Can a Wage Subsidy be used to Improve Women's Formal Employment in Zambia?

RESEARCH PROPOSAL

Presented to

Partnership for Economic Policy (PEP)

By

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Zambia

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Before you begin

Please make sure to carefully review and understand the following

- Webpage – especially with regards to the PAGE priority themes and
- Guidelines – for designing a research project proposal (in scientific terms)
- PEP requirements and strategy for policy engagement and research communication

Please note that :

- This template is mandatory for proposals of projects submitted under the PMMA and MPIA groups, i.e. that do not involve data collection
- Plagiarism is strictly forbidden – see note on "references and plagiarism" at the end of this document/template. PEP will be using a software program to detect cases of plagiarism.
- PEP encourages applicant research teams to submit proposals in English, but content (in text boxes below) may also be written in French or Spanish (and will be accepted given proper justification of language barrier).

There are three main areas/dimensions to all PEP-supported projects: capacity building, research and policy engagement. Each dimension must be considered with due care and attention, as they will be assessed individually and concurrently to determine the overall quality of a proposal.

The PEP proposal template is structured in five sections, as follows:

- Project overview and objectives
- Capacity building – team composition and experience
- Research – literature review, method and data
- Policy relevance and engagement strategy
- Other considerations

SECTION I – PROJECT OVERVIEW & OBJECTIVES

1.1. **Abstract** (max 100 to 250 words)

The abstract should state the main research question, the context and its relevance in terms of policy issues/needs in relation to PAGE priority issues. Complete with a brief description of the method and data that will be used.

Insert your text here – max 100 to 250 words The participation rate of women in the formal sector in Zambia is low. This has hampered the empowerment of women in the country. Due to this, the government of Zambia is willing to adopt policies that have the possibility of improving the employment of women in the formal

sector. Based on this policy objective, this research proposes the use of a wage subsidy targeting women in the formal sector. The proposal has been motivated by the kin interest of the government to adopt policies that will help them achieve this objective. It has also been motivated by the success of wage subsidies in countries that are currently implementing them. In order to achieve the objective of this research, a Computable General Equilibrium (CGE) methodology will be used. This model will be a Social Accounting Matrix (SAM) based approach that will capture the gender aspects of the economy. The use of CGE model calibrated to a gendered SAM will allow this research to take into account the interdependency that exists in the economy.

1.2. Main research questions and contributions (max 500 to 700 words)

Explain the focus (or key questions) of your research and its policy relevance. Explain why you think this is an interesting research question and what the potential usefulness and value added of your work might be - in terms of both (general) knowledge gaps and policy needs for evidence base.

The literature review shall be detailed under "Research" (section III), not in this section.

Insert your text here - max 500 to 700 words

Introduction

The empowerment of women continues to be on the agenda of most economies in the world. This is no different from the agenda of the Zambian government. The government through its development road map for the period 2017 to 2021, aims to design policies that will increase the participation rate of women in the formal sector in efforts to empower them. One of these policies will focus on implementing employment creating interventions that will reduce informalities and improve working condition as well as improving the returns to labour (MNDP, 2017). Through the design and implementation of such policies, it is expected that the number of women employed in the formal sector will increase from 28.6% to 45% by 2021 (MNDP, 2017). According to the labour force survey (2014), 63.5% of all employed women are contributing family workers compared to the 32.2% of men. These workers do not get paid or have limited or no social security. This is despite the national level employment rates that states that 52% of women are employed compared to the 47% of men. This national level employment rate does not take into account the fact that most women are contributing workers and therefore do not earn any form of income. The formal sector, where wages are reasonably high, only employs 28.6% of women compared to the 71.4% men employed in the sector (CSO, 2016). Further,

among the women considered as employed, 87.9% are in the informal sector while only 12.1% are in the formal sector (CSO, 2016). This situation has prompted policymakers to focus on designing policies that will increase the employment of women in the formal sector.

In this regard, this research proposes the use of a wage subsidy directed towards women in order to increase the number of women in the formal sector while keeping the labour cost low. The wage subsidy can have two positive effects, depending on the design. The subsidy can increase the participation of women in the formal sector. It can also have a long term effect of improving their employability and hence their competitiveness in the labour market (Almeida et al., 2014). Individuals that get jobs during the period when a wage subsidy is implemented get the opportunity to acquire some work experience and an income which can assist them during this period or work as start-up capital for future investments. For women, this is one form of empowerment that will have a long term effect. According to Almeida et al. (2014) in the absence of wage subsidies, potential workers will be inactive or unemployed which will reduce their human capital or may force them to take on jobs that do not allow them to realise their potential productivity.

In Zambia, wage subsidies are not a common practice but exist to a small extent for disabled people. This research aims to analyse a policy that may assist the government in empowering women to a more sustainable level and increase the employment of women in the formal sector according to the agenda of the government's development plan.

The research will contribute by offering an empirically backed policy that is a step towards achieving the government's target. The wage subsidy policy if properly designed, can greatly benefit the economy and has the objective of improving the well-being of women in non-agricultural sectors. Currently, policies that are focused in the agricultural sector are keeping women in a sector that although working in offering employment, the sector does not allow them to earn a wage above the minimum wage and offers no social security. Secondly, the methodology used will allow this research to evaluate the transmissions that will exists through-out the economy by capturing the inter-dependencies that exists among the macro- economy, sectors and households.

The main objective of this research is to analyse whether implementing a wage subsidy for women in the formal sector will produce the same benefits for a developing country like Zambia that have been experienced in other countries (Pauw and Edwards, 2006; Samoy and Waterplas, 2012; Erero et al., 2013) that have implemented wage subsidies for various vulnerable groups. It should be noted that some sort of wage subsidies are being implemented in Zambia but this is being done by very few companies. These are mainly focused towards disabled

people. This may be due to a lack of knowledge or understanding on how these subsidies can lead to positive benefits in the country. A wage subsidy can reduce labour cost and in turn increase labour demand and employment (Huttunen et al, 2013; Samoy and Waterplas, 2012)

According to Pauw and Edwards (2006), a wage subsidy can be implemented through the government subsidising the wage paid by the firm without lowering the wage received by the worker. This can be in form of a direct cash subsidy or a tax credit towards future obligations. This subsidy can be financed through an increase in income and profit tax or through a deficit financing method.

The wage subsidy will lower the labour cost and this will increase the expected profit, capital investment and employment. This increase in employment will lead to an increase in income for the households and hence increased consumption. Due to the increased demand for a firms' output, prices will reduce which will lead to an increase in spending power for households. The increase in firms' output will lead to an increase in labour demand which will pull from the pool of unemployed women and hence reduce the levels of unemployment. This transmission can better be captured by CGE modeling.

Women in the Zambian Labour Market

In Zambia, the participation of women in the labour force is slightly higher than that of men in Zambia with 78.2% compared to the 77.1% of men (CSO, 2016). Although the labour force participation rate for women in Zambia is slightly higher than that of men, there is a large discrepancy in terms of the benefits incurred to women compared to men based on the type of employment or sectors in which these women are employed. Women in developing countries are usually employed in the informal sector or jobs were the earnings are relatively low (Fields, 2011). They are hindered by cultural and social factors that limit their involvement in the formal sector. Further, their work in the informal sector is usually work as contributing or family workers. The 2014 Labour Force Survey (LFS) shows that 63.5% of women are contributing workers compared to 32.2% being men. Under the economically active population, 33.5% of men are paid employees while only 12.2 % of women are paid employees (CSO, 2016). Doing this type of work entails that they are paid either in kind or low wages and they do not have various benefits such as paid leave or social security.

Most institutions in Zambia would rather employ men in jobs that are formal, pay a high wage and have various benefits. A breakdown of the distribution of employed persons by institution shows that women are segregated in sectors that are mostly private owned while men are segregated in institutions that are classified as international organisations, producers' cooperative and the local government. These institutions employ the highest percentage of

men and the lowest percentage of women of the total employed persons in the country. For example, the international organisations employs 82.6% of men compared to only 17.4% of women (CSO, 2016). Meanwhile women are mostly employed in private businesses or farm related institutions. 53.7% of women are employed in private business or farms compared to 46.3% being men (CSO, 2016). From a demand side argument, it can be said that private businesses employ women because women lack the bargaining power to get their true wage or better conditions of service. The private businesses benefit from reduced labour costs. Further, the type of jobs women perform may be more in line with the caring nature of women or their perceived role based on cultural and social norms.

However, from a supply side, it might be because women may not have the necessary skills or perceived skills to be employed in these institution. The Zambian labour market mainly consist of workers with secondary education. Most of the economically active population have secondary education with 40.9% followed by primary education with 41.6% (CSO, 2016). A gender decomposition shows that of the total economically active men, 50.2% have secondary education while of the total economically active women, 36.2% have secondary education (CSO, 2016). Despite the gap in education between men and women, it still does not translate on the huge gap that exists in terms of number of women employed in the formal sector. One possible explanation of this huge gap would be because women are more likely to use the benefits offered by institutions which would increase the labour costs. Further, because of their role as care givers in households, women are more likely to stay away from work which would affect an institution that has invested in their on-the-job training.

In terms of formality and informality, a distinction is made between informal and formal sector as well as formal and informal employment. The 2014 LFS in compiling the statistics, defines the formal sector as having production units registered with the country's registering tax or licensing authorities while the informal sector consists of those who have not registered (CSO, 2016). Meanwhile, formal employment is defined as the type of employment in which workers are entitled to social security coverage and contract in addition to some sort of entitlement such as paid leave while informal employment is one which lacks these attributes (CSO, 2016). In this regard, an individual can have informal employment in the formal or informal sector as long as they are not getting the stated attributes while an individual is classified as having formal sector employment as long as they are in a registered company.

The gender composition of the formal sector consists of 71.4% being men and only 28.6% being women. In the informal sector, 43% are men and 57% are women (CSO, 2016). Arguably, this shows that companies that are registered with tax or licensing authorities prefer to employ men

rather than women while those not registered prefer to employ women rather than men. This may be attributed to the fact that these women may not be paid their entitled wage. Further, these companies may take advantage of the women's poor bargaining power which allows them to reduce their labour costs. A higher percentage of women in the formal sector are working mostly in sectors that are more related to how women are perceived as care givers or their nurturing nature. Based on a sectoral break down in the formal sector, most women are employed in sectors referred to as activity of household as employer, human health and social work activities as well as the accommodation and food services (CSO, 2016).

With regards to type of employment, 89.3% of the employed population are classified as being informally employed while 10.7% are classified as having formal employment (CSO, 2016). Under informal employment, 50.7% of people have occupations as skilled agriculture, forestry and fisheries workers while 25% are in the elementary occupations (CSO, 2016). In terms of gender decomposition, 94.6% of the total number of females employed have informal employment while only 5.4% have formal employment. As for men, of the total number of men employed, 83.4% have informal employment while 16.6% have formal employment (CSO, 2016). The men with formal employment are twice the number of women with formal employment. This can be attributed not only to the skills that they may possess but their bargaining power which entails that they are able to obtain jobs that have better conditions of service. It can also be due to cultural and social norms that segregate women in jobs categorised as jobs for women.

Women who are more likely to require paid leave are concentrated in jobs that do not offer these conditions. This may increase the possibility of these women not working as they do not offer ideal situations of working. Further, women may prefer to work in informal employment or informal sector as this allows them to have more flexibility in them fulfilling their role in the care economy. These women may also choose to work in the agriculture sector, despite the poor wage or lack of, because it may have other benefits such as allowing them to work with their children or giving them food that can be used to feed their households.

The private business and farm institutions employ the highest number of people with formal employment with 48.9% followed by the central government with 35% (CSO, 2015). Under informal employment, the private business and farms employ the highest number of people with 91.9% followed by 6.9% in households. These statistics show the possibility of an effective wage subsidy designed to target private businesses.

Wage Subsidy: Target and Alternative Programs to Encourage Women's Participation in the Formal Sector.

Lahey and Hall, (2009), describe Targeted Wage Subsidies (TWS) as an active labour market intervention used by governments in several advanced industrial democracies to increase the long-term employment prospects of workers by subsidizing on-the-job training with local employers. This research aims to propose a program that will have the possibility of increasing women's participation in the formal sector. In order to ensure that this program is effective, the assumption made is that these women are ready to work and are suitable to carry out the job. They also possess similar skills as the men.

As proposed by this research, financing of this subsidy can be through taxes or a deficit financing method. This will affect households and firms to some extent. However, it is hoped that the benefits will outweigh the costs. Well targeted subsidies of reasonable duration (six to nine months) can be more cost effective than other labour market programs and increase the long-term employment prospects of participants (Lahey and Hall, 2009). The participants will be able to obtain the needed on job training that will allow them to be competitive in the labour market especially as jobs are being created. Job creation is a one of the government's priority. Women can be empowered by attaching the wage subsidy program to this job creation. Over time through the skills they gain, they can be able to be more competitive in the labour market as jobs are being created. The wage subsidy will be more effective when it is targeted towards women that are in the informal sector or are unemployed but willing to work with the required qualifications.

Other issues that need to be considered to increase women's participation in the formal sector is support to families with young children, in particular in the form of parental leaves and childcare subsidies. Delivering such services directly or providing financial support to help families acquire such services in the marketplace can make it easier for women to work by reducing their double burden and lowering the opportunity cost of working. That is especially the case for less-educated or less-skilled women, whose potential earnings are lower. Greater support from the government may also ease the trade-off between having children and deciding to work especially in the formal sector. Another important step would be to promote more flexible work arrangements and new cultural models that would allow a more equitable distribution of the burden of household production, including care-taking, among men and women in the household (ILO, 2012).

SECTION II – CAPACITY BUILDING

2.1. Team composition and experience

For each research team member, please indicate (using the following tables – one per member):

1. **Age, sex, as well as relevant/prior training and experience** in the issues and research techniques involved (start with team/project leader).
    - Note that PEP favors gender-mixed teams, composed of a maximum of four (4) members, at least 50% female researchers, and at least two (2) junior researchers (aged under 30), all contributing substantively to the research project. PEP also seeks gender balance in team leaders and thus positively encourages female-led research teams.
    - Each listed member must post an up-to-date CV in their profile on the PEP website – refer to "How to submit a proposal" on the call's webpage.
2. **Benchmark and expected capacity building**:
    - Describe the research capacities that each team member (and potentially her/his affiliated institutions) is expected to build through their participation in this project. This is an important aspect in the evaluation of proposals and should be presented in detail.
        - What techniques, literature, theories, tools, etc. will each team member and her/his institutions learn (acquire in practice) or deepen her/his knowledge of?
        - How will these skills help each team member in their career development?
        - What are the current state of knowledge of each team member in regard to the project you are proposing?
3. **Task and contributions to project**: Indicate the specific tasks each team member would carry out in executing the project.
    - Note that one of the team members must be clearly identified as responsible for coordinating and reporting on the design/implementation of the projects' policy engagement and communication strategy (see section III below). To achieve a more balanced task distribution, PEP advises to select a member other than the project leader.

Team leader

Name	**Age**	**Sex (M, F)**	**Highest degree/diploma**
Name Bupe Simuchimba	Age 32	M/F Female	Highest degree PhD
Training and experience	Insert your text here Has undergone training in CGE modeling and I have used a CGE model in my thesis work. I am currently a lecturer and interested in research.		
Expected capacity building	Insert your text here I hope to learn more in the area of CGE modelling. This is an upcoming modelling technique that I believe will be beneficial to my country. I hope to widen my knowledge on CGE and hope to use it in future research.		

	These types of models are not widely used in my country and among my colleagues.
Contribution to project	Insert your text here Knowledge of CGE modelling and designing of the objectives of the research.

Team member #2

Name	**Age**	**Sex (M, F)**	**Highest degree/diploma**
Name Frank Chansa	Age 36	M/F Male	Highest degree PhD
Training and experience	Insert your text here has undergone training in PEP CGE models, was a lecturer and currently working for the central bank. He has experience in trade and labour issues.		
Expected capacity building	Insert your text here Will gain knowledge which will be useful in current job as they are interested in using different types of economy-wide modelling to influence policies.		
Contribution to project	Insert your text here Will bring knowledge of PEP models and the workings of the Labour sector. Possible candidate for taking over the research.		

Team member #3

Name	**Age**	**Sex (M, F)**	**Highest degree/diploma**
Name Charles Banda	Age 34	M/F Male	Highest degree M.A
Training and experience	Insert your text here He is a lecturer and research that has done research in various fields and has supervised a number of research projects.		
Expected capacity building	Insert your text here It will expand his C.V as a research and will be useful in his current job. It will also allow him to gain insight as he plans to pursue his PhD.		
Contribution to project	Insert your text here He will bring knowledge on undertaking research and the workings of the Labour sector. Has the ability to disseminate information that this research will provide through his connections and his experience gained from working on various research projects.		

Team member #4

Name	**Age**	**Sex (M, F)**	**Highest degree/diploma**
Name Wapakulukwela Simuchimba	Age 27	M/F female	Highest degree Bachelor of Arts (currently pursuing a Masters)
Training and experience	Insert your text here Current work description involves dealing with the ministry of labour. Was project manager in setting up a school in Zambia and was tasked with interviewing potential teachers. Is also tasked with marketing the brand for the company she works for.		

Expected capacity building	Insert your text here She will gain knowledge which will be useful in her studies and future job prospects. Having her on the project is a way of empowering a youth who is a female and has great potential.
Contribution to project	Insert your text here She will bring knowledge gained with her interaction with the ministry of labour. Has capabilities to assist in the dissemination of the research through her ability to promote high level events and interact with various stakeholders.

2.2. List of past, current or pending (non-PEP) projects in related areas involving team members, including resulting publications (If any)

Name funding institution, title of project and related publications, list of team members involved.

Name of funding institutions	**Title of projects and related publications (link)**	**Team member(s) involved**
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	

2.3. List of past or current PEP-supported projects involving team members, including resulting publications

Project code (e.g. PMMA-12345)	**Title of project and related external (non-PEP) publications, if any**	**Team member(s) involved**
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	
	Publication (reference):	
	Title:	

	Publication (reference):	
	Title:	
	Publication (reference):	

SECTION III – RESEARCH

3.1. **Literature review** (max 1000 to 1500 words)

Explain specific gaps in existing literature that your research aims to fill. You might want to explain whether or not this question has been addressed before in this context (including key references), and if so, what you wish to achieve (in addition) by examining the question again?

Insert your text here – max 1000 to 1500 words

The structure of the labour market in developing countries is slightly different from that in developed countries. Women in developing countries are usually employed in the informal sector or jobs were the earnings are relatively low (Fields, 2011). They are hindered by cultural and social factors that limit their involvement in the formal sector. Although, they may work in the informal sector, this is usually work for their families which does not earn them any income. This is no different from the labour market scenario in Zambia. Most women employed are considered contributing workers. Further, the situation in developing countries is also compounded by the policies such as reduction in inflation that usually have a negative effect on employment with more women than men facing job losses (United Nations, 2014). A survey by the United Nations (2014) also points out that when governments decide to reduce the public sector, women are mostly disadvantaged. This increases the number of women in less formal non-regular jobs. Due to the structure of the economies, a major difference between developing countries and developed countries is that a large number of people in developing countries are employed in the agriculture sector and few have formal employment (Fields, 2011). This leads to a scenario were majority of people want to work in the formal sector as it also offers social protection. This pushes women into the informal sector or the care economy.

A wage subsidy directed towards women will empower women by giving them an opportunity to earn a better salary and work in the formal sector. It will also improve their future chances in the labour market through the skills and training they acquire by being employed in the formal sector. Wage subsidies have been in existence since the early 1900s. Although implemented at a low extent in developing countries, they have been few studies that have looked at the

benefits that the developing countries may get from implementing them. Most studies analyse this policy using data for an already existing program. Further, very few research (Pauw and Edwards, 2006; Erero et al., 2013) have used the Computable General Equilibrium (CGE) methodology on the topic of wage subsidies. In Zambia, there has been no study that has looked at wage subsidies focused on women and using CGE modeling.

In line with what will be done in this study, Pauw and Edwards (2006) look at the effect of a wage subsidy scheme that is being implemented by the South African government using a CGE model. However, this research is not focused towards women in the formal sector and therefore, the CGE model used does not disaggregate labour according to gender. This is one of our contributions to the body of knowledge. Pauw and Edwards (2006) obtain results that are of interest to countries that would like to adopt the wage subsidy. Their results suggest that employment for the targeted group increases. The major challenge with this wage subsidy is the increase in financial costs.

Wolff and Reinthaler (2008) look at the effectiveness of wage subsidies focused towards research and development. Using an instrumental regression model, the results show that due to a subsidy on research and development, the wages for scientists are increased and the expenditure towards research and development is also increased. Wolff and Reinthaler (2008) offer insight on the possible benefits of a wage subsidy. This insight will be great motivation to analyse whether or not these benefits can be achieved for a wage subsidy designed to improve women's participation in the formal sector for Zambia.

Betcherman et al. (2010) analyses the employment subsidy schemes that are implemented in Turkey. This study discovers that the employment subsidy schemes lead to higher registered jobs in the targeted areas. However, these schemes suffered from dead weight losses. This is a possibility as most subsidies do sufferer from dead weight loss as well as substitution effect (Almeida et al., 2014). Betcherman et al. (2010) acknowledge that they did not have adequate data. Further, based on the form of analysis used, they study did not take into account the interdependency that exist in the economy as it used a difference in difference methodological approach.

Erero et al. (2013) also look at wage subsidy for lower skilled workers in the Democratic Republic of Congo. The study uses a CGE model. The results suggest that through the wage subsidy, government is able to increase the real disposable income of households. The results also show

a reduction in the income gap between the informal and formal sectors as well as an increase in real GDP.

Levinsohn and Pugatch (2014) analyses the wage subsidy that has been implemented by the government in order to reduce the unemployment levels of youths in Cape Town. The study uses a structural search model and incorporate the aspect of reservation wage. The results suggest that a wage subsidy paid to employers leads to an increase in the wages as well as a reduction in youth unemployment.

Kaiser and Kuhn (2016) looks at the effect of the wage subsidy program in Denmark on individuals and firms participating in the program. The study has an advantage of using people and firms that have gone through the program as their data source. It uses the propensity matching score to match the treatment and control groups and then runs a multivariate regression on the obtained data. The results suggest that the program had a positive effect on employment and earnings before it expired. The positive effects of the subsidy are only obtained for individuals both during the program and after its expiry.

The reviewed studies offer insight on not only the benefits of wage subsidies but as well as the challenges that may arise if not properly implemented. This study hopes to analyse how a wage subsidy would work in the Zambian context.

3.2. **Methodology** (max 1200 to 1600 words)

Presentation of the specific techniques that will be used to answer the research questions and how exactly they will be used to do so.

- Explain whether you will use a particular technique normally used in other contexts or whether you intend to extend a particular method and how you will do so.
- Explain if these methods have already been used in the context you are interested in (including key references).
- **For PMMA (microeconomic analysis) proposals only**: In case the proposed methodology aims to empirically estimate a causal relationship, explain potential sources of endogeneity in the context of your research, and how the proposed technique(s) would allow the identification of the relevant parameters.

Insert your text here – max 1200 to 1600 words

A wage subsidy in the labour market is a phenomenon that is being implemented in OECD (Organisation of Economic Cooperation and Development) countries (Katz, 1996; Wolff and Reinthaler, 2008; Samoy and Waterplas, 2012; Sjögren and Vikström, 2015). The design of these

subsidies continues to evolve so that they achieve their intended purpose in the most efficient and effective way. Countries are still learning on which design offers the most in terms of impacting the intended target (Katz, 1996; Sjögren and Vikström, 2015). Most studies (Katz, 1996; Samoy and Waterplas, 2012; Huttunen *et al*., 2013; Levinsohn and Pugatch, 2014; Kraiser and Kuhn, 2016) have looked at the effect of an already existing subsidy program, they have simply looked at the effectiveness of the already designed wage subsidy by looking at the change in various variables. This research proposes an introduction of a wage subsidy in Zambia directed specifically towards women. Therefore, the study does not have the advantage of using data from an already existing data. However, the chosen methodology has an advantage of giving policy makers insight on the policy's effect on the economy. In order that policy makers are made aware of the benefits as well as weaknesses of the wage subsidy, it proposes the uses of a model that will show how this subsidy will be transmitted through-out the economy while the inter linkages that exist in the economy are taken into account. The use of CGE modelling to analyse the effectiveness of a wage subsidy has been used by Pauw and Edwards (2006) for youths in Cape Town. However, the methodology does not capture gender differences in the labour market. Erero et al. (2013) also analyses a wage subsidy directed towards low skilled workers in the Democratic Republic of Congo. The study does not disaggregate labour by gender and uses the ORANI version of the CGE model. This research will extent the use of CGE modelling used in Pauw and Edwards, 2006; Erero *et al*., 2013 by calibrating the model to a gender Social Accounting Matrix (SAM). This research will make modifications to both the SAM and therefore, the standard PEP 1-1 model. This will be done in order to achieve the objective of the research.

In order to capture the aspect of gender in our CGE model, the SAM's labour account will be disaggregated according to gender. The disaggregation will be guided by the 2008 labour force survey compiled by the Central Statistics Office as well as 2006 Living Conditions and Monitoring Survey (LCMS). These are the closes surveys to the base year of the SAM that provides information on the labour market. This will entail that the 44 sectors in the SAM will be aggregated to the 10 sectors as the information provided by the labour force survey breaks the labour used into 10 sectors by gender. The inclusion of gender in a SAM for Zambia has been done before by Fontana (2002). However, the study looked at the effect of trade on women using the Hausner 1995 SAM. The inclusion of male and female labour in the SAM has implications on the use of the labour. Labour is used in three activities; market, reproduction (social) and leisure.

Households, who provide the labour, will consume three goods; market goods, home produced goods and leisure time. The utility derived from the consumption of these goods will be subject

to the income constraint and time constraints. Further, individuals have 24 hours in which to undertake all the necessary activities, out of this, 10 hours is assumed to be allocated to sleep, eating and other personal activities (Fontana and Wood, 2000). The remaining 14 hours is then allocated to paid market work, unpaid household work and leisure. In line with this, the time constraint will be a function of the time used in market, household and leisure activities disaggregated by gender. A break-down of the time available for an individual will be of assistant in the creation of the value added in the reproduction and leisure activities.

The standard SAM that is used as the benchmark dataset in CGE modeling does not take account of the gender dimension. Therefore, it has to be extended to distinguish labor factors by gender and will herein be referred to as a gendered Zambia SAM. The gender extension of the SAM will be done in a four step procedure as follows:

i. By making use of data from the living conditions monitoring survey (LCMS) and the labour force survey, we shall generate gender disaggregated data on household expenditure, income and market activities.
ii. The expenditure and income data from step one is then reconciled with the SAM so as to produce a gender disaggregated Social Accounting Matrix.
iii. We shall compute the time spent by individuals on non-market activities such as domestic work or leisure by combining time use data (obtained from the central statistics office) with the household expenditure and income data.
iv. We shall then incorporate the household non-market work, leisure and personal care time into the gender-disaggregate SAM to generate a gender oriented SAM.

As is standard in other similar studies, a monetary value shall be prescribed to the time that is spent by individuals on non-market work and leisure. The opportunity cost approach is used and in this regard, the wage rate that an individual would have received had he or she been engaged in market rather than non-market activities will be used as a proxy. Ultimately, the value of household production is given by the estimated value of non-market labour. The total income obtained by the households is through market production, non-market production and leisure activities which is made up of leisure activities by men and women.

In the labour market, the total demand of labour is equal to the total supply of labour of which labour is disaggregated by gender. The average wage rate takes into account the different wages obtained from the production of different market goods for men and women as well at the fact that labour for market goods is a combination of labour provided by men and women. The incorporation of gender will have implications on other equations included to capture production, trade, price, firms, households and government accounts. In this research, the

model closures that will be adopted will be a close approximation of the running of the Zambian economy in which labour is disaggregated by gender. The closures will consist of a factor market closures, the government balance will capture the functioning of the government in terms of income and expenditure, the external balance will be used to capture the exchange regime and the savings-investment balance will capture what happens if the economy is savings or investment driven.

Elasticities will be added to the gendered SAM data exogenously. These elasticities will be added through a review of literature. In order to ensure that these elasticities do not influence the model results, a sensitivity analysis is undertaken.

This study uses the standard PEP 1-1 CGE model developed Decaluwe et.al (2007) and extends it in a number of ways so as to be able to analyse the research problem. The PEP 1-1 model has had wide application in a number of studies on different aspects of developing countries and hence its use in this study. Specifically, we extend the standard CGE model by disaggregating the factors of production, particularly labour, by gender and by treating domestic work and leisure activities as separate sectors different from the market-economy sectors. We intend to use a static version of the model.

3.3. **Data requirements and sources** (max 400 to 700 words)

This is a critical part of the proposal. The key issue is to explain the reason for the choice of your particular databases. You must establish that they are ideal for the question you wish to address and that you have or will have access to these data before your project begins. Please consult the "Guide for designing a research project proposals" for more detail.

Insert your text here – max 1000 to 1300 words

This research will use the SAM based CGE model. The 2007 Zambian SAM was released in 2013 after the collaborative efforts of the Zambia Institute of Policy Analysis and Research (ZIPAR), the United Nations University World Institute for Development Economics Research (UNU-WIDER) and the International Food Policy Research Institute (IFPRI) (Chikuba *et al.*, 2013). The data sources comprises of the national accounts, government accounts, balance of payments, Bank of Zambia (BOZ), Zambia Revenue Authorities (ZRA), farm budget data, industrial financial statements and management accounts, Living Conditions and Monitoring Surveys (LCMS), Central Statistics Office (CSO), International Monitoring Fund (IMF) and in some areas assumptions based on past trends. However, it should be noted that the SAM is outdated and will need to be updated.

The Zambian micro SAM comprises of 44 sectors, 7 factors, 10 household levels, 12 government levels and other accounts. The households in this SAM are divided into rural and urban which are further divided into 5 socio economic quintiles for each household strata. For the factors of production, labour is divided into 4 levels according to education attainment; not completed primary, completed primary, completed secondary and completed tertiary. In order to capture the gender aspect, this research will use the labour account and will disaggregate this account according to the gender composition. In order to achieve this, the research will use the 2008 labour force survey as the main source. However, it should be noted that other surveys such as the 2006, 2010 LCMS and 2015 LCMS are available and may offer insight into the disaggregation. Including gender into the SAM will allow this research to analyse how a wage subsidy targeting women is going to be distributed throughout the economy. The surveys will be able to give us the percentage distribution and numbers of people employed in the formal and informal sectors by gender. They will also provide information regarding the employment levels in the public and private sector as well as the various industries by gender. Further, the surveys provide information regarding the unemployment rates. The surveys are a rich source of information that will be beneficial to this research in allowing it to analyse its main objective.

In order to capture time use that is required for the methodology, this research will use raw data for the labour force survey. Consultations will the labour division in the statistic office confirmed that questions on time use are included in the labour force survey.

The other three factors are livestock, crop land and capital. The accounts include transaction costs, enterprises, government, taxes, savings and investment, change in stocks and rest of the world.

SECTION IV – POLICY ENGAGEMENT

4.1. Policy relevance

4.1.1. Describe policy context and needs

Describe the specific policy issues or needs that your research aims to address; how your potential outcomes and findings may be used in policy making? Please be as precise as possible, indicating specific current or prospective policies and the specific contributions your research would make.

Also, justify timing of your research in terms of policy and socioeconomic needs and context – e.g. reference to existing, planned or potential policies at the national, regional or local level; specific political context; international examples of similar policy problems or solutions, etc.

Insert your text here – max 800 to 1000 words

Currently, the Zambian government has released its development plan for the period 2017 to 2021. This development plan accounts for the contributions of various stakeholders in the Zambian economy. It outlines the targets and strategies that the government intendeds to achieve and implement during this period. One of the targeted groups in this plan is the women. The plan has acknowledged that the low number of women in the formal sector has not improved the empowerment of the women. The plan suggests the use of formal sector vulnerable groups' support and working with the private sector to create jobs for women. Based on this, the government intends to increase the number of women in the formal sector. However, the government has not outlined any specific policy that will allow them to achieve this objective. This research offers a viable policy that has the potential to contribute in achieving this target.

The proposed policy is expected to increase women working in the formal sector as long as the wage subsidy is in effect. This will enable them to earn an income that will have an impact on their living standard. Further, once these women are given an opportunity to work in the formal sector, they will be able to improve their skills by gaining some experience. This will improve their employability in the labour market.

This research will contribute in assisting policy makers by offering insight on the benefits as well as challenges that can arise by implementing a wage subsidy for women in the formal sector. The methodology used will also offer insight on how various macroeconomic variables, sectors and households will be affected.

4.1.2. Consultations to date

List the consultations that you have had with potential research users (e.g. policy makers or stakeholders) and that have helped define your research question, and/or informed you of the specific policy context described above.

For each institution consulted, please:

- List key (individual) representatives who participated in the consultation
- Describe the main outcome(s) of the consultation (feedback, inputs, etc.)

Name of institution/organization #1	Name of instit./org.
List the key representative involved in consultations (names and titles/positions)	

- The Team is currently working on interviewing officers and policymakers in the ministry of Labour and social security, ministry of gender and ministry of national development planning. - The only consultation that was done was concerning data on time use with an officer under the labour division at the Central Statistics Office (CSO). - The team also requested for the Integrated Economic Accounts of which the information needed by the team will be given upon request. Assurance was from the head of the national accounts unit at CSO.
Describe main outcomes of consultation – feedback or inputs received
Insert your text here – max 100 words This research has been solely motivated by the country's Seventh National Development Plan (7NDP)'s objective on women empowerment. This document was released in June 2017 and involves the contributions of different stakeholders in the country. The government releases development plans that outline its objectives, strategies and program focuses for a period of four years. The 7NDP's major objective is to ensure that the objectives outlined in the vision 2030 are attained. One of the plan's objective is to increase women's participation in the formal sector in efforts to reduce poverty and empower women. The plan mainly states this but has not specifically outlined a policy that stipulates how this will be achieved. This research offers an alternative way in which participation of women in formal employment can be increased and suggests that government includes such a measure in its strategic planning. However, in order for policymakers to adopt the method proposed, this research will answer the question of whether a wage subsidy directed towards women's formal employment can work in the Zambian context.

4.2. Engagement strategy

4.2.1. Identify target audiences

Identify potential users of your research findings – institutions/organizations that may use your findings to inform, advise or influence policy or other relevant decision-making processes. Please explain why you believe these institutions/organizations are the most important potential users of your research, to inform relevant development/policy decisions.

Name of institution/organization #1	Name of instit./org. Ministry of Labour and social security
Explain relevance of this user to inform key decisions	
Insert your text here – max 100 words	

This ministry is concerned with the labour conditions that exist in the labour market. Therefore, it will be interested in this policy and the conditions that employers will attach to the women employed. It can also offer suggestions on how best it can be designed. Consultations will be undertaken with this ministry as they have more information regarding the labour market. The guidance offered will ensure that this research offers the best design of the wage subsidy that will be used in helping increase women's participation in the formal sector. The findings of this research may be used by this ministry as they interact with employers in the formal sector and can advise employers on the benefits of employing more women through the wage subsidy that will be proposed by this research.

Name of institution/organization #2	Name of instit./org. Ministry of Finance
Explain relevance of this user to inform key decisions	
Insert your text here – max 100 words Based on how the wage subsidy is designed and implemented, this ministry will be interested on how such a subsidy will affect the revenue that are collected through the Zambia Revenue Authority. The involvement of this ministry will strengthen the absorption of this subsidy by employers. This ministry works together with the Ministry of National Development Planning. The Ministry of Finance is concerned with the financial aspect while the Ministry of National Development Planning is concerned with ensuring that policies that lead to the achievement of the targets stipulated in the Seventh National development plan are implemented effectively. These ministry can also help in the design of such a policy by engaging the necessary stakeholders. It can also assist in ensuring that the subsidy is effectively implemented.	

Name of institution/organization #3	Name of instit./org. Ministry of Gender
Explain relevance of this user to inform key decisions	
Insert your text here – max 100 words This ministry advocates for the empowerment of women in the economy. It is guided by the gender policy among various policies. Increasing the number of women in the formal sector implies that women have better working conditions and better pay. It also helps them achieve their major objective when the employment of women is increased in the formal sector where women can earn a reasonably higher income than that which they earn in the informal sector.	

4.2.2. Define outreach and engagement strategy

How, from proposal design to the dissemination of your research results, will you consult and communicate with these users to both gather their inputs and keep them informed of your project, in order to increase chances of research uptake?

Insert your text here – max 150 words

It will be important to ensure that stakeholders are informed of this policy option. It will also be important to ensure that consultations are undertaken with these users in order that they are involved in the proper design of the wage subsidy for women. Their involvement will also ensure that companies in the formal sector are informed of the benefits of being part of this policy option. It will also give strength to the wage subsidy scheme especially if it is backed by the important ministries in the economy. In order to ensure that the research captures the policy context fully, interviews will be carried out with various officers in the major ministries such as ministry of labour and social security, ministry of finance and ministry of planning. This will help in structuring the research in ways that will meet their policy objectives.

In order to fully disseminate the results of this research public discussions and workshops can be organised. Apart from these, meetings with key officials in vital government ministries will be organised. Further, the media can be involved so that people have a better understanding of what a wage subsidy involves in terms of advantages and challenges.

4.2.3. Outline your preliminary dissemination strategy

Outline your preliminary dissemination strategy (channels, tools, events, audiences, etc.).

Note that PEP expects grantees to disseminate information about their research work and (expected) outcomes throughout the project cycle, and not only after publication.

Insert your text here – max 150 words

Preliminary dissemination will be through public discussions such as those hosted by the Economics Association of Zambia. These discussions attract stakeholders from various sectors and offer an opportunity for these stakeholders to contribute to the research. Their contribution are usually based from their experience as employers, policy makers and the targeted group.

Another platform, is through presentations at various universities in the country this will assist by giving critical reviews or peer reviews for the work that the research is undertaking.

SECTION V – OTHER CONSIDERATIONS

5.1. Describe any ethical, social, gender or environmental issues or risks that should be noted in relation to your proposed research project.

Insert your text here

One issue that might arise has to do with the financing of the wage subsidy. Currently, the government is removing subsidies from the energy and agriculture sectors. In order to deal with this, there is a need to explain clearly the benefits of such a policy and how it can be financed without negatively affecting the Zambian Economy. There will be a need to fully explain that this subsidy differs from that in the agriculture and energy sectors because it has long term effect that will reduce poverty among women and lead to sustainable economic growth..

Another challenge that might arise is the use of the 2007 Zambian SAM. The year of the SAM may be deemed too far back especially for people who do not understand CGE modeling.

5.2. References and plagiarism:

Applicants should be very careful to avoid any appearance of plagiarism. Any text of five or more consecutive words that is borrowed from another source should be carefully contained between quotation marks with a reference to the source (including page number) immediately following the quotation. It is essential that we be able to distinguish what you have written yourself from what you have borrowed from elsewhere.

Note also that copying large extracts (such as several paragraphs) from other texts is not a good practice, and is usually unacceptable. For a fuller description of plagiarism, please refer, for example, to the following website:

- http://writing.yalecollege.yale.edu/advice-students/using-sources/understanding-and-avoiding-plagiarism

PEP will be using a software program to detect cases of plagiarism.

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