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Foreign Capital Inflows and Sectoral Reallocation of Bank Credit: A Static General Equilibrium Analysis

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Abstract: This paper develops a theoretical model to examine the macroeconomic consequences of foreign capital inflows on credit allocation across sectors in a small open dependent economy. The model combines the structural features of the Salter-Swan framework with two key mechanisms: (i) a Dutch disease effect, whereby capital inflows lead to an appreciation of the real exchange rate and relative expansion of the non-tradable sector; and (ii) a financial accelerator effect, through which increases in firm-level capital reduce perceived credit risk and further stimulate borrowing and investment. Additionally, we consider the imperfect substitutability between domestic bank credit and external financing in the tradable sector, resulting in a crowding-out effect that intensifies the contractionary impact on tradable output. A monetary policy tool—modeled via a reserve requirement ratio—is introduced to explore its role in mitigating misallocations caused by capital surges. The static general equilibrium setup allows for the analytical derivation of sectoral interactions, price movements, and policy implications.
Keywords: Financial Accelerator, Capital Inflows, Dependent Economy, Credit Crowding-Out, General Equilibrium, Dutch Disease

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1. Introduction

Capital inflows into emerging and developing economies have been the subject of extensive debate due to their ambiguous effects on growth, structural transformation, and macroeconomic stability. While neoclassical models highlight their potential to alleviate savings constraints and increase investment, empirical observations point toward sectoral misallocations and increased vulnerability. One widely discussed phenomenon is the so-called Dutch disease, whereby capital inflows (or resource windfalls) lead to real exchange rate appreciation, reducing the competitiveness of tradable sectors and triggering a shift toward non-tradables.

This paper revisits the Dutch disease mechanism within a general equilibrium framework that incorporates financial frictions. In doing so, we extend the traditional Salter-Swan model by

incorporating two key frictions: a financial accelerator affecting the cost of borrowing in the non-tradable sector, and a credit crowding-out mechanism that captures the imperfect substitutability between domestic and foreign credit in the tradable sector.

Our contribution is twofold. First, we provide a tractable static general equilibrium model that captures how financial frictions amplify the real effects of capital inflows. Second, we analyze the potential of a reserve requirement policy tool to contain credit-driven distortions, particularly those arising from misallocation of capital between sectors. This theoretical structure is a foundation for later empirical validation and policy simulations.

In contrast to existing Dutch disease models, which often focus on real exchange rate dynamics and labor reallocation alone, our approach integrates a financial transmission channel that operates through the banking system. The inclusion of a financial accelerator in the non-tradable sector and credit market segmentation introduces nonlinearities that can magnify the macroeconomic consequences of capital inflows. Moreover, most traditional models treat credit allocation implicitly or assume perfect substitutability between funding sources, whereas our model captures the institutional frictions and asymmetries that drive differential sectoral outcomes. By introducing a monetary policy instrument—reserve requirements—we offer a novel policy dimension to mitigate these sectoral imbalances without relying on exchange rate manipulation or capital controls.

2. Literature Review

The concept of "Dutch disease" was first introduced by *The Economist* in 1977 to describe the adverse effects on Dutch manufacturing following the discovery of natural gas in the 1960s. Although the discovery significantly increased national wealth, the consequent appreciation of the Dutch guilder—driven by capital inflows and higher exports from the booming resource sector—made non-oil exports less competitive. This resulted in a contraction of manufacturing output and employment, fueling a broader trend of deindustrialization. The core issue was the coexistence of a thriving resource sector with declining performance in the rest of the economy.

Corden (1984) formalized the theoretical underpinnings of Dutch disease by proposing a three-sector model consisting of: (i) the booming tradable sector (e.g., oil), (ii) the lagging tradable sector (e.g., agriculture, manufacturing), and (iii) the non-tradable sector (e.g., services). Within this framework, a positive shock to the booming sector leads to two distinct mechanisms. The first is the *spending effect*, whereby rising incomes increase demand for non-tradables, bidding up their prices relative to tradables. The second is the *resource movement effect*, which reallocates labor and capital toward the booming and non-tradable sectors, further squeezing the lagging tradable sector.

Neary (1985) extended this framework by emphasizing the intertemporal dimension of the spending effect. He showed that even the anticipation of future resource revenues can influence present-day consumption and prices, causing premature appreciation of the real exchange rate and structural

imbalances. These insights remain particularly relevant for small open economies facing volatile capital flows or commodity-driven booms.

Our model builds on this tradition by exploring the Dutch disease dynamics generated not by resource booms per se, but by foreign capital inflows. We incorporate financial frictions—namely, a financial accelerator in the non-tradable sector and imperfect substitutability between credit sources in the tradable sector—to explain how inflows may exacerbate misallocations and macroeconomic fragility. This contribution aligns with and expands upon recent research emphasizing the transmission of capital inflows through domestic financial systems.

3. Model Setup

The economy is composed of representative households and two productive sectors: tradables (T) and non-tradables (N). Households supply labor inelastically, consume both goods, and receive income from labor and distributed profits. Firms in both sectors rent labor and capital to produce, but face distinct financial environments. Capital is sector-specific, and domestic banks intermediate capital inflows to finance investment.

3.1 Households

Households maximize utility over consumption of tradable (C_T) and non-tradable (C_N) goods:

$$\max U(C_T, C_N) = {C_T}^{\alpha} {C_N}^{1-\alpha}, \qquad 0 < \alpha < 1 \qquad \textit{Eq. 1}$$

Where α is the weight on tradables. The CES utility implies diminishing marginal utility and a constant expenditure share between sectors. This Cobb-Douglas utility function reflects constant elasticity of substitution between tradables and non-tradables.

Subject to the budget constraint:

$$C_T + P_N C_N = W + \pi_T + \pi_N \qquad \textit{Eq. 2}$$

Where P_N is the price of non-tradables, W is wage income, π_T, π_N are firm profits. Total spending equals total income from wages and profit. This equation ensures households cannot spend more than their total income.

The resulting demand functions derived from utility maximization under budget constraints:

$$C_T = \alpha(W + \pi_T + \pi_N), \;\; C_N = \frac{1-\alpha}{P_N}(W + \pi_T + \pi_N) \qquad \textit{Eq. 3}$$

Where $(W + \pi_T + \pi_N) = Y$

These expressions confirm that tradable consumption depends only on the income share allocated to tradables, while non-tradable consumption adjusts with its relative price P_N. As P_N rises, C_N falls, highlighting the price sensitivity of demand for non-tradables.

3.2 Firms

The economy is divided into two production sectors: tradables (T) and non-tradables (N). Both sectors use capital and labor, but differ in financing conditions and exposure to domestic versus international credit markets.

3.2.1 Non-Tradable Sector (N)

Production follows a Cobb-Douglas function:

$$Y_N = A_N {K_N}^{\beta} {L_N}^{1-\beta} \quad \textit{Eq. 4}$$

Investment is financed exclusively by domestic bank credit. Capital equals investment ($K_N = I_N$). These firms face an interest rate r augmented by a financial accelerator:

$$r = r_b + \frac{\theta}{K_N} \quad \textit{Eq. 5}$$

With:

$$\frac{d^2 r}{dK^2} > 0$$

r_b is base rate, θ reflects financial risk sensitivity. This implies that the marginal benefit of increasing capital (via reduced borrowing costs) is increasing at lower capital levels. This condition creates nonlinear amplification, where small capital inflows result in large changes in borrowing costs and hence investment.

The larger the value of θ, the more responsive the interest rate is to firm-level capital. A high θ makes borrowing costs highly sensitive to capital accumulation, increasing the strength of the accelerator.

The firm's profit is given by:

$$\pi_N = P_N Y_N - W L_N - (1 + r) K_N \quad \textit{Eq. 6}$$

First-order conditions:

$$\frac{\partial \pi_N}{\partial L_N} = P_N (1 - \beta) A_N {K_N}^{\beta} {L_N}^{-\beta} - W = 0 \quad \textit{Eq. 6.1}$$

$$\frac{\partial \pi_N}{\partial K_N} = P_N \beta A_N {K_N}^{\beta - 1} {L_N}^{1-\beta} - (1 + r_b + \frac{\theta}{K_N}) = 0 \quad \textit{Eq. 6.2}$$

Firms maximize profits by equating marginal product of labor/capital to their respective costs.

3.2.2 Tradable Sector (T)

Production function:

$$Y_T = A_T {K_T}^{\gamma} {L_T}^{1-\gamma} \quad \textit{Eq. 7}$$

Investment is financed through domestic credit DC_T and foreign borrowing FB_T:

$$I_T = DC_T + FB_T \quad \textit{Eq. 8}$$

The cost of foreign borrowing rises with exposure to domestic credit:

$$r^*_{eff} = r^* + \emptyset\left(\frac{DC_T}{FB_T}\right) \quad \textit{Eq. 9}$$

Imperfect substitutability implies that higher domestic credit increases foreign borrowing cost.

The overall effective interest rate (cost of capital) is a weighted average:

$$r_{eff} = (1 + r_b).\frac{DC_T}{I_T} + \left(1 + r^*_{eff}\right).\frac{FB_T}{I_T} \quad \textit{Eq. 10}$$

Profit function :

$$\pi_T = Y_T - WL_T - r_{eff} I_T \quad \textit{Eq. 11}$$

First order conditions :

$$\frac{\partial \pi_T}{\partial L_T} = (1-\gamma) A_T {K_T}^{\gamma} {L_T}^{-\gamma} - W = 0 \quad \textit{Eq. 11.1}$$

$$\frac{\partial \pi_T}{\partial K_T} = \gamma A_T {K_T}^{\gamma-1} {L_T}^{1-\gamma} - r_{eff} = 0 \quad \textit{Eq. 11.2}$$

3.3 Banking Sector

Banks receive deposits (S) and capital inflows (K_{in}), and supply credit subject to a reserve requirement (ρ):

$$DC_T + I_N = (1-\rho)(S + K_{in}) \quad \textit{Eq. 12}$$

Banks allocate available funds between sectors; reserves reduce loanable funds.

4. Market Clearing Conditions

In equilibrium, all markets in the economy must clear. The following conditions ensure consistency across goods, factor, and financial markets:

- Non-Tradables $Y_N = C_N$

Output of non-tradables is entirely consumed domestically. Since these goods cannot be traded internationally, market clearing requires that supply equals domestic demand.

- Tradables $C_T = Y_T + FB_T$

Consumption of tradable goods exceeds domestic production by the amount of foreign borrowing FB_T. This reflects the current account deficit, where imports are financed by external debt.

- Labor $L = L_T + L_N$

Total labor supply L is inelastically supplied and allocated between the two sectors. This condition ensures that all available labor is employed.

- Capital $K = K_T + K_N$

Total capital stock is allocated across the tradable and non-tradable sectors. This condition assumes a fixed domestic capital supply at the aggregate level.

- Credit $DC_T + I_N = (1 - \rho)(S + K_{in})$

This equation ensures credit market balance.

- Relative price $RER = P_N$

The price of non-tradables P_N adjusts endogenously to clear the non-tradables market. As P_N rises, demand for non-tradables falls, rebalancing the market. Since tradables are priced in international markets (assumed numéraire), the real exchange rate (RER) is identified with P_N.

5. Comparative Statics and theoretical results

The equilibrium of the model is defined by the solution to the system of equations derived above. An increase in capital inflows (K_{in}) expands the domestic credit base, stimulating investment in the non-tradable sector. Via the financial accelerator mechanism, where the interest rate $r = r_b + \theta/K_N$, this capital accumulation lowers borrowing costs by reducing risk premiums. As a result, further investment is incentivized, intensifying the growth of the non-tradable sector.

This expansion exerts upward pressure on the relative price of non-tradables (P_N), which leads to a real exchange rate appreciation. Consequently, the tradable sector, which competes in international markets with fixed prices, contracts due to loss of competitiveness—an outcome that mirrors the Dutch disease dynamic.

Moreover, the model reveals a crowding-out mechanism in the credit market. Tradable firms, which rely on a mix of domestic and foreign borrowing, face increasing costs of foreign debt as the availability and preference for domestic lending shift toward the non-tradable sector. This reallocative pressure makes financing more expensive for tradable producers and depresses their output.

The financial accelerator mechanism amplifies these dynamics under several important conditions. First, convexity in the risk premium function ensures that the marginal benefit of additional capital—through reduced borrowing costs—increases as capital stock rises. This is captured in the relationship $r = r_b + \theta/K_N$, which implies that the second derivative of r with respect to K_N is negative, reinforcing the feedback loop between capital accumulation and credit costs.

Second, the amplification is more pronounced when the financial friction parameter θ is large. A higher θ increases the sensitivity of borrowing costs to changes in firm-level capital, making the investment response disproportionately large for a given capital inflow. Third, the investment function must be highly elastic with respect to the interest rate. In other words, the responsiveness of

investment to marginal reductions in r must be sufficiently strong to trigger a self-reinforcing expansion.

Fourth, amplification is contingent on the absence of binding supply-side constraints in the non-tradable sector, such as labor shortages or capacity ceilings, which would otherwise dampen the output response. Finally, strong segmentation in credit markets is essential. If non-tradable firms cannot access foreign credit easily, the entire expansionary effect of capital inflows must pass through domestic lending channels, intensifying sectoral imbalances.

Monetary policy, specifically through an increase in the reserve requirement ratio (ρ), plays a stabilizing role. By restricting the credit multiplier effect of capital inflows, a tighter reserve requirement constrains excessive lending, thereby curbing the overshooting of the non-tradable sector and dampening inflationary pressures. This intervention helps restore equilibrium between sectors and mitigates the risk of macroeconomic imbalances.

In sum, capital inflows into a financially constrained economy produce asymmetric sectoral outcomes through both real exchange rate adjustments and credit market distortions. Prudential tools such as reserve requirements provide a non-disruptive means of insulating the economy from the structural consequences of global liquidity surges.

6. Conclusion

This paper develops a static general equilibrium framework to explore how foreign capital inflows interact with financial frictions and institutional constraints to influence sectoral credit allocation in a small dependent economy. Our analysis reveals that capital inflows, far from being uniformly beneficial, can lead to asymmetric outcomes across sectors due to the interplay of a financial accelerator in the non-tradable sector and credit segmentation that disadvantages the tradable sector. By reducing perceived credit risk, inflows intensify investment in non-tradables, pushing up their relative prices and appreciating the real exchange rate—hallmarks of the Dutch disease. Simultaneously, tradable firms face rising costs of external finance and are increasingly crowded out of the domestic credit market.

A key innovation of this model is the formal integration of financial frictions—both at the firm and system level—into the classical Salter-Swan framework, allowing us to trace the sectoral and macroeconomic distortions emerging from capital surges. Unlike traditional Dutch disease models that emphasize factor reallocation, ours underscores how financial intermediation channels can act as a transmission and amplification mechanism, particularly in economies where credit access is uneven or distorted.

The policy analysis highlights the potential role of reserve requirements as a prudential tool that operates through the financial system rather than direct market intervention. When calibrated optimally, reserve requirements can mitigate excessive credit expansion in the non-tradable sector, relieve upward pressure on the real exchange rate, and help preserve the competitiveness of tradable

sectors. Importantly, this approach offers a less intrusive alternative to capital controls or exchange rate management, preserving openness while targeting financial distortions at their source.

The broader policy implications are clear: in financially segmented and capital-reliant economies, capital inflows can exacerbate structural vulnerabilities unless accompanied by countercyclical regulatory tools. Reserve requirements—and, more broadly, macroprudential policy—emerge as crucial levers for managing not just macroeconomic aggregates, but also the composition of output and investment. This insight is particularly relevant for emerging markets, where traditional monetary policy tools often have limited traction in the face of volatile global liquidity.

While this study offers a static perspective, it lays the groundwork for dynamic extensions. Future research could incorporate intertemporal optimization, expectation-driven capital flows, and more granular financial sector modeling, including risk-weighted lending or capital adequacy constraints. Moreover, empirical calibration and simulation can help assess the real-world quantitative significance of the channels identified here, offering guidance to policymakers navigating the complex trade-offs of financial openness.

In sum, our findings challenge the assumption that capital inflows are unambiguously growth-enhancing. Instead, we show that in the presence of financial frictions and credit segmentation, they can generate structural distortions that threaten long-term productivity and external balance. Addressing these imbalances requires a shift from reactive to preemptive regulation—leveraging financial instruments that align credit flows with the broader goals of macroeconomic and sectoral stability.

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APPENDIX

The **financial accelerator** amplifies the effects of capital inflows under a specific set of conditions, which emerge from how firm-level capital interacts with borrowing costs and sectoral investment decisions. Below are the core conditions under which this amplification occurs in our model:

1 Convexity in the Risk Premium Function

2 High Financial Friction Parameter θ

3 Elastic Investment Response to Interest Rates

Let investment in the non-tradable sector be:

$$I_N = I(r)$$

with:

$$\frac{dI}{dr} < 0$$

The interest elasticity of investment must be high. This ensures that a small drop in r (due to higher non tradable capital K_N) causes a large increase in investment.

4 Absence of Countervailing Constraints

If there are :

- No sharp capacity constraints in the non-tradable sector
- Weak external competition (non-tradables aren't traded internationally)
- No immediate policy offset (e.g., if ρ is low or fixed)

Then the financial accelerator operates unchecked, reinforcing the capital inflow shock.

5 Strong Credit Market Segmentation

If non-tradable firms cannot easily switch to foreign financing, then:

- The full burden of adjustment occurs through domestic credit
- Capital inflows disproportionately expand credit to low-risk, domestically-focused firms
- This crowds out tradable firms, worsening misallocation