

# The Impact of Minimum Wages within the Environment and Cultural Sector of the Expanded Public Works Programme.

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## Abstract

The Public Works Programme initiated during the Great Depression in the United States was known for its ability to stimulate economic activity through employment creation. This sentiment of poverty alleviation and reducing inequality is echoed as one of the prime objectives of the Expanded Public Works Programme within South Africa. The programme focuses on reducing unemployment through work based programmes, providing income relief through job creation to many households. The very high levels of unemployment and the associated poverty and inequality are considered to be amongst some of the most daunting challenges for the South African economy. The Environment and Cultural Sector has been faced with many challenges regarding wage determination and wage setting behaviour. The aim of this paper is to investigate the impact of setting minimum wages within the Environment and Cultural Sector as an appropriate wage strategy intervention policy, under the Expanded Public Works Programme. The Expanded Public Works Programme is a nationwide programme, which seeks job development, within the economy. After analysing data from over 3500 individual projects, it was found that there is a negative relationship between wage setting behaviour and job creation for many individuals, especially amongst the woman and youth. The paper found that investment in skill development and training has a positive impact within the Environment and Cultural Sector of the Expanded Public Works Programme.

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**Key Words:** Minimum Wages; Environment and Cultural Sector; Wage Distribution; Expanded Public Works Program.

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## Overview

The concept of the 'Public Works Programme' (PWP) is by far not new, originating under the Presidency of Roosevelt as the 'Federal Emergency Administration of Public Works' in the United States. This programme was initiated in response by the Administration of the United States to the very low performance of the economic environment brought about by the Great Depression during the early 1930's. Gayer (1935) mentioned that the focus of the Federal Emergency Administration of Public Works was to "increase employment quickly" (Gayer, 1935, p. 2). To achieve this, it was proposed that the programme should focus on the construction, repair and improvement of public highways and park ways, public buildings, and any publicly owned instrumentalities and facilities.

Furthermore, to focus on the conservation and development of natural resources, including control, utilization, and purification of waters, prevention of soil or coastal erosion, development of water power, transmission of electrical energy, and construction of river and harbour improvements and flood control and also the construction of any river or drainage improvement. And further still any other project carried out under a public authority (Gayer, 1935, pp. 2-3).

Within South Africa, the 'Expanded Public Works Programme' (EPWP) is a nationwide programme which seeks job development within different sectors of the South African economy by empowering individuals and small businesses to maintain their work output and increasing their capacity to earn a better income while they simultaneously acquire the necessary skills which they need in order to improve productivity. This programme has been divided into four sectors, namely the environment and cultural sector, the social sector, the economic sector and the infrastructure sector. Each of these sectors includes a number of government departments. The environmental and cultural sector comprises of the following departments, namely; the Department of Environmental Affairs and Tourism (DEAT), the Department of Water Affairs and Forestry (DWAF), Department of Arts and Culture (DAC) and the Department of Agriculture (NDA).

The Environment and Culture Sector (EAC) consists of several core programs which reflect the commonalities of the mandates of the departments involved providing a framework for the integrated approach to achieving job creation, community participation, utilise indigenous knowledge and sustainable natural resource management. The Environment and Culture Sector

constitute the following programmes, namely; Sustainable Land Based Livelihoods, Working for the Coast, People and Parks, Working for Tourism and Working on Waste (EAC, 2004).

One of the key aspects of reforms that take place in South Africa is the enhancement of the state's role in the regulation of social processes, strengthening of civil service in ensuring social interests and establishment of sustainable cooperation between the civil society and the state. According to the Institute of Race Relations (2018), Government spending on Arts, Sports, Recreation and Culture sits at 3.2% of the budget (R10. 39 Billion). In the context of the present transition of South Africa towards the innovative development, this role of the state is realized in the necessity of formation of new life conditions for people and the development of an environment conducive to intellectual and innovative capacity building, which will lead to higher levels of productivity (Junusbekova, 2016)

## Introduction

Poverty, unemployment and inequality are considered to be amongst some of the most daunting challenges for the South African economy. South Africa ranks among one of the most unequal countries in the world as well as amongst those countries in the world with similar or higher levels of unemployment. Internationally there is no systematic correlation between rates of inequality and of unemployment, as there are countries with very high unemployment but comparatively egalitarian income distribution (Albania, Slovakia, Croatia and Iran). On the other hand, there are countries that are highly unequal yet, have relatively low rates of unemployment, such as Malawi, Singapore, Guatemala, and Malaysia (Tregenna & Tsela, 2008).

However, we might expect some relationship between unemployment and inequality, at least in first differences as an increase in unemployment would tend to have a dis-equalising impact on income distribution. Indeed, increases in unemployment worsen income inequality (Tregenna & Tsela, 2008).

The increases in unemployment and the growing levels of wage inequality are 'alternative' results of changes in the structure of relative labour demand. An adverse trade or technology shock may lead to some combination of lower wages in existing jobs, loss of some existing jobs and re-employment in lower-wage jobs, and loss of some existing jobs without replacement. The extent that unemployment is a structural macroeconomic problem, and particularly to the extent that it is a product of problems in macroeconomic management, it

cannot be considered simply as a result of excessive wages paid to workers. The nature and extent of the perceived ‘trade-off’ between changes in unemployment and in inequality are

This income inequality is most noticeable, when comparing differences in race, gender and education levels within the country. This poses certain challenges for policy makers, when examining the structure supporting the development of wage policy within an economy. The spill-over effect of the high levels of inequality experienced in South Africa is most noticeable by the persistent high levels of poverty and the high levels of unemployment within the country.

In a study by the Development Policy Research Unit (DPRU) in 2008, it was mentioned that the high and persistent unemployment rates in South Africa are a serious threat to economic and social stability in the country. This has sparked widespread awareness, and further motivated policy agendas of many departments to act with urgency. There are various factors which had contributed to the rising unemployment levels during the latter 90’s. Most often cited are structural changes, which have taken place in the South African economy during the previous decades. In particular, production has shifted away from the labour intensive primary production sectors of the economy towards the relatively capital and technical intensive secondary and tertiary sectors, which are dependent on workers with high skill levels who are operating in technology intensive industries.

The level of inequality coupled by poor wage policy and high unemployment will have a negative impact on economic growth, deepening poor social development, widening the inequality gap by extending poverty still further within South Africa. According to Wilmers (2017), the rising consumption inequality due to wage differentiation and poor wage distribution increases inequality and further drives labour market dualism. The shift from mass consumption toward a segmented, elite-dependent consumer economy provides evidence of the failure of wage inequality to explain how the recent increase in wage inequality between regions.

### Productivity and Income

Income through profit and wages are usually considered as two distinctly different aspects of an economy, having immensely different implications to the workings within the financial structures of a monetary system. Wages are measured in terms of compensation for work done, and is usually transferred from employer to employee and it’s usually wages which constitutes the largest proportion of household income. Profit differs from wages as it is usually in the form of compensation received for entrepreneurial activity, and is the key factor relationship

within the business sector of an economy. This is measured on an aggregate level across the entire economy as the Gross Domestic Product.

Wages have an extended impact on both the macroeconomic and microeconomic levels of an economy. Suitable wages and a fair distribution of income can drive social order and lead towards a suitably stable economic environment (Wilmers, 2017). Fair wages can lead to an increase in the purchasing power of individuals, and thus increase consumer expenditure, production and overall increase the level of competitiveness within the primary, secondary and tertiary sectors, which eventually will have overarching influence on the overall economy (Epple & Romano, 2015). Income has an important Keynesian stimulatory impact on the economy, as income becomes expenditure. Yet the process is not an automatic transfer from income to expenditure. These should be considered but with apprehension we must still consider the low levels of household savings and the reduced multiplier effect generated through the investment expenditure experienced in South Africa at this time (Aminu, 2011).

Furthermore, the distribution of wages across an economy could have potential implications for regional development and growth. For example, rural development is often slower than development in urban areas due to the high level of wage and spending in urban centres. Even after taking into consideration wage remittances, as wages earned in capital centres by migrant workers get sent back to rural areas to support household families. This effect is important to rural development but unfortunately insufficient to promote high levels of growth in lesser developed regions of the country (Isaacs, 2016).

Thus, this is a concern regarding the spatial distribution of wages between sectors of an economy which could have far reaching implications within a country. According to Bhorat, Caetano, Jourdan, Kanbur, Rooney, Stanwix and Woolard (2016), minimum wages in South Africa have been organised through two primary frameworks, namely the Bargaining Council and through Sectoral Determination, which together represents 70 percent of low-wage income workers within South Africa. More recently, the introduction of a National Minimum Wage at the beginning of 2019 remains of concern and the subject of ongoing national deliberation and discussion.

In the report issued by DPRU and CSDA, as highlighted by Bhorat et.al. (2016), 'Sectoral Wage Determination' only applies to workers who otherwise would not have specifics on labour protection. Wage fixing criteria are combined with the prevailing legal and economic environment, such as efficient labour laws and trade unions. The legislative frameworks used

in South Africa which serves as a foundation for labour relations is the Labour Relations Act (LRA) of 1995 and the Basic Conditions of Employment Act (BCEA) of 1997.

These two acts combine to form the backbone of collective bargaining through statutory institutions and the 'Sectoral Determinations' published by the Ministry of Labour for sectors/occupations/areas. Beyond basic employment regulations the BCEA allows the Minister of Labour to establish a more specific 'Sectoral Determination' for a given sector, which introduces minimum wages, maximum working hours, and other non-wage requirements.

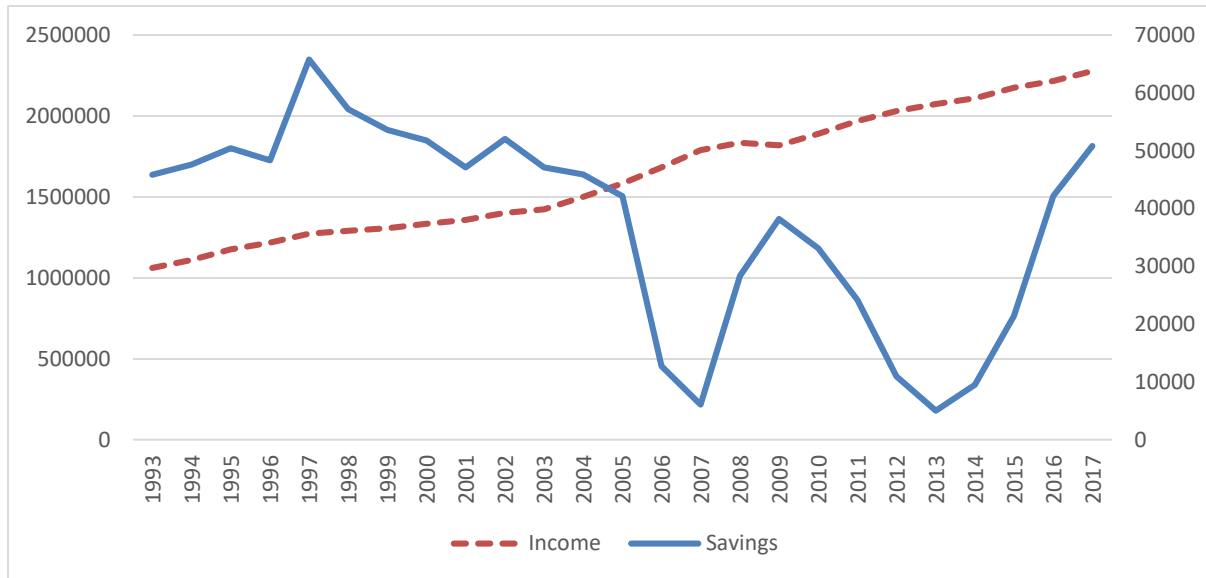
### Examining 'Wage'

Research into the impact of wage behaviour stimulates the very core of social science because it helps to understand questions regarding the principals underlying human well-being. Through better understanding the determinants of wages helps policy makers develop tactics to promote wealth, to help ease poverty and eventually to put countries on a path to increased growth and prosperity (Polachek, 2008).

The definition of wage involves a monetary compensation paid by an employer to an employee in exchange for work done. Payment may be calculated as a fixed amount for each task completed (a task wage or piece rate), or at an hourly or daily rate, or based on an easily measured quantity of work done. The International Labour Organisation define it as 'a wage imposed by law in each country, which is binding and enforceable under criminal law and entails punishment'. However, enforcement requires capable institutions, with adequate resources, to ensure compliance. An effective inspectorate is central to ensure that employers adhere to legislation and enforcement strategies can take a variety of forms including cooperation, warnings, civil and criminal penalties, licence suspension (Bhorat, et al., 2016). It is the amount paid to the worker for a work done or service rendered within a specified period, and which may not be reduced whether under an individual or collective agreement, and is guaranteed by the law (Almohaimeed, 2016).

According to Grant and Brue (2007), according to the new Keynesian school of economics, an efficiency wage (market wage) is an 'above' market clearing wage that minimizes the employers wage cost per effective unit of labour service employed. While economists presume that an excess supply of labour would exert a downward pressure on wages it can be concluded that a reduction in wages would in turn reduce unemployment by raising the quantity of labour demanded. Hence, according to standard economic theory, unemployment is a self-correcting

problem. However, according to Mankiw (2019) the new Keynesian economists often explain that this market clearing system fails. The theory proposes that high wages make workers more productive. The influence of wages on worker efficiency may explain the failure of firms to cut wages despite an excess supply of labour. In other words, wage reduction would cause worker productivity and profits to decline. This is often referred to as ‘sticky wages’.



**Figure 1: The changing relationship between household savings and household income, South Africa, 1993-2019.**

Source: Quantec 2019

The sticky wage hypothesis predicts that workers would experience larger increases in real wages and correspondingly larger output contractions (Bordo, Erceg, & Evans, 1997). There are various theories about how wages affect worker productivity, simultaneously acts as a wage rigidity within the market. It is assumed that efficiency/wage theory holds that high wages reduce labour turnover. Hanes and James (2012) also point out that there was "extraordinary rigidity of aggregate money wages during the first two years of the Depression". It was argued that large industrialists refrained from wage cuts because they alleged that a general maintenance of wage levels would maintain sales.

Furthermore, the more a firm pays its workers, the greater the incentive to stay within the firm and by paying a wage above the market estimate, the firm may avoid losing quality workers and increase productivity. Another important point to consider is that a high wage improves worker effort. This is because employees must themselves decide much effort to make given

their wage. In other words, the firm can raise worker effort by paying a high wage and thus increase productivity (Mankiw, 2019).

Bordo et.al (1997), propose that setting contracts by firms between the employer and the employee may further act as a wage rigidity and these 'sticky wages' led to monetary contraction at the early stage of the Great Depression and which played a significant role in the economic downturn of the late 1920's in the United States. Some still argue that such contract models compliment human capital in explaining wages and other labour market phenomena; others argue that contract models are a substitute for the human capital model (Polachek, 2008).

There is substantial literature to argue that gains derived from technological in production processes have further increased demand for high-skilled workers relative to low-skilled workers. With greater emphasis on output and productivity, the deepening of technological process design, and global access to technology based productivity as can be seen within the fourth Industrial revolution, the problem of unemployment is partly considered a structural issue. Through the use of 'Human Capital Theory', investment into an individual through education and skill development raise wages and lessen the burden of poverty and inequality (Polachek, 2008).

There is a perspective which suggests that arguments the economy functions better with a fair minimum wage supported by compelling moral arguments in favour of a minimum wage. This can be found in the words of Adam Smith (1776) who wrote that "No society can surely be flourishing and happy, of which the far greater part of the members of society are poor and miserable. It is but equity, besides, that they who feed, clothe and lodge the whole body of the people, should have such a share of the produce of their own labour as to be themselves tolerably well fed, clothed and lodged" (Krueger, 2015).

Minimum wage theory includes factors which determine the costs of living necessities (poverty line methodology), and on economic criteria such as labour productivity, wage levels, and actual income in the economy. The debate over the role of minimum wage and unemployment is generally accepted. For example, in Marxist theory, the minimum wage reduces employer's violations, admitting that higher minimum wages bring higher unemployment. Neoclassical theory mentions that minimum wages prevent companies from hiring workers with low productivity that doesn't cover its cost (wage and social security).



Any increases in the minimum wage will affect different markets differently, both because of the elasticity of the demand for labour directly and also because of the elasticity of demand for the firm's output (Beggs, 2019). The minimum wage objective also needs to consider relative living standards and the needs of low paid workers when setting the minimum wage (McKenzie, 2018). While subscribers of the neoclassical school consider minimum wages as neither beneficial nor harmful, post-Keynesian economists consider minimum wages as advantageous to the labour market, though they do impose short term costs to firms (Almohaimed, 2016).

The magnitude of the employment effect of the minimum wage depends on the extent with which the wage is set above the equilibrium wage rate. If the minimum wage is set below the average wage rate within the industry, then it could lower a range of wage rates found within that sector, increasing the wages of the lowest-paid workers without increasing unemployment (Vink & Tregurtha, 2003). This left the social sciences with the challenge of understanding the links between wage, labour productivity and economic growth. Neoclassical growth theory models rely on the concept of homogeneity, which implies that each unit of capital is identical and so is each unit of labour. Because few countries achieved sustained levels of economic growth without having invested substantially in education, researchers began to question whether input quality, particularly for labour, really was constant. However, education and training reflect labour quality, a new line of research, namely human capital theory developed to study how society invests to enhance worker quality, and hence worker productivity (Polachek, 2008).

While the structure and wage-setting frameworks differ across the world, there is consensus that the minimum wage is an important labour market intervention tool. Objectives of most minimum wage policies usually include protecting workers from low pay, addressing poverty, and encouraging labour productivity (Bhorat, et al., 2016). However, regional minimum wage systems set varying rates for each defined region within a country, and is typically established in countries with particular administrative and political structures, such as in the United States.

According to a report by the Organisation of Economic Cooperation and Development (OECD), (2015), legal minimum wages are considered to be government's most direct policy lever for influencing wage levels, especially for workers in a weak bargaining position brought about by high unemployment, poverty and inequality. Minimum wages serve as a basic labour reference point, alongside working-hours regulations and related provisions to ensure basic

job-quality standards. There are around 26 out of 34 OECD countries who have laws governing minimum wages (OECD, 2015) .

A concern for wage differentials is highlighted in a research by Aminu (2011) stating that there may be lags in the adjustment of labour market and its sub-markets. In addition, workers in the different sectors may be non-competing groups and that the government sector is not subject to the same pressures as the private sector. In South Africa, a tri-partite unit institutes sectoral and occupational (minimum) wages for specific low-income sectors, and collective bargaining also establishes sectoral/occupational minimum wages in many other sectors in the country (Bhorat, et al., 2016).

Some countries have adopted measures that they could use to reduce the gap between what an employer pays and the take-home pay that the worker receives. To lower employers' costs, or to reduce risks of employment losses following the implementation of minimum wages increases, some countries have introduced tax rebates for firms employing minimum wage workers (OECD, 2015). Isaacs (2016) proposes that a national minimum wage can also support economic growth. A national minimum wage can be implemented without significant employment effects.

These findings are supported by literature, showing that a minimum wage is helpful in reducing inequality and poverty without negative impacts. Isaacs supports this statement by mentioning that the economy adjust to higher wages and can drive a positive growth stimulus (Isaacs, 2016). The lack of competition could be a concern in that the impact of competition is important in bringing about uniformity in wages offered by the private sector. Competition may prompt the public sector to pay higher rates, reducing the number of people it employs or the sector may decide to pay less than the going rate and accept the consequences (Aminu, 2011).

If the change in markets demand is uncertain and wages have to be set in advance through wage negotiation and labour laws, then there is a random component to the demand for labour and the estimated return to wage. By increasing the wage rate, the producer is able to increase output (assuming efficiency wages) increases the risk of having unsold stock. So, if market demand is uncertain, the probability of rationing labour is more likely. The profit maximizing level for a firm depends on the amount of market uncertainty, production capacity and the 'Elasticity of Labour Demand'.

The elasticity of labour demand measures the responsiveness of demand of labour when there is a change in the wage rate. There are some fundamental considerations here. Firstly, when labour expenses are a high percentage of total costs, then labour demand is more wage elastic, and secondly, labour demand is more elastic when a firm can substitute easily and cheaply between labour and capital inputs. The change in unemployment due to an increase in the minimum wage depends on the elasticity of labour demand. In other words, how sensitive the quantity of labour that industry would want to employ is to the prevailing wage. If industries demand for labour is inelastic, an increase in the minimum wage will result in a relatively small reduction in employment. If industries demand for labour is elastic, an increase in the minimum wage will result in a relatively small reduction in employment (Beggs, 2019).

### Elasticity of Labour Demand within the EAC of the EPWP

Because input prices are a determinant of supply, and the wage is just the price of the labour input to production, an increase in the minimum wage will shift the supply curve up by the amount of the wage increase in those markets where workers are affected by the minimum wage increase. Such a shift in the supply curve will lead to a movement along the demand curve for the firm's output until a new equilibrium is reached. Therefore, the amount that quantity in a market decreases as a result of a minimum wage increase depends on the price elasticity of demand for the firm's output. In addition, the amount of the cost increase from an increase in wage is determined by the company's ability to pass these costs on to the consumer which is determined by the price elasticity of demand. When quantity decreases are small then most of the cost increase will be passed onto the consumer, but only if demand is inelastic. Alternatively, if demand is elastic, quantity decreases will be large and most of the cost increase will be absorbed by producers (Beggs, 2019).

Totty (2015) mentions that despite the long history of attention given to modelling the issue of wages in the different sectors of the economy, a large amount of work on the structure of wages has been done, but with little agreement on which is the best form of model. This is due to the many endogenous and exogenous factors that surround both the labour sector, the markets and the national and international environment. Furthermore, empirical evidence in these studies also differs depending on both the datasets used and the methodology applied. This can be captured in cases where, for example, employers with unorganised work forces generally pay wages below the full social costs of labour, while legal measures could potentially force

employers to pay wages at least equivalent to and more likely greater than the social costs of labour (Vink & Tregurtha, 2003).

In order to study the effects of (minimum) wages, it is important to estimate the impact that the change in the minimum wage has on employment. This is done using the wage elasticity (denoted by  $\eta_L$ , and also called the partial price elasticity of demand for labour) which is defined as the percentage change in employment ( $\% \Delta L$ ) for a given percentage change in the wage ( $\% \Delta w$ ). Wage Demand Elasticity is best suited to studying the relationship between the change in labour demanded and the change in the minimum wages paid.

In reality however, firms employ a variety of different types of factors of production, including the use of capital, land and the various different types of labour in the production process. The decline in employment in response to higher wages stems from the fact that firms are able to choose between different technologies. A production technology defines the technical relationship between inputs and outputs (DPRU, 2008).

The effects of different relative capital/labour ratios should also be considered if the sector covered by the minimum wage is more capital intensive than that of the overall economy. If the demand for its goods were fairly elastic, a minimum wage would cause its employment and output levels to fall and both the capital and labour would move to the relatively less capital-intensive parts of the economy. The added capital would make these sectors more capital intensive by definition, and thus have higher wages (Vink & Tregurtha, 2003).

Due to the nature of this sector, the Environment and Cultural Sector has its own set of unique challenges which is especially true for the heterogeneous nature of the environmental and cultural industries. Similarly, the 'interaction' which exists between 'human capital' and the overall 'environment' is a core principal defining the uniqueness of this model. Income elasticity of labour demand in South Africa within the Environment and Cultural Sector is highly inelastic (-19.9332) based on data from 2015 and 2017 and is calculated from within the EAC sector of the EPWP data. The inelastic nature of the demand curve for labour is as a result for the unwillingness to substitute capital for labour (Public Works Program), the nature the services provided, especially as substitutes are possible and the low cost of the labour as a percentage of the entire product within the short term 'time' frame of the projects. The high income elasticity of labour demand is very similar findings to the level of labour elasticity of demand in the United states during the 'Great Depression' of 1929 to 1933. According to Smiley (2019), the decline during the Depression was closely related to the income inelasticity

of labour demand predominantly within the agricultural sector. It was shown that as incomes grew, the demand for agricultural products grew much more slowly.

Similarly, firms are clearly becoming more aware of the extent of the crisis confronting them, and cost cutting resulted in employment reductions combined with a strong commitment to company survival by those who kept their jobs. Labour and total factor productivity declined steeply between 1929 and 1933. Where work intensity fell due to short-term uncertainty over the dimension of the downturn, the resulting excess supply of labour acted as a rigidity to wage growth (Darby & Hart, 2008).

### Unobserved factors and characteristics of labour and productivity.

There are many forms of unobserved worker's characteristics that needs to be accounted for in an analysis of this nature. Personal preferences are shaped by culture (Liu, Meng, & J, 2000), and economic reform brings about institutional change. One of the most obvious being the spatial displacement between the formal and informal markets, Urban and Rural demographics, and most important, level and sophistication of the market structure based within different regions and locations.

Four types of job segmentation exist, namely; Internal labour market jobs: jobs in large workplaces requiring extensive qualifications. Craft-like jobs: jobs in small workplaces requiring extensive qualifications. Mass production jobs: jobs in large workplaces requiring no qualifications. And peripheral jobs: jobs in small workplaces requiring no qualifications.

Hannan (2006) lists seven types of industry segmentations namely: Traditional primary industries, such as, competitive markets/labour tied to property rights, e.g., fishing and forestry. Small competitive industries, such as, competitive markets/combination of family labour and un- skilled labour, e.g., restaurants, retail trade. Classical capitalist industries, such as the competitive commodity markets/unskilled labour, e.g., textiles and clothing, and food and drink. Competitive industries such as competitive markets/skilled labour, e.g., construction and printing. Large-scale engineering-based industries bearing technical restrictions on entry/skilled labour, e.g., chemicals, electrical machines, and machine tools. Professional service industries, such as restriction by licensing/skilled labour, e.g., education, religion, and health. Bureaucratic service industries, such as state restrictions on entry/skilled labour, e.g., insurance and banking (Hannan, et al., 2006).

According to Cho and Cho (2011), the structure of the formal and informal labour market is related closely to gender groups in the labour market. It often appears that female workers in the informal market often find themselves employed in low income employment and poor working conditions with limited opportunities to develop in the formal labour market. It has been shown that the employment distributions of men and women frequently differ in the formal and informal labour markets. Men often dominate the formal market, whereas many female-concentrated jobs are relatively distributed in the informal market (Cho & Cho, 2011).

Another major unobservable consideration is the role of institutions. Liu, Meng and Zhang (2000), suggest that comparisons of wage structures highlight the potential role of intercountry differences in labour market institutions and the changing role of a given country's institutions. This was particularly relevant in China as the economy transformed from a central based economy to a market based economy.

An interesting observation from the same paper by Liu, Meng and Zhang (2000), was that workers in the state sector have higher earnings than those in the other two sectors in one province, which was the opposite for men in another province. It appeared that the underlying factor was the different types of jobs held by migrants and non-migrants. In the one province of China, the majority were urban residents and many occupied important positions in the state sector. The fact that the state sector had higher average earnings indicates that the state sector was, on average, more attractive to workers. In the other province of China, jobs or occupations, were at a lower level than those held by urban residents.

Junusbekova (2016) elaborates on the labour related policy within the European Union which has led to result-based wage setting behaviour. In this case, the 'Human Resource Management' is carried out on an individual basis within companies. The assessment of labour duties is linked to official performance indicators, which are stipulated in the employment contract. Individual criteria of efficiency and effectiveness is based on an established and agreed performance efficiency outcomes.

Compensation of employees is clear and transparent. The assessment of the efficiency and effectiveness is measured and assessed through open dialogue with the individual's line managers. This results based system forms the basis for an optimal internal processes which is used when setting targets, clarification of tasks, skills development, improving the dialogue of employees and managers (Junusbekova, 2016). This then highlights the importance of

specialisation of labour and the importance for labourers to develop very specialised sets of skills.

Hannan and Schomann and Blossfeld (2006), point out that the link between schooling and wages reflects general processes of rationalization. They suggest that the return to education increase for as the group becomes more educated. However, the returns to education decline when the educational system expands and the average levels of schooling increase. In other words, as the flow of graduates with advanced degrees exceeds the number of vacant positions that require such training, the returns to any particular level of schooling begins to decline. This implies that the 'status value' of a given level of schooling diminishes as those levels of qualifications become more common.

### Brief International comparative analysis of the application of the minimum wage and wage rigidity.

The macroeconomic impact of a minimum wages is far from been clear in the literature. Few published articles explicitly measure the total employment effects of a minimum wage when the real effects of the upstream and downstream industries are also considered in the study. However, "small net decrease in employment may also lead to an increase in total employment if the upstream and downstream employment effects of the increased spending by those whose wages increase is larger than the direct and indirect effects of the decreased spending by those rendered unemployed by the minimum wage" (Vink & Tregurtha, 2003, p. 5).

There are mixed impacts of minimum wages on different sectors of the economy. There could be many reasons for this, not least been the idea that the impact of minimum wages will be as a result of different political and economic constraints, such as the existence of suitable. Some of these regulatory institutions and monitoring bodies are beset with sufficient laws and power to enforce such measures. An important consideration is where the employers are strong enough to be in a monopsonistic position, setting their own wages (Vink & Tregurtha, 2003).

Most economists agree with the proposition that a minimum wage set above the market clearing equilibrium wage will cause unemployment. The real effect of a minimum wage will depend on the reason for its implementation (Vink & Tregurtha, 2003). Often when there are formal incentives, disciplinary powers or the power to hire and fire, meeting plan targets hinged on shop managers relying almost entirely on informal mechanisms of control in the allocation of

work, payment, social and welfare benefits and access to promotion to motivate and discipline the workforce (Morrison & Schwartz, 2003).

Another factor could be the size and the extent or reach of the informal sector which has the capacity to support a large increase in unemployed people. Also there is the consideration of the dual economy, especially in the case of a large divide which could exist between the two tiers, such as the tax base, the size of social security base, the level and extent of market regulation, and the degree of corruption and political instability which could exist within the country. Another consideration within the labour market is the role of the informal managerial power of the employee who, depended on keeping production quotas relatively low, allowing workers to fulfil and over fulfil plan targets easily and using other components of incentive schemes, like bonuses, etc. (Morrison & Schwartz, 2003).

For example, in the USA, it was found that the economic policy surrounding minimum wage was very much a consensus value as opposed to structural reform. For example, there are key differences between the analyses conducted during Democratic and Republican Administrations (Vink & Tregurtha, 2003). However, It was seen that even though statehouse democracy proved that policy outcomes are tightly related to mass opinion across states, the same policies are fairly far removed from citizens' measured preferences (Simonovits, Guess, & Nagler, 2018).

In Russia, it was the failure of 'Perestroika' and the introduction of market reforms finally set wages free from the administrative control of the party-state system. Enterprises were no longer constrained by the tight schedules of the plan and could devise wage systems and distribution consistent with the demands of the market. Brazil's experience suggests that a high rate of interracial socialization can coexist with persistent racial inequality and discrimination, while the measurement of racial categories, and hence discrimination, becomes more complex. There appeared to be a connection between measured racial identity and economic outcomes that is echoed in recent demographic research in the United States (Cornwell, Rivera, & Schmutte, 2017).

The transition of Russia to capitalism fostered much of the wage bargaining used in the new Russia, by introducing better technical and organisational control over labour, but simultaneously bringing about the threat of unemployment for some and the promise of increased wages for others (Morrison & Schwartz, 2003). Another sound example is found in the work of Volosatov (2007), arguing that the political undertones deployed by the Ministry



of Education and Science of the Russian Federation considered the political advantage of accelerated development of the system for raising up ‘proletarian cadres’ within a system which was headed towards collapse (Volosatov, 2007).

In Australia the institutional nature allows for the erosion of the system by the removal of unions from minimum wage and award determination. It is highlighted that negotiations have no direct bearing on the determination of minimum wages and award provisions by the Fair Work Commission. In this instance unions and workers are now merely ‘heard’ by the Fair Work Commission (McKenzie, 2018). In Brazil, a high rate of interracial socialization can coexist with persistent racial inequality and discrimination, while the measurement of racial categories, and hence discrimination, becomes more complex (Cornwell, Rivera, & Schmutte, 2017).

There appeared to be a connection between measured racial identity and economic outcomes which proved to be similar to the research done on demographics in the United States (Cornwell, Rivera, & Schmutte, 2017), and in Austria, Germany, and Poland it was found that immigrants experience a high wage penalty compared with local residents. With the exception of migrants from Non-European countries, migrants from within the European area get the same wage as native born workers, once they occupy the same jobs. However, in this research, the findings leans far further than a political or institutional gap, but proposed that a substantial part of this gap can be explained by differences in human capital endowment and job position (Hofer, Titelbach, Winter-Ebmer, & Ahammer, 2017).

In this case it must be important to note that controlling for occupation and job position is justified only if this selection depends on productivity-relevant characteristics such as transferability of human capital acquired abroad and language skills. The role of wage discrimination across gender also showed that for woman, the wage discrimination was a lot lower in the early working age, but grew as age of woman increased (Hofer, Titelbach, Winter-Ebmer, & Ahammer, 2017). In other words, wage discrimination is a function of institutional and social stereotypes, coupled with various unobservable factors within the market for labour.

### National Minimum Wage

According to the Government Gazette (2018), the National Minimum Wage Act 9, 2018 makes allowance for an amount of R20.00 per hour, or an amount of R3,500 per month. For full-time employees, that means no more than 45 hours a week and sets the minimum wage at R900 a week. This does not include overtime. The National Minimum Wage Panel Report to the

Deputy President (2016) states that: “after carefully considered the proposals, research and evidence from the social partners and interested parties and after much deliberation unanimously agreed that the level of R20 per hour adjusted to a monthly wage of approximately R3,500 was a starting level for the national minimum wage that would maximise benefits to the poor and minimise any possible dis-employment effects. A lower number would have a much smaller effect on poverty, and a higher number would likely start causing unemployment consequences. The Panel believes that a clear number (rather than a range) will be simpler and easier to communicate and implement” (NWP, 2016).

The Panel considered economic and affordability criteria, starting with the aggregate level of wages. Benchmarks included within the decision making of the panel the relationships between the mean and median level of wages in the economy (NWP, 2016). Considering the nature and extent of low pay in South Africa it was estimated that 6.2 million workers (47.3% of all workers) earn below R3,500 per month, and there is marked variation in the distribution of low pay between sectors.

Of the workers in private households, 90.7% earn below R3,500 per month, while 84.5% of workers in agriculture earn below this level. Furthermore, the ratio that is relevant for setting the National Minimum Wage depends on individual sectors. An amount of R3,500 is affordable relative to international averages on a minimum to median basis. It was pointed out in the report (2016) that a high wage of R4,000 did not reach the minimum-to-mean international average of 0.51 (NWP, 2016).

### Data Analysis of the Environment and Cultural Sector of South Africa

The methodology used in this section to analyse the minimum wage within the different provinces of South Africa will be done by examining the wage paid to workers within the Environment and Cultural Sector over the period 2015 to 2017 with emphasis on 2017 data collected for the Environment and Cultural Sector. It is important to mention here that this is a comparative ‘static’ model, and is not suitable as a predictive tool, but rather a policy tool which is useful for evaluating the impact of very specific policy shocks under strict behavioural conditions provided that there are ‘given’ assumptions about the underlying economy.

The statistical analysis will cover the nine National Provinces within South Africa, which will be examined collectively and where necessary, individually analysed. Abbreviations for the purpose of this analysis will be used, namely; EC Eastern Cape, FS Free State, GP Gauteng Province, KN Kwa-Zulu Natal, LP Limpopo Province, MP Mpumalanga Province, NC

Northern Cape, NW North West Province, and WC for the Western Cape. There are three sets of Funding Spheres listed, and these include Municipal, National and Provincial funding Spheres.<sup>1</sup>

**Table 1: Funding Spheres: Comparing Municipal, National and Provincial Funding.**

<b>Rand's</b>	<b>Total</b>	<b>Average</b>	<b>min</b>	<b>max</b>	<b>Number of projects</b>
<b>Municipal</b>	R2 997 062 305,29	R2 025 042,10	R2 500,00	R285 188 521,00	1 408,00
<b>National</b>	R5 487 231 530,47	R5 191 325,95	R18 053,00	R405 913 592,00	1 057,00
<b>Provincial</b>	R925 274 563,66	R1 180 197,15	R300,00	R31 564 700,00	784,00

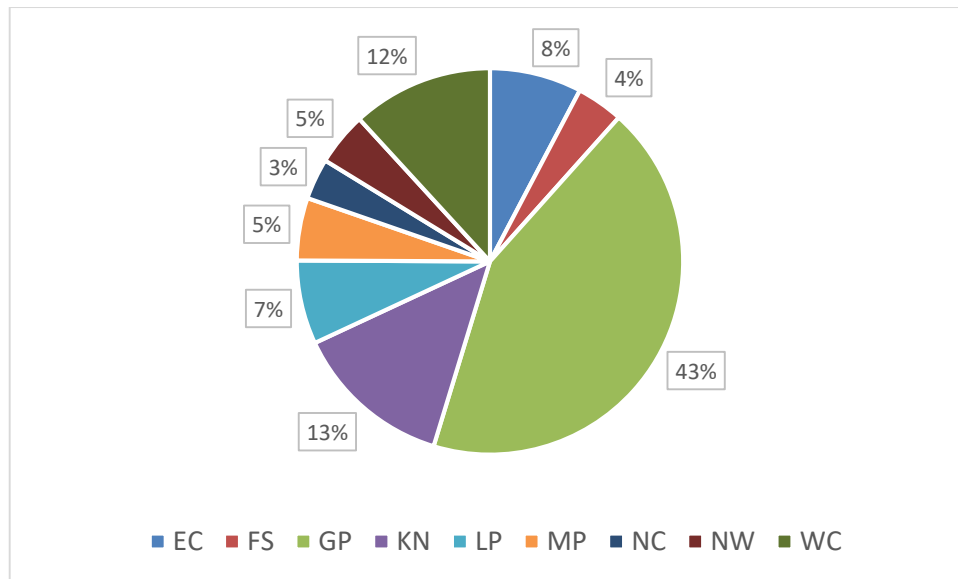
Source: Derived from EPWP Data (2017)

Funding within the Environment and Cultural Sector is provided mainly from National level, followed by Provincial level and finally from Municipal level. Under the Environment and Cultural Sector's there are a number of key programs listed, and these include 'Coastal Management', 'Municipal Infrastructure', 'Parks and Beautification', 'Sustainable Energy', 'Sustainable Land Based Livelihoods', 'Tourism and Creative Industries' and 'Waste Management'.

The sub categories include: 'Air quality management', 'Buildings', 'Cemetery Maintenance', 'Community parks', 'Comprehensive Agricultural Support Programme', 'Creative Industries', 'Food for Waste', 'Forestry Operations', 'Fresh Water Farming', 'Greening and Gardening Services', 'Greening and open space management', 'Heritage services', 'Investing in culture', 'Land Care', 'Language services', 'Mining Rehabilitation', 'Museum services', 'People and parks', 'SAFCOL Infrastructure Maintenance', 'Urban Renewal-Cleaning of Public Open Spaces', 'Wildlife economy', 'Working for Ecosystems', 'Working for Energy', 'Working for Fisheries', 'Working for Land', 'Working for Water', 'Working for Wetlands', 'Working for the coast', 'Working for tourism', 'Working on Fire', 'Working on Waste', 'Youth Environmental Service' and 'Other'

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<sup>1</sup> The data used in this analysis has been provided by the Department for the purpose of better understanding the relationships between the Environment and Cultural Sector and the Minimum Wage. This analysis was done using MATLAB 2019a on the 2017 data provided by the EPWP.



**Figure 2. The Provincial Distribution of Funding for the Environment and Cultural Sector of the Expanded Public Works Program, South Africa**

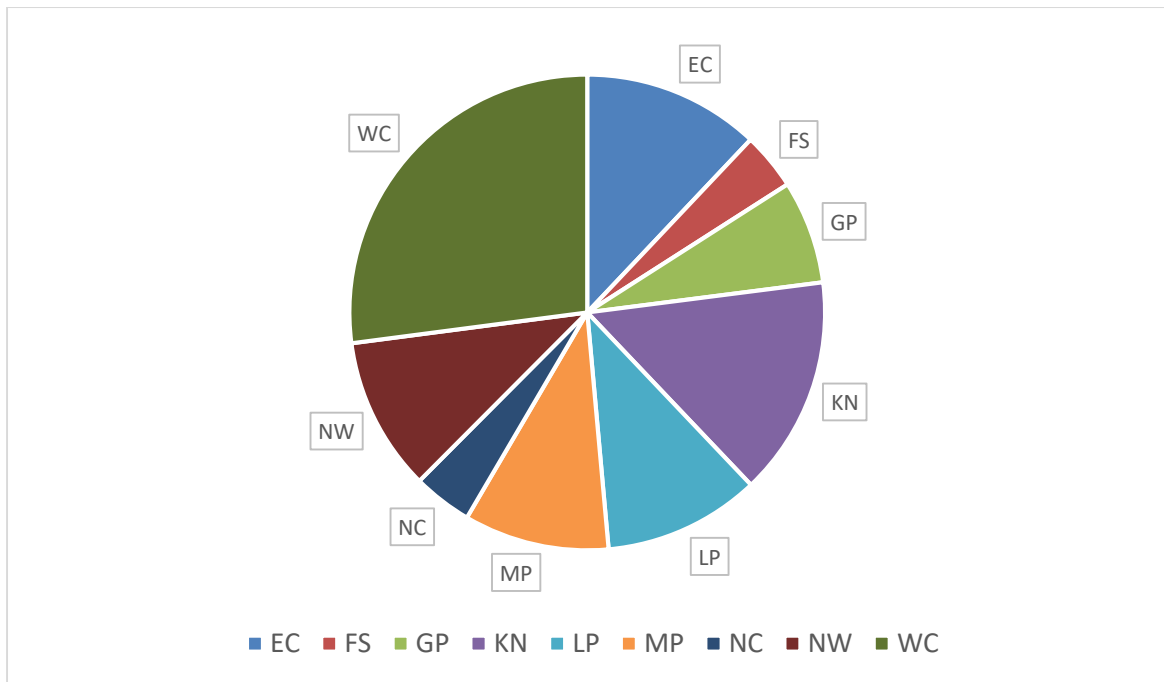
Source: Derived from EPWP Data (2017)

It is clear that the Gauteng Province receives the largest sphere of funding within the Environment and Cultural Sector across South Africa, followed by Kwa-Zulu Natal and then the Western Cape.

**Table 2: Distribution of the Minimum Wages across the Province's**

	Sum	Average per day	Min per day	Max per day
<b>EC</b>	R44 954,84	R108,32	R50,00	R500,00
<b>FS</b>	R14 510,81	R98,71	R51,60	R155,04
<b>GP</b>	R26 215,76	R112,51	R50,12	R250,00
<b>KN</b>	R55 707,63	R107,13	R52,32	R479,00
<b>LP</b>	R39 728,84	R107,67	R51,83	R264,00
<b>MP</b>	R36 852,08	R108,07	R52,80	R386,40
<b>NC</b>	R15 028,32	R102,93	R50,00	R350,00
<b>NW</b>	R39 003,24	R116,43	R50,00	R289,50
<b>WC</b>	R100 958,99	R123,88	R50,00	R484,50

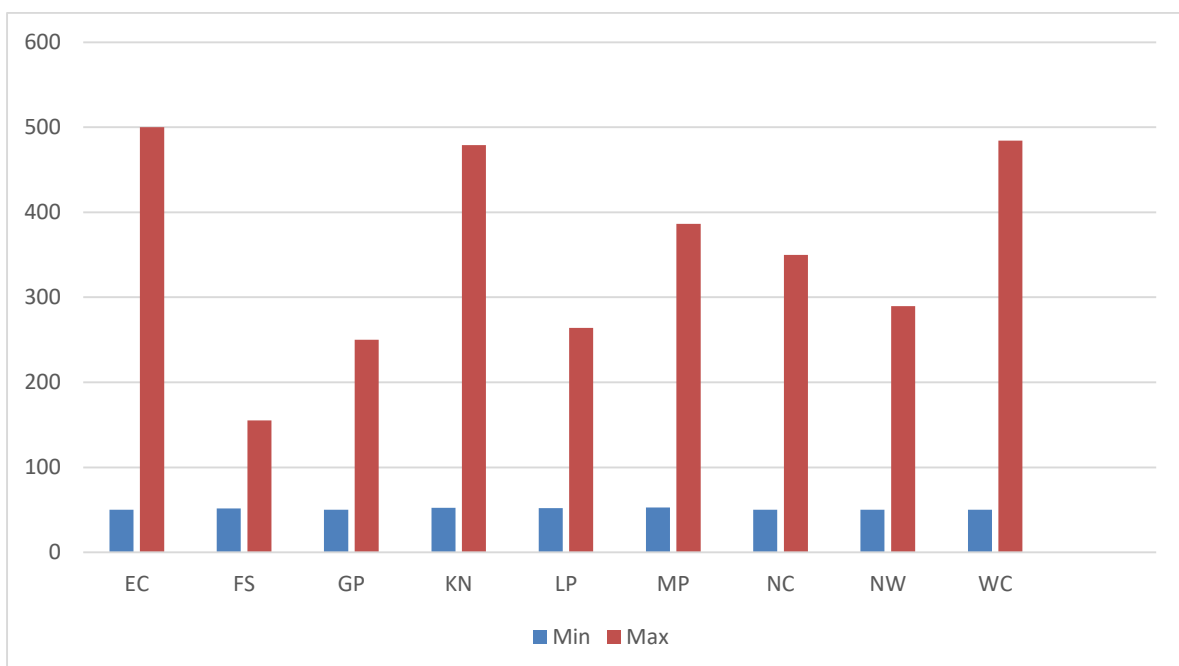
Source: Derived from EPWP Data (2017)



**Figure 3. The distribution of the Sum of the Minimum Wage for the Environment and Cultural Sector, a comparison between Provinces across South Africa**

Source: Derived from EPWP Data (2017)

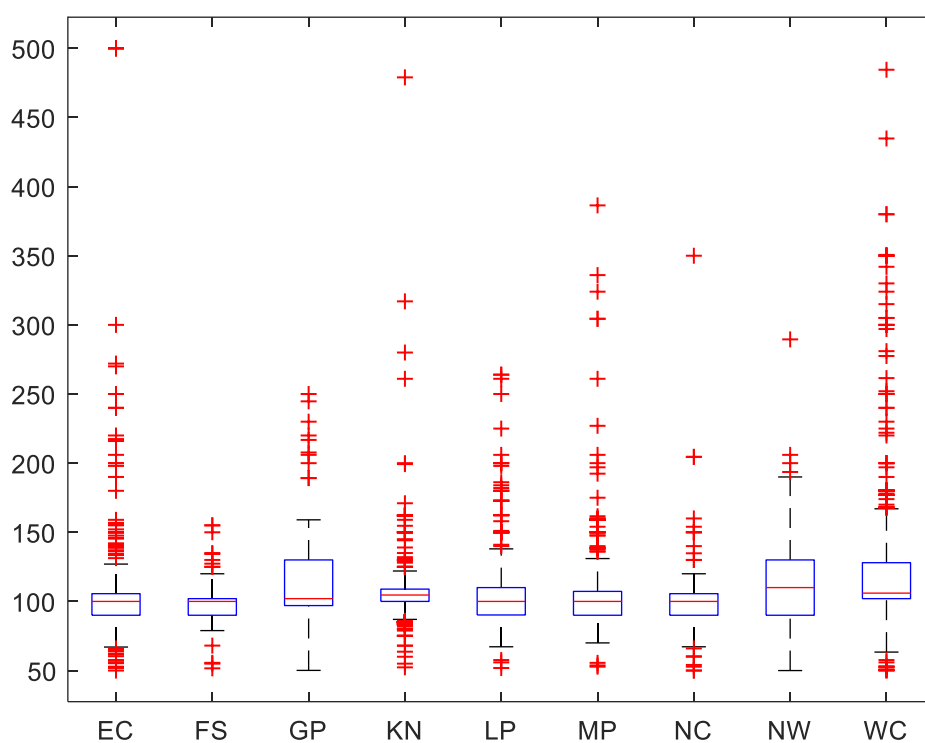
The Western Cape contributes the most towards minimum wages, with the lower level been R50,00 per day and the highest been R484,50 per day, and an average of R123,00 per day. North West Province has an average of R116,43 and Gauteng Province follows with an average of R112,51.



**Figure 4. The range of minimum wages from Minimum to Maximum within the Environment and Cultural Sector Budget between Provinces across South Africa**

Source: Derived from EPWP Data (2017)

The Eastern Cape shows the largest range between the lowest and the highest wage rate paid within the Environment and Cultural Sector. This is followed by the Western Cape and Kwa-Zulu Natal.

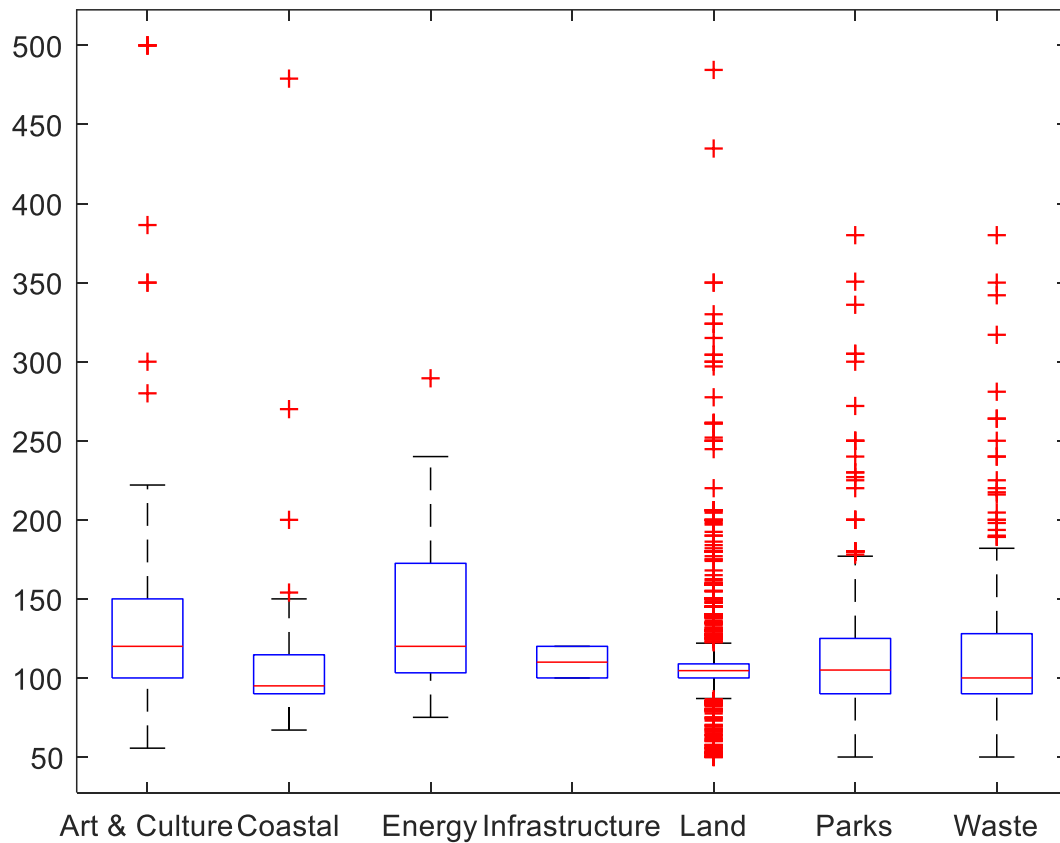


**Figure 5. Boxplot examining the range of the minimum wages within the Environment and Cultural Sector across Provinces across South Africa**

Source: Derived from EPWP Data (2017)

The distribution of the wage rate (including outliers) for the Western Cape is greatest, with a midpoint wage even slightly lower than the North West Province. Gauteng Province shows a

large range with more people earning a wage higher than the midpoint wage. Considering all the plots, there is a tendency towards an increasing level of the wage rate within the SEC sector.



**Figure 6. Boxplot examining the range of the minimum wages within the Environment and Cultural Sector across programmes after removing outliers.**

Source: Derived from EPWP Data (2017)

The analysis examines Coastal Management (Coastal), Municipal Infrastructure (Infrastructure), Parks and Beautification (Parks), Sustainable Energy (Energy), Sustainable Land Based Livelihoods (Land), Tourism and the Creative Industries (Art & Culture) and Waste Management (Waste). After removing the outliers<sup>2</sup>, the range (highest to lowest) wage proved to be smallest within the Land based Livelihood sector, and the distribution of wages between the first and last quartile is the narrowest within infrastructure programme compared to all the other programmes examined in this study. Land has many outliers and this raises the

<sup>2</sup> The outliers were replaced using shape-preserving piecewise cubic spline interpolation. The outlier is identified in this study as a value that was more than three scaled median absolute deviations (MAD) away from the median.

concern of the extreme lower end wages paid to workers within the Agricultural sector, and thus the highest likelihood of rural based poverty and inequality related issues.

Municipal infrastructure shows the lowest range variance. This could imply that better management or stronger monitoring systems in place. Energy shows to have the largest upper Minimum Wage levels. Parks and Waste Management proved to have the largest budget surpluses of all the programmes within the Environment and Culture Sector. There is possibly room within this sector to fund additional projects, employ more people or pay higher wages.

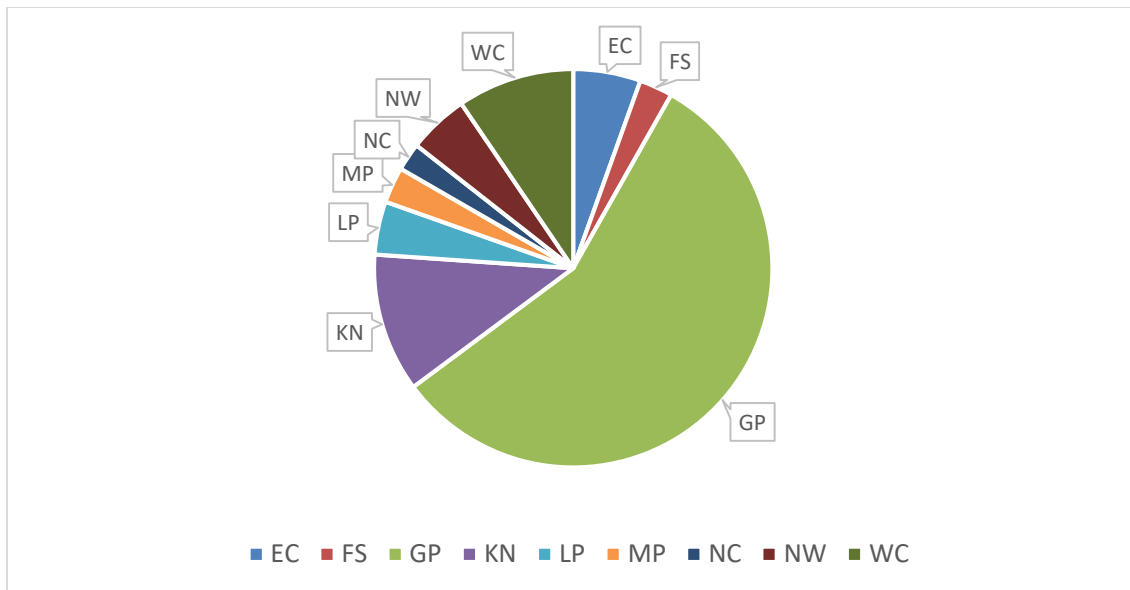
**Table 3: The Distribution of the Budget Surplus across the Province's**

	<b>Sum</b>	<b>Average</b>	<b>Min</b>	<b>Max</b>
<b>EC</b>	R355 183 214,62	R855 863,17	-R37 609,04	R13 069 910,00
<b>FS</b>	R175 684 805,61	R1 195 134,73	-R38 000,00	R23 811 020,00
<b>GP</b>	R3 672 278 111,84	R15 760 850,27	-R11 180,00	R404 691 702,00
<b>KN</b>	R730 379 203,73	R1 404 575,39	-R13 824,64	R284 767 321,00
<b>LP</b>	R280 011 149,39	R758 837,80	-R95 874,00	R30 093 970,08
<b>MP</b>	R188 499 354,29	R552 784,03	-R1 419 569,74	R11 931 461,00
<b>NC</b>	R146 523 441,73	R1 003 585,22	R0,00	R17 200 360,00
<b>NW</b>	R318 233 702,00	R949 951,35	R0,00	R22 991 165,00
<b>WC</b>	R616 083 693,08	R755 930,91	-R47 796,36	R34 564 649,84

Source: Derived from EPWP Data (2017)

A large challenge is the existence of a very high Budget Surplus within the EAC sector. The Budget Surplus was estimated by calculating the amount spent against the budget allocated for each project. This has huge consequences in terms of efficiency and budget management. Not every project operated at a surplus, some projects also experienced a large deficit too, but the mean was substantially above zero within this sector.

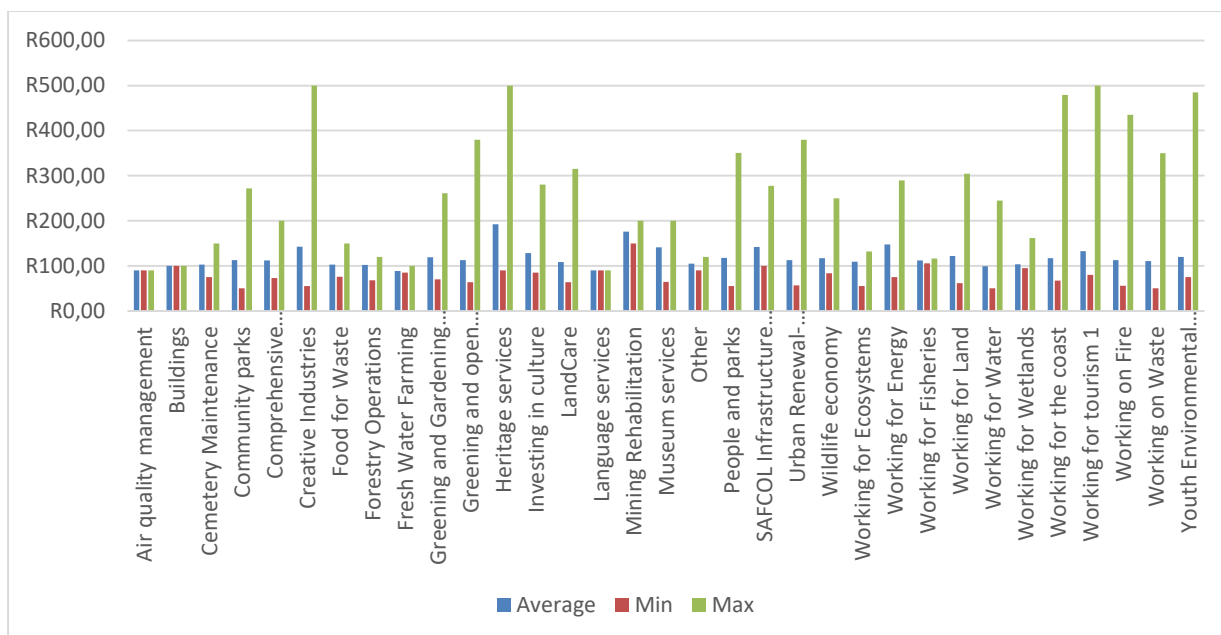




**Figure 6. The distribution of the Budget Surplus for the Environment and Cultural Sector between Provinces across South Africa**

Source: Derived from EPWP Data (2017)

The Gauteng Province has the largest Budget Surplus of all the Province’s within South Africa demonstrating 57% surplus amount. This is followed by the North West Province and the Western Cape. Surplus budgets are a concern indicating mismanagement of funds, insufficient levels of planning or the lack of skills or experience to deal with the managing the budgets or setting wages of employees.



**Figure 7. The distribution of the average lowest and highest wage per program for the Environment and Cultural Sector across South Africa**

Source: Derived from EPWP Data (2017)

The heritage sector programme shows the largest average wage while the creative Industries program shows the largest range between the lowest and the highest wage. Areas with particularly large ranges include: Working for The Coast, working for Tourism, working on Fire, Working on Waste, and the Youth Environmental Service.

**Table 4: Distribution of the ‘Days Employed’ within programs across South Africa**

Days Employed	Total	Average	Min	Max
Coastal Management	646 314	14 363	46	41 179
Municipal Infrastructure	26 489	13 245	4 733	21 756
Parks and Beautification	2 640 489	4 259	5	361 701
Sustainable Energy	16 207	1 801	8	6 363
Sustainable Land Based Livelihoods	7 305 454	4 569	4	348 472
Tourism and Creative Industries	1 003 360	6 826	3	111 151
Waste Management	4 627 698	5 148	1	265 601

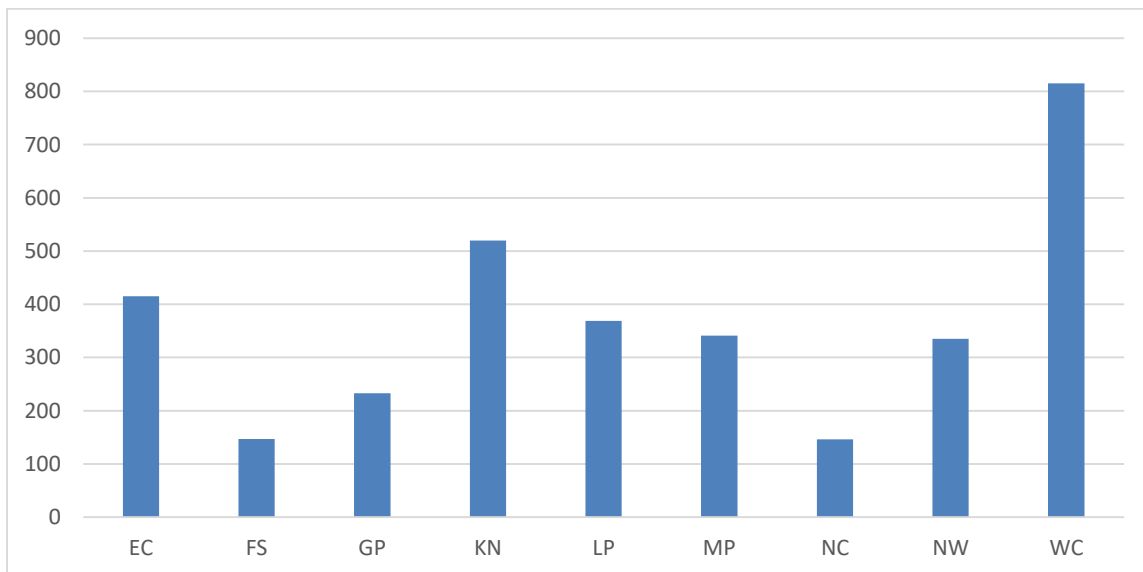
Source: Derived from EPWP Data (2017)

Within South Africa, the Sustainable Land Based Livelihoods Sector of the Programme employed the most people (measured in days per year), followed by Waste Management and

thereafter Parks and Beautification. Gayer (1935), emphasises that the idea of the public works program was to maximise the use of human labour in lieu of machinery wherever practicable and consistent with sound economic and public advantage. However not to the extent that the work may be accomplished at a greater expense by human labour than by machinery.

However, there is no clear cut relationship between the Budget Expenditure and the number of people employed. In other words, a large budget surplus does not automatically translate into job creation, which is of concern and is a major factor undermining the core purpose of the Expanded Public Works Program.

Education appeared to have a significant positive impact on wage growth for men, but within this sample this did not prove the same for Woman. However, wages appeared to grow at a decreasing rate with duration of length of employment for both men and women (Hannan, Schomann, & Blossfeld, 2006). This could have a devastating impact for woman headed households in South Africa.



**Figure 8. The distribution of days training for the programs within the Environment and Cultural Sector across the Provinces of South Africa**

Source: Derived from EPWP Data (2017)

The most training within this sector is done within the Western Cape Province. The Western Cape is followed by Kwa-Zulu Natal and Eastern Cape in terms of the number of days training.

According to Geyer (1935). where appropriate, the qualifications of the labour should be considered where it adds value to the project. The choice of labour was administered under the Board of Labour Review, composed of one labour representative, one representative of employers and a chairman representing the Public Works Administration.

A concern here is that within South Africa and given the huge skills shortages that exist within the country, there is clearly insufficient levels of skill transfer and training done in order to sufficiently deal with the challenges faced in South Africa by unemployment, poverty and inequality.

**Table 5: Correlation Coefficients for the Environment and Cultural Sector**

R Value	Budget	DaysEmp	WorkOpp	EmpWoman	EmpYouth	Training	MiniW	BudgetSurp
Budget	1,0000	0,2021	0,1538	0,1968	0,1827	0,0514	-0,0136	0,9892
DaysEmp	0,2021	1,0000	0,8116	0,9752	0,9284	0,2573	-0,0821	0,0772
WorkOpp	0,1538	0,8116	1,0000	0,8217	0,6923	0,1625	-0,0995	0,0616
EmpWoman	0,1968	0,9752	0,8217	1,0000	0,8665	0,2994	-0,0835	0,0821
EmpYouth	0,1827	0,9284	0,6923	0,8665	1,0000	0,4332	-0,0741	0,0558
Training	0,0514	0,2573	0,1625	0,2994	0,4332	1,0000	-0,0062	0,0178
MiniW	-0,0136	-0,0821	-0,0995	-0,0835	-0,0741	-0,0062	1,0000	-0,0081
BudgetSurp	0,9892	0,0772	0,0616	0,0821	0,0558	0,0178	-0,0081	1,0000

p Value	Budget	DaysEmp	WorkOpp	EmpWoman	EmpYouth	Training	MiniW	BudgetSurp
Budget	1,00	0,00	0,00	0,00	0,00	0,00	0,43	0,00
DaysEmp	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00
WorkOpp	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00
EmpWoman	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00
EmpYouth	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00
Training	0,00	0,00	0,00	0,00	0,00	1,00	0,72	0,31
MiniW	0,43	0,00	0,00	0,00	0,00	0,72	1,00	0,64
BudgetSurp	0,00	0,00	0,00	0,00	0,00	0,31	0,64	1,00

Source: Derived from EPWP Data (2017)

When analysing the cross correlation coefficients between the main variables in this data series we can see that the change in the minimum wage has a negative impact on the number change in the number of days employed, work opportunities, the employment of woman and youth. Training proves to have a positive correlation on these same variables.

Since productivity rises with the employee's knowledge and experience, wages too should rise with work duration and work experience. However, there is a limit to skill acquisition, and since skills are finite, skill acquisition increases at a decreasing rate with duration of

employment and therefore wage rates increase at a decreasing rate with duration of employment too (Hannan, et al., 2006).

### Employment opportunities

The relationship between the Minimum Wage and the Budget Surplus using the two sample t test hypothesis test which returns a test decision for the null hypothesis that the data in vectors  $x$  and  $y$  comes from independent random samples from normal distributions with equal means and equal but unknown variances, using the two-sample t-test. The alternative hypothesis is that the data in  $x$  and  $y$  comes from populations with unequal means. The result  $h$  is 1 if the test rejects the null hypothesis at the 5% significance level, and 0 otherwise. In this case we reject the null hypothesis with a high degree of significance ( $p= 4.0615e^{-11}$ ). In other words, there is no significant relationship between the setting of the minimum wage and the budget surplus. This could imply that the project budget is not determining a minimum wage, which is making it difficult to decide I the reason for setting a minimum wage. The same applies for the relationship between the expenditure on a program and setting a minimum wage.

The data is analysed here by using an ANOVA test to measure the significance of the relationship by using an N-way analysis of variance:  $p = \text{Anova}$  returns a vector of p-values, one per term, for multiway (n-way) analysis of variance (ANOVA) for testing the effects of multiple factors on the mean of the vector  $y$ . In this case there is a strong significant positive relationship between a budget surplus on the minimum wage and the number of hours employed in the Environment and Cultural Sector. This situation is emphasised by Darby and Hart (2008) who identified this phenomenon within the early stages of the Great Depression of 1929 to 1933 within the United States. The analysis highlighted that while real wages were still increasing (Bordo, Erceg, & Evans, 1997) through wage stickiness, there appeared to be a substantial reduction in working hours as can be seen by the growing levels of unemployment.

In effect, the model presented here shows upward nominal wage pressure and downward real wage rigidity. The short term uncertainty over the severity of the economic downturn and the resulting workforce utility constraints resulted in lower weekly earnings. The cumulative effect is a net effective gap between income earned and actual hours of work (Darby & Hart, 2008).

The budget surpluses indicate decreases in work intensity which serves to dampen the short run (nominal) wage growth, impacting some sectors more than others. This is more is highly important to the current economic environment of South Africa, as it provides evidence that the wage rigidity may be a leading indicator of a possible economic downturn which is

endogenous and independent to exogenous financial events as we have experienced in the past. The consequences will become evident as a continued slowdown of the South Africa economy with additional exaggerated effects on unemployment, poverty and persistent inequality.

## Conclusion

The role of wage differentiation within the economy is of concern given the high levels of unemployment and the associated levels of inequality experienced within South Africa. The Expanded Public Works Program, focusing within this study on the Environment and Culture Sector is an important drive by Government to increase the economic growth rates of the country through job creation and to stimulate economic development.

This sector of the South Africa economy is an important mechanism as it stimulates economic and social development by creating work opportunities for those individuals who are subjected to the greatest level of poverty and inequality, especially amongst woman and young people. It is from the cultural sector that we find opportunities to develop the arts, forge innovation, and deepen the resilience and the reach of the creative industries. These industries have the potential to tap into a larger international market which is driven through the growing tourist industries.

However, this study has also highlighted the role of wage rigidity, and its possible implications as a factor which was prevalent in the early stages of the Great Depression within the United States in the early 1930's. the objectives of the expanded public works program are designed to enable the South African economy to move towards higher levels of economic growth and better opportunities, yet the findings of this analysis also indicate the possible danger of a continued economic downturn through persistent endogenous factors. These factors in themselves fall outside of the scope of this study.

Minimum wages have a wide range of possible economic implications for an emerging economy. Given the level of sound governance within a robust Local Economic Development structure, could result in the benefits of establishing possible wage structures which will have positive outcome for the members of the targeted communities involved. It is from this perspective that the EPWP should focus development initiatives to better strengthen the ability to empower poorer communities. This is achievable through facilitating the development of innovation, furthering the support structures within the Environment and Cultural Sector, develop sound skill transfer and business development. Finally, to continue to develop the Expanded public Works Program and also focus on growing foreign investment initiatives into

the economy, across different regions within different sectors, could further benefits to the South African economy.

## References

- Almohaimed, A. (2016). Analysis of the minimum wage : A mathematical model for the private sector in Saudi Arabia. *Issues in Business Management and Economics*, 4(7), 70-80.
- Aminu, A. (2011). Government Wage Review Policy and Public-Private Sector Wage Differential in Nigeria. *AERC Research Paper*, 223(January), 1-42.
- Beggs, J. (2019). *The Impact of an Increase in the Minimum Wage*. Retrieved 05 24, 2019, from <https://www.thoughtco.com/increased-minimum-wage-impact-4019618>
- Bhorat, H., Caetano, T., Jourdan, B., Kanbur, R., Rooney, C., Stanwix, B., & Woolard, I. (2016). *Investigating the Feasibility of a National Minimum Wage for South Africa*. DPRU.
- Bordo, M. D., Erceg, C. J., & Evans, C. L. (1997). *Money, Sticky Wages, and the Great Depression*. International Finance Discussion Papers.
- Cho, J., & Cho, D. (2011). Gender difference of the informal sector wage gap: A longitudinal analysis for the Korean labor market. *Journal of the Asia Pacific Economy*, 16(4), 612-629.
- Cornwell, C., Rivera, J., & Schmutte, I. M. (2017). Wage Discrimination When Identity Is Subjective. *Journal of Human Resources*, 52(3), 719-755.
- Darby, J., & Hart, R. A. (2008). Wages, productivity, and work intensity in the great depression. *Southern Economic Journal*, 75(1), 91-103.
- DPRU. (2008). *Minimum Wages, Employment and Household Poverty Table*. Development Policy research Unit.
- EAC. (2004). *Environment and Culture Sector Plan*. EAC.
- Epple, D., & Romano, R. (2015). Equilibrium and efficient provision of local public goods with peer effects. *Research in Economics*, 69(3), 291-319.
- EPWP. (2014). *Environment & Culture Sector Plan 2014/15-2018/19*. National Departments of Environmental Affairs and Public Works.



- Garcia, J. (2013). *The Mincer Equation and Beyond: a Summary*. <https://static1.squarespace.com/static/5341e3f0e4b09af661088ada/t/53a32bcde4b01c7e0c0612e5/1403202509241/The+Mincer+Equation+and+Beyond%2C+Summary.pdf>.
- Gayer, D. (1935). *Public Works in Prosperity and Depression*. NBER.
- Grant, R., & Brue, S. (2007). *The Evolution of Economic Thought*. (Seventh Edition ed.). Thomson South Western.
- Hanes, C., & James, J. (2012). *The relative decline of the agricultural sector in this period was closely related to the highly inelastic income elasticity of demand for many farm products, particularly cereal grains, pork, and cotton. As incomes grew, the demand for these staples grew*. University of Michigan Economic History Workshop.
- Hannan, M. T., Schomann, K., & Blossfeld, H.-P. (2006). Sex and Sector Differences in the Dynamics of Wage Growth in the Federal Republic of Germany. *American Sociological Review*, 55(5), 1-21.
- Heckman, J., Lochner, L., & Todd, P. (2003). FIFTY YEARS OF MINCER EARNINGS REGRESSIONS. *National Bureau of Economic Research*, 1-73.
- Heese, K., & Allan, K. (2008). *Budget adds to problem delivery to the poor*. Opinion.
- Himmelstein, K. E., & Venkataramani, A. S. (2019). Economic Vulnerability Among US Female Health Care Workers: Potential Impact of a \$15-per-Hour Minimum Wage. *American journal of public health*, 109(2), 198-205.
- Hofer, H., Titelbach, G., Winter-Ebmer, R., & Ahammer, A. (2017). Wage Discrimination Against Immigrants in Austria? *Labour*, 31(2), 105-126.
- IRR. (2017). *South Africa Survey*. Johannesburg: Institute of Race Relations.
- Isaacs, G. (2016). *A National Minimum Wage for South Africa*. Johannesburg: CSID School of Economics and Business Sciences.
- Junusbekova, G. (2016). Increasing the motivation of civil servants in Kazakhstan. *Public Policy and Administration*, 15(3), 363-374.
- Kabunda, P. (2014). The Creative Wealth of Nations, How the performing arts advance development and human progress. *World Bank Group*(Working paper), 1-84.

- Krueger, A. (2015). The History of Economic Thought on the Minimum Wage. *Industrial Relations: A Journal of Economy and Society*, 54(4), 1-5.
- Liu, P., Meng, X., & J, Z. (2000). Sectoral gender wage differentials and discrimination in the transitional Chinese economy. *Journal of Population Economics*, 13(2), 331-352.
- Mankiw, G. (2019). *The Library of Economics and Liberty*. Retrieved 05 24, 2019, from <https://www.econlib.org/library/Enc/NewKeynesianEconomics.html>
- McKenzie, M. (2018). The erosion of minimum wage policy in Australia and labour's shrinking share of total income. *Journal of Australian Political Economy*, 2018(81), 52-77.
- Morrison, C., & Schwartz, G. (2003). Managing the labour collective: Wage systems in the Russian Industrial Enterprise. *Europe - Asia Studies*, 55(4), 553-574.
- NWP. (2016). *A national Minimum Wage for South Africa: Recommendations and Policy Implementations*. National Minimum Wage Panel report to the Deputy President.
- OECD. (2015). *Minimum wages after the crisis: making them pay*. Directorate for Employment, Labour and Social Affairs.
- Pinkovetskaia, I., & Kiseleva, O. (2018). SMEs in Regions of Russia: Workers Salary. *Journal of History Culture and Art Research*, 7(2).
- Polachek, S. (2008). Earnings Over the Life Cycle: The Mincer Earnings Function and Its Applications. *Foundations and Trends® in Microeconomics*, 4(3), 165-272.
- Quantec. (2018). *Easy Data*. Retrieved 08 29, 2018, from <http://www.easydata.co.za>
- Quantec. (2019). *EasyData*. Retrieved January 16, 2019, from <http://www.easydata.co.za/>
- Simonovits, G., Guess, A. M., & Nagler, J. (2018). Responsiveness without Representation: Evidence from Minimum Wage Laws in U.S. States. *American Journal of Political Science*, 63(2), 401-410.
- Space Station. (2019). *MORE THAN HALF OF SA HOUSEHOLDS NOW HAVE INTERNET ACCESS*. Retrieved 05 28, 2019, from <https://www.thespacestation.co.za/more-than-half-of-sa-households-now-have-internet-access/>

- Teegala, S. K., & Singal, S. K. (2015). Economic analysis of Power transmission Lines using Interval Mathematics. *Journal of Electrical Engineering Technology*, 10(4), 1471-1479.
- The Presidency. (2018, November 27). Act No. 9 of 2018: National Minimum Wage Act, 2018. *Governmnet Gazette*, pp. 1-21.
- Totty, E. (2011). *The Effect of Minimum Wages on Employment: A Factor Model Approach*. Purdue Univeresity, Department of Economics.
- Trading Economics. (2019). *Economic Indicators*. Retrieved 05 28, 2019, from <http://www.tradingeconomics.com>
- Tregenna, F., & Tsela, M. (2008). *Inequality, unemployment and poverty in South Africa*. TIPS.
- Vink, N., & Tregurtha, N. (2003). A theoretical perspective on a minimum wage in South African agriculture. *Agrekon*, 42(1), 49-59.
- Volosatov, V. D. (2007). The Demographic Situation and Problems of Employment on Russia's Entry into the World Trade Organization. *Sociological Research*, 45(3), 6-20.
- Wazimap. (2011). *Community Survey 2016*. Retrieved March 16, 2018, from <https://wazimap.co.za/profiles/province-NW-north-west/>
- Wicomb, W. (2018). *The South African*. Retrieved 06 11, 2019, from <https://www.thesouthafrican.com/news/national-minimum-wage-all-you-need-to-know/>
- Wikipedia. (2018). *Mincer earnings function*. Retrieved 05 24, 2019, from [https://en.wikipedia.org/wiki/Mincer\\_earnings\\_function](https://en.wikipedia.org/wiki/Mincer_earnings_function)
- Wilmers, N. (2017). Does Consumer Demand Reproduce Inequality? High-Income Consumers, Vertical Differentiation, and the Wage Structure. *American Journal of Sociology*, 123(1), 178-231.