

# **Patent Rights Protection and High-Tech Exports: New Evidence from Taiwan**

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## **ABSTRACT**

An array of literature empirically examines the impact of patent rights (PRs) protection on international trade, but most studies employ the traditional gravity model to estimate and ignore firm-level behavior. Helpman, Melitz and Rubinstein (2008) propose a two-stage, non-linear least squares estimation procedure (the HMR model) to correct potential biases embodied in the gravity estimation of trade flows, which decomposes the impact on trade volumes of all trade resistance measures into their extensive and intensive margin components. Yet, Santos Silva and Tenreyro (2015) suggest that the HMR model is incorrectly specified and propose the Poisson pseudo maximum likelihood (PPML) methodology to solve heteroscedasticity. Utilizing the HMR model and the PPML method, this paper empirically investigates how differences in PRs protection may influence Taiwan's semiconductor exports to 119 destination countries from 1995 to 2010. Our results support the effectiveness of an importing country's patent harmonization in stimulating importation of high-tech goods from Taiwan.

Key Words: patent rights, high-tech, semiconductor, export, HMR, PPML

# 專利權保護與高科技產品出口： 臺灣的新證據

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## 摘 要

過去探討專利權保護與國際貿易間關係的實證研究大多使用傳統的引力模型，忽略廠商層級的效果。Helpman et al. (2008) 提出一個兩階段、非線性最小平方估計法 (HMR 模型)，修正引力模型的潛在偏誤問題，分析國家間專利權保護程度的差異對於廠商出口決策與出口數量之影響。然而，Santos Silva and Tenreyro (2015) 認為 HMR 模型仍存在估計偏差，故提出 PPML 方法來解決異質變異問題。本文運用 HMR 模型和 PPML 方法，探討 1995 至 2010 年間，臺灣與 119 個進口國的專利權保護程度差異對臺灣半導體產品出口之影響。實證結果顯示，當進口國專利權保護程度提升時，對臺灣高科技產品出口確實產生顯著正向的影響。

關鍵字：專利權、高科技、半導體、出口、HMR 模型、PPML 方法