labour force as children, the elderly and dependant people often are not employed. Because the caregivers are not specified in this definition, let us complete it by leveraging Rasavi care Diamant (Rasavi in Himmelweit, 2013). This graph shows how households, companies, states and communities (non-profit or informal settings) all participate in caring. Thus, there are many environments where paid and unpaid care can happen.

Another characteristic of care that explains its core role in feminist economics is that while care activities occur in various settings, they have a common denominator: they are mainly performed by adult women. Both paid and unpaid care are hyperfeminised responsibilities. In France ¹ women comprise 76% of the labour force in the healthcare



Source: Adapted from Rasavi, 2007: 21

sector and 69% of the education sector. Certain professions that involve a continued and close relationship with the care recipients (nurse, nursing auxiliary, registered childminder, home helpers) are almost exclusively occupied by women (more than 90%) (Faure, 2020). Reciprocally, domestic work is a burden carried primarily by women. A study from the INSEE (INSEE, 2010) found that 54% of French women spend more than 4 hours per day caring for their children, against less than 38% of

¹ France will be used as a reference point for examples and data in this paper

men. This gap is even wider if we focus on domestic work: 25% of mothers in relationships spend more than 4 hours doing housework compared to 10% of men.

These first observations highlights the particularity of care as seen by feminist economics. It also hints at how including this notion in Baumol's framework could change the author conclusions. Thus, this paper will try to answer the following question: does a feminist perspective on care challenges Baumol's model and results? If so, how?

To answer this question, I will first focus on how to integrate care in Baumol's analysis. Then this article will study how care could relate to productivity gains in the model. Finally, I explore the possible impact of care's hyperfeminisation on Baumol's solutions to the cost disease.

1. Can Baumol's model be feminist?

1.1. Overview of Baumol's model

Baumol's 4 hypotheses are the following:

1. The economy can be divided into two sectors: one with significant productivity gains (progressive sector) and the other without (stagnant sector) (Baumol, 1967).
2. Only the labour factor is considered in order to streamline the model (Baumol, 1967).
3. The wages positively correlate with workers' productivity (Baumol, 1967).
4. Wages are homogenous in the long run (Baumol, 1967). A difference between both sectors' wages can happen in the short run but does not persist in the long term.

The mechanism of Baumol's model is drawn directly from these 4 hypotheses. As productivity gains arise in the progressive sector, the progressive sector workers ask for a wage adjustment to compensate their increased productivity. As a result, the wages in the progressive sector increase. Because wages are homogenous in the mode, the stagnant sector is forced to adjust its wages based on the productivity gain of the progressive sector. However, the stagnant sector does not benefits from productivity gains which implies that, as its wages rise, the prices also increase. Thus,

the relative costs and the relative prices in the stagnant sector increase compared to the progressive one. This gap widens as the productivity differential between both sectors increases. Nordhaus (Nordhaus, 2006) published an empirical study verifying most of this mechanism, especially the increase in the stagnant sector's relative prices. However, Nordhaus' results are nuanced concerning the indexation of wages on productivity.

The stagnant sector's production will decrease until it is null, while the progressive sector's production will increase due to demand's elasticity to prices. The decrease in the stagnant sector's production will negatively impact growth. Indeed, the progressive sector employs fewer people as it benefits from productivity gains and, if the stagnant sector also employs fewer people because of lower demand, then employment tends to lower. In this situation the long run, growth tends towards 0 when the economy stagnates. But Baumol identifies a second possibility: the State's subvention of the stagnant sector. This allows the demand to be inelastic to prices (an alternative is no subvention but a 'naturally' inelastic demand). In this second situation, the production of the progressive sector will increase but its demand for labour diminishes with productivity gains. On the contrary, the stagnant sector will always maintain its production and demand more labour. But ultimately, growth will tend towards 0 as only one sector grows, and its growth is negatively correlated with employment. When Baumol returns to his model to discuss health and education, he considers this second situation. Indeed, he underlines that because health and education are essential services, their demand is quite inelastic to price and/or a public subvention can be assumed.

1.2. Is care a stagnant activity?

As feminist economists have pointed out, it is very difficult to increase care productivity (Himmelweit, 2013). Indeed, as care implies a personal relationship between caregiver and care recipient, the possibility of automation and the number of people who can be cared for simultaneously is limited. Increasing care productivity will most often negatively impact care's quality (Himmelweit, 2013) or transform its characteristics/nature. For instance, 'caregivers' robots' that are being tested in Japan's retirement houses (Lechevalier, 2022) will not be able to produce the emotional connection that a human caregiver provides. The type of care provided is

different in both cases. The difficulty to increase the productivity of the care services includes care in the stagnant sector.

Indeed, Ali Sen (Sen, 2020) identifies activities that are part of Baumol's stagnant sector as public administration, community and social services, real estate, Business to Business services and personal services. Amongst this list, public administration (except regalian functions), community and social services, and personal services can be grossly considered as paid care. Based on INSEE data, we can estimate the stagnant sector total added value to 708.4 billion euros (Insee, 2019; Carnot, Debauche, 2021 and Insee, 2020c) and paid care activities added value to 294,8 billion. Thus, paid care is a significant part of the stagnant sector but does not represent its majority.

Unpaid care, precisely because it is unpaid, cannot be considered part of an economic sector, whether progressive or stagnant. However, unpaid care's value is significant. Indeed, INSEE (Roy D, Insee, 2012) estimated domestic work (which is only a part of unpaid care) to be 708.4 billion in 2010, which is more than the activities of the stagnant sector altogether. Recognizing unpaid care work as work is an angular stone of feminist economics (Fudge, 2014, Donath, 2000). We should add that such monetary estimation is a way to recognize unpaid care value but does not reflect its full impact on society and the economy (Elson, 2017).

Thus, only a part of care (paid care) is included in the stagnant sector, which also encompasses other activities with very different characteristics. Another part of care, unpaid, does not appear at all in Baumol's model and does not take place in the market, which limits its integration.

2. Care and productivity: a feedback loop

2.1. What does care produce?

To go beyond the definition of care as a range of activities; care can be thought of as a production process aiming to maintain the labour force (Braunstein, Boudhia, Seguino, 2019). Care produces human capacities, the capacities allowing humans to be efficient workers, such as education, competencies, self-confidence, and emotional maturity. The notion of human capacities is close to human capital, which is the competencies and experiences accumulated which make workers more productive (Stiglitz, 2007, quoted in Fraise-D'Olimpio, 2009). In that sense, human capacities go further than human capital by considering individuals' emotional needs, stability and

intelligence and not only technical issues. This perspective uncovers care's positive impact on productivity gains. By fulfilling individuals' needs, care services allow them to be productive and discover ways to increase productivity. Education is the most obvious way to see how care influences productivity. Children are educated and learn formal competencies and soft skills that are ways for them to be employed in the future. Thus, care performed in t has a great deal of influence on productivity in $t+1$. However, it should be recalled that care recipients are not limited to children. Care also allows adult workers to stay physically and mentally healthy, which is the foundation for being productive and figuring out productivity gains.

2.2. Care's hidden costs

Care implies multiple personal investments from the caregiver: time, sometimes money and emotions are invested when care activities are performed both in paid and unpaid care. While paid performed on the market, it is often underpaid, and domestic pay is unpaid. When care is not properly compensated and considered, it can harm the caregiver (MacDonald, 2005), who will sometimes deny their own needs and self-reproduction to care for others. Finally, certain types of care do not produce human capacities, such as care geared towards individuals who will never be able to work or towards the elderly. However, it can be argued that preserving the intergenerational contract contributes to a safer and more stable society (Himmelweit, 2010) which could allow individuals to perform better at work by reducing their fear of the future and overall stress. But this is only a hypothesis, and care's social value should not be reduced to its ability to generate productive individuals.

2.3. Rethinking the care's role

Considering care's positive impact on the recipients uncovers a new relationship in Baumol's model. Part of the stagnant sector, the care activities, is one of the main determinants of the progressive sector productivity gains. This formal integration concerns only paid care as domestic/ unpaid care is not part of the stagnant sector precisely because it takes place in the household. The feedback loop between the stagnant and the progressive sector is a new correlation in the model. To formally integrate it, we create the parameter c , which is the transformation rate of the stagnant sector production ($aL1$) in productivity gains (e^{rt}). Thus, we e^{rt} becomes endogenous

with $e^{rt} = c aL1$ i.e., the productivity gains depend on the transformation rate of the stagnant sector multiplied by the stagnant sector production. c is an exogenous parameter that must consider the proportion of the stagnant sector represented by care and then the transformation rate of care in productivity gains. A is the labour productivity in the stagnant sector (keep in mind there is no capital in the model), and $L1$ is the labour in the stagnant sector.

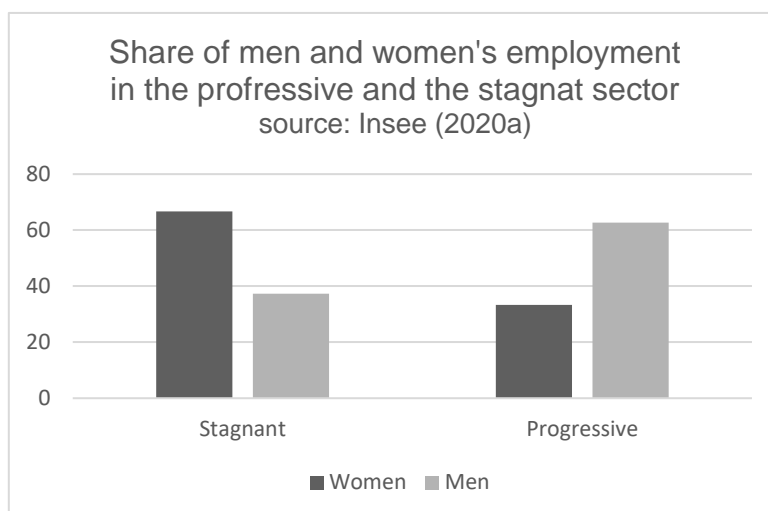
The productivity gains in the model depend on $L1$, which tends (and is limited by) L , the total labour force in the model; on a , which is supposed constant (because the stagnant sector does not have any productivity gains) and on c . To maintain growth in the model, c should be maximized, which implies that care needs to lead to as many productivity gains as possible. It also implies having a system that allows care activities to be as less detrimental to care workers and caregivers as possible. Finally, it also implies that having as many care activities as possible in the stagnant sector is better because other activities do not support the progressive sector's productivity gains. Thus, maximizing e^{rt} and maintaining or increasing care production should benefit growth. All of this could lead to normative implications that should be considered carefully. Indeed, it could be concluded that maximizing the impact that care has on productivity gains is a priority which could lead to giving less importance to other types of care that are needed. Focusing on maintaining care activities to the detriment of other stagnant activities (such as cultural ones from instance) can also be questioned. Finally, in this model, the aim is to maximize the productivity gains and growth in the model to prevent the negative effect of Baumol's cost disease. These implications should be maintained and interpreted in the context of Baumol's model.

3. A threat to Baumol's solution: the labour market gendered segregation

3.1. How is the labour market segregated

Taking care and its specificities leads us to view the labour market from a gender perspective. Baumol does not differentiate workers in his model, nor based on gender neither based on qualification. Any differentiation would potentially represent an issue as wages are assumed homogeneous. As we stated in the introduction, care is mostly undertaken by women. We take back Ali Sen's list of the stagnant sector's activities (Sen, 2020) and determine which proportion of women is employed in that activity. As

we see in the table. We can estimate that roughly two-thirds of women work in the stagnant sector (66.7%) while the remaining work in the progressive sector. On the contrary, two-thirds of men work in the progressive sector against a little more than a third who are employed in the stagnant sector. This difference is mainly due to the feminization of public administration, which represents 44.2% of women's employment against only 18.9% of men's employment. One possible explanation is that public administration gathers a lot of care activities, such as the health care and education systems. Based on these observations, we can draw the following stylized fact: L1 refers mainly to women, while L2 mainly refers to men.



3.2. Can we keep the homogenous wage hypothesis if we adopt a feminist perspective?

To draw the consequences of this hypothesis, we should try to understand the mechanism behind this gendered labour market segregation. The first explanation lies in gender norms: Carol Gilligan was the first one to point out that little girls are taught to perform care at a very young age and that this influence their psychological development (Carol Gilligan, 1982) while little boys are taught to focus on themselves first. As we focus on economic challenges and solutions, we will not develop social norms and psychological development issues. Stratification economics provides an analytical framework to explain the gender segregation of the labour market. It can be defined as: « *analyses the structural and institutional processes influencing the reproduction of hierarchy and thus inter-group inequality, emphasizing in particular the implications for race and gender inequality*» (Blumberg 1984 ; Darity et al. 2017 in Seguino 2019b, p195). And it states that « *stratification processes in most industrialized countries are characterized by the dominance of whites and males, with women and racial/ethnic 'minorities' the subordinate groups*» (Seguino, 2019b, p195).

Two mechanisms perpetuate inequalities between groups. Exploitation implies extraction by the dominant group of the value created by the dominated group. This is often used as an interpretation of unpaid care work as women provide valuable care services without explicit financial compensation or legal framework to guarantee any compensation. Folbre expands this perspective by considering children as public goods in the economic sense. Children are educated by women, both through paid and unpaid care work. Thus, women bear the costs but are not properly compensated and do not receive any benefits. (Folbre, 1994 in Seguino, 2019) This applies to all the care workers who cannot benefit from the productivity gains they allow. From this point of view, the feedback loop that we highlighted can be considered much more than a positive externality. Indeed, a positive externality is defined as: “[a situation where] *the production and consumption of a good or service benefits a third party not directly involved in the market transaction*” (Britannica, 2022).

Care and education share the characteristics of a positive externality. However, the productivity allowed by care is not a by-product of education; it is one of its aims. Furthermore, the repartition of care work is not hazardous; it is rooted in systemic inequalities, which shows that care may not be reduced to a market failure.

Exclusion is defined as the hoarding of opportunities and of the best social and professional position by the dominant group to the detriment of the dominated group. In the labour market, this translates by the segregation of women in the ‘bad jobs’ and eventually in unemployment while men maintain a monopoly of the ‘good jobs’. ILO, the international labour organisation, defines ‘decent’ employment as a productive job that offers a safe workplace, social protection and personal development perspective like acquiring or improving competencies (International Labour Organization in Seguino et Braunstein, 2018). A ‘good job’ is also assumed to offer a better level of earning, more stable employment, more career opportunities and good working conditions (Seguino and Braunstein, 2018).

Moreover, the authors add that companies offering these jobs often have stronger market power, allowing them to generate a rent (Braunstein, 2008) that can be shared with certain employees. They also note that these companies are often more profitable and have more productivity gains, making them more attractive to investors and widening the gap between companies offering ‘good jobs’ and companies offering

'bad jobs' (Gordon et al, 1982 in Braunstein and Seguino, 2018). We should also note that Seguino and Braunstein take jobs in the industrial sector as a reference for good jobs (Sen, 2020). Following these observations, the authors conclude to the existence of a "glass wall" and not only of a "glass ceiling" (DAS, 2013 in Seguino and Braunstein 2018, p979).

Based on these insights, it seems reasonable to assume that the stagnant sector is the sector with 'bad jobs' with a high concentration of women, while Baumol's progressive sector would be considered as the sector with 'good jobs', which mostly employs men.

This point of view implies a difference in the quality of jobs offered in the two sectors. To verify empirically this interpretation, we will compare the average salary in the different activities of the stagnant and the progressive sector. The average salary in the stagnant sector is 2050.5 euro net of taxes which is 700 euros less than in the progressive sector (2762.91 euro net of taxes) (DARES Résultats, 2018).² The average wages in the public sector – that we included in the stagnant sector – is between the means at 2300 euros net (Insee, 2022). This gap seems doomed to widen as the annual salary evolution in the progressive sector is between 1.3 and 3.3%, while it varies between -0.2% and 2.3% in the stagnant sector. These empirical observations support the presence of a 'glass wall' between the progressive and the stagnant sector. However, the gender wage gap varies between -29.1% and -4.7% for the stagnant sector and between -38.8% and +0.4% for the progressive sector (DARES Résultats, 2018). This last observation hints at gendered segregation between sectors (horizontally) as well as inside each sector (vertically) which would mean there is both a glass ceiling and a glass wall at the same time (DAS, 2013 in Braunstein and Seguino, 2018, p979).

² Unless indicated otherwise, all the statistics in this section are based on (DARES Résultats, 2018) which indicates average wages for women and men in every sub-sector of the economy. Thanks to Ali Sen's classification of activities in the stagnant and the progressive sector (Sen, 2020), I was able to roughly estimate the mean salary in the progressive and the stagnant sectors.

3.3 Questioning Baumol's solution

We can draw two conclusions from these observations: the wages are not homogenous between or inside both sectors and this gap can be explained not only by a differential of productivity between sectors but also because of systemic gender inequalities. Indeed, even if Baumol considers a small lag between the stagnant and progressive sectors possible, he adds that this gap closes in the long run (Baumol, 1967). Because Baumol's model is a long-term model, the author does not consider this lag. Moreover, the progressive sector wages increase more rapidly than the stagnant sector wages on average. The lower rise of wages in the stagnant sector could have two effects. The first one would be that Baumol's costs disease happens slower, so services and goods of the stagnant sector are more accessible price-wise. That would mean that the needs for subvention of these activities are lower.

Nevertheless, Baumol suggests that as productivity rises in the progressive sector, the labour needed in that sector diminishes (L_2 tends towards 0). On the contrary, more workers are needed to maintain growth in the stagnant sector without any productivity gains (L_1 tends towards L). Thus, transferring workers from the progressive to the stagnant sector is one of Baumol's solution to maintain growth and employment in his model.

However, if we apply this solution without homogeneous salaries, the average wage in the model will decrease (because the wages in the stagnant sector are lower than in the progressive one). As the workers in the progressive sector are forced to move towards the stagnant sector, they will have to accept lower wages, so their income and purchasing power will be lower. Depending on the evolution of wages in the stagnant sector and the speed of transfer of workers from one sector to another, this second effect may cancel the first one: because overall income is lower, the fact that prices in the stagnant sector rise slower is not sufficient to make goods and services in the stagnant sector more accessible.

The gender segregation and wage differences between the two sectors can be seen as market rigidities. These rigidities could be combined with other types of market rigidities, such as the lack of training available to change career paths or the lack of geographical mobility of labour. Gender norms and institutional practices that maintain

gender segregation could undermine the transfer of workers towards the stagnant sector and especially towards care activities which are perceived as very feminine (DAS 2013 cité dans Braunstein et Seguino 2018). This poses an additional problem as care activities already struggle to meet the rising demand. Indeed, Seguino (Seuigno, 2019) analyses the 2008 crisis and shows that there was a structural change in employment. Indeed, the activities that laid off the most workers were industry and construction, while care services such as education, health care and social services kept recruiting more workers. This leads to a rise in women's participation in employment relative to a decline in men's participation. Indeed, laid-off men did not change sectors to find new jobs. Thus, in the short to mid-term, gender segregation completely blocked the transfer of workforce, even if we could assume that on the (very) long term this segregation diminishes or change with social norms. Thus, in Baumol's model, the labour force of the stagnant sector would be limited (except on the very long run) only to women i.e. 05L at most (because women participate less to the labour market than men, mostly because of unpaid care responsibilities). Thus, if the economy faces quick productivity gains that translates into a fast decrease of employment in the progressive sector, the economy may face massive unemployment. To avoid this scenario, two solutions should be considered. One is to try to diminish the gender segregation of labour which implies changing social norms to some extent and could take a considerable amount of time. The second option is to place more incentive for women to participate in the labour market and especially in the stagnant sector. This would mean increasing L1 and L exogenously. This would allow the care activities to better face their increasing demand and, by allowing women to access to a greater income, could minimize the negative impact of the loss of employment of men.

4. Conclusion: new perspectives, new questions?

Throughout this article I have tried to demonstrate that a feminist perspective on care can shift the conclusion of Baumol's model.

First, I focused on how care redefined the role of the stagnant sector: while care does not benefit from significant productivity gains, it ensures the reproduction of the labour force and maintains it functional which is at the root of productivity and productivity gains. By including this mechanism in Baumol's formal model, we

confirmed the positive impact of this feedback loop on growth. This questions Baumol's initial conclusion of a growth that would tend toward 0.

Then I focused on the second peculiar characteristic of care activities, the hyperfeminization of its workforce. Empirical observations of average wages in the progressive and in the stagnant sector strongly threatened Baumol's hypothesis of homogenous wages, even in the long run.

Finally, the gender segregation of labour showed proved to be a significant obstacle to Baumol's main solution to maintain employment and growth: the transfer of labour from one sector to another. Gender norms could act as a rigidity between both sectors, preventing the workers who were laid off the progressive sector to seek employment in the stagnant sector. This could be a significant difficulty as it may cause unemployment, undermine growth. It could also impede the capacity of the care activities to produce enough services to respond to the growing demand.

The core of this article is the study of care and growth relationship. However, I need to point out related issues that have not been addressed.

First of all, the definition of growth - i.e. the increase of the production level over time – as measured through the GDP raises questions. Indeed, as unpaid care such as domestic work is not accounted for by the GDP. The exclusion of unpaid care for this measure undermines the full recognition of unpaid work participation to economic growth.

Then, it must be noticed that this paper's analysis of growth is limited to Baumol's model. Due to that limit, I did not consider the different types and drivers of growth as analyzed by Braunstein, Bouhia and Seguíno, (Braunstein, Boudhia and Seguíno 2019). Indeed, the relationship between care and growth varies depending on the countries' economic structure. Other factors, both economical, political and sociological could influence the relationship between the two concepts.

Finally, the public-private dilemma presented by Baumol's model. As the stagnant sector's relative costs, and thus prices, go up the demand for these services go down, except if a subsidy is implemented (Baumol, 1993b). This leads to the dilemma: should the State intervene to subsidize the stagnant sector? Or should we let the market handle certain essential services? These questions relate to the topic of who is responsible for care's production which would deserve research of its own.

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