## Tbilisi 2022 Abstract Submission

**Title**
Price Premiums and Supply Functions for South African certified and Black Economic Empowerment wines: One-stage and two- stage hedonic approaches

**I want to submit an abstract for:**
Conference Presentation

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**Keywords**
South Africa, Black Economic Empowerment, Certifications, 1-stage and 2-stage hedonic pricing method, supply functions

**Research Question**
Are there price premiums for BEE wines and other certificates on the South African market and on export markets?
What attributes are important for inverse supply functions of BEE/certified wines?

**Methods**
This study applies the hedonic price theory and estimation based on Rosen (1974). Both, one-stage and two-stage hedonic price functions are estimated using data from multiple markets.

**Results**
BEE wines exhibit significant discounts, while certified wines (and quality scores) mostly show price premiums on all markets.
In inverse supply functions, producer size and organizational form are important.

**Abstract**
Introduction
In nearly all industries of the world, but especially in the food industry, sustainability in production and consumption is becoming increasingly important. Consumers request information about the products they buy related to the inputs, production processes, and social and environmental impacts (Trienekens et al., 2012; Pullman et al., 2009; Paloviita, 2010). The wine industry is reacting to this demand by signalling their environmental and social impacts, and sustainable management practices with the help of certification schemes such as “Biodynamic,” “Organic,” “Fairtrade,” etc. (Christ & Burritt, 2013). In South Africa, in order to address inequality, the Broad-based Black Economic Empowerment Act (BEE) has supported black economic empowerment since 2003, and black ownership of wine labels is transparent in the South African wine industry. As producers are interested in understanding consumers preferences, it is helpful to analyse whether there are price premiums for different types of labelling within the domestic market and in different export markets. Furthermore, it is desirable to analyse which producer attributes are related to the supply of certified or BEE wines.

Study Objective

The principal aim of this study is
- to compare price premiums of BEE wines and wines exhibiting other certifications on the domestic market and four major export markets (Germany, Netherlands, UK and Sweden), applying a first stage hedonic regression, and
- to derive supply functions for both attributes (BEE and other Certifications), using the results of the first-stage hedonic pricing regression for the second stage.

Literature Review
The literature addressing the issue of sustainable wine consumption through wine prices mainly applies first-stage hedonic approaches. Vecchio's (2013) research suggests a positive impact of the attribute "sustainability" on a wine's final value, because customers are willing to pay between 23% and 57% more than the average price. In New Zeeland, Forbes et al. (2009) find that consumers believe that the quality of sustainable wines is superior to that of conventional wines and are, thus, prepared to pay higher prices for them. Alonso-Ugaglia et al. (2021) show that the willingness to pay differs according to the importance the consumer gives to the respective certifications. For South African Fairtrade wines in the UK market, Niklas et al. find that Fairtrade wines exhibit lower price dispersion. Back et al. (2019) show that for South African Fairtrade wines in the US market, these wines yield higher margins at the retail level. Mihailescu (2018) shows that there is a willingness to pay more for organic wine in South Africa. There is only one paper applying Rosen's (1974) two-stage hedonic approach for estimating supply functions for wine attributes (Oczkowski, 2021). This study seeks to fill the research gap by applying both first and second stage hedonic pricing models for BEE wines and other certification schemes.

Theory
This study applies the hedonic price theory and estimation based on Rosen (1974). In a first-stage hedonic estimation, the hedonic price function is estimated:

p(z) = H(z1,z2,....zn) (1)
Then the marginal prices for wine attributes are calculated:

□̂□ = □□̂(□)/□□□, i = 1,2,..n, (2)
Then a marginal supply function is calculated:

□̂□ = □□(□1,□2,...□□,□2) i = 1,2,..n (3)
Estimating equation (3) can only be estimated with data from multiple markets to overcome the identification problems related to single market data.

For our estimations log, linear models are applied and robust standard errors are used, while vintage dummies control for climate change, regional fixed effects control for unobserved heterogeneity between regions (regional weather, soil etc.), and producer fixed effects control for individual production related differences and price policies.

Data
Data for South African wine prices for the domestic market and four export markets (Germany, UK, Netherlands, Sweden) and for scores and wine characteristics were obtained from the Wine-Searcher website (www.wine-searcher.com) for the years 2007-2021.
Additional data on producer characteristics and certifications were collected from Platter Wine Guides of the respective years.

Results (Initial)
Preliminary results show that BEE wines exhibit a significant discount in all five countries, with the highest discount in South Africa. The other certifications, opposingly, show a significant price premium in the UK, Netherlands and Sweden, a non-significant price premium in South African and a (small) price discount in Germany. These results, therefore, show a vast difference between the willingness to pay for "normally certified" wines and BEE wines. One

explanation could be that there is a need to better promote black economic empowerment wines. However, an additional qualitative analysis would be necessary to find more detailed explanations.

Other attributes that positively influence wine prices on all markets are Wine-Searcher scores, the age of a wine (with the exception of the Netherlands market) and the grape varieties Pinot Noir and Cabernet Sauvignon, while the other grape varieties yield different price premiums or discounts in the different markets.

The results for the second-stage hedonic regression are only preliminary and show the importance of producer size and organizational form (private or corporate) in inverse supply functions. Further detailed results will be forthcoming at the conference.

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Alonso Ugaglia, A., Niklas, B., Rinke, W., Moscovici, D., Gow, J., Valenzula, L., Mihailescu, R. (2021). Consumer preferences for certified wines in France: A comparison of sustainable labels. Wine Economics and Policy, 10(2), http://dx.doi.org/10.36253/wep-10382.

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# Price Premiums and Supply Functions for South African certified and Black Economic Empowerment wines: One-stage and two- stage hedonic approaches

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## Introduction

In nearly all industries of the world, but especially in the food industry, sustainability in production and consumption is becoming increasingly important. Consumers request information about the products they buy related to the inputs, production processes, and social and environmental impacts (Trienekens et al., 2012; Pullman et al., 2009; Paloviita, 2010). The wine industry is reacting to this demand by signalling their environmental and social impacts, and sustainable management practices with the help of certification schemes such as "Biodynamic," "Organic," "Fairtrade," etc. (Christ & Burritt, 2013). In South Africa, in order to address inequality, the Broad-based Black Economic Empowerment Act (BEE) has supported black economic empowerment since 2003, and black ownership of wine labels is transparent in the South African wine industry. As producers are interested in understanding consumers preferences, it is helpful to analyse whether there are price premiums for different types of labelling within the domestic market and in different export markets. Furthermore, it is desirable to analyse which producer attributes are related to the supply of certified or BEE wines.

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The principal aim of this study is

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## Literature Review

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## Theory

This study applies the hedonic price theory and estimation based on Rosen (1974). In a first-stage hedonic estimation, the hedonic price function is estimated:

$$p(z) = H(z_1, z_2, \ldots z_n) \quad (1)$$

Then the marginal prices for wine attributes are calculated:

$$\hat{p_i} = \partial \hat{H}(z) / \partial z_i, \; i = 1,2,..n, \quad (2)$$

Then a marginal supply function is calculated:

$$\hat{p_i} = G_i(z_1, z_2, \ldots z_n, Y_2) \; i = 1,2,..n \quad (3)$$

Estimating equation (3) can only be estimated with data from multiple markets to overcome the identification problems related to single market data.

For our estimations log, linear models are applied and robust standard errors are used, while vintage dummies control for climate change, regional fixed effects control for unobserved heterogeneity between regions (regional weather, soil etc.), and producer fixed effects control for individual production related differences and price policies.

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