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Exchange Rate Regimes and the International Transmission of Macroeconomic Shocks: Lessons from the Great Depression

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Introduction

Exchange rate regimes are fundamental concepts in the field of international economics and finance, as they play a crucial role for macroeconomic adjustments, the business cycle and international trade, influencing investments, and macroeconomic stability. They impact a wide range of economic aspects, from the returns on overseas investments to the determination of international competitiveness, as exchange rate movements can make exports cheaper or more expensive on the global market and affect the cost of imported goods. As such, exchange rates significantly affect the decisions made by households, entrepreneurs, and governments, as well as economic activities across numerous sectors. Moreover, the choice of exchange rate regime, which refers to the mechanism that a country adopts to determine the value of its currency relative to others, can greatly affect the country's economic performance and its susceptibility to economic crises. Each regime comes with specific advantages and disadvantages, and their selection requires careful consideration by policymakers to ensure economic stability and growth.

Fully understanding how exchange rate regimes work is essential for analyzing economic relationships among different countries. This knowledge allows us to understand how national economies interact, influence each other, and what strategies can be adopted to address global economic challenges and reach macroeconomic objectives. The ability to navigate the various dynamics of exchange rates and exchange rate regimes is therefore crucial for economists, policymakers, and financial operators, making this a particularly relevant and timely field of study.

The relevance of this topic is underscored by the significant role exchange rates play in today's macroeconomic landscape, where nations must navigate the complexities of globalization, economic integration, and financial interdependencies. Globalization has reconfigured world trade, production, and finance, significantly affecting international competitiveness, trade flows, and relative prices. This process has altered how economies react to external shocks and how exchange rate movements impact economic performance, particularly for countries with a high degree of openness and global integration.

The interconnectedness of national economies has intensified, leading to more frequent and substantial cross-border economic impacts. Exchange rates influence global trade dynamics, affect multinational investments, and play a key role in international financial markets. In this interconnected world, the importance of exchange rates extends beyond national borders. In this increasingly globalized economic context, exchange rates and the choice of an appropriate exchange rate regime have become critical tools for responding to exogenous shocks. Choosing an appropriate exchange rate regime is crucial for managing the complexities of global economic interactions. The stability and predictability provided by well-managed exchange rates are essential for maintaining economic equilibrium in a world dominated by interdependencies among nations. They facilitate the balancing of trade, investment flows, and financial stability by allowing adjustments to these impacts.

Understanding and effectively managing exchange rates and their regimes are vital for countries aiming to thrive in a globalized economy, highlighting the relevance of this field of study for contemporary economic analysis.

The primary objective of this study is to analyze the role that exchange rates play in terms of mecroeconomic stability and how various adopted regimes influence the transmission of cyclical shocks. To this end, the significant case of the Great Depression is considered to understand how such a major historical crisis had different economic repercussions depending on the regime adopted.

This work is structured as follows: “Chapter 1” is dedicated to an in-depth analysis of the characteristics of different exchange rate regimes and the evaluation of the implications of monetary and fiscal policies in the case of fixed and flexible exchange rates. By leveraging models such as the Mundell-Fleming model, the first chapter provides a comprehensive examination of the interplay between exchange rates and macroeconomic variables. “Chapter 2” focuses on the analysis of the Great Depression. By considering the opinions of various economists such as Hayek, Keynes, Friedman, and Bernanke, this chapter aims to understand the causes that led to the outbreak of the crisis. Finally, “Chapter 3” addresses the topic of the international transmission of the Great Depression, analyzing how economic shocks in the United States affected global

economies through the lens of exchange rate regimes and the gold standard. Some concluding remarks wind up.

By exploring these themes, this paper aims to contribute to a deeper understanding of exchange rate mechanisms and their crucial role in shaping economic trajectories during periods of stability and financial crises.

Chapter 1. How Exchange Rate Regimes Work

1.1 International Monetary Standards: An Introduction

Exchange rates are a crucial aspect of international finance and open economy macroeconomics. These exchange rates denote the value of one country's currency in terms of another's and are determined by the foreign exchange market (forex), a global marketplace for buying and selling currencies. While the nominal exchange rate specifies how much foreign currency can be exchanged for a unit of domestic currency, the real exchange rate compares the purchasing power of two currencies in terms of their ability to exchange comparable goods and services between the domestic and the foreign country. The understanding of exchange rates' regimes is important for economies worldwide as movements in these rates influence the decisions of individuals, businesses, and governments, ultimately affecting the level of economic activity in different industries.

Many relevant factors, including the inflation rates, the interest rates, political stability, and economic performance, contribute to the exchange rate determination. The behavior of real exchange rates, as it is clearly established in the work of Stockman (1983) and Mussa (1986), is significantly affected by the exchange rate regime adopted by a country. There are numerous exchange rate regimes under which a country may choose to operate. At one extreme, a currency can float freely, rising and falling with market changes, while at the opposite end it is fixed to another currency using a hard peg. Although finer distinctions can be made within this range, two are the broadest categories: the fixed and the floating exchange rate regimes. A fixed exchange rate is a system of currency exchange in which a country decides to tie the nominal value of its currency to another country's currency. On the other hand, a system of floating exchange rate allows the nominal exchange rate to fluctuate in response to changing economic conditions and to adjust in order to achieve an equilibrium in both the goods and money market simultaneously. Because in this case it is the market that dictates the exchange rate, this regime is believed to be "self-correcting."

While each regime seeks to maintain the currency value that best promotes international trade and a robust economy, neither is perfect and each system is characterized by pros and cons. Both fixed and floating exchange rate systems offer

distinct advantages and drawbacks, making it hard to assess the superiority of one over the other.

This chapter aims to provide a thorough analysis of each of these exchange rate regimes, to fully understand their functionality and impact on economic dynamics.

In a fixed exchange rate system, the government decrees a given value for its currency relative to another currency or a tangible asset and establishes the rules governing currency exchange transactions; these aspects define the fixed nature of this exchange rate system. Different approaches can be taken to implement this regime. Typically, currencies with fixed exchange rates are pegged to a more stable and influential marker, such as a major currency as the U.S. dollar. However, a government could also decide to peg its currency's value to a specific quantity of gold, thus adopting a gold standard; conversely, if the currency's value is linked to a basket of a set amount of another country's currency, it adopts a reserve currency standard.

Under a fixed exchange rate regime, the country's monetary policy is dedicated solely to the objective of maintaining the exchange rate at the announced level. This implies rigorous intervention by the monetary authority to buy or sell domestic currency in the foreign exchange market as needed, influencing the supply and demand dynamics, and stabilizing the exchange rate. When a central bank can no longer maintain the fixed exchange rate, for example because it's running out of reserves, it might devalue its currency.

This exchange rate system offers several advantages. Firstly, it seeks to mitigate exchange rate risk, thereby fostering greater certainty and facilitating international trade and investment. Secondly, the discipline imposed on the nation's monetary authority by this regime, compels adherence to policies intended to achieve a lower inflation rate. By limiting the discretion of monetary authorities and focusing their efforts on exchange rate stability, the fixed exchange rate regime aims to promote macroeconomic stability and foster confidence in the domestic currency. This system's peculiar features make it appealing to countries facing economic instability, therefore fixed exchange rates can be particularly useful for developing countries, in order to help establish regular trade relationships and grow local economies.

Exploring the historical context of the fixed exchange rate regime, particularly after World War II, provides valuable insights into its operation and effectiveness across different economic environments. The Bretton Woods system, agreed upon by the allied countries during the Bretton Woods conference, held in the United States in 1944, aimed to introduce stability and order in the international currency system of the postwar period. This system required countries to maintain fixed exchange rates against the US dollar, which was the only currency convertible into gold. By doing so it provided a stable economic framework to support international commerce and facilitate global economic recovery.

Nonetheless, this exchange rate system is not impeccable. While it is true that pegging the exchange rate serves as a useful commitment device for central banks, this approach also limits the ability to react to macroeconomic shocks. A study by Ghosh and Ostry (2009) illustrates important trade-offs in the choice of exchange rate regimes: "Regimes that are more rigid help countries anchor inflation expectations, sustain output growth, and foster deeper economic integration. But they also constrain the use of macroeconomic policies, increase vulnerability to crisis, and impede external adjustment.".

While fixed exchange rates were once the only option available, since the collapse of the Bretton Woods system in 1973, floating exchange rates are how most currencies are valued, especially in countries whose currency values can be safely maintained by their already established economies, such as the U.S. dollar, the euro, and the Japanese yen. Today floating exchange rates predominate for the world's most-traded currencies.

A flexible (or floating) exchange rate is a regime according to which a country's currency price is determined by the open market, depending on the relative supply and demand of other currencies. Since the market sentiment towards a country's economy influences the perceived strength or weakness of the floating currency, long-term fluctuations in currency prices reflect differences in comparative economic strength and interest rates across countries; changes in the short-term floating exchange rate, on the other hand, represent speculative activity.

Amongst the main advantages of the floating exchange rate regime is its ability to provide greater flexibility in a country's monetary policy. This flexibility allows

policymakers to pursue various objectives, including price stabilization and addressing domestic economic challenges such as unemployment, independent of exchange rate considerations. Thus, free-floating exchange rates allow countries to respond to external economic shocks more effectively. During economic crises like recessions, the exchange rate can act as a shock absorber by helping to rebalance the economy. Moreover, a floating exchange rate is a useful tool for correcting trade imbalances over time. If a country is running a large trade deficit, its currency's depreciation can eventually make its exports more price competitive in international markets and imports more expensive, leading to a narrowing of the deficit. Additionally, when operating under a floating exchange rate system, the central bank does not need to hold large foreign currency reserves because there is no specific currency target, financial capital can move freely across countries in search of the best returns.

One of the most significant drawbacks of a free-floating system is the potential for exchange rate volatility. As Michael Mussa (1986) wrote: "Under a floating exchange rate regime, real exchange rates typically show much greater short-term variability than under a fixed exchange rate regime". Under a floating exchange rate regime, currencies can experience rapid and unpredictable fluctuations, which can introduce uncertainty for businesses engaged in international trade and investment.

In reality, however, the assumption of complete exchange rate flexibility is not always accurate. Most industrialized countries rather adopt a system of managed floating, instead of letting central banks to completely refrain from intervening, allowing exchange rates to be determined freely in the foreign exchange markets. Under this system, central banks intervene by buying and selling foreign currencies to influence exchange rates, without keeping exchange rates rigidly fixed. For example, after moving away from a fixed exchange rate in 2005, China announced that it had transitioned to a managed floating exchange rate regime. Ever since, the renminbi has become more flexible over time but is still carefully managed; Chinese authorities keep the value of the RMB artificially low to support their economic policies.

Before delving into the analysis of the mechanics of different exchange rates, it is crucial to assess the role of monetary policies under both a fixed and a flexible exchange rate system. The choice of an exchange rate regime has profound implications for the

autonomy of central banks in formulating monetary policy. Under flexible exchange rates, the currency's value is determined by market forces, primarily reflecting balance of payments dynamics. The exchange rate naturally adjusts to international economic shifts, enabling the central bank to implement monetary policies without significant concern for their immediate impact on the currency's value. This allows the central bank more freedom to focus on domestic economic objectives such as inflation control or stimulating growth. In contrast, a fixed exchange rate system considerably constrains the central bank's policy choices. To maintain the currency's pegged value, the central bank must actively intervene in the foreign exchange market, often using its reserves to buy or sell the currency or adjusting interest rates to attract or deter foreign capital. These actions can limit the central bank's ability to address domestic issues, as maintaining exchange rate stability often requires policy decisions that may conflict with other economic objectives. Therefore, while a fixed exchange rate can provide economic stability and predictability, it restricts monetary policy flexibility, tying the central bank's hands in responding to domestic economic conditions.

Having established a foundational understanding of both fixed and floating exchange rate regimes, we now turn our focus towards analyzing how these regimes influence economic stability and react to economic shocks. For this purpose, the Mundell-Fleming model offers a robust framework for examining the implications of these regimes under different scenarios.

1.2 The Mundell-Fleming Model for a Small Open Economy

The Mundell-Fleming model, developed by Robert Mundell and Marcus Fleming in the 1960s, describes the economic dynamics of a small open economy. This model extends the IS-LM model, which analyzes the relationship between interest rates and various levels of output in the domestic economy, to include international capital flows and exchange rate dynamics, thus adapting it for open economies. Such expansion, known as the IS-LM-BP model, incorporates an analysis of the Balance of Payments in addition to the traditional goods and financial markets balances, making it particularly relevant for open economies with significant cross-border financial movements.

This model is instrumental in analyzing how exchange rates and macroeconomic variables interact under different exchange rate regimes and degrees of capital mobility. To effectively use this model for macroeconomic analysis, it is essential to first understand how it is constructed and its key assumptions behind. Since we are going to focus on short-run fluctuations, prices are assumed to be sticky, which implies that they do not adjust immediately to changes in economic conditions. This assumption is critical as it allows the model to focus on variations in output and interest rates, rather than price levels, thereby highlighting the potential real impacts of monetary and fiscal policies. Moreover the model assumes the economy is too small to influence international interest rates or exchange rates through its own domestic policies. This "small economy" assumption implies that the economy can take international prices and interest rates as given, and that domestic policies have negligible effects on global figures.

Delving into the construction of the model, we first describe the IS (Investment-Savings) curve represents the equilibrium in the goods market. Since in an open economy part of the domestic output is sold to foreigners (exports) and part of spending by domestic residents purchases foreign goods (imports), in the Mundell-Fleming model, the IS equation is modified from the closed economy version to include net exports:

$$\mathrm{IS}: \ \mathrm{Y} = \mathrm{C}(\mathrm{Y} - \mathrm{T}) + \mathrm{I}(\mathrm{i}^*) + \mathrm{G} + \mathrm{NX}(\mathrm{e}, \mathrm{Y}, \mathrm{Y}^*)$$

where Y is the national income; C represents consumption as a function of the disposable income, which refers to the total amount of goods and services that households plan to consume; I is investments, which is the total spending on goods that will be used for future production, and depends negatively on the world interest rate; G is government spending; and NX represents net exports, the difference between a country's exports to and its imports from the rest of the world, which depend negatively on the real exchange rate (e) and domestic income (Y), and positively on foreign income (Y*) [1]. Net exports are negatively related to the real exchange rate since, as the real exchange rate increases (the country's currency appreciates), exports become more expensive to foreigners, decreasing demand for exports, and imports become cheaper to domestic consumers, which leads to an increase in demand for imports, thus reducing net exports. The IS curve

[1] Exports are a function of the income of the rest of the world (exogenous) and the exchange rate. Imports are a function of national income and the exchange rate.

is downward sloping, indicating that at lower interest rates investment are higher, leading to higher output.

The LM (Liquidity Preference-Money Supply) curve represents the equilibrium in the money market:

$$\mathrm{LM}: \frac{\mathrm{M}}{\mathrm{P}} = \mathrm{L}(\mathrm{i}^*, \mathrm{Y})$$

On the left-hand side of the equation, M/P denotes the real money supply, which must be equal to the real money demand, on the right-hand side. The money demand depends on the liquidity preference, which is a function of two variables: the real income or real GDP of the economy (Y), and the interest rate (i). The demand for money is positively related to income because higher income tends to increase spending and transactions, which in turn increases the demand for money. Conversely, it is inversely related to the interest rate because holding money yields no interest, so higher interest rates make holding money less attractive compared to interest-bearing assets. The LM curve is therefore upward sloping, reflecting that higher income levels lead to a higher demand for money, which, given the money supply, leads to higher interest rates.

The final component to the Mundell-Fleming model we must consider is the BP (Balance of Payments) curve, which accounts for international economic transactions. The balance of payments is in equilibrium when all inflows and outflows of foreign exchange resulting from current account transactions (like trade denoted by NX) and capital account transactions (like investment denoted by CF) exactly offset each other:

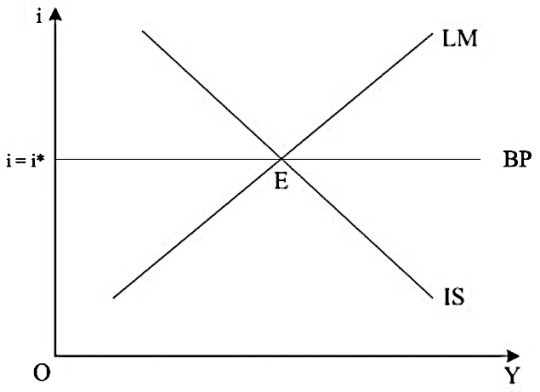
$$\mathrm{BP}: \mathrm{CA} + \mathrm{KA} = \mathrm{NX}(\mathrm{e}, \mathrm{Y}, \mathrm{Y}^*) + \mathrm{CF}(\mathrm{i} - \mathrm{i}^*) = 0$$

Capital flows are a function of the interest rate differential and depend positively on the domestic interest rate and negatively on the foreign interest rate. This means that if the domestic interest rate increases, capital inflows are likely to increase because investors are attracted to the higher returns available domestically. Conversely, if foreign interest rates increase, it would result in capital outflows as investors seek better returns abroad. However, since we are analyzing the case of a small open economy which faces given world interest rates, the domestic interest rate equals the world interest rate ($i = i^*$). Therefore, under perfect capital mobility [2], which is going to be our working assumption

[2] Capital is perfectly mobile internationally when investors can purchase assets in any country they choose, quickly, with low transaction costs, and in unlimited amounts. When capital is perfectly mobile, asset holders are willing and able to move large amounts of funds across borders in search of the highest return

at the moment, the BP line would be horizontal at the level where the domestic interest rate equals the foreign interest rate, as any imbalance would immediately be corrected by capital flows.

The point where IS, LM, and BP intersect represents the short-run equilibrium where the goods market, the money market, and the balance of payments are all in balance.



IS-LM-BP Model under perfect capital mobility

Now that we have described how the model is constructed, we can use it to understand how economic policies and shocks are transmitted under different exchange rates regimes. For a small open economy with perfect capital mobility, the inability to influence international economic variables means that its economic policies must be highly adaptive to external economic conditions, particularly in maintaining economic stability and responding to international market signals.

Under a fixed exchange rate regime, implementing an independent monetary policy is infeasible. Adjustments in the money supply will lead to surpluses or deficits in the balance of payments. However, since the exchange rate is fixed, the only way to restore equilibrium to the balance of payments is through government intervention. By buying and selling foreign and domestic currencies, the government restores the original balance. Conversely, fiscal policy under this regime can effectively increase or decrease

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or lowest borrowing cost. Due to perfect capital mobility the domestic interest rate is equal to the international interest rate. This means any deviation from the world interest rate would lead to infinite capital flows that would restore equilibrium. If the domestic interest rate were higher than the international rate, there would be an influx of capital from abroad, and if it were lower, capital would flow out until the rates equalized.

both national income and the interest rate, necessitating central bank interventions to maintain the fixed exchange rate.

As previously mentioned, under a system of fixed exchange rates and perfect capital mobility, interest rates must align with global market levels, and any attempt to pursue a distinct monetary policy triggers capital flows that compel intervention to realign domestic rates with international ones. This commitment to a fixed exchange rate means the money supply becomes endogenous, controlled by the central bank's actions to meet the demand for foreign exchange at the fixed rate.

Switching to a scenario of an economy with fully flexible exchange rates, the absence of intervention implies adjustments in the exchange rates to ensure that the sum of the current and capital accounts is zero, so that the balance of payment is in equilibrium. Since there is no need to intervene, central banks can set the money supply at will, and therefore pursue an independent monetary policy. In this case, however, exchange rate will depreciate or appreciate in response to imbalances in the balance of payments due to monetary policies. These changes in the exchange rate will affect net exports so that a new equilibrium will be reached at the same interest rate as before ($i = i^*$), but at a new production level. On the other hand, a fiscal policy under this regime will be neutral. Implementation of fiscal measures - whether expansionary or contractionary - will lead to immediate deficits or surpluses in the balance of payments, respectively causing the domestic exchange rate to depreciate or appreciate. This, in turn, adjusts net exports so that the final equilibrium corresponds to the initial state.

The important lesson here is that real disturbances to demand do not affect equilibrium output under flexible rates with perfect capital mobility. Instead, these disturbances lead to changes in the value of the domestic currency (or exchange rates), and a shift in the composition of domestic demand between domestic and foreign goods.

This model highlights the vulnerability of small economies to global economic shocks and the importance of stable economic policies. Having analyzed both exchange rate regimes it is clearly impossible for a country to simultaneously maintain a pegged exchange rate regime, an independent monetary policy and free capital flows. Mundell's trilemma of international finance implies that each nation must choose whether it wants to live with exchange-rate volatility, or if it wants to give up the use of monetary policy

for domestic stabilization purposes. The only possible way to both fix the exchange rate and conduct an independent monetary policy is for a nation to restrict its citizens from participating in world financial markets (and become a closed economy).

1.3 The Two-Country Mundell-Fleming Model

Up until now, our modeling of the open economy has focused on the case of a small country that cannot affect foreign output, price levels, or interest rates through its own monetary and fiscal policies and examined the effectiveness of policy tools in a small open economy context, particularly how exchange rate regimes modify those tools' impacts. However, in large open economies, the assumptions and implications of policy interventions can differ significantly from those in small open economies. Analyzing the effects of fiscal and monetary policies in the context of two large open economies is therefore an interesting extension to our study.

For the above-mentioned analysis we are going to use an extended version of the Mundell-Fleming model which considers the world market, accounting for two large interacting economies, namely "Home" and "Foreign". Both economies can be described by means of a (slightly modified) IS-LM-BP model, keeping in mind that neither country can be thought of any longer as facing a fixed external interest rate and that they influence the other's economic variables (like GDP, interest rates, and exchange rates), due to their size and the volume of trade and capital flows they control.

Given the interdependencies among these countries, it is necessary to consider both domestic and foreign equilibria and to examine how policies adopted by one country not only impact its own equilibrium but also have repercussions on other countries.

First of all, assuming perfect capital mobility and assuming large but economically similar countries, in a equilibrium situation the interest rate on both countries must be equal, reflecting perfect asset substitutability between domestic and foreign bonds, otherwise an arbitrageur could make profits by borrowing money in the country with lower interest rate and invest the money on the other country. For this reason, the BP curve might still be approximated as horizontal at $i = i^*$. However, realistic deviations from these assumptions (like capital controls, economic asymmetry, and strategic policy interactions) can make the BP curve upward sloping, reflecting the intricate dynamics of larger, interconnected economies.

If we consider the goods market equilibrium, the IS curve needs to reflect both domestic and foreign economic conditions:

$$\text{IS: } E(i, Y) + T\big(Y, \phi^*(Y, i)\big)$$

where $E(I, Y)$ represents domestic expenditures, including investment, consumption, and government spending, which are a function of the domestic interest rate and domestic output; $T\big(Y, \phi^*(Y, I)\big)$, denotes the net exports, which is a function of both domestic output and foreign output, as a function of the domestic interest rate and level of income. The interdependence of income determination is explicitly recognized by the fact that the trade balance depends on income levels in both countries [3] (Dornbusch, 1980).

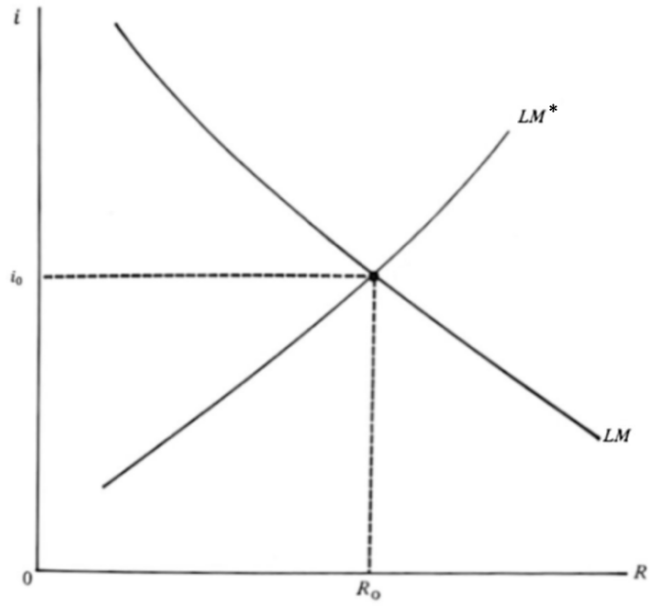
The interconnected nature of domestic and foreign economies means that changes in interest rates affect not only domestic economic conditions but also international trade and income levels. As interest rates decline, foreign income increases, leading to an expansion in domestic exports and consequently, an increase in domestic output. These dynamics are represented both visually and analytically by the downward slope of the IS curve. However, compared to a small open economy, the IS curve in this broader context is flatter. This flatter slope reflects the more pronounced expansionary impact of declining interest rates, once the induced effects on the rest of the world are considered.

Shifting now to the world asset market, equilibrium requires the world supply of money to equal the world demand for money:

$$D + D^* + \overline{R} = L(i, Y) + L^*(i, Y^*)$$

where the left-hand side of the equation represents the total sources of funds available, which include domestic debt, foreign debt, and the world stock of reserves; while the right-hand side represents the demand for liquidity both domestically and from the foreign country.

[3] In this two-country world the imports of Home are the exports of Foreign and vice versa. Net exports of Home decrease with its own output, but rise with Foreign's output, and a rising real exchange rate (a deterioration of the terms of trade) has negative effects on net exports.



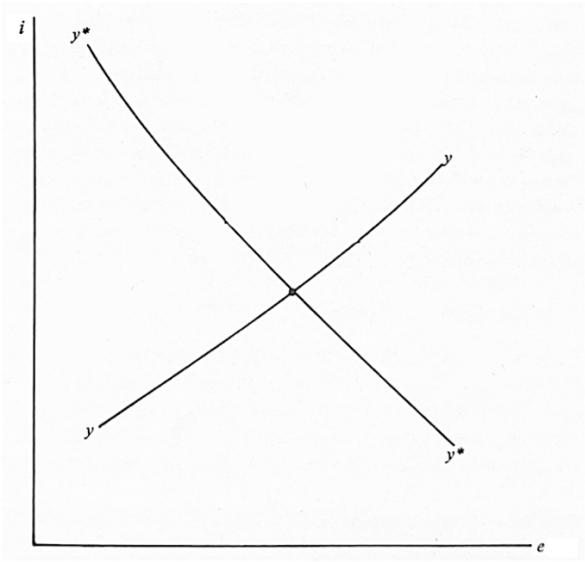
The LM curve shows the equilibrium stock of reserves at which we have domestic monetary equilibrium, for any given domestic debt. At a lower interest rate there is a higher level of monetary demand, accordingly a higher level of reserves is required to yield a higher money supply. On the other hand, the LM* curve shows the foreign money market equilibrium. Given the world supply of money, the foreign money stock is larger the lower are domestic reserves (hence the higher are foreign reserves). Accordingly, the LM* curve is positively sloped. The equilibrium is reached at the point where the LM and LM* curves intersect, which indicates the equilibrium interest rate and the level of reserves where both the domestic and foreign money markets are in balance.

The LM curve, represented by the equation $\mathrm{D} + \mathrm{D}^* + \overline{\mathrm{R}} = \mathrm{L}(\mathrm{I}, \mathrm{Y}) + \mathrm{L}^*\left(\mathrm{I}, \phi^*(\mathrm{Y}, \mathrm{i})\right)$ has an upward slope. This is because higher interest rates typically decrease the demand for money while simultaneously increasing the supply of money as foreign demand for money also declines. To re-establish monetary equilibrium under these conditions, income must increase. This increase in income boosts domestic money demand and reduces the supply, offsetting the expansion in foreign money demand (Dornbusch, 1980).

The world equilibrium is achieved when the goods and money markets simultaneously reach a state where supply matches demand across both markets, reflecting the interdependencies of global trade and capital flows. This equilibrium ensures that adjustments in interest rates, monetary policies, and economic outputs in one

country are harmonized with corresponding adjustments in the other country, thereby stabilizing the global economic environment.

The small open economy model, with its theoretical simplicity, evolves into more complex and realistic dynamics in the two-country model. We aim to explore how the economies of two countries, Home and Foreign, interact and influence each other through their macroeconomic policies. To analyze spillover effects of policy changes we can introduce a new diagram which allows for comparative statics, and is particularly useful to determine equilibrium output levels, the equilibrium terms of trade, and the world interest rate in a two-country scenario.



The two curves represent the combination of output and real exchange rate that allows for simultaneous equilibrium in goods and money markets in each country. To understand the slope of these curves we have to consider that a real depreciation rises domestic income and thus requires a higher interest rate to maintain equilibrium in the money market (therefore the yy curve is upward sloping); conversely a depreciation of our exchange lowers income abroad, and thus requires a fall in the interest rate to maintain monetary equilibrium (therefore the y*y* curve is downward sloping).

In an economy operating under a fixed exchange rate regime, monetary and fiscal policies play crucial roles in managing domestic economic activity while influencing international financial dynamics. Under a fixed exchange rate, a monetary expansion leads to a decrease in domestic interest rates. This makes borrowing cheaper, stimulating

investment and consumption within the economy. Lower domestic interest rates can lead to increased economic activity and output, as companies might intensify production to meet rising demand. However, such an expansion can lead to capital outflow as investors seek higher returns abroad, potentially weakening the domestic currency. To prevent this and uphold the fixed exchange rate, the central bank must intervene by selling its foreign reserves to buy back domestic currency.

This intervention, while maintaining the exchange rate, effectively injects more liquidity into the global market, potentially stimulating economic activity in foreign markets as well. The added liquidity abroad can lower global interest rates and promote increased economic activity internationally, showing how domestic monetary policy under a fixed exchange rate can have significant international spillover effects.

On the other hand, a fiscal expansion directly boosts domestic demand. This increase in spending generally leads to a rise in imports due to greater domestic consumption and investment, which in turn requires more foreign currency to settle international payments. Under a fixed exchange rate, the central bank must manage these increased demands without altering the pegged rate, often by using its foreign reserves. To finance a growing trade deficit that results from higher imports without running out of reserves, the central bank might need to attract more foreign capital, possibly by raising domestic interest rates. Although it might reduce domestic investment and consumption, this is essential for drawing the capital required to maintain the currency peg. At the same time, higher domestic rates can make domestic bonds more attractive to international investors, potentially leading to an influx of foreign money that can help finance the government's budget deficit.

Overall, fiscal policy aimed at stimulating domestic demand can inadvertently lead to higher interest rates, which might have a contractionary effect domestically but help maintain the balance of payments. The necessity of stabilizing the currency often imposes limitations on how expansively fiscal policy can be used without triggering adverse effects.

By refining these interactions, it becomes clear that both monetary and fiscal policies under a fixed exchange rate regime are effective. However, they are not merely tools for domestic economic management but also mechanisms that influence and are influenced by international economic conditions. A monetary policy spreads in an

expansionary way to the rest of the world, while the net effect of a fiscal policy is not always certain. This complex interplay necessitates careful policy management to balance domestic objectives with the impacts on foreign exchange and international economic relations.

Nevertheless, in a scenario of perfect capital mobility, large open economies usually opt for floating exchange rates. This allows for automatic adjustments in response to capital flows, aiding in stabilizing the balance of payments without government intervention. Our analysis will, therefore, now focus on flexible exchange rate regimes.

Starting with monetary policy, let's examine the scenario where Home implements a monetary expansion. This policy leads to a depreciation of Home's currency. The depreciated currency makes Home's exports cheaper on the international market, potentially boosting sales abroad and improving the trade balance. At the same time, lower interest rates stimulate domestic investment and consumer spending, further elevating Home's overall economic output. However, the effects of these policies are not confined within Home's borders. The depreciation of Home's currency implies an appreciation of Foreign's currency, which could make Foreign's exports less competitive internationally, potentially reducing Foreign's output. Nonetheless, this negative impact might be mitigated if Home's increased spending extends to imports from Foreign, thus stimulating Foreign's economy through enhanced demand. The ultimate effect on Foreign's economy hinges on the relative strength of these opposing forces, the negative impact of its currency appreciation versus the positive impact of heightened demand for its exports.

Turning to fiscal policy, Home might decide to increase government spending or reduce taxes, aiming to stimulate the economy directly by boosting domestic demand. Such expansionary fiscal measures are likely to raise both income and output within Home. To maintain monetary equilibrium in the face of increased fiscal spending, interest rates might rise, which could temper some of the initial stimulatory effects by making borrowing more costly. The repercussions of Home's fiscal expansion also extend to Foreign. As Home's demand for goods and services increases, it may import more from Foreign, thereby giving a boost to Foreign's economy. Moreover, the appreciation of Home's currency, resulting from higher interest rates, enhances the competitiveness of

Foreign's exports by making them cheaper in Home's market. Thus, despite the potential for fiscal policy to leak benefits across borders, both Home and Foreign might experience economic gains, characterized by increased output and employment.

To sum up, both monetary and fiscal policies in a large-country context demonstrate significant cross-border impacts due to interconnected global markets. The final outcomes depend on a complex interplay of exchange rates, interest rates, and trade flows. The dynamics of these policies highlight the significant influence that large economies exert on global economic patterns, underscoring the need for policymakers to anticipate both domestic and international consequences of their economic interventions.

In conclusion, the use of the Two-Country Mundell-Fleming Model, which incorporates international transmission mechanisms and policy spillover effects, is useful to study the role of exchange rates more dynamically, highlighting the potential for international spillover effects, and including the possibility of currency wars or competitive devaluations. This stresses the need for careful policy coordination among nations in order to foster global economic stability and growth.

The analysis of both the case of a small open economy and two large open economies offers interesting insights about the repercussion of fiscal and monetary policies. In assessing the efficacy of monetary and fiscal policies within open economies, it becomes evident that the size of the economy and the prevailing exchange rate regime critically influence policy outcomes. In small open economies, monetary policy is largely ineffective under a fixed exchange rate regime as any domestic interest rate adjustments are quickly neutralized by central bank interventions aimed at maintaining the exchange rate. Conversely, under a flexible exchange rate regime, monetary policy gains potency as it directly impacts the exchange rate, thereby influencing economic conditions through adjustments in net exports. Fiscal policy, while effective in altering domestic demand under fixed exchange rates, tends to have its effects neutralized under flexible rates due to resultant appreciations in the domestic currency, which temper the competitiveness of exports.

On the other hand, in the context of two large open economies, both monetary and fiscal policies not only effectively influence domestic economic conditions but also

generate significant international repercussions, regardless of the exchange rate regime. However, their effectiveness and the mechanisms through which they operate differ significantly between fixed and flexible exchange rate regimes. Monetary policy tends to have a more direct and potent effect under flexible rates due to the immediate impact on exchange rates and cross-border flows, while fiscal policy has robust domestic effects in both regimes but interacts differently with international trade depending on the regime. This is due to the substantial economic interdependencies and the capacity of large economies to influence global financial and trade flows. Indeed, in the two-country model, the actions taken by one country are not isolated; they reverberate through the economic relationship, affecting trade balances, exchange rates, and economic stability. Policies in one country can lead to compensatory or magnifying effects in the other, depending on the nature of the policy and the existing economic conditions.

1.4 The Role of Imperfect Capital Mobility

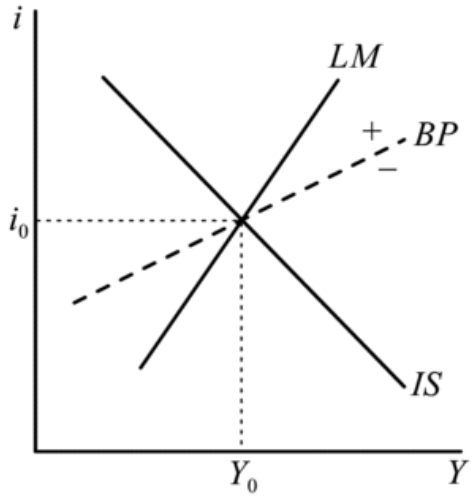
In this last section we are going to explore the consequences of removing the hypothesis of perfect capital mobility. Shifting the scenario from perfect to imperfect capital mobility introduces new dynamics into the balance of payments (BP) equation. Imperfect capital mobility implies that there are frictions and restrictions, such as transaction costs, capital controls, and regulatory barriers, that impede the free flow of financial capital into and out of the country. These conditions can significantly affect the economy's ability to balance its payments autonomously.

Under imperfect capital mobility, the BP equation remains the same, but the terms within it behave differently. The capital account will now reflect these imperfections:

$$KA = CF(i, i^*, \theta)$$

Capital flows are now less sensitive to differences in interest rates between the domestic economy and the rest of the world, and more dependent on θ, which represents barriers to capital flows. With imperfect capital mobility, the small open economy no longer equates its interest rate strictly with the world interest rate ($i \neq i^*$). Consequently, the BP curve, which was horizontal under perfect capital mobility, assumes now an upward slope since the domestic interest rate is higher than the world rate ($i = i^* + \text{spread}$). Such spread might depend on the risk premium required by international investors to compensate for frictions and capital controls, therefore its magnitude - and thus the

steepness of the BP curve - increases with greater frictions. As θ increases, indicating more substantial barriers to capital flow, the BP curve becomes steeper, which signifies a larger discrepancy between domestic and world interest rates, emphasizing the increased costs and risks associated with capital controls and other frictions.

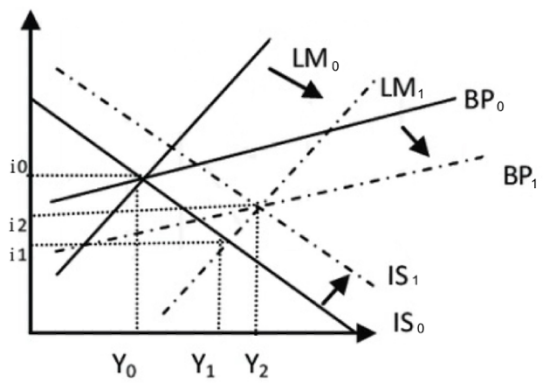


IS-LM-BP Model under imperfect capital mobility

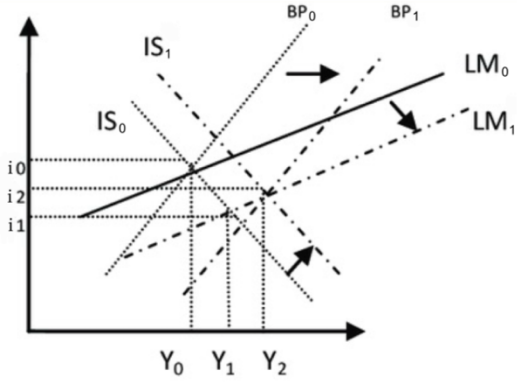
Having established how imperfect capital mobility steepens the BP curve and introduces a spread in interest rates, we now turn to examine the nuanced effects that monetary and fiscal policies exert under fixed and floating exchange rate regimes in such a transformed economic landscape.

Starting by analyzing the effects of a monetary policy, we can re-assert that under a fixed exchange rate system a monetary policy has again no effect, no matter how great or small capital mobility is. However, the effects of a monetary policy under a floating regime are completely different. A monetary expansion, for example, will shift the LM curve rightward, hence leading to a balance of payments deficit. The excess demand for foreign currency and excess supply of domestic currency on the foreign exchange market, imply that the real exchange rate will fall, depreciating the domestic currency. This will increase net exports, shifting the IS and BP curves rightwards. The new equilibrium is at a higher output level. Thus, under a flexible exchange rate regime, in contrast to a fixed exchange rate regime, monetary policy is significantly more effective in enhancing output, particularly with higher levels of capital mobility (as can be seen from the graphs below).

Monetary expansion under flexible exchange rates



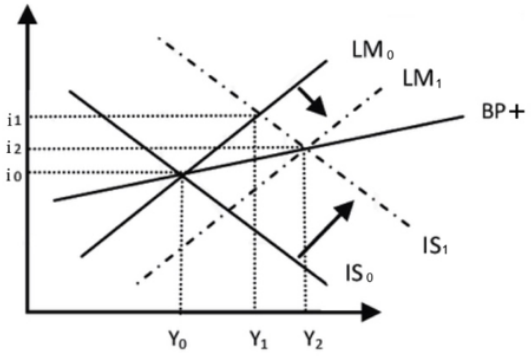
High capital mobility



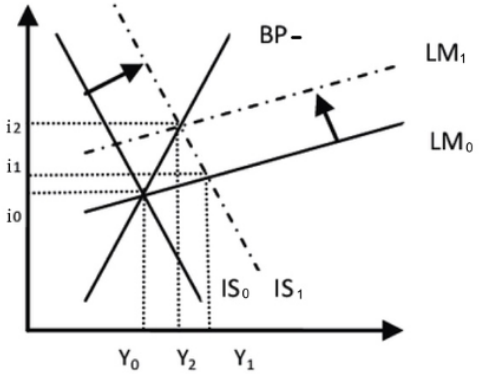
Low capital mobility

Conversely, a fiscal policy is effective under both fixed and flexible exchange rates, even if the consequences of such a policy may vary a lot under different circumstances. If we consider a fixed exchange rate system, the higher the capital mobility the more effective the fiscal policy. Under these assumptions, an expansionary fiscal policy increases both output and the interest rate, shifting the IS curve to the right. Depending on capital mobility, we'll either have a balance of payments surplus (high capital mobility, BP+ curve) or a balance of payments deficit (small capital mobility, BP- curve). Since balance of payments surpluses and deficits are not sustainable on their own and exchange rates are fixed, government will need to intervene. A balance of payments surplus corresponds to an excess supply of foreign currency, which must be bought by the domestic central bank, that pays for its purchase of foreign currency with domestic currency. Thus, a balance of payments surplus triggers a monetary expansion which further increases output. Instead, a balance of payments deficit implies there is an excess demand for foreign currency, which must be provided by the domestic central bank. By withdrawing domestic currency from circulation when it sells its foreign currency, the central bank causes a monetary contraction which partially offsets the initial increase in income.

Fiscal expansion under fixed exchange rates



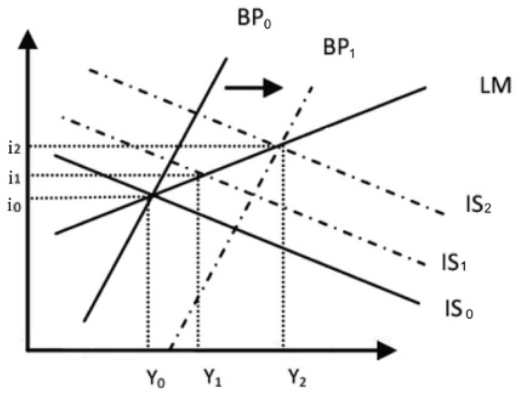
High capital mobility



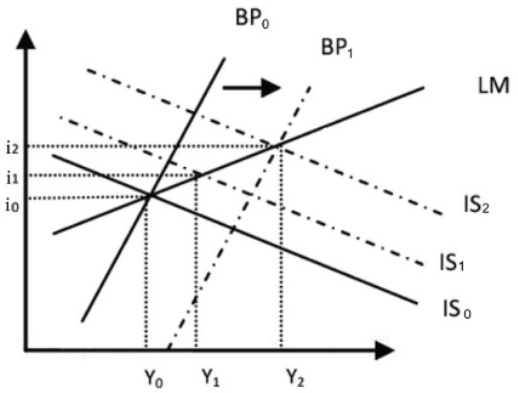
Low capital mobility

The effectiveness of a fiscal policy under a flexible exchange-rate regime and imperfect capital mobility is more ambiguous. Similarly to the previous case, a fiscal expansion implies a rightwards shift of the IS curve. In the case of high capital mobility such a policy causes a balance of payment surplus, which, considering flexible exchange rates, will result in an appreciation of the domestic currency. In turn, the BP shifts upwards and the IS curve backwards, until the equilibrium is achieved. Consequently, with high capital mobility a fiscal expansion is less powerful under a flexible exchange rate regime than under a fixed exchange rate regime. The above conclusion is reversed if we consider low capital mobility. In this case a fiscal expansion leads to a balance of payments deficit and consequently a fall in the exchange rate. The reduction in the exchange rate shifts rightwards both the IS and BP curves, until the new equilibrium is reached.

Fiscal expansion under flexible exchange rates



High capital mobility



Low capital mobility

Therefore, we can conclude that with imperfect capital mobility and flexible exchange rates, fiscal policy is more efficient the smaller capital mobility is.

To sum up everything we have discussed within this chapter, given that the consequences of different types of shocks depend highly on the exchange rate regime, each government should opt for the most suitable exchange rate regime so as to maximize its insulating effects. Consequently, countries experiencing a lot of real shocks should choose floating exchange rates; the presence of nominal rigidities makes achieving relative price flexibility easier under such a system. On the other hand, countries mostly affected by financial shocks will tend to adopt fixed rates.

However, in practice, the choice between floating and fixed rates is not as stark as it might appear. The exchange rate regime adopted by each country can be adjusted in response to cyclical shocks and regulated to mitigate negative effects on the national and global economy. Nevertheless, decisions concerning the exchange rate regime must be made while considering a variety of factors, such as economic policy objectives, market conditions, and international commitments.

Chapter 2. Analyzing the Great Depression of 1929: Diverse Economic Perspectives

In the intricate context of global economic dynamics, exchange rates play a decisive role in addressing cyclical shocks, the combination of unexpected circumstances and disruptions that impact the business cycle or the economy's short-term fluctuations.[4] These shocks can influence various economic indicators such as GDP growth, unemployment rates, and interest rates, destabilizing both domestic and global economies. In this context, exchange rates assume a critical role in mitigating the effects of such shocks by influencing trade flows, inflation, and the formulation of macroeconomic stabilization policies. By serving as a means for adjustments in response to these shocks, exchange rates facilitate the maintenance of economic stability through uncertain conditions, underscoring their significance in the broader economic landscape.

In order to delve deeper into the mechanics of exchange rates and their role in responding to shocks, in the following chapters we will conduct an extensive analysis of the period of the Great Depression, examining how countries that adopted different regimes were affected by the crisis and how easily they managed to recover.

The Great Depression stands out as one of the most severe economic crises in modern history, lasting from 1929 until the beginning of World War II in 1939. After nearly a decade of prosperity and optimism, the U.S. economic expansion of the roaring twenties came to an end. On October 29, 1929, famously known as Black Tuesday, the New York Stock Market crashed, signaling the official beginning of the Great Depression, and throwing the United States into a period of profound despair. In 1931 Keynes observed that the world was then "in the middle of the greatest economic catastrophe … of the modern world … there is a possibility that when this crisis is looked back upon by the economic historian of the future it will be seen to mark one of the major turning points" (Keynes, 1931).

The stock market, which was perceived to be the pathway to becoming rich, quickly became the route to bankruptcy. By the end of 1932, stock values had plummeted

[4] J.A. Schumpeter defined business cycle fluctuations as "irregular regularities" in his *Theory of Economic Development.*

to approximately 20% of their previous worth, leading to the failure of 11,000 of the 25,000 banks in the U.S. by 1933. As stock prices continued to plummet without any sign of recovery, panic struck. Despite attempts by many to sell their stock, no one was buying. "And yet, the stock market crash was just the beginning" (Jennifer Rosenberg, 2021). With numerous banks having heavily invested large portions of their clients' savings in the stock market, their closure became inevitable, further exacerbating the situation. The closure of several banks triggered widespread panic across the country. Fearful of losing their savings, people rushed to banks that were still open to withdraw their funds. This massive withdrawal of cash caused additional banks to close. Since there was no way for a bank's clients to recover any of their savings once the bank had closed, those unable to reach the bank in time also faced financial ruin. The downturn hit bottom in March 1933, culminating in the collapse of the commercial banking system and the declaration of a national banking holiday by newly elected President Franklin Roosevelt. During this time, all banks remained closed until they were deemed solvent by government inspectors (Jennifer Rosenberg, 2021).

Furthermore, the Great Depression caused substantial declines in production, severe unemployment, and acute deflation in almost every country of the world. Industrial production in the United States declined by 47% and real gross domestic product (real GDP) fell by 30%, reaching its lowest recorded level of just 57 billion U.S dollars in 1933 (Figure 1). The wholesale price index declined by 33%, indicative of deflation, while unemployment rates exceeded 20% at their peak (25-30% by 1932). In an attempt to end the Great Depression, the U.S. government took unprecedented direct action to help stimulate the economy. President Roosevelt introduced significant changes in the structure of the U.S. economy through his New Deal programs of economic relief and reform. Despite this help, it was the increased production needed for World War II that finally ended the Great Depression.

The economic impact of the Great Depression was enormous, including profound changes in governments' approach toward stabilization policies and economic intervention. Before the Great Depression governments relied on impersonal market forces for economic correction. However, after the Great Depression, government intervention became a key factor in ensuring economic stability.

During the Depression years and for many decades afterward, economists disagreed sharply on the sources of the economic and financial collapse of the 1930s. In the following subsections, we will explore some interpretations of renowned economists, each offering a distinct perspective on the causes of this critical historical event.

2.1 Pioneering Perspectives: The Contrasting Ideas of Hayek and Keynes

The two leading economists who helped shape the interpretation of the Great Depression in the early 1930s were John Maynard Keynes and Friedrich Hayek (Wapshott 2011). They both explained the Great Depression applying opposing business cycle theories: for Hayek, the crisis was caused by an excess of investment over saving; for Keynes, on the contrary, by an excess of saving over investment.

2.1.1 Friedrich August von Hayek

The original explanation of the depression was put forth by the Austrian economist Friedrich Hayek in the first years of the 1930s. Hayek's view on the causes of the Great Depression revolves around his critique of monetary policy, which emphasize the instability resulting from the mismanagement of the money supply and credit (Klausinger, 1995).

Hayek pinpointed the loose monetary policy of the 1920s as that the primary cause of the Great Depression, which led to an unsustainable economic boom. He argued that central banks' artificial lowering of interest rates encouraged excessive investment and speculation that were not supported by real savings. According to Hayek, this misallocation of resources, referred to as "malinvestment", led to a distortion of the capital structure of the economy. He argued that when new money is injected into the economy through the banking sector, it does not affect all sectors uniformly. Instead, it tends to concentrate in capital-intensive industries, leading to a boom in these sectors. However, because these investments are not driven by real consumer demand or savings, they become unsustainable, eventually necessitating a painful adjustment process, which Hayek saw as the inevitable bust (White, 1999).

Moreover, Hayek was highly skeptical of efforts to stabilize prices, a popular policy among his contemporaries. During the onset of the Depression, rather than

allowing the market to self-correct by letting malinvestments liquidate, the Federal Reserve intervened by inflating the money supply. Hayek criticized this approach, arguing that such interventions would only exacerbate the problem by delaying necessary economic corrections (Hayek, 1931). He advocated for letting the recession run its course to allow the economy to naturally correct the distortions. He argued that such attempts masked underlying inflationary pressures and hindered necessary economic adjustments. True economic stability, in his view, could only be achieved if the money supply closely mirrored real economic conditions without artificial manipulations (Skidelsky, 2010).

Furthermore, as a proponent of the gold standard, Hayek saw it as a mechanism offering a more stable monetary framework than discretionary policies. Yet, he expressed concerns about its management during the 1920s. Hayek believed the gold standard had been compromised by national policies aimed at price stabilization and economic management. This critique aligns with his broader argument that monetary stability should not be sacrificed for short-term economic objectives (Klausinger, 1995).

In conclusion, Hayek's interpretation of the Great Depression underscores his belief in the importance of natural economic adjustments without excessive intervention. His emphasis on the harmful effects of credit expansion and interventionist policies provides a crucial counterpoint to more interventionist economic theories. Despite his controversial recommendations, Hayek's work during the Depression remains central to debates on monetary policy and government intervention, highlighting the need for balanced approaches that consider both natural adjustments and temporary interventions.

2.1.2 John Maynard Keynes

Only a few years later, John Maynard Keynes, a British economist, offered profound insights into the Great Depression in his work *"The General Theory of Employment, Interest, and Money"*. In a decade that saw Britain struggling with economic difficulties that escalated into severe double-digit unemployment after the outbreak of the Great Depression in the United States, Keynes was fully aware of the urgency of these economic challenges. His theory not only provided explanations for the causes of the Depression but also proposed strategies to prevent future downturns.

Central to Keynes' analysis was the concept of insufficient aggregate demand, which he proposed as the fundamental cause of the Great Depression. He noted that during economic downturns, uncertainty often leads consumers and businesses to increase their savings and reduce spending, which decreases overall demand. This reduction in demand prompts companies to cut production and lay off workers, further depressing income and demand. This situation was exacerbated by a decline in the marginal efficiency of capital (MEC).[5] Keynes argued that a sustained fall in the MEC leads directly to a reduction in investment and, by extension, economic activity. This reduction in investment is spurred by diminishing returns on new investments as the market becomes saturated with capital goods, driving down their profitability (Tsoulfidis, 2008).

To address this downturn, Keynes emphasized the need for robust government intervention, particularly during periods when private sector investment waned. He advocated for aggressive countercyclical fiscal policies, such as increased public spending and tax reductions, to counteract the decline in private sector spending and stimulate demand. These measures, he argued, would not only stimulate further economic activity through a multiplier effect (an initial increase in spending leading to a greater overall increase in national income), but also help offset the depressive effects of falling MEC by invigorating the economic cycle through increased employment and consumption. By recognizing the limitations of a laissez-faire approach during such crises, Keynes' approach marked a stark contrast to classical economists' preference for minimal state interference (Keynes, 1936).

In addition to fiscal measures, Keynes also addressed the limitations of monetary policy during severe downturns with his concept of liquidity preference. This reflects the public's inclination to hold cash rather than invest during uncertain times. Even with lower interest rates set by the central bank, widespread economic pessimism might deter businesses and consumers from borrowing and spending, a situation described as a liquidity trap that underscores the limitations of monetary policy in reviving demand under such conditions. The belief that investment demand was highly unresponsive to interest rate changes and a nearly flat Liquidity preference - Money supply (LM) curve

[5] MEC is a measure of expected profitability of investment, representing the rate of discount which makes the cost of purchasing a capital asset equal to the present value of expected future earnings from that asset.

suggested that monetary expansion would have minimal impact on stimulating demand and output.

Keynes' analysis of the Great Depression and his call for proactive fiscal policy marked a significant shift in economic theory. His insights led to the development of Keynesian economics, which has had a profound impact on economic policies globally, especially in how governments manage macroeconomic cycles. The principles derived from Keynes' work, emphasizing the importance of aggregate demand and the active role of government in stabilizing the economy, remain central to economic policy debates today.

A more recent analysis by Galizia, Portier, and Beaudry attempts to reconcile Hayek's views with those of Keynes. The authors note that both economists recognized the instability resulting from poor monetary policies but differed in their solutions. While Keynes advocated government intervention to stimulate aggregate demand, Hayek emphasized the need for market corrections and criticized interventionist policies. They argue that Hayek's focus on preventing inflation and Keynes' emphasis on fighting unemployment might have led to complementary policies that could have mitigated the Depression's severity.

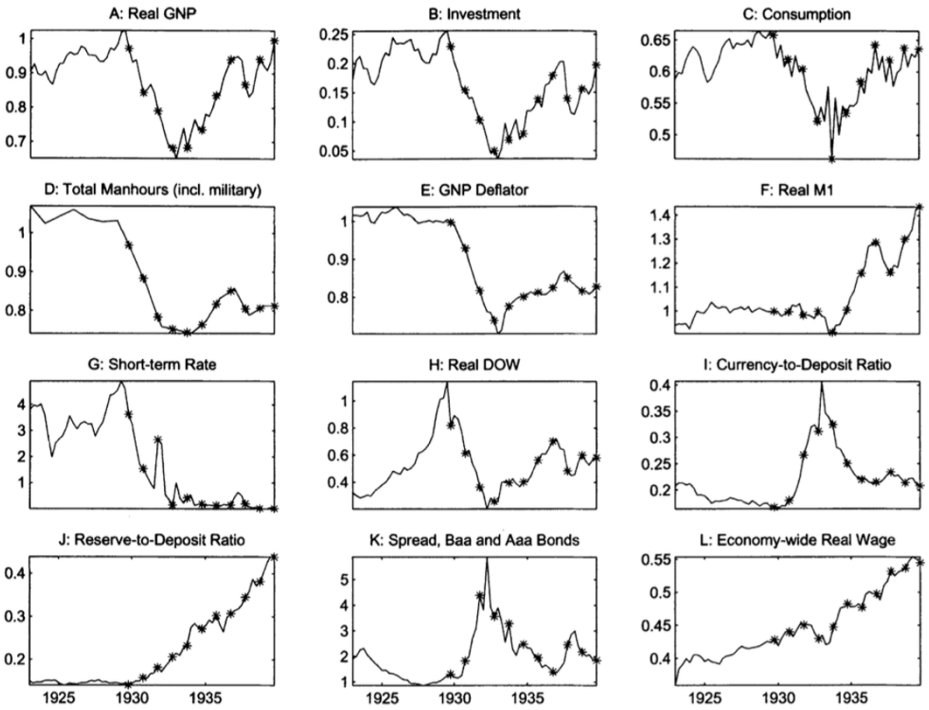
2.1 A Monetary Approach: Friedman's Critique of the Great Depression

A robust challenge to the Keynesian emphasis on fiscal policy, which had downplayed the role of monetary factors in economic management, was offered by Milton Friedman and his colleagues in the 1950s. They argued forcefully for the centrality of monetary policy in influencing both economic output and price levels. To elevate the importance of monetary measures, it was crucial to debunk the belief that monetary policy had been ineffective during the Great Depression. This critical view led Friedman, along with his co-author Anna Schwartz, to provide a groundbreaking reinterpretation of the Great Depression's causes in their work, *"A Monetary History of the United States, 1867–1960"* (1963). Their analysis not only challenged Keynesian principles but also reshaped economic thought by reasserting the powerful role of monetary policy.

Friedman's reinterpretation of the Great Depression disproved the widely held belief that it stemmed from inherent flaws in the capitalist system or the stock market

crash of 1929. Instead, he and Schwartz attributed the contraction primarily to the collapse in the money supply faced by the United States. This contraction in the money supply was initially triggered by the Federal Reserve's tight monetary policy in 1928-1929, aimed at stemming the overheated stock market. They contended that this policy stance exacerbated the downturn by leading to a significant reduction in economic activity. However, as can be seen from the table in the appendix (Figure 2), the reduction in the money supply is not attributable to a contraction of the monetary base, which increased by 19% between 1929 and 1933, but rather to a 38% collapse in the money multiplier. For this reason, it is difficult to determine the extent to which the Federal Reserve can be held responsible for the reduction in the money supply (Mankiw, 2016).

According to Friedman and Schwartz, the key catalyst for the collapse in the money multiplier during the 1930s was the series of banking panics that occurred in the years immediately following the onset of the crisis. These bank failures caused a contraction in the money supply by altering the behaviors of both banks and depositors, which manifested in a decline in currency-to-deposit and reserve-to-deposit ratios (see panel I and J in the picture below [6]) .



Key macroeconomic data for the 1920s and 1930s (fourth quarters after 1928 indicated by *)

[6] Key macroeconomic data for the 1920s and 1930s. Source: Lawrence Christiano, Roberto Motto, and Massimo Rostagno, "The Great Depression and the Friedman-Schwartz Hypothesis".

Having lost confidence in the banking system, people began to view currency as a safer form of money compared to demand deposits. Consequently, there was an increase in the currency-to-deposit ratio. Furthermore, bank failures made bankers more cautious. Witnessing numerous bank runs, they began to fear the consequences of operating with limited reserves and thus increased reserves beyond the legal minimum, leading to an increase in the reserve-to-deposit ratio. These two effects together contributed to a significant decrease in the money multiplier, which caused the contraction of the money supply (Mankiw, 2016).

It could therefore be argued that, even if the Federal Reserve cannot be held directly responsible for the monetary collapse, it should be blamed for not taking a more decisive role in preventing bank failures. Friedman and Schwartz criticized the Federal Reserve for not counteracting bank panics through open market purchases or other monetary policy tools, as it failed to act as a lender of last resort when banks needed liquidity to address bank runs. Friedman argued that if the Federal Reserve had conducted counterfactual open market purchases at critical junctures during the contraction, it could have prevented the monetary collapse (Christiano, Motto, & Rostagno, 2003).

Additionally, Friedman's analysis underscores the Federal Reserve's failure to increase the monetary base sufficiently after the stock market crash of 1929, which could have stabilized the banking system. He posited that this failure led to a significant reduction in the money supply, exacerbating the economic downturn. Friedman suggested that had the Federal Reserve adopted a more accommodative monetary policy stance, particularly by responding more aggressively to money demand shocks, the severity of the Depression could have been significantly mitigated (Friedman & Schwartz, 1963).

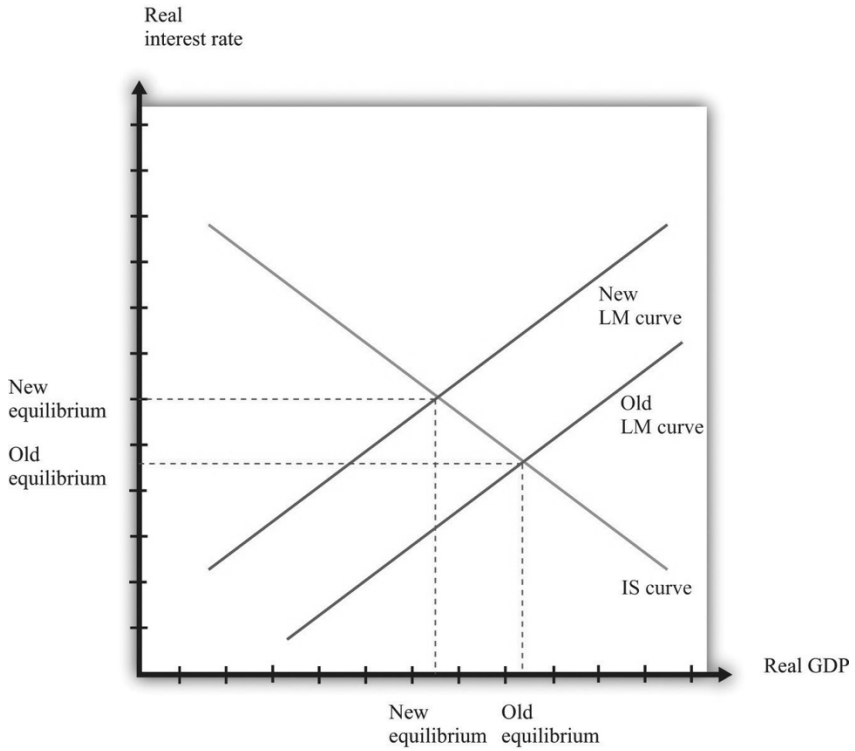
Moreover, central to Friedman's interpretation was the Quantity Theory of Money (QTM), which offers a profound reinterpretation of the economic dynamics during the Great Depression. The QTM is succinctly encapsulated by the equation $MV = PQ$, where M represents the money supply, V the velocity of money, P the price level, and Q the output of goods and services. This theory posits that the money supply directly influences price levels in the long run, provided that the velocity of money and output levels remain relatively stable. According to this theory, a decrease in the money supply leads to a decrease in spending, investment, and consumption, thereby causing a recession or

depression. Friedman applies this theory to the Great Depression, arguing that the Federal Reserve's contractionary monetary policies resulted in a sharp decline in the money supply, which in turn contributed to the depth and duration of the depression (Christiano, Motto, & Rostagno, 2003).

In their analysis, Friedman and Schwartz argue that the Federal Reserve's failure to stabilize the money supply was a critical exacerbating factor during the Depression. They documented the link between bank failures and the money supply during the Great Depression, arguing that the banking panics of the early 1930s led to a significant reduction in the money supply as banks failed and depositors lost confidence in the banking system. This caused a decrease in the velocity of money, indicative of reduced economic transactions and increased cash retention by the public, which exacerbated the economic downturn by reducing the availability of credit and constraining economic activity and further amplified the deflationary effects of the reduced money supply (Christiano, Motto, & Rostagno, 2003).

Friedman's rigorous advocacy of the QTM not only challenged the Keynesian fiscal-focused paradigm but also reoriented economic policy towards the importance of monetary measures. His argument underscored the potent role of monetary policy in managing economic stability, influencing the subsequent adoption of monetarism as a guiding principle in economic policy formulation. This shift marked a significant transformation in economic thought, moving away from a primarily fiscal-centric view to one that equally emphasizes the strategic management of the money supply (Christiano, Motto, & Rostagno, 2003).

Using the IS-LM model, we can interpret Friedman's monetary hypothesis and assert that the Great Depression was caused by a leftward shift of the LM curve:



From a policy perspective, Friedman's interpretation of the Great Depression has significant implications. He contended that the Federal Reserve could have mitigated the economic downturn by implementing aggressive open market operations to increase the money supply. Such actions, according to the QTM, would have helped stabilize both the price level and overall economic output, thus lessening the Depression's severity (Friedman & Schwartz, 1963).

Additionally, Friedman highlighted the constraints imposed by the gold standard on monetary policy during the Great Depression. Under the gold standard, countries were required to maintain a fixed exchange rate by backing their currency with gold reserves. Friedman argued that adherence to the gold standard limited the Federal Reserve's ability to expand the money supply and implement countercyclical monetary policies to combat the depression. As a result, the gold standard exacerbated the severity of the economic downturn by constraining the Federal Reserve's ability to act as a lender of last resort and provide liquidity to the banking system.

In sum, Friedman and Schwartz emphasized the crucial role of monetary policy in exacerbating the crisis. Contrary to views that blamed inherent flaws in American capitalism, they argued that the Depression resulted largely from inadequate monetary management, highlighting the significant responsibility of monetary authorities in causing the economic collapse. By applying the Quantity Theory of Money and analyzing the effects of monetary policy on the money supply and economic activity, Friedman challenged conventional wisdom about the causes of the Depression and provided a framework for understanding the importance of sound monetary policy in preventing future economic crises. This analysis not only reshaped the discourse on economic policy and central banking but also underscored the necessity of maintaining monetary stability as a means to mitigate economic downturns. His insights have profoundly influenced modern monetary policy frameworks, including inflation targeting and the strategic use of monetary interventions during economic crises.

Nonetheless, the Friedman-Schwartz hypothesis has also faced criticism. First of all, a primary issue with the monetary interpretation concerns real money balances. A leftward shift of the LM curve can only be caused by a decrease in real money balances (M/P). However, between 1929 and 1931, real money balances in the United States increased since the contraction of the money supply was accompanied by an even greater reduction in the price level. A second inconsistency with the monetary interpretation is related to the behavior of interest rates. A leftward shift of the LM curve should have led to an increase in interest rates. Yet, nominal interest rates in the United States were continuously decreasing between 1929 and 1933.

These reasons demonstrate that the monetary interpretation is insufficient to explain the severity of the Great Depression (Mankiw, 2016).

2.2 Bernanke's Interpretation: From Monetary Theories to Financial Crises

Some economists argue that while monetary factors played a significant role, the Great Depression was also influenced by non-monetary factors such as declines in consumer and business confidence, deflationary pressures, and international trade dynamics. In attempting to understand the Great Depression, Bernanke (1983) argues that

the traditional monetary perspective, primarily associated with Milton Friedman and Anna Schwartz, which emphasizes the impact of banking crises through the lens of a decline in the money supply, is necessary but not sufficient to explain the severity and duration of the Depression.

Bernanke pointed out that the amount of money available did not shrink so substantially as to cause a depression of such magnitude. While agreeing with Friedman and Schwartz that money was an important factor in the 1929-1933 period, he is skeptical about whether it fully explains the connection between the financial sector and overall production, arguing that monetary forces were, at most, only part of the problem. This is what prompted him to study a non-monetary channel through which an additional impact may have caused the Great Depression (Pampillón, 2022).

When it comes to addressing the causes of this crisis, Bernanke introduces a new channel through which the financial crisis impacted economic output: he puts the spotlight on financial intermediaries, underscoring that non-monetary factors primarily affected the economy by impairing the financial sector's ability to perform its function of credit intermediation efficiently. These inefficiencies within the financial system, according to Bernanke, helped convert what might have been a severe but shorter economic downturn into a protracted depression. Proof of this conviction is precisely the title of his journal article: *"Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression"*, in which he analyses how the disruption of the financial sector, by banking and debt crises, raised the real cost of intermediation between lenders and borrowers, thus leading to a decline in aggregate output.

Central to Bernanke's work is the concept if the Cost of Credit Intermediation (CCI) and his analysis of how the financial crisis increased the (CCI) during the Great Depression. The Cost of Credit Intermediation refers to the real costs associated with the process of transferring funds from savers to borrowers. Under normal economic conditions, financial intermediaries, such as banks, facilitate this transfer efficiently. They assess risks, provide loans, and support both investment and consumption. However, Bernanke highlights that disruptions in this process, especially during financial crises,

can lead to a significant increase in CCI, making credit both expensive and less accessible, and thereby constraining broader economic activity [7].

The late 1920s and early 1930s were marked by a series of bank failures and debt defaults, which were critical in raising the CCI. Bernanke identifies both internal and external shocks as precipitators of these failures. Internally, many banks had overextended themselves with loans that became non-performing as the economy began to falter, compounded by a lack of adequate capital buffers. Externally, the onset of the Depression ignited widespread panic and bank runs, further aggravated by previous speculative investments that had gone sour and a general loss of investor confidence.

These bank failures and defaults had severe repercussions. A notable consequence was a marked increase in risk aversion among the surviving banks, which in turn severely tightened their lending criteria. This restriction reduced access to credit for many potential borrowers, particularly small businesses and individuals who were deemed too risky. Moreover, this heightened risk aversion directly contributed to a higher CCI, as banks either demanded higher interest rates to compensate for the increased risk or chose to lend only to the most creditworthy, typically larger corporations with clear collateral (Bernanke, 1983).

Bernanke uses empirical data to illustrate these dynamics. The last column of the table below [8] shows the differential between yields on Baa corporate bonds and long-term U.S. government bonds. The widening of this gap from about 2.5% in 1929-1930 to nearly 8% by mid-1932 reflects the growing reluctance of lenders to extend credit without significant risk premiums. This differential is a clear indicator of how financial stress translated into higher borrowing costs, thereby further restricting economic activity through increased CCI (Bernanke, 1983).

[7] According to Bernanke, the financial sector's breakdown meant that even if money was technically available, the mechanisms to distribute this money (lending and credit) were impaired.

[8] Source: "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression" by Ben S. Bernanke (1983)

SELECTED MACROECONOMIC DATA, JULY 1929–MARCH 1933

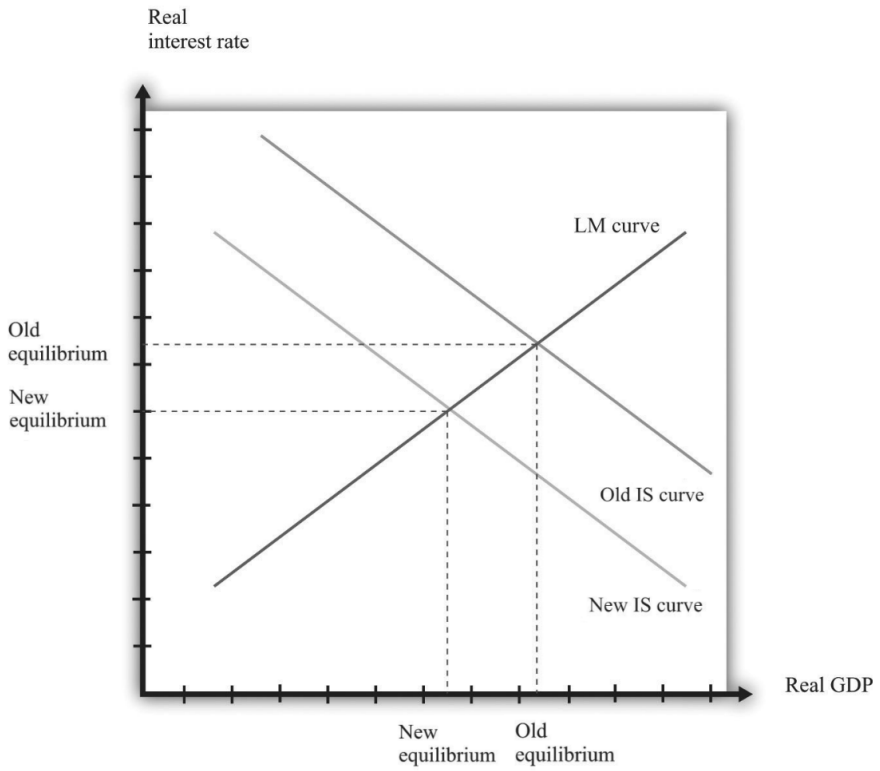
Month	*IP*	*Banks*	*Fails*	$\Delta L/IP$	*L/DEP*	*DIF*
1929*J*	114	60.8	32.4	.163	.851	2.31
A	114	6.7	33.7	.007	.855	2.33
S	112	9.7	34.1	.079	.860	2.33
O	110	12.5	31.3	.177	.865	2.50
N	105	22.3	52.0	.121	.854	2.68
D	100	15.5	62.5	−.214	.851	2.59
1930*J*	100	26.5	61.2	−.228	.837	2.49
F	100	32.4	51.3	−.102	.834	2.48
M	98	23.2	56.8	.076	.835	2.44
A	98	31.9	49.1	.058	.826	2.33
M	96	19.4	55.5	−.028	.820	2.41
J	93	57.9	63.1	.085	.818	2.53
J	89	29.8	29.8	−.055	.802	2.52
A	86	22.8	49.2	−.027	.800	2.47
S	85	21.6	46.7	.008	.799	2.41
O	83	19.7	56.3	−.010	.791	2.73
N	81	179.9	55.3	−.067	.777	3.06
D	79	372.1	83.7	−.144	.775	3.49
1931*J*	78	75.7	94.6	−.187	.763	3.21
F	79	34.2	59.6	−.144	.747	3.08
M	80	34.3	60.4	−.043	.738	3.17
A	80	41.7	50.9	−.104	.722	3.45
M	80	43.2	53.4	−.133	.706	3.99
J	77	190.5	51.7	−.120	.707	4.23
J	76	40.7	61.0	−.013	.704	3.93
A	73	180.0	53.0	−.103	.706	4.29
S	70	233.5	47.3	−.050	.713	4.82
O	68	471.4	70.7	−.310	.716	5.41
N	67	67.9	60.7	−.101	.726	5.30
D	66	277.1	73.2	−.120	.732	6.49
1932*J*	64	218.9	96.9	−.117	.745	4.87
F	63	51.7	84.9	−.138	.757	4.76
M	62	10.9	93.8	−.183	.744	4.91
A	58	31.6	101.1	−.225	.718	6.78
M	56	34.4	83.8	−.154	.696	7.87
J	54	132.7	76.9	−.170	.689	7.93
J	53	48.7	87.2	−.219	.677	7.21
A	54	29.5	77.0	−.130	.662	4.77
S	58	13.5	56.1	−.091	.641	4.19
O	60	20.1	52.9	−.095	.623	4.44
N	59	43.3	53.6	−.133	.602	4.79
D	58	70.9	64.2	−.039	.596	5.07
1933*J*	58	133.1	79.1	−.139	.576	4.79
F	57	62.2	65.6	−.059	.583	4.09
M	54	3276.3[a]	48.5	−.767[a]	.607[a]	4.03

Notes: IP = seasonally adjusted index of industrial production, 1935–39 = 100; *Federal Reserve Bulletin*.
Banks = deposits of failing banks, $millions; *Federal Reserve Bulletin*.
Fails = liabilities of failing commercial businesses, $millions; *Survey of Current Business*.
$\Delta L/PI$ = ratio of net extensions of commercial bank loans to (monthly) personal income; from *Banking and Monetary Statistics* and *National Income*.
L/D = ratio of loans outstanding to the sum of demand and time deposits, weekly reporting banks; *Banking and Monetary Statistics*.
DIF = difference (in percentage points) between yields on Baa corporate bonds and long-term U.S. government bonds; *Banking and Monetary Statistics*.
[a]A national bank holiday was declared in March 1933.

In concluding this segment of his analysis, Bernanke contrasts the financial dynamics of the U.S. with those of Canada during the same period to underscore the variable impacts of financial crises depending on the structural and regulatory

characteristics of national financial systems. Unlike the U.S., where numerous bank failures exacerbated the economic downturn, Canada's banking system, which was characterized by fewer, larger banks, remained relatively stable. Despite this stability, the Canadian economy also experienced a tightening of credit and an increase in CCI, even if not to the extent seen in the U.S. This comparison highlights the importance of the banking system's structure in influencing the severity of the economic impact during financial crises (Bernanke, 1983).

As a Neo-Keynesian economist, Bernanke's interpretation of the Great Depression proposes a leftward shift in the IS curve attributable to an exogenous contraction in spending:



Bernanke illustrates the direct linkage between heightened CCI and the consequent reduction in economic activity, focusing particularly on the effects of elevated borrowing costs on investment and consumption.

On the investment front, elevated borrowing costs rendered it prohibitively expensive for businesses, especially those traditionally reliant on external financing like households, farmers, and small businesses, to found themselves. This constraint severely limited their ability to secure necessary capital for maintaining, let alone expanding, their operations and economic activities. This setback in capital formation, consequently, curtailed new projects and led to stalled capital formation and a subsequent dip in productivity and potential economic growth.

Consumer behavior also shifted markedly. Tighter credit conditions substantially reduced purchasing power, particularly impacting the acquisition of durable goods and real estate—sectors heavily dependent on financing. The ripple effects of reduced consumer spending were compounded by a general decline in consumer confidence and wealth, leading to deferred consumption and heightened liquidity preference. This shift towards increased savings and reduced expenditure, further depressed demand.

Bernanke's analysis offers a comprehensive view on how financial system disruptions can extend beyond temporary economic fluctuations to cause deep, structural economic downturns.

Moreover, in his interpretation of the Great Depression, Bernanke understood the pivotal role played by deflation in transforming a minor recession into a prolonged period of unemployment and depressed income. Indeed, between 1929 and 1933, a series of systematic price reductions led to profound deflationary pressures (the price level fell by 25%). A fall in price levels usually leads to an increase in people's income, however this is not what happened during the Great Depression. In trying to understand the reasons for such a destabilizing effect of deflation "Bernanke distinguishes at least two channels by which deflation induced depression." (Schwartz, 2002).

The first, which we have just finished describing, is a nonmonetary channel that consists of the decline in financial intermediation that followed from the reduction in banks' ability to lend. The second channel is the way in which labor markets functioned.

The contraction in prices eroded company revenues, pushing many into lower profits or deeper losses. This financial strain drove numerous businesses into bankruptcy, which sharply increased unemployment. As more workers lost their jobs, wages and thus household spending declined. This reduction in consumer spending further diminished

business revenues, exacerbating their losses. As the downward spiral continued, consumers delayed purchases, especially of durable goods, anticipating further price declines. This hesitation stifled business investments even more. These developments continued to feed the vicious cycle of declining employment, lower consumption, further price cuts (in an attempt to sell more), and thus even greater economic decline (Pampillón, 2022).

Bernanke elucidates the multiplier effects wherein reduced business expansion and consumer spending exacerbated unemployment, leading to a cyclical decline in income and further contracting consumption and investment. Moreover, Bernanke emphasizes that these dynamics were particularly pronounced in the real estate and construction sectors, which suffered from acute financing droughts, thereby affecting related industries (Bernanke, 1983).

Moreover, we need to mention the role of expectations in exacerbating the crisis. Indeed, inflation (and deflation) expectations are fundamental when considering the investment function, which depends on the real interest rate: $I(i - \pi^e)$. As long as prices are believed to remain constant the real interest rate equals the nominal interest rate. However, when people start to expect a fall in the price level the inflation rate becomes negative ($\pi^e < 0$), and the real interest rate is higher for any given nominal interest rate. This increase in the real interest rate depresses planned investment spending and thus aggregate output.

Additionally, when consumers and businesses expect a future decline in the price level, there is a change in planned spending. Consumers delay their spending decisions, hoping to increase their future purchasing power, and businesses hesitate to incur debt to purchase investment goods, believing they will have to repay the debt with money that has greater purchasing power. This decline in consumption and investment depresses aggregate income and consequently reduces the demand for money. The nominal interest rate must then decrease to rebalance the money market, but if it decreases by less than the expected deflation, it causes an increase in the real interest rate (Mankiw, 2016).

To sum up, Ben Bernanke's analysis of the Great Depression significantly redefines our understanding by emphasizing the crucial role of financial systems,

particularly credit intermediation, in exacerbating the economic downturn. His work shifts the focus from traditional monetary explanations, which primarily consider money supply contractions, to the impacts of banking crises on manufacturing and economic activity. This approach not only deepens our comprehension of the Depression but also enhances our strategies for economic policy and crisis management. By extending the monetary framework of Friedman and Schwartz to illustrate how disruptions in the financial sector can profoundly affect economic stability, Bernanke underlines the interconnectedness of monetary policy, financial regulation, and economic outcomes, offering vital lessons for navigating complex economic landscapes. This comprehensive approach not only sheds light on past economic events but also offers vital lessons for managing contemporary and future financial crises.

In conclusion, this chapter offers an extensive examination of the Great Depression and seeks to explain the reasons for its severity through the analysis of the diverse theories of prominent economists such as Hayek, Keynes, Friedman, and Bernanke. These interpretations, although contrasting, not only deepen our understanding of this pivotal crisis but also continue to influence contemporary economic policy and crisis management.

Chapter 3. The International Transmission of the Great Depression

Despite the onset of the Great Depression in the United States, the repercussions of the 1929 crisis had significant impacts on numerous other global economies. In his seminal article, "The Macroeconomics of the Great Depression: A Comparative Approach" (1995), Bernanke highlights that while many economists have focused primarily on the United States, incorporating analyses of other countries can be highly beneficial. Such a comprehensive approach enhances our understanding of the causes and dynamics of the crisis from a macroeconomic perspective. For this reason, the following chapter will explore how the American crisis influenced economic systems around the world.

3.1 Analysis of International Spillovers of Foreign Shocks

Before delving into the analysis of the consequences of the Great Depression on other economies we need to understand the mechanism through which a crisis that burst in the US affected so many countries of the world. In order to do so we are going to propose an analytical examination of real foreign shocks and their effects on the rest of the world. Taking the perspective of the domestic economy, the short-run macroeconomic effects of both fiscal and monetary shocks in the United States, which already in 1929 was one of the biggest economies of the world, are going to be considered [9].

As observed in the previous chapter, during the Great Depression, the United States banking system was under tremendous strain, leading to a series of bank failures. This resulted in relatively high real interest rates, despite low nominal rates, because deflation increased the real value of money. Figure 3 in the Appendix shows this severe increase in the real interest rates in the United States between 1930 and 1932.

[9] The alaysis is going to focus on the consequences in the first few years following the collapse, to observe the immediate reactions of economies and governmental policies. Thus, in the case of the Great Depression, the short-term period would extend approximately until 1932. During these years, some of the most immediate and dramatic effects of the economic downturn were observed, such as the rapid increase in unemployment, the contraction of economic activity, and the initial responses of governments, such as the adoption of deflationary or protectionist policies before more structural measures like the New Deal were introduced in the United States starting in 1933.

Such a monetary shock in the US causes several consequences for other economies. As a matter of fact, when foreign interest rates rise, the return on investments (such as bonds) in that foreign currency becomes more attractive compared to those available in the domestic market, assuming domestic interest rates remain unchanged. Investors seeking higher returns will move their capital to markets offering higher interest rates. This means that investors will sell their domestic currency to buy foreign currency, which they then use to invest in the foreign country. The increased demand for foreign currency and the increased supply of domestic currency in the exchange market leads to a depreciation of the domestic currency. As more people sell the domestic currency to buy the foreign currency, the price (or value) of the domestic currency falls relative to the foreign currency. The depreciation of the domestic currency leads to an increase in the domestic aggregate output, due to the improvement of the current account (Krugman, Obstfeld, & Melitz, 2022).

However, this increase in the domestic aggregate output during the Great Depression was crowded out by the fiscal shock that affected the US simultaneously to the monetary one. As a matter of fact, the increase in the interest rate experienced by the United States made the cost of borrowing more expensive, reducing consumer spending and investment, thus causing a fall in aggregate output. Similarly to the monetary shock, this fiscal shock had profound repercussions in other economies. A fall in the GDP of the United States, caused a reductions of their imports, which means a reduction of exports for many open economies, and a reduction in the demand of their currency. This imbalance between lower demand and stable supply leads to depreciation of the domestic currency. Moreover, currency markets are also influenced by expectations and speculations. If market participants expect the domestic currency to weaken due to deteriorating economic fundamentals, they might start selling the currency in anticipation, which can further drive its value down (Krugman, Obstfeld, & Melitz, 2022).

These combined effects of the monetary and fiscal shocks experienced by the United States during the period of the Great Depression caused a severe depreciation of the exchange rates of many countries with respect to the dollar.

However, if the domestic country adopts a fixed exchange rate system, then its central bank must intervene to fight the exchange rate depreciation. There are several

strategies that the domestic central bank might adopt to counteract such pressures and maintain its fixed exchange rate. The most direct method is for the central bank to buy its own currency in the foreign exchange market using its foreign exchange reserves. This reduces the supply of the domestic currency and increases its price, helping to maintain the pegged rate. However, this method is limited by the amount of foreign reserves a country holds. Alternatively, the domestic central bank can increase interest rates to make holding the domestic currency more attractive. Higher interest rates can attract foreign capital, increasing demand for the domestic currency and supporting its value. This approach, however, can slow domestic economic growth and increase borrowing costs, leading to potential slowdowns in investment and consumer spending (Krugman, Obstfeld, & Melitz, 2022).

Now, that we have understood the mechanisms of international transmission of foreign shocks, and the implication of different exchange rate ragimes, we can move on to the examination of what actually happened during the Great Depression in many economies, and the reasons for the differences in outcomes.

3.2 The Gold Standard and the Transmission of yhe Great Depression

Although the initial impulse behind the Great Depression was beyond the control of individuals, the reasons why it evolved into a catastrophe of such magnitude and was not arrested in the years following its onset, are surely tied to the opinions and views of those making economic policies. The most important barrier to actions that would have arrested or reversed the decline was the mentality of the gold standard. This world view, held by those making economic policy, sharply restricted the range of actions they were willing to contemplate (Eichengreen and Tamin, 2000).

During the late 19th and early 20th century, the majority of the world's economies were linked to each other by the gold standard, according to which each country maintained a reserve of gold and agreed to exchange one unit of its currency for a specified amount of gold. Through the gold standard, the world's economies maintained a system of fixed exchange rates (Eichengreen & Flandreau, 1997). Even though the gold standard had been suspended during the First World War, its restoration was considered

a priority by virtually all the major economic powers. It is easy to understand the appeal of the gold standard to contemporaries: the frightening inflation after 1918 made policymakers yearn for a system that would improve financial stability. To policymakers the gold standard represented a state of normality for international monetary relations; support for it was a continuation of the mindset that had become firmly established in the late nineteenth century (Eichengreen and Tamin, 2010).

However, the gold-standard mentality and the institutions it supported limited the ability of governments and central banks to respond to adversity; they led to the adoption of policies that made economic conditions worse instead of better. As early as 1920, the Swedish economist Gustav Cassel warned that mismanagement of the gold standard could lead to a severe depression. Unlike Keynes or Hayek, Cassel not only explained how this could occur, analyzing both how a country could get into a depression and how it could get out of one, but his explanation anticipates the way the Great Depression actually occurred. He repeatedly warned policymakers of the danger of deflation, arguing that excessive demand for gold by central banks would lead not only to deflation, but also to a worldwide depression and the demise of the gold standard. According to Cassel the solution in order to get out of the depression was monetary expansion [10].

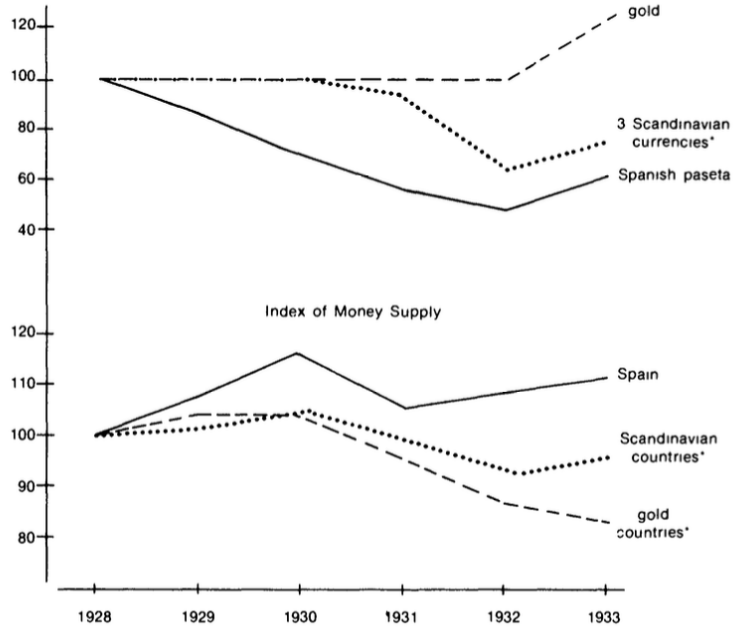
As the dollar was linked nearly to all the currencies of the world through a network of fixed currency exchange rates (the gold standard) and being the United States the primary creditor and financier of postwar Europe, the financial crisis in the U.S. triggered or worsened economic failures globally. However, the timing and severity of the Great Depression varied substantially across countries.

One key difference among governments was how committed they were to the fixed exchange rate set by the international gold standard. Choudhri and Kochin, in 1980, examined the role of the exchange rate in the transmission of the Great Depression trough Europe. They compared several small European countries that operated under different exchange rate regimes during the depression. From the point of view of small countries, the Great Depression was an external shock independent of domestic conditions in these countries. Thus, by focusing on small countries, they highlighted the importance of the

[10] Also Eichengreen showed that the gold standard constrained monetary policies and prevented countries from undertaking expansionary measures that could have ended the severe deflation (Eichengreen and Temin, 2000).

exchange rate system in the transmission of exogenous business cycle disturbances from abroad.

The sample of the study includes Spain, as it was the only major country operating under a flexible exchange rate system at the onset of the Great Depression, and remained on flexible exchange rates throughout the whole period. As representatives of countries which adhered to the gold standard throughout the depression period they chose The Netherlands, Belgium, Italy, and Poland. Except for the Netherlands, all these nations had encountered significant price inflation and exchange rate depreciation during the 1920s. This historical context likely influenced their choice to maintain their currencies tied to gold. Lastly, they analyzed the behavior of three Scandinavian countries that were on the gold standard as the Great Depression began, however, they suspended the gold standard in the middle of the depression (September 1931), shortly after the United Kingdom decided to leave the gold standard, allowing the currencies of these countries to fluctuate.



As can be seen from the graph above [11], the value of the Spanish peseta witnessed a significant decline during this period, with a depreciation of over 50% by 1932. However, the Spanish money supply remained relatively stable, except for a sizable decrease in the money stock in 1931. In a sharp contrast, countries adhering to the gold

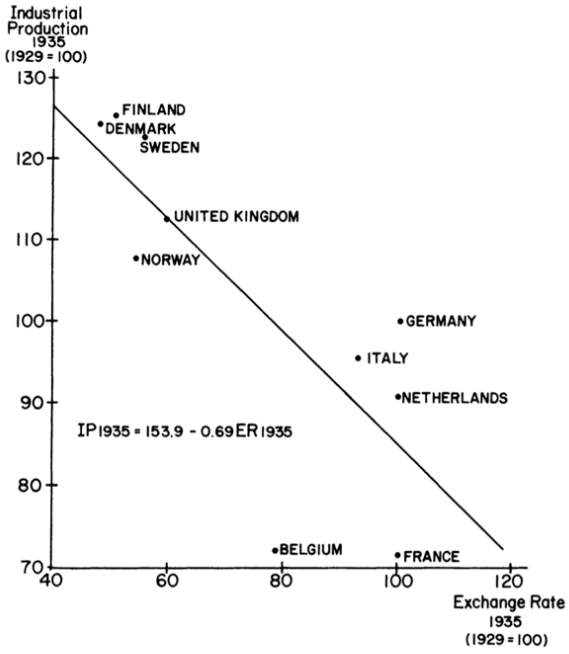
[11] The graph shows the behavior of the exchange rate (price in terms of U.S. dollars) and money supply during 1928-1933 in the three exchange rate regimes discussed (*indicates an unweighted average). Source: (Choudhri & Kochin, 1980)

standard maintained fixed exchange rates with the United States until 1932 (when the U.S. abandoned the gold standard) yet experienced a sustained decline in their money stock. The data also reveal that while the price of the Scandinavian currencies fell between 1931 and 1932, the decline was not as pronounced as that of the peseta. Additionally, the money supply in these countries declined less than that of the gold countries (Choudhri & Kochin, 1980).

During the specified timeframe, a striking contrast emerged between the behaviors of industrial production and the wholesale price levels under the two distinct exchange rate systems. Figure 4 shows that all four nations adhering to the gold standard experienced a significant downturn in both prices and output between 1928 and 1932. It is remarkable that despite considerable differences in terms of industrialization and trade, the economic contraction in each gold country closely mirrored that of the United States. Conversely, Spain experienced minimal impact on prices and output during the depression period. In fact, the level of production and prices and production in 1932 showed little deviation from those observed in 1928 (Choudhri & Kochin, 1980).

Regarding the impact of exchange rate regimes on the economic recovery from the Great Depression, the article by Barry Eichengreen and Jeffrey Sachs, "Exchange Rates and Economic Recovery in the 1930s", offers an extensive examination, providing a new interpretation of the effects of currency depreciation. Eichengreen and Sachs present evidence that countries which devalued their currencies in early stages of the depression, such as the United Kingdom, Denmark, and Scandinavian countries, experienced a more rapid economic growth compared to those that remained on the gold standard, like Italy, France, and the Netherlands. This is supported by empirical analysis demonstrating a clear negative relationship between the extent of a country's currency depreciation and its subsequent economic recovery, measured in terms of industrial production growth [12].

[12] The graph represents the percentage change in the exchange rate between 1929 and 1935 and the percentage change in industrial production. The depreciation, plotted along the horizontal axis, is expressed as the gold price of domestic currency in 1935 as a percentage of the 1929 parity; the change in industrial production, plotted along the vertical axis, is the ratio of production in 1935 to 1929 multiplied by 100. Source: (Eichengreen & Sachs, 1985)



While the document recognizes the complex nature of the topic and highlights the necessity for additional investigation, it asserts that exchange rates management was a key factor in the economic recovery of the 1930s. The macroeconomic benefits upon countries that implemented currency depreciation are indisputable, especially in terms of enhancing competitiveness (Figure 5), adjusting real wages (Figure 6), and influencing interest rates. Thus, the main criticism of the exchange-rate depreciation strategy during the 1930s revolves around its inconsistent application and complete avoidance by some major countries. They suggested that a wider and more synchronized adoption of this policy would have been beneficial for all the countries involved. Despite the potential global benefits of widespread currency depreciation, the intermittent and uncoordinated way exchange-rate policies were executed in the 1930s likely diminished their overall effectiveness (Eichengreen & Sachs, 1985).

While the Depression was particularly long and severe in the United States and Europe, it was milder in Japan and much of Latin America. Shibamoto and Shizume's research into Japan's recovery from the Great Depression shows how the strategic combination of expansionary fiscal, exchange rate, and monetary policies, prescribed by the finance minister Takahashi Korekiyo, played a critical role in the country's early recovery during the 1930s. The analysis suggests that adjusting the exchange rate, as an

independent policy mechanism, was pivotal in overcoming the depression. This adjustment shifted public expectations from deflation to inflation in the latter half of 1931, well ahead of the actual policy shift in December, anticipating Japan's departure from the gold standard and its inflationary consequences. Japan's experience during the 1930s serves as a prime example of how a small open economy can recover from a global downturn through strategic policy adjustments, such as exiting the gold standard, which not only aligned with but also accelerated by public behavioral changes ahead of official actions. This conforms to the views of Temin (1989) and Eichengreen (1992), who argue the crucial role of abandoning the gold standard for economic recovery during the 1930s. Additionally, the study provides new empirical evidence on the significant role of inflation expectations in shaping the period's economic dynamics.

The analysis of the effects of exchange rate policies on economic recovery during the 1930s to Latin American countries was conducted by José Manuel Campa. Building upon the work of by Eichengreen and Sachs (1985), Campa applied their methodology to analyze the impact of currency devaluation on these economies [13]. Latin American countries were "hit first by and reacted earlier to the effects of the Depression", leading these countries to adopt inward-oriented development strategies, focusing on import substitution to stimulate domestic industrialization (Campa, 1990). The depreciation of the currency made import goods more expensive relative to domestic goods, causing a switch in aggregate demand toward domestic goods hence increasing in employment and output. This excess demand raised domestic prices, boosting the overall production, and moderating the inflation. Therefore, similarly to the effects observed in European countries, devaluation had a positive effect on the economic recovery of Latin American economies (Figure 7). Moreover, the study found a clear negative relationship between currency depreciation and export volume (Figure 8).

To compare the reaction of the Latin American and the European countries to depreciation, regression analysis was used [14].

[13] The anaysis is based on the assumption that unilateral devaluations carried out by Latin American countries, considerd as small economies, had no effect on the broader global economy. Therefore the analysis narrows its focus on the examination of the domestic economic effects of devaluation within thse countries. (Campa, 1990).

[14] Simple OLS regression results (1929-1935). Note: t-statistics are in parentheses. Source: (Campa, 1990)

Dependent Variable	Constant Term	Exchange-Rate Term	R^2	N	Sum Square Residuals
Ten European Countries					
(1) Industrial Production	153.55	−0.71	0.63	10	1349.285
	(14.59)	(−3.66)			
(2) Export Volume	140.87	−0.80	0.63	10	1714.387
	(8.56)	(−3.67)			
Ten Latin American Countries					
(3) Industrial Production	166.79	−0.66	0.40	10	2334.101
	(7.22)	(−2.29)			
(4) Export Volume	162.91	−1.04	0.71	10	1515.124
	(8.75)	(−4.45)			
The Twenty Countries Pooled					
(5) Industrial Production	156.40	−0.63	0.40	20	5048.950
	(10.84)	(−3.42)			
(6) Export Volume	149.44	−0.89	0.65	20	3424.112
	(12.56)	(−5.82)			

"Regressions 1 and 2 reflect the results of the European sample used by Eichengreen and Sachs, while Regressions 3 and 4 correspond to the results using only the Latin American countries. Finally, regressions 5 and 6 correspond to the results of the pooled sample of European and Latin American countries, where the coefficients are restricted to be equal for both subsamples" (Campa, 1990). Although Latin America felt the impact of the Great Depression sooner and addressed it more quickly, the way they responded trough exchange rate policies was like that of European economies. Thus, the structural economic frameworks of Latin American countries did not restrict their ability to respond to the Depression through policy changes, contrary to what might have been assumed.

To better understand the impact of different exchange rate regimes in the recovery from the Great Depression, throughout the following sessions we are going to analyze the case of two different countries: Australia, a small open economy that stayed under a fixed exchange rate regime; and Britain, a large economy which decided to adopt a floating exchange rate regime.

3.3 The Case of Australia

Being a small open economy, Australia has historically been heavily reliant on commodities exports, making it particularly vulnerable to global economic fluctuations. This vulnerability was highly evident during the period of the Great Depression. The

economic shocks of the 1930s had profound impacts worldwide, and Australia was no exception. The Great Depression's effects on the Australian economy were numerous and severe. First of all the real output experienced its largest decline in the twentieth century. As can be seen from the table below, Australia's real output fell by more than 17% [15].

REAL OUTPUT DECLINES DURING THE DEPRESSION

Country	Peak year	Trough year	Peak-to-trough decline (%)
Australia	1928	1931	17.3
UK	1929	1931	5.8
U.S.	1929	1933	28.5
France	1930	1932	14.7
NZ	1929	1932	14.6
Canada	1928	1933	29.6

SOURCE: Angus Maddison's Historical Database.

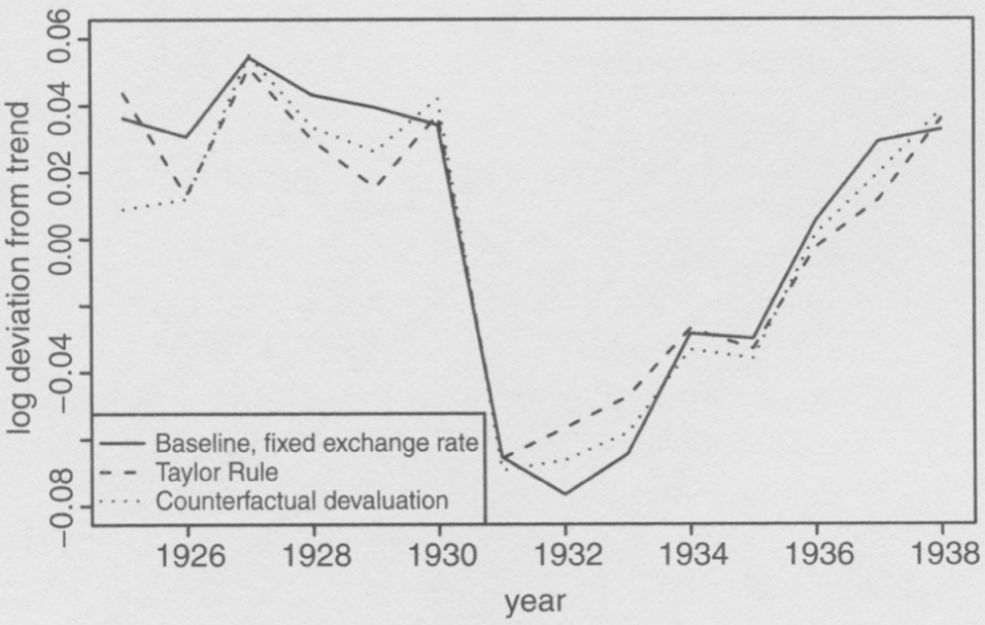
Additionally, the period marked the most significant deflation in twentieth-century Australian economic history, with prices dropping about 25% between 1929 and 1933, while unemployment reached a peak of 32% in 1932.

Given the profound impact of this depression upon Australian economy it is crucial to examine the economic policy response, which was significantly affected by the policy environment during the interwar period. The Commonwealth Bank of Australia, responsible for note issuance and overseeing government transactions, had the primary economic goal of maintaining currency stability, which meant adherence to the gold standard. This adherence to the gold standard is often viewed as a key factor in the depression's spread to the international economy, indeed Australia's commitment to gold limited its ability to adjust the exchange rate in response to current account deficits, resulting in high nominal interest rates throughout the 1920s. Even after leaving the gold standard in 1931, Australia's monetary policy remained relatively passive and limited, due to the currency attachment to the British sterling. This kept interest rates at modest levels and allowed only a cautious expansion of the money supply through the 1930s.

[15] Australia's fall in output may seem moderate if compatred to the one of the US. However this moderation is deceptive, as it reflects also the fact that the Australian economy stagnated in the second half of the 1920s. Between 1925 and 1929, the Australian economic activity declined by 2%, while the U.S. economy grew by 15% in real terms over the same period.

In order to analyze the role played by exchange rate regimes on the effects of the Great Depression in Australia, we will refer to the study by Payne and Uren (2014), titled "Economic Policy and the Great Depression in a Small Open Economy". By utilizing a standard New Keynesian model of a small open economy with nominal rigidities extended include a government sector, they examined the economic policy responses to the Great Depression and to what extent modern-day policies[16] would have been able to moderate output fluctuations.

Their results suggest that if Australia had adopted a flexible exchange rate following a Taylor rule, the output fluctuation would have been significantly moderated and the recovery more rapid. Specifically, they estimated that such monetary policy could have mitigated the output fluctuations by up to 25%. The chart below shows output fluctuations under alternative monetary policies [17].



[16] Monetary and fiscal policies have changed substantially since the Depression. Most importantly the Reserve Bank of Australia (RBA) does not pursue a single-minded goal of maitaining the stability of the currency. Rather, there is a dual mandate of maintain employment and controlling inflation. (Payne & Uren, 2014)

[17] The solid line represents the baseline scenario with a fixed exchange rate, simulating the conditions similar to the gold standard, which was the actual policy during the Great Depression. The dashed line represents a simulation where monetary policy follows a Taylor rule, allowing for a flexible exchange rate. The dotted line shows the effect of devaluation under the Taylor rule but keeping interest rates fixed.

While the decline in real output would still be considerable under a flexible exchange rate (-6,6%), it would be less severe compared to what was observed historically (-8,5%) or under a model with a fixed exchange rate (-7-7%) (Payne & Uren, 2014).

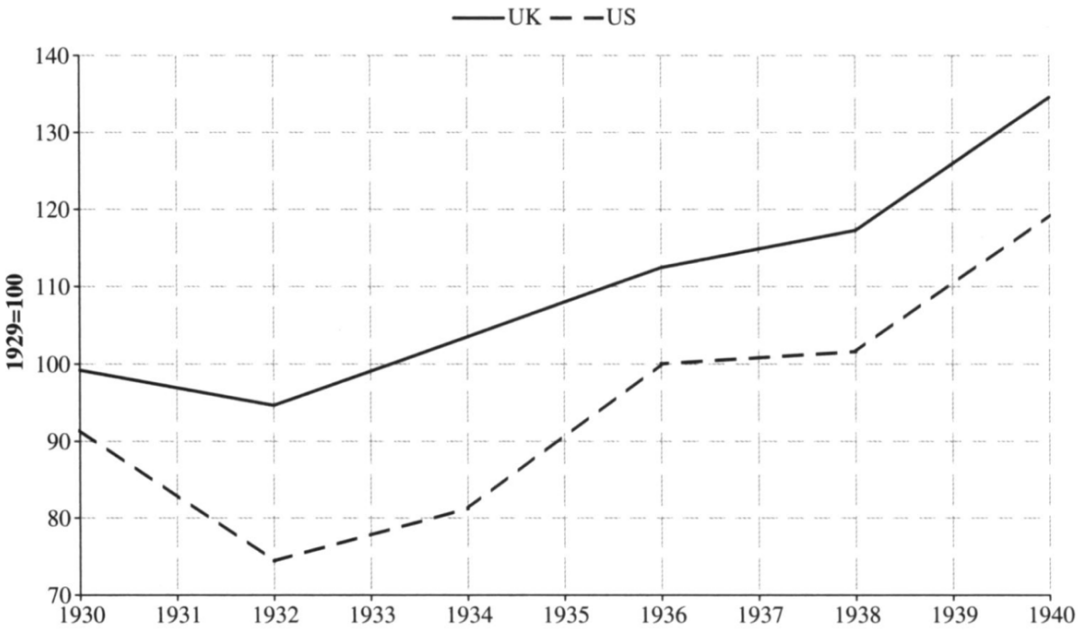
By examining this historical episode, we can understand the costs and benefits associated with different exchange rate regimes. The conclusions of the paper highlight the importance of flexible exchange rate regimes and proactive fiscal and monetary policies in mitigating economic crises. Australia's economic downturn during the Great Depression could have been less severe if the policymakers at the time had the insights and tools available to contemporary economists.

3.4 The Case of Britain

Analyzing the strategies employed by Britain during the same historical period reveals significant differences in terms of economic policies, which contributed to the mitigation of the Great Depression's impact on the British economy.

Roger Middleton's work [18] provides a thorough analysis of Britain's response to the Great Depression, focusing on the effectiveness of British monetary and fiscal policy during the period spanning from 1929 to the eve of the Second World War. Starting with a comparison between UK and US economic trends "it is clear that the British economy did not experience a "Great Depression" in any meaningful sense between 1929 and 1932" (Middleton, 2010). The chart below presents real GDP changes in the United Kingdom and the United States from 1929 to 1937, using 1929 as the base year (indexed to 100).

[18] Middleton, R. (2010). British monetary and fiscal policy in the 1930s. *Oxford Review of Economic Policy*.



Sources: UK: Sefton and Weale (1995, Table A3); US: Carter *et al.* (2006, III, series Ca9).

The UK experienced a peak-to-trough fall in real GDP of 5.4% from 1929 to 1931, which is significantly less than the US's fall of 26.6% from 1929 to 1933. Moreover, by 1937, the UK's real GDP was 16.4% above its level in 1929, indicating a recovery and growth beyond the pre-depression level. In contrast, the US real GDP in 1937 was only 5.3% above its 1929 level, showing that while it also recovered, the magnitude of recovery relative to the starting point was not as great as the UK's, whose economic performance was stronger during this period (Middleton, 2010).

A key aspect of Britain's response to the Great Depression was the abandonment of the gold standard in 1931. Following a period of moderate growth from 1925 to 1929, the British economy experienced a sharp contraction from 1929 to 1931, which made the situation unsustainable, leading to the suspension of the gold standard (Dimsdale, 1981).

General developments in the British economy 1925–31

Constant prices	*Percentage change* 1925–29	1929–31
1. Gross domestic product	+8.5	−5.8
2. Gross fixed investment	+12.4	−1.5
3. Consumers' expenditure	+7.3	+2.6
4. Exports of goods and services	+7.3	−30.6
5. Public current expenditure on goods and services	+6.5	+5.0
6. Imports of goods and services	+7.6	+2.4
7. G.D.P. Deflator	−5.1	−2.8
8. Weekly wage rates	−2.8	−1.7
9. Real earnings	+5.8	+7.6
10. Unemployment %*	8.6–8.0	8.0–16.4
11. Money stock	+4.7	−0.4
12. Sterling/dollar exchange rate	+0.6	−6.7
13. Terms of trade	+0.8	+20.0
14. Average balance on current account £ million	+50	−8

* Percentage unemployment among employees in first and last years.

Sources: 1–10 Feinstein (1972) Tables 6, 5, 61, 65, 57, 58.
11 Sheppard (1971) Table 3.3.
12 L.C.E.S. The British Economy: Key Statistics 1900–1970 (nd) Table L.
13 Feinstein (1972) Table 64.
14 Sayers (1976) Appendix 32.

After abandoning the gold standard, Britain adopted a managed floating exchange rate, a crucial decision which enabled the Bank of England to pursue a more independent monetary policy aimed at domestic stabilization, without the constraint of maintaining gold parity. Once Britain had a floating and highly managed exchange rate, there was an initial fear of inflation due to a potential uncontrollable depreciation of the sterling. This fear led policymakers to implement fiscal retrenchment, such as reducing government deficits through cuts in spending and increases in taxes, to maintain confidence in the economy. However, after this initial period of adjustment and recovery from panic, the Bank of England was able to lower the Bank rate [19] significantly to 2% and maintain it throughout the period. Moreover, depreciation made British goods cheaper on the international market, helping to boost exports and, by extension, the national economy.

[19] The Bank rate, often referred to as the base interest rate, is the rate at which a nation's central bank lends money to domestic banks, influencing the general level of interest rates across the economy. Lowering the Bank rate would generally be expected to stimulate economic activity by making borrowing cheaper, thus encouraging spending and investment.

While the devaluation of the pound was a strategic move to improve Britain's balance of payments and stimulate economic recovery, the implementation of a "cheap money" policy was instrumental in supporting Britain's economic recovery after 1932. Lower interest rates, facilitated by the abandonment of the gold standard, reduced the cost of borrowing, encouraging investment and consumption.

Once again this analysis suggests that the successful recovery of Britain's economy was heavily reliant on the ability to adjust the exchange rate as needed, which allowed for more targeted and effective economic policies. By abandoning the gold standard, Britain was able to avoid the kind of monetary collapse that the United States experienced.

To sum up, while it is true that the worst depression ever experienced by the world economy stemmed from a multitude of causes, such as declines in consumer demand, financial panics, and misguided government policies which caused economic output to fall in the United States, the gold standard played a key role in transmitting the American downturn to other countries. The gold standard interpretation has come to represent a "consensus view" of the Great Depression among most economic historians. The fact that countries not on the gold standard managed to avoid the Great Depression, while countries on the gold standard did not begin to recover until they abandoned it and started ensuing monetary expansion, provides strong evidence in support of this explanation.

Conclusions

In light of the analysis conducted, we can finally draw some final considerations regarding the important role that exchange rate regimes play for capitalism, especially in situations characterized by instability. Thanks to the empirical analysis of the repercussions of the Great Depression in various countries around the world, we have been able to confirm what was demonstrated by the theoretical models regarding the role of different regimes in response to fiscal and monetary economic policies and their impact on economic stability.

The Great Depression serves as a critical case study highlighting the profound influence of exchange rate regimes on the transmission and amplification of economic shocks. During this period of crisis, the gold standard played a fundamental role in determining the intensity and duration of the economic downturn in various countries. Indeed, countries adhering to the gold standard faced significant constraints in their policy responses, which often exacerbated the economic downturn. The gold standard, a fixed exchange rate regime, significantly limited the ability of central banks to respond to economic shocks through monetary policy. This inability to adjust the exchange rate in response to current account deficits made it nearly impossible for countries adopting a fixed regime to reverse declines in GDP. Countries that remained tied to the gold standard, such as France and Italy, had to maintain restrictive monetary policies to defend the exchange rate parity, thereby worsening the internal economic contraction. The inability to adjust exchange rates in response to global deflation led to high unemployment rates and a prolonged economic recession.

In contrast, nations that, already in the initial phases of the crisis, abandoned the gold standard and adopted more flexible exchange rate regimes, such as Great Britain and the Scandinavian countries, were able to devalue their currencies, which improved the competitiveness of their exports and stimulated economic recovery. Moreover, adjustments in the exchange rate allowed for shifts in expectations, which was a crucial factor for the faster economic recovery experienced by these countries compared to those that remained on the gold standard.

Despite reaching a consensus on the role of exchange rate regimes in responding to the crisis, there is still no agreement on the explanations for the causes that initially triggered a crisis of such proportions. From a personal perspective, the causes that originated and spread the Great Depression can be seen as a confluence of both monetary mismanagement and structural weaknesses within the global financial system. The Federal Reserve is certainly to be blamed, but the severity of the crisis must also be attributed to disruptions within the financial sectors and expectations. The initial stock market crash of 1929, while a significant trigger, was not the sole cause of the prolonged economic downturn. Instead, it exposed underlying vulnerabilities, such as over-leveraged investments, speculative bubbles, and an inadequate banking system unable to withstand the subsequent financial shocks. If we consider all of these factors combined, it becomes evident how a crisis that could have been a minor recession turned into one of the greatest depressions of all time.

The policy responses, or lack thereof, further exacerbated the situation. Initial reluctance to abandon the gold standard, coupled with austerity measures and protectionist trade policies, deepened the economic contraction. It was only with the abandonment of the gold standard and the adoption of more flexible economic policies, such as those introduced through the New Deal in the United States, that some countries began to recover.

This analysis underscores the necessity for adaptive and context-sensitive economic policies. While fixed exchange rate regimes can offer stability, they also limit the ability of policymakers to respond to shocks. The experience of the Great Depression suggests that flexibility in exchange rate management can be crucial in mitigating the adverse effects of global economic disturbances. In contemporary economic practice, the lessons learned from this period emphasize the importance of maintaining a balance between stability and flexibility, ensuring that exchange rate policies are robust yet adaptable to changing economic conditions.

The above condicted study underlines the importance of economic history, which serves as a crucial tool in understanding and preventing the recurrence of financial crises. By examining past economic events, such as the Great Depression economists and

policymakers can identify the causes and effects of these crises and develop strategies to mitigate their impact in the future.

The research by the Nobel Prize laureate Ben Bernanke, underscores the significance of this historical insight. One of the pivotal insights from Bernanke's research is the central role that bank failures played in deepening and exacerbating the depression. Prior to Bernanke's work, the prevailing belief was that the severity of the Great Depression could have been mitigated if the central bank had increased the money supply. While this might have been a contributing factor, Bernanke demonstrated that the primary cause of the prolonged economic downturn was the collapse of the banking system. His research showed that the relationship between banks and their borrowers, which includes valuable knowledge capital, was critical for the functioning of the economy. When banks failed, this relationship was destroyed, leading to a loss of economic efficiency and a slow recovery.

Furthermore, the insights gained from studying the Great Depression significantly influenced the response to the Great Recession of 2008. The financial crisis that began in 2008 bore similarities to the banking crises of the 1930s, with widespread bank failures and a severe contraction in economic activity. However, the policy responses in 2008 were informed by the lessons learned from the Great Depression, which helped to prevent a repeat of the devastating economic collapse experienced in the 1930s. One of the key lessons was the importance of maintaining the stability of the banking system. Bernanke, who was then the head of the Federal Reserve, implemented measures to prevent bank collapses, such as providing liquidity to banks and ensuring that depositors' funds were secure. These actions helped to stabilize the banking system and restore confidence among depositors and investors.

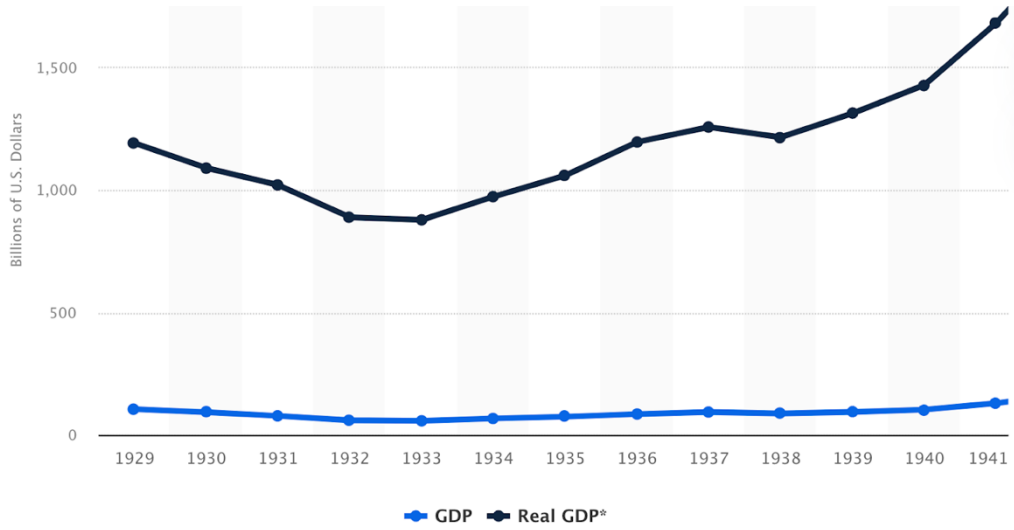
The study of economics, and specifically economic history, is essential for understanding the complex mechanisms that drive financial systems and economies. By analyzing historical data and events, economists can develop theories and models that explain how economic policies and practices influence the broader economy. This knowledge is invaluable for informing current economic policy and for developing strategies to prevent future crises. Economics provides a framework for understanding human behavior and decision-making processes in the context of resource allocation. It helps policymakers anticipate the potential outcomes of their decisions and design

interventions that promote economic stability and growth. Furthermore, economic studies contribute to our understanding of how different economic systems and institutions function, allowing for more effective regulation and oversight. This is particularly important in a globalized world where financial systems are interconnected, and the ripple effects of a crisis in one part of the world can quickly spread to others.

In conclusion, the analysis of the exchange rate regimes and their impact during the Great Depression provides valuable lessons for modern economic policy. As global financial systems continue to evolve, the ability to navigate and manage exchange rate dynamics will remain a critical component of economic stability and growth. Future research and policy development should continue to build on these historical insights, fostering a more resilient and responsive global economic framework.

Appendix

Figure 1



U.S. GDP during the period of the Great Depression.
(Statista 2024)

Figure 2

	August 1929	March 1933
Money Supply	**26.5**	**19.0**
Currency	3.9	5.5
Demand deposits	22.6	13.5
Monetary Base	**7.1**	**8.4**
Currency	3.9	5.5
Reserves	3.2	2.9
Money Multiplier	**3.7**	**2.3**
Reserve-deposit ratio	0.14	0.21
Currency-deposit ratio	0.17	0.41

The money supply and its determinants: 1929 – 1933.
Data from: "A Monetary History of the United States, 1867–1960" by Friedman and Schwartz, (1963)

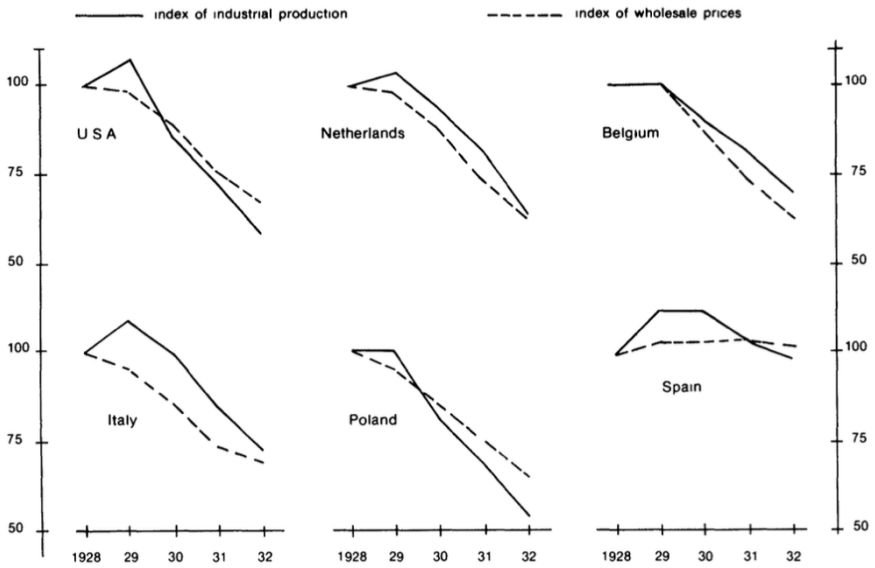
Figure 3

Great Depression

Year	Interest rate (%)	
	Nominal	*Real*
1930	2.23	4.73
1931	1.15	10.38
1932	0.78	10.95
1933	0.26	2.78
Avg.	1.10	7.21

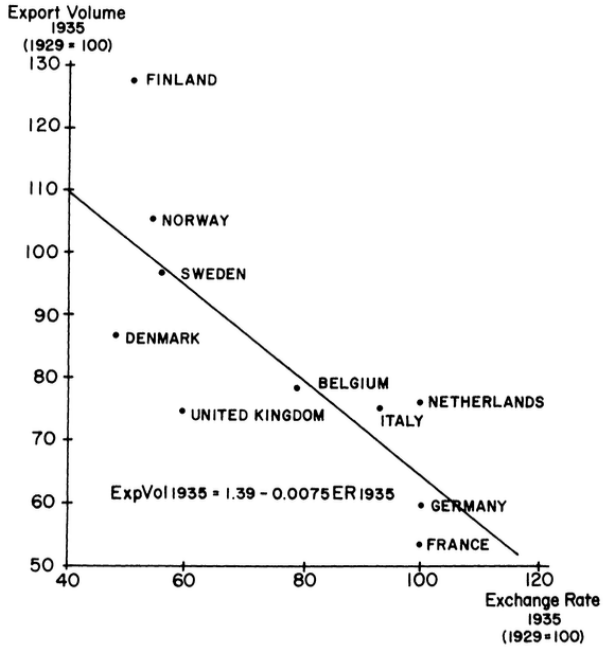
Nominal and real interest rates in the United States during the period of the Great Depression. (Board of Governors of the Federal Reserve System, 1943)

Figure 4



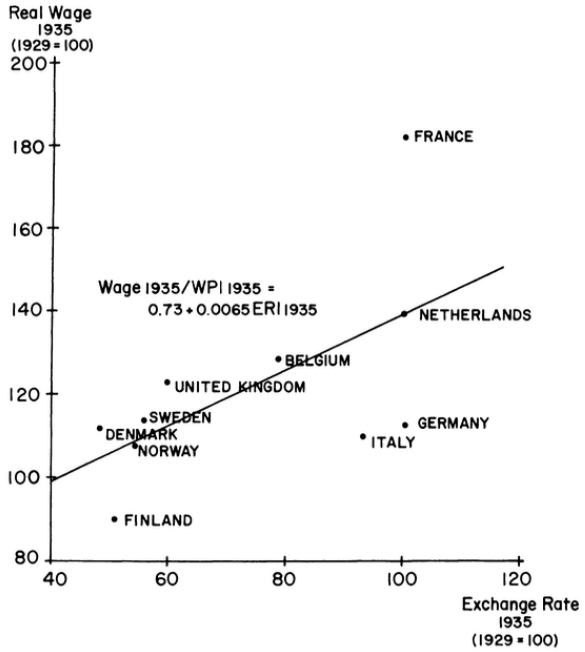
The behavior of output and prices during 1928-1932: The Gold Countries and Spain Compared with the United States
Source: (Choudhri & Kochin, 1980)

Figure 5



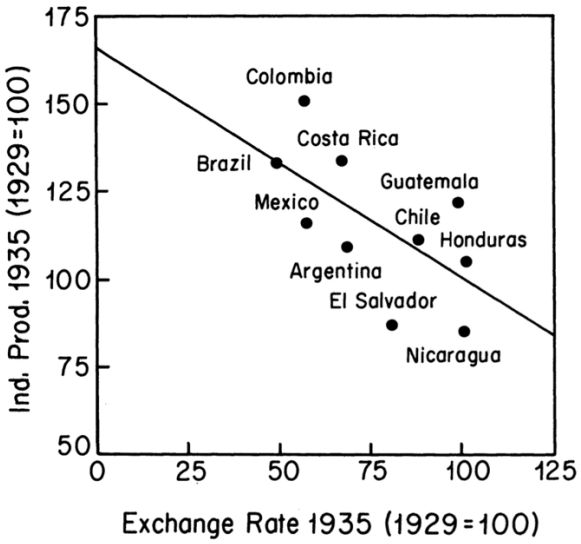
The impact of depreciations on demand: countries which depreciated succeeded in promoting the recovery of export volume compared with countries that remained on gold.
Source: (Eichengreen & Sachs, 1985)

Figure 6



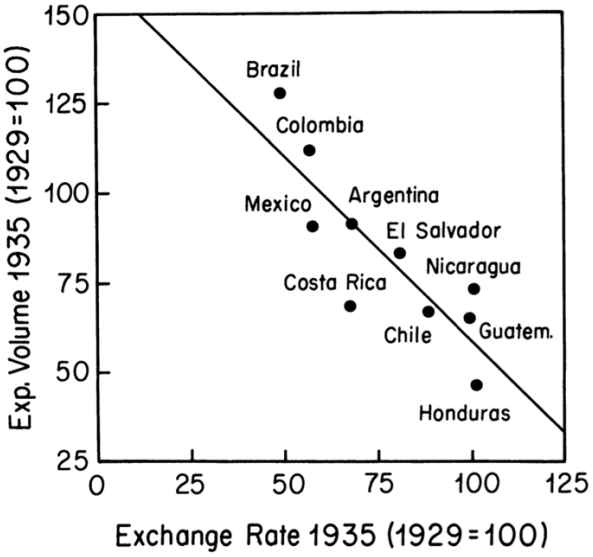
The relationship between the change in the exchange rate and the change in the real wage, suggesting that depreciation, by putting upward pressure on prices, contributed to the reduction in the real wage.
Source: (Eichengreen & Sachs, 1985)

Figure 7



The relationship between depreciation and the index of industrial production between 1929 and 1935.
Source: (Campa, 1990)

Figure 8



The relationship between export performances and exchange rates.
Source: (Campa, 1990)

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