

PROJECTED FINANCIAL IMPACT OF AN ALTERNATIVE HEALTH FINANCING MECHANISM FOR BREAST CANCER PHARMACOTHERAPY IN MALAYSIA

JING SHENG LIM¹, KENNETH KWING CHIN LEE², RENUKHA SELLAPPANS¹

¹ School of Pharmacy, Faculty of Health and Medical Sciences, Taylor’s University, Subang Jaya, Selangor, Malaysia
² Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Petaling Jaya, Selangor, Malaysia

INTRODUCTION

Malaysia’s affordable public healthcare limits access to innovative therapies, which may push uninsured breast cancer patients toward costly private care and increase risk of financial toxicity

Rakan KKM, an alternative health financing model by the Ministry of Health, aims to provide affordable premium access while reinvesting revenue to strengthen public healthcare. This study evaluates its potential financial impact on the health system

METHODOLOGY

Perspective & horizon: National healthcare system (Year 2026 – 2035)
Model: System dynamics model simulating breast cancer incidence by stage with treatment options (*public, private, Rakan KKM, no-treatment*)
Costs & Outcomes: Reported in 2025 MYR (1 MYR = 0.23 USD), with compounding annual inflation rate of 1.90%

Parameter	Value	Source
Annual breast cancer incidence	5,650 – 6,760	
Early-stage breast cancer diagnosis	0.477 – 0.450	1,2
Locally advanced breast cancer diagnosis	0.298 – 0.328	
Metastatic breast cancer diagnosis	0.230 – 0.234	
Transition from early stage to locally advanced	0.034	3
Transition from locally advanced to metastatic	0.072	
Proportion seeking treatment in public healthcare	0.591	
Proportion seeking treatment in private healthcare	0.386	4
Proportion not seeking treatment	0.023	
Proportion switching from public to Rakan KKM	0.051	
Proportion switching from private to Rakan KKM	0.664	5
Public breast cancer pharmacotherapy cost	16,687 – 18,919	
Private breast cancer pharmacotherapy cost	74,404 – 90,025	Institutional local data
Rakan KKM breast cancer pharmacotherapy cost	19,190 – 21,756	

Table 1. Input Parameters for System Dynamics Model

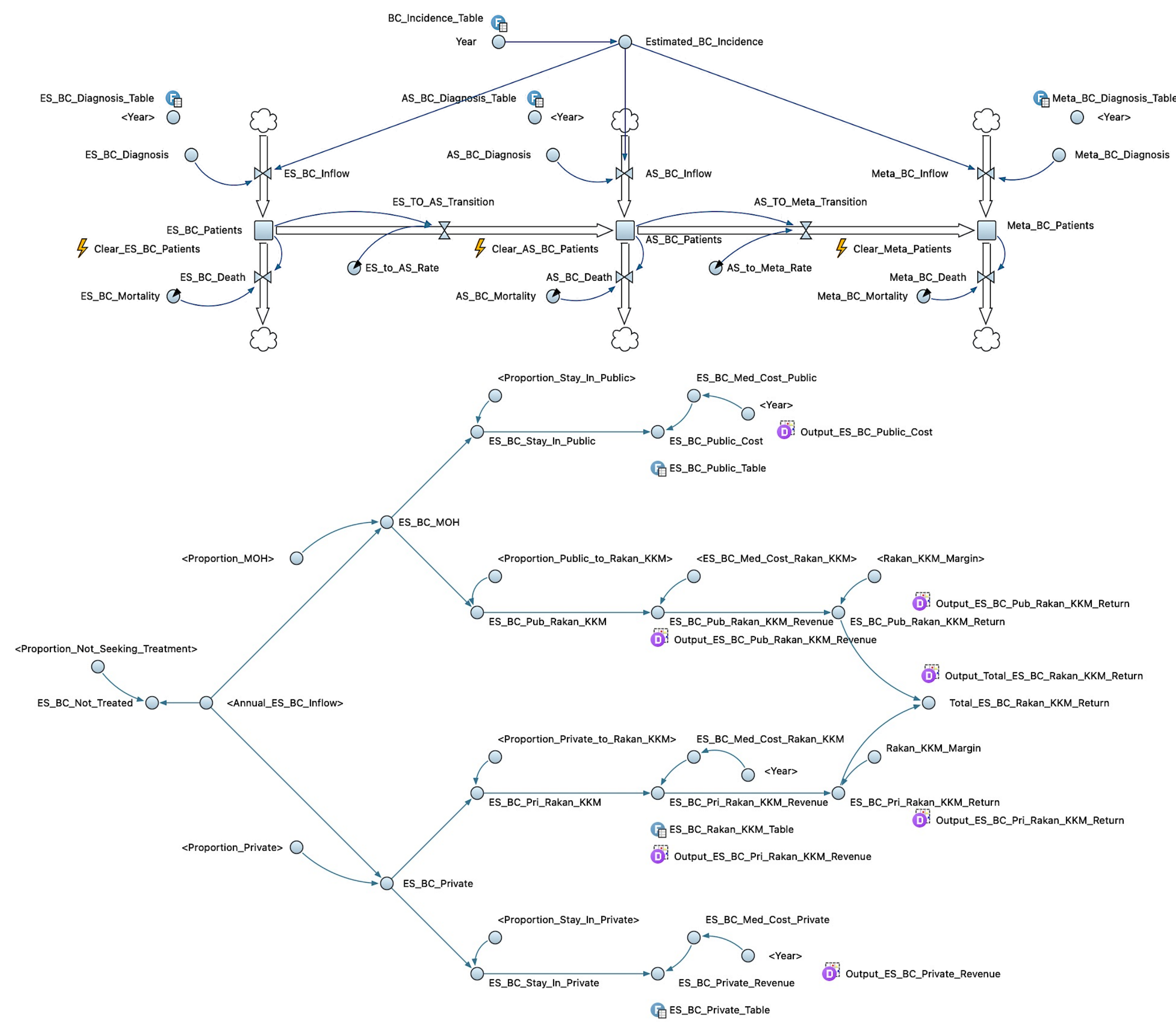


Figure 1. Schematic Illustration of System Dynamics Model ⁶

Validation: Model structure and assumptions were face validated by experts, and base-case results were financially triangulated with Malaysian National Health Accounts (MNHA) data ⁷
Scenario analysis: 5.1% of public and 66.7% of private patients were assumed to shift to Rakan KKM, with extended analyses examining capacity constraints and uptake velocity based on Diffusion of Innovation theory ⁸
Sensitivity analysis: Deterministic and probabilistic sensitivity analysis (3,000 Monte Carlo iterations)

RESULTS

USD 181.34 Million

Estimated cumulative national expenditure optimisation over 10 years

USD 9.53 Million

Estimated cumulative programme return for MOH over 10 years

75.8% Out-of-Pocket Savings

Estimated out-of-pocket savings of USD 16,688 per Rakan KKM patient compared to treatment at private healthcare facilities

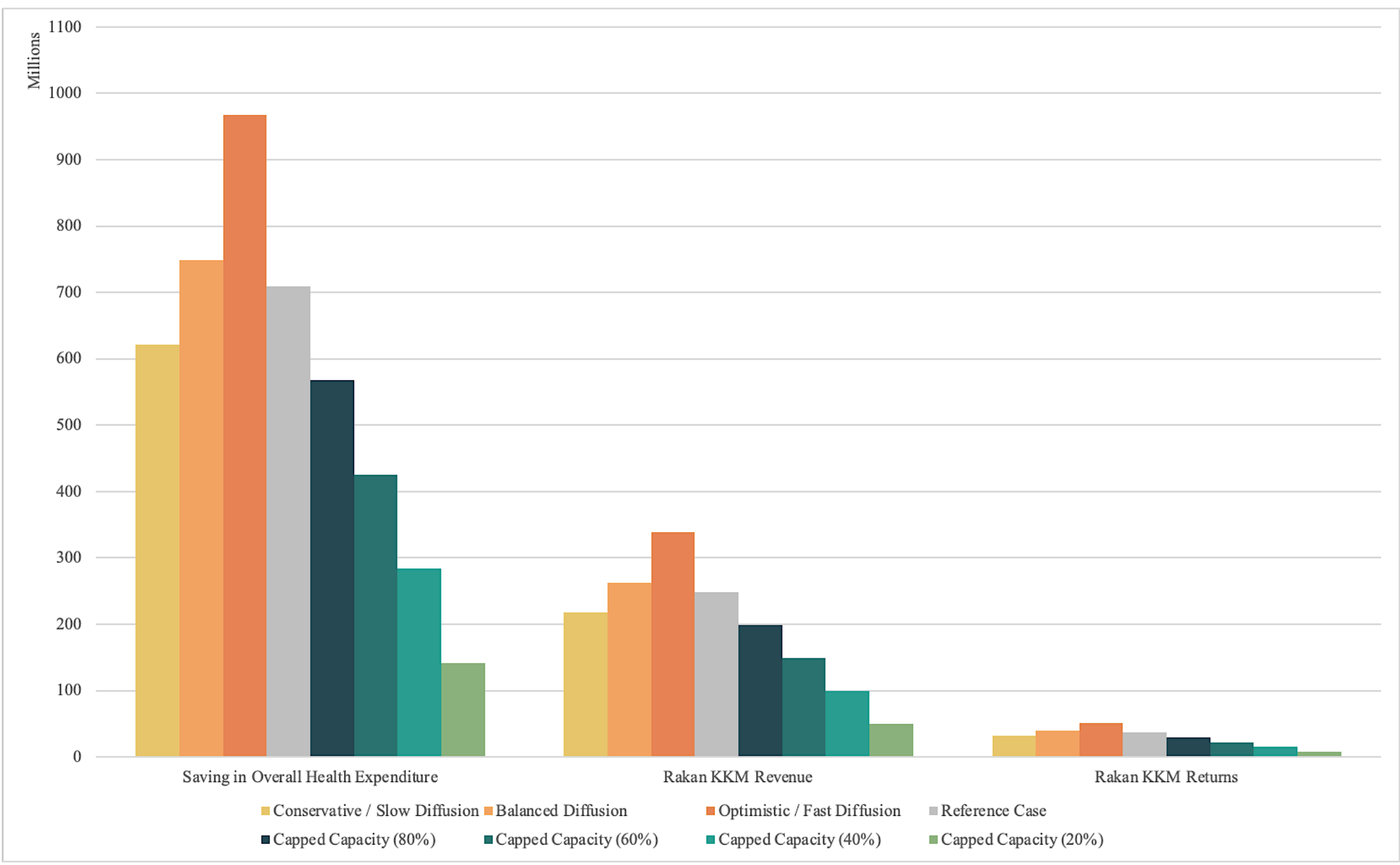


Figure 2. Comparative cumulative financial projections across scenarios

CONCLUSION

Rakan KKM may provide a feasible intermediate approach for improving oncology financing sustainability within resource-constrained healthcare systems. However, successful implementation would require transparent frameworks for return allocation, strategic procurement and workforce arrangements.

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