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YUNIBESITHI YA PRETORIA

MODELLING SOUTH AFRICA'S INCENTIVES UNDER THE MOTOR INDUSTRY DEVELOPMENT PROGRAMME

by

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PRETORIA

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Summary

Modelling South Africa's Incentives under the Motor Industry Development Programme

By

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Despite it being a global phenomenon, there is no formal process to guide governments' offer of incentives to industry. Specific to South Africa, the offer of incentives to the automotive industry to support its competitiveness has had mixed results. Industry trade deficit has consistently increased and investment in R&D has remained minimal. The purpose of the study was to develop a formal model to determine the effect of changes in the value and basis of the Productive Asset Allowance (PAA) incentive on industry competitiveness and on industry trade balance.

An overview of the South African automotive industry, automotive policy and industry performance under the country's Motor Industry Development Programme (MIDP) was done. This was followed by literature review on investment, investment incentives, R&D and competitiveness. Quantitative and qualitative data was collected through observer participation in the study situation and expert opinion interviews. A formal modelling process of the PAA based on the system dynamics modelling protocol followed. The PAA model had to be extended to incorporate the Import-Export Complementation (IEC)

incentive structure because of the intertwined nature of the effect of PAA and IEC on industry dynamics.

The study findings as per the specific study objectives were as follows:

- The prospect of the PAA to support the competitiveness objective was dependent on the extent to which the incentive would motivate technological innovation in the automotive industry.
- The often-assumed positive relationship between investment and investment incentives was not universal. Each case of industry incentive offer has to be judged on its own merit.
- The PAA had a significant and positive effect on industry investment, but limited ability to support long-term industry competitiveness though R&D and innovative activities.
- The IEC rather than the PAA incentive was the major contributor to the industry trade balance trend.
- The PAA-IEC incentive model exhibited time-bound constraints. The model demonstrated saturation as benefits awarded to industry tended towards the domestic market size over time.
- The PAA-IEC incentive model had no specific policy lever to direct investment into R&D and innovative activities. By this measure the model was not a strong policy framework for supporting long-term industry competitiveness.

For the South African automotive industry, the study introduced and showed the usefulness of applying system dynamics modelling in understanding causes of unintended consequences of government incentives to the industry. For countries in which offer of incentives is part of the national industrial policy, the study provided scientific means through which the question of how to structure incentives can be objectively investigated as a means of improving policy decisions on such industry intervention.

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Samevatting

Modellering van Suid Afrika se Aansporingsmaatreëls onder die Motornywerheid-ontwikkelingsprogram

deur

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Ekonomiese aansporingsmaatreëls van regerings kom wêreldwyd voor, maar daar is geen formele riglyne daarvoor nie. Met spesifieke verwysing na Suid Afrika, het aansporingsmaatreëls om die motorvervaardigingsbedryf meer mededingend te maak in die wêreldmark, gemengde resultate gehad. Handelstekorte van die motorvervaardigingsektor het skerp toegeneem, en investering in navorsing en produkontwikkeling het skraps gebly. Die doel van hierdie studie was om 'n formele model te ontwikkel om te bepaal wat die invloed is van verandering in die waarde en basis van een van die aansporingsmaatreëls, die Produktiewe Batetoelaag (Engels: Productive Asset Allowance – PAA), op die motorvervaardigingsektor se mededingendheid en handelsbalans.

'n Oorsigstudie is uitgevoer van die Suid Afrikaanse motorvervaardigingsbedryf, toepaslike beleid, en prestasie van die motorvervaardigingsbedryf onder die Motornywerheids-ontwikkelingsprogram (Engels: Motor Industry Development

Programme – MIDP). Dit is gevolg deur 'n literatuurstudie oor nywerheidsbelegging, aansporingsmaatreëls vir nywerheidsbelegging en die invloed van navorsing en ontwikkeling op mededingendheid. Besyferde en kwalitatiewe data is versamel by wyse van waarnemerdeelname in die studiesituasie, asook deur onderhoude met deskundiges. 'n Formele modelleringsproses van die produktiewe batetoelaag is gevolg, gebaseer op 'n stelseldinamika-modelleringsprotokol. Die produktiewe batetoelaagmodel moes uitgebrei word om die regering se aansporingsmaatreëls vir Invoer-Uitvoerkomplementering (Engels: Import Export Complementation – IEC) in te sluit vanweë die twee aansporingsmaatreëls se verweefde invloed op die dinamika van die nywerheid.

Die bevindings van die studie, in ooreenstemming met die studiedoelwitte, was soos volg:

- Die verwagting dat die produktiewe batetoelaag die motorvervaardigingsbedryf meer mededingend sou maak, was afhanklik van die mate waartoe dit tegnologiese innovasie in die motornywerheid kon aanspoor.
- Die algemeen aanvaarde positiewe verwantskap tussen belegging en aansporingsmaatreëls vir belegging was nie algemeen geldig nie. Elke geval van 'n aansporingsmaatreël moet op eie meriete beoordeel word.
- Die produktiewe batetoelaag het wel 'n beduidende en positiewe invloed op belegging deur die motorvervaardigingsbedryf gehad, maar het 'n beperkte vermoë getoon om langtermynmededingendheid te bevorder deur navorsing en ontwikkeling en deur innovasie.
- Die invoer-uitvoerkomplementeringsmaatreëls was die hoofbydraer tot die handelsbalanstendense in die motorvervaardigingsbedryf, en nie die produktiewe batetoelaag nie.
- Die gekombineerde model van die produktiewe batetoelaag en die invoer-uitvoerkomplementeringmaatreëls het tydsgebonde beperkings vertoon. Die model het versadiging aangetoon namate voordeelwaardes toegeken aan die bedryf oor tyd geneig het na die waarde van die plaaslike mark.
- Die produktiewe batetoelaag en die invoer-uitvoerkomplementeringmaatreëls het geen spesifieke beleidshefboom om belegging in navorsing en ontwikkeling en

innoverende aktiwiteite te bevorder nie. Gemeet aan hierdie maatstaf was dit nie 'n kragtige beleidsraamwerk om oor die langtermyn nywerheidsmededingendheid te bevorder nie.

Vir die Suid Afrikaanse motorvervaardigingsbedryf het die studie die voordele van stelseldinamika-modellering aangedui as 'n hulpmiddel om die oorsake te verstaan van onbedoelde gevolge van die aansporingsmaatreëls wat die regering aan die bedryf bied. Vir ander lande wat aansporingsmaatreëls as deel van 'n nasionale nywerheidsbeleid aanbied, bied hierdie studie 'n wetenskaplike werkwyse waardeur aansporingsmaatreëls objektief ondersoek en gestruktureer kan word ten einde beter beleidsbesluite te kan neem oor sulke ingrepe in die nywerheid.

"*The Gods did not reveal, from the beginning, all things to us; but in the course of time, through seeking, men find that which is better*"
Bell & Bell, 1980, p.4.

"*But as for certain truth, no man has known it, nor will know it; neither of the gods, nor yet of all things of which I speak. And even if by chance he were to utter the final truth, he would himself not know it; for all is but a woven web of guesses*" Popper, 1963, p.26, quoting Xenophanes, *Verses*, (570-475 B.C).

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- My mother, for her love and inspiration. Mum, you epitomise the challenges of an African woman and her resilience to move on against all odds; a great lesson to me.
- My entire family for always reminding who I am.

DECLARATION

I declare that the thesis *'Modelling South Africa's incentives under the Motor Industry Development programme'* is my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references

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Martin Kaggwa Date

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