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GOING DUTCH: THE MANAGEMENT OF MONETARY POLICY
IN THE NETHERLANDS DURING THE INTERWAR
GOLD STANDARD

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Going Dutch: The Management of Monetary Policy in the Netherlands during the Interwar Gold Standard*

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Abstract

Under what conditions can policymakers make demonstrably poor policy choices? By providing a new account of monetary policy management in the Netherlands during the interwar gold standard, we show how policymakers can fail to escape their long-held beliefs and refuse to consider available policy alternatives. Using high-frequency macroeconomic data, we are the first to document that the Netherlands' policymakers were able to conduct an independent monetary policy in the 1930s. We then show how this independence was squandered on fixing the guilder's exchange rate, a policy which led only to deflation, trade deficits, corporate bankruptcies and mass unemployment. We explain the government's policy stance by documenting the beliefs of politicians and central bankers, and then by investigating how business leaders and public intellectuals attempted to influence these beliefs.

Keywords: monetary policy, exchange rate policy, gold standard, interwar period, the Netherlands.

JEL Classification: N14, E42, E52, E58.

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‘Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist. [...] I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas.’

John Maynard Keynes, *The General Theory of Employment, Interest and Money* (1936: 340).

‘My ideas are unchanged and I dare say: unchangeable.’

Hendrikus Colijn, private correspondence (22 September 1936).¹

1. Introduction

This paper investigates the management of monetary policy in the Netherlands between 1925 and 1936, the period of the interwar gold standard when one guilder was exchangeable for 0.6 grams of pure gold at the Netherlands’ central bank. We present an in-depth case study of policy formation, implementation and impact. We identify the various policy instruments at the disposal of central bankers and show how they were used to fix the guilder’s exchange rate while simultaneously maintaining an important degree of monetary policy autonomy. We then measure the macroeconomic consequences of their exchange rate and monetary policies. Our case study allows us to address why policymakers can end up making poor policy choices; is it because they are captured by powerful lobbies, or is it because they mistakenly believe their policies to be beneficial? This is an especially relevant question in light of recent economic and political developments which pose similar problems, including difficulties surrounding the implementation of the UK’s Brexit referendum results, and the emerging trade war between the US and China.

Aside from cataloguing precedents and analogues, studying interwar Dutch monetary policy management is interesting for the following reasons. First, the longevity of the regime is unusual compared with other countries in the period: the Netherlands re-joined the gold standard early – alongside the UK – in 1925, and it was the last to leave the system – following France – in 1936. Second, the fact that the Netherlands was a small open economy allows us to apply off-the-shelf macroeconomic models to understand the policy trade-offs faced by countries in a fixed exchange rate system. Third, the period under investigation has several unique features: (a) the

¹ Letter from Hendrikus Colijn, prime minister of the Netherlands, to Pietro Stoppani, director of the League of Nations Economic Relations Section (22 September 1936); quoted in Langeveld (2004: 152). This quote demonstrates Colijn’s continued unwavering belief in the gold standard just prior to its collapse.

decision to re-join the gold standard was made while the Dutch economy was still recovering from a prolonged period of price deflation and a severe domestic banking crisis; (b) Dutch macroeconomic policymakers had a long standing tradition of maintaining a strong currency; and (c) De Nederlandsche Bank (henceforth DNB), the Netherlands' central bank, experienced a significant influx of gold during the WWI, increasing its ability to set policy during the period.

Many empirical contributions to the literature on monetary policy under fixed exchange rate regimes are historical in nature. The classical gold standard (1870–1914) is a particularly popular subject of enquiry. The standard relied on the presence of a “monetary hegemon”, the UK, which was both willing and able to lead the system (Kindleberger, 1986). Members needed conducive internal and external political environments, including (limited) democratic rights for citizens and good international policy coordination (Eichengreen, 1997). The system succeeded because it promoted trade, financial integration and economic prosperity (O'Rourke and Williamson, 2001). Bordo and Rockoff (1996) point to its ability to act as a “good housekeeping seal of approval”, enabling countries to borrow more and to borrow cheaply.² Overall, the classical gold standard can be held up as a piece of successful policymaking (Officer, 2008).

Meanwhile, the interwar gold (exchange) standard (1925–1936) has been framed as history's key example of a failed exchange rate regime. Indeed, Temin (1976) argues the structural weaknesses of the interwar gold standard made the Great Depression almost inevitable. At the very least the interwar standard inhibited policymakers from fighting its effects (Eichengreen, 1992). A direct link between the interwar gold standard and the US banking crises of the 1930s has also been established (Bernanke and James, 1991). Kindleberger (1986) concludes the absence of a monetary hegemon, and the inability of central bankers to coordinate, meant the new standard was not associated with the benefits of the old pre-war standard.

The Dutch experience of the interwar gold standard has been the subject of several studies. Contributions to Griffiths (1987) highlight Dutch support for this exchange rate regime came from diverse social groups, despite the fact that it put some of these at a significant economic disadvantage. In particular, Schoorl (1987) argues the Netherlands' most listened-to economists prioritised ethical considerations over economic analysis. De Vries (1994) focuses on

² The classical gold standard tied the hands of policymakers, solving time-inconsistency problems and improving the overall credibility of policymakers (Bordo and Kydland, 1995; Obstfeld and Taylor, 2003).

the actions of central bank president Leonardus Trip, absolving his flawed monetary policy by arguing it was a product of its time. Van Zanden (1996) links the Netherlands' adherence to gold with the country's poor performance during the 1930s, concluding the policy was a mistake. And Langeveld (2004) focuses on the personality and politics of Hendrikus Colijn, who as the Netherlands' finance minister, and subsequently prime minister, was ultimately responsible for government policy towards gold.³ Our paper builds on these works with a theory-informed study of monetary policy management and its domestic political economy.

Our case study is divided into three parts. In the first part, we provide an overview of the economics necessary to understand the interwar gold standard. We describe the conditions for a sustainable fixed exchange rate regime. We emphasise the trade-offs faced by policymakers by applying the Mundell-Fleming IS-LM-BP small open economy model to the Dutch case (Mundell, 1960, 1961; Fleming, 1962). We then discuss the domestic political economy of the interwar gold standard, where we emphasise the roles of single-issue interest groups, political parties and government institutions (following Broz and Frieden, 2001).

In the second part, we review the macroeconomics of the Dutch case. We start by describing the institutional design of the gold standard as it was re-introduced in 1925. We then use high-frequency macroeconomic data to understand Dutch monetary policy during the period; we uncover the formal and informal policy instruments used by central bankers, and measure the consequences of policy avenues taken. We analyse data on Dutch policy rates in comparison with those of key countries on the gold standard following the methodology of Shambaug (2004) and Obstfeld and Taylor (2005). We uncover both indirect and direct evidence of the use of measures to restrict capital mobility predicted by the Mundell-Fleming model.⁴

In the third part, we use diary entries, memoirs, personal correspondence, confidential meeting transcripts, propaganda pamphlets, newspaper articles and contemporary academic publications to explain the choices made by the Netherlands' policymakers. We uncover policy preferences from four perspectives: (a) political leaders responsible for the overall policy

³ Of course, there are also several quantitative economic histories of the interwar gold standard in which the Netherlands is analysed as part of wider cross-country comparisons (see, esp., Wandschneider, 2008).

⁴ Obstfeld and Taylor (1998) consider the collapse of the interwar gold standard to be a watershed in monetary policymaking, after which countries switched from capital mobility to immobility. We argue the watershed was not the collapse of the gold standard in general, but rather the collapse of the gold standard in the UK.

framework; (b) central bankers charged with its day-to-day implementation; (c) single-issue interest groups in favour and against gold; and (d) academic economists and policy commentators with competing visions on monetary policy. We uncover how the Netherlands' political elite pushed through their gold agenda without paying much regard to opposition voices.

Our findings are as follows. When the Dutch joined the standard, they considered the UK to be the monetary hegemon, coordinating their macroeconomic policies with those of their biggest trading partner. But the UK was unable to maintain its fixed exchange rate and was forced to leave the standard in 1931. Surprisingly, we find the UK's departure improved the stability of the guilder's exchange rate. We explain this finding by the fact central bankers used open market operations, manipulated their gold reserves, and imposed formal and informal restrictions to limit the in- and outflow of gold capital – all to maintain the independent monetary policy necessary for the guilder to stay on the gold standard. We conclude these efforts to stabilise the guilder were very successful. But we also conclude the domestic economy did not benefit from this policy stance. We describe how the policy choices of the Dutch government in the aftermath of the UK's departure from the gold standard prompted a prolonged period of deflationary pressure, deepened the decline in economic growth, worsened trade balances, and led to high business failure rates and high unemployment levels. Maintaining the gold standard meant the Dutch did too little to combat the effects of the Great Depression. While Dutch policies can be excused as being a product of their time, with hindsight it is clear that the dogma of gold harmed the Dutch economy.

We show that the policy preferences of the Netherlands' political elites were not uncontroversial; decisions taken by key policymakers were scrutinised very publicly and policy alternatives were abundant. Our analysis suggests the government's policy decisions were driven by an economic rationale rooted in the world of high finance, which advocated the *status quo* and prioritised the interests of a banking elite. Alternative economic ideas were systematically ignored. We show how various attempts policymakers made to mitigate the negative impact of gold were based on electoral rather than economic concerns. Overall, we conclude the powerful lobbies were themselves under the mistaken belief that the policies of their captured politicians were economically beneficial.

2. Economics of the Interwar Gold Standard

This section presents the economics of the interwar gold standard. After explaining the theoretical benefits and necessary conditions to sustain a fixed exchange rate regime, we set out how the monetary policy trilemma applies to the interwar gold standard. We then look at how ideas from the political economy of monetary policy can be employed to explain the Netherlands' policy choices.

2.1 Fixed Exchange Rates

Fixed rate regimes such as the interwar gold standard have two main domestic benefits. First, they promote trade and investment by reducing exchange rate risk. Countries that share a common currency or have a long-term peg appear to trade much more than comparable countries with separate currencies by reducing transaction costs (Rose, 2000). Second, fixed rates promote domestic monetary stability. By anchoring the value of the domestic currency to a low-inflation currency (or gold), policymakers are constrained to follow a time-consistent path of low inflation (Giavazzi and Pagano, 1988; Bordo and Kydland, 1995; Canavan and Tommasi, 1997). The cost of fixing is the flip side of this benefit: forfeiture of domestic monetary policy independence or capital mobility.⁵ Additionally, fixed exchange rates systems like the gold standard contain a deflationary bias (Eichengreen, 1984; Bernanke and James, 1991; Balderston, 2003).

Broz and Frieden (2006) argue that two conditions must be met in order for such a regime to be successful. First, a degree of international *coordination* is required. Coordination here means countries on the regime choose a common focal point, such as to peg their currency to gold (Frieden, 1997; Meissner, 2003). Obviously, why different countries choose to fix their exchange rate is idiosyncratic; one might be after increased monetary stability, while the other may be motivated by a reduction in currency volatility. Broz (1997) argues that a fixed exchange regime can be sustainable so long as the attractions of the regime increase with its membership. This also implies the reverse, that as soon as countries start leaving a fixed exchange regime, the regime itself may no longer be sustainable.

⁵ In addition to these two domestic benefits, predictable currency values can also help to mitigate international trade conflicts by reducing variability in the balance of payments, thereby reducing the chance of (costly) protectionist pressures, and keeping commercial antagonism at bay (Broz and Frieden, 2006).

Second, a degree of international *cooperation* is required. Countries need to coordinate their national economic policies to keep the exchange rate regime sustainable (Eichengreen, 1985, 1992; Cohen, 1993). That is, countries set all domestic economic policies within the constraints of maintaining the regime, and are willing to enter into agreements with other countries to support one another's monetary authorities in times of difficulty. While coordination and cooperation are associated with the long-run sustainability and durability of a fixed exchange rate regime, these two conditions are often not fully met because they require politically unpalatable economic trade-offs. Broz and Frieden (2006) point out that the gains of a fixed exchange rate may be difficult to realise because they require painful adjustment policies. Domestic consequences of interest rate changes can lead to conflict over the international distribution of these adjustment costs.

In addition to this literature explaining why fixed exchange rate regimes are established and how they are sustained, a separate literature focuses on the crises that eventually end these regimes. First-generation balance-of-payments or currency crisis models concern sudden speculative attacks on fixed exchange rates, and explain how investors may rationally sell a currency *en masse* when they anticipate the government can no longer afford to support the exchange rate (see Krugman, 1979). Second-generation models focus on the idea of self-fulfilling prophecies, in which investors attack a currency because they think others are also attacking that currency (see Obstfeld, 1986). Finally, third-generation approaches tend to link the banking sector more explicitly into the operation of currency markets, and focus on how these crises can have an impact on the real economy (see Chang and Velasco, 2001).

2.2 Monetary Policy Trilemma

Countries on a fixed exchange rate are faced with stark policy trade-offs. These trade-offs are best understood by employing the Mundell-Fleming IS-LM-BP small open economy extension (Mundell, 1960, 1961; Fleming, 1962) of the Keynes-Hicks-Hansen IS-LL model (Keynes, 1936; Hicks, 1937; Hansen, 1953). The theory states that in a fixed exchange rate regime, the balance of payments can only be equated by shifts in demand for goods, securities and money, conditional on the difference in interest rates between two countries. More explicitly, in a fixed exchange rate regime, countries need to sacrifice *either* their ability to set monetary policy independently

or their citizens' freedom to move capital across borders. Figure 1 is a graphical representation of these trade-offs. In a fixed exchange rate system like the gold standard, it says policymakers are forced to choose just one out of two remaining policy objectives.

[Insert Figure 1 here]

Independent monetary policy implies that countries do not have to coordinate their interest rates, nor do they have to jointly intervene in foreign exchange (or gold) markets, to stabilise their currency. It means setting a domestic interest rate different from that of other countries does not put appreciation or depreciation pressures on the currency, and does not undermine the stability of the exchange rate. For the model to be in equilibrium, the exchange rate must be “credible”, i.e., the long-run relationship between the changes in domestic and foreign rates must be stable. This only occurs when foreign and domestic policies are strongly co-moving, which is only possible if capital is sufficiently mobile.

Capital mobility refers to the ease with which banks and private parties can import and export financial capital and physical goods (e.g., gold) in and out of the country. Countries are able to impose formal or informal restrictions on capital leaving the country, affecting how the balance of payment with other countries equates. For example, countries can formally put in place restrictions on the international transportation of gold. Alternatively, countries can informally impose restrictions on the convertibility of currency to gold. In a fixed exchange rate regime where a country makes the choice to set independent monetary policy, capital mobility must be restricted to prevent capital flight. And when the country has a preference for free capital mobility, the model says policymakers will need to turn to the fixed exchange rate regime's hegemon in order to observe and follow the interest rate adjustments needed to equate their balance of payments.

We contend that not only the three corners of the trilemma triangle are available.⁶ In our view, especially pertaining to the case study here presented, it is not a choice of perfect capital mobility versus fully restricted capital mobility, or fully independent monetary policy

⁶ A similar argument is made by Klein and Shambaug (2015): partial capital controls and limited fixed exchange rates can enable full monetary policy independence. Alternatives are presented by bipolar exchange rate regimes (Fisher, 2001), or in the case where fixed and floating regimes freely switch (Klein and Shambaug, 2008). Ugolini (2012) applies similar ideas in a historical application to nineteenth-century Belgium.

versus fully dependent. We argue policymakers can switch rapidly between the bottom two corners of the trilemma triangle, leaving them in practice somewhere along the line between these corners.

2.3 Domestic Political Economy

Policymakers are concerned with diverse policy goals; they may be interested in maintaining domestic economic or financial stability and so pay attention to metrics such as inflation, unemployment, stock markets prices and national income levels. However, choosing to fix exchange rates requires domestic monetary policy to be subordinated to currency and balance-of-payments considerations (Broz and Frieden, 2001: 326). We distinguish two broad categories of domestic policy trade-offs faced as a result of choosing a fixed exchange rate regime.

Policymakers are concerned with *distributive trade-offs*. That is, they are concerned with the welfare effects of the fixed exchange rate regime for internationally-oriented industries, domestically-oriented industries, and the domestic purchasing power of consumers (Frieden, 1991). The intuition here is simple: if the groups losing from the fixed exchange rate regime are too influential, international coordination or cooperation may not find sufficient political backing within the country (Broz and Frieden, 2006). Policymakers are also concerned with *electoral trade-offs* in the face of monetary policy choices. The literature demonstrates governments delay exchange rate adjustments when faced with upcoming elections (Klein and Marion, 1997; Frieden et al., 2000; Leblang, 2002).⁷

The distributional effects of fixed exchange rates follow from associated costs and benefits (Frieden, 1991): groups involved in foreign trade and investment (international banks and investors, exporters) may favour fixed rates because exchange rate stability promotes trade and investment. On the other hand, groups whose economic activity is limited to the domestic economy (e.g., consumers or left-wing parties focused on protecting workers) may prefer a floating regime that allows the government to implement policies which stabilise domestic economic conditions.

Of course, the policy choice also depends on the *level* at which the fixed exchange rate

⁷ More broadly, economists have documented the incentive for policymakers to stimulate the economy to hold onto their jobs (see, e.g., Alesina et al, 1992).

is set (Broz and Frieden, 2001). If the currency is significantly overvalued, then exporters may favour incurring the costs of a floating regime, while consumers may favour incurring the costs of a fixed regime. The preferences and understanding of the parties involved is also important; some actors may promote policies that are against their economic self-interest because they vote for non-economic reasons, or fail to understand their economic implications. The Netherlands' confessionalised political system means these non-economic reasons may in our case include socio-religious values (Lijphart, 1979).

Broz and Frieden (2001) distinguish three mechanisms to explain how policymakers' ultimate decisions on a country's exchange rate regime is arrived at: (1) a contest played between competing interest groups (e.g. Frieden, 1991; Hefeker, 1997); (2) a class-based partisan approach which focuses on the preferences of political parties (e.g., Simmons, 1994; Hibbs, 1997); and (3) a focus on the consequences of a country's political institutions themselves (e.g., Bernhard and Lebland, 1999; Clark and Hallerberg, 2000). The interest-group explanation emphasises the role of single-issue pressure groups, the relative strength of which depends on the degree to which their constituency benefits or loses from a particular policy decision. The partisan approach looks at the basket of policy stances taken by parties across the political spectrum and how these are shaped by factors including beliefs and ideas. Finally, the political institutions explanation looks at how electoral and legislative institutions can shape the policy decisions of incumbent government, especially around the time of elections.

3. Macroeconomics of the Dutch Case

In this section we describe the state of the Dutch economy during the interwar gold standard. We link the management of monetary policy to the most prominent macroeconomic developments. First, we discuss the institutional arrangements of the interwar gold standard and the Dutch commitment to this currency regime, especially in the 1920s. Second, we document the various policy instruments available to DNB central bankers and their use, especially in the 1930s. Third, we discuss the economic outcomes of Dutch monetary policy during the period. This current section is primarily concerned with the presentation and analysis of quantitative evidence on the impact of gold standard policy. Appendix A provides an overview of the data

sources used in this analysis, while Appendix B describes our econometric methodology and results. Section 4 then uses qualitative, archival, evidence to describe and explain the decision processes which led this policy outcome.

3.1 Institutional Design

The UK returned to the gold standard in April 1925. It joined the US, which had effectively re-entered in 1919 – or, at least, in 1922 (Officer, 2008) – and the countries of Central and Eastern Europe, which had been forced to join in 1924 to combat hyperinflation. The Netherlands coordinated its return with the UK alongside other polities in their political sphere (Australia, New Zealand, South Africa and the Dutch East Indies). By the end of 1925, some 35 currencies were officially or *de facto* convertible into gold (Eichengreen, 1992: 192). Figure 2 reports the Dutch exchange rate between 1919 and 1939. The gold standard fixed the exchange rates as soon as the countries joined. Exchange rates only increased in volatility after the UK left in September 1931 (denoted with a vertical line).

[Insert Figure 2 here]

The re-emergence of the gold standard in the 1920s was a process fraught with difficulties. Britain was effectively forced to re-join in 1925 because it would have otherwise had to renew legislation originally introduced to suspend the gold standard. Indeed, British officials had pressed countries which had been contemplating joining before 1925 – including the Netherlands – to hold off until they could afford to re-join (Eichengreen, 1992). Unlike the pre-war gold standard, there was little support from gold surplus countries to others experiencing “gold famines”. The US Federal Reserve (henceforth referred to as “the Fed”), for example, maintained a policy of offsetting – or sterilising – all gold movements (Friedman and Schwartz, 1963: 283, 297).

There were subtle, yet important, differences in the ways countries linked their currencies to gold (Eichengreen, 1992). The Netherlands was initially able to sustain a full gold coin standard, having benefited from an influx of gold during the World War I. The UK adopted a gold bullion standard; gold coin had been withdrawn from circulation and the BoE was no longer legally required to sell gold to the public. A third group, which included Belgium, adopted a

gold *exchange* standard, by which a limited share of reserves could be held in the currencies of other gold standard members.

In the US, legislation forced the Fed to hold gold equal to 40 per cent of the value of money in circulation (Friedman and Schwartz, 1963: 149). An equivalent law was not initially imposed on DNB; it was up to Dutch central bankers to judge the proportion of money supply covered by gold (and gold-backed foreign exchange). Then, in 1929, the Netherlands' finance ministry also insisted on 40 per cent backing, of which 80 per cent had to be held in the vaults of DNB (Vanthoor, 2004: 133). This it could easily achieve thanks to its ample gold reserves.

Eichengreen (1992: 195) argues a major change of the interwar gold standard was the use of open market operations alongside interest rate policy.⁸ The Fed actively purchased and sold banker's acceptances, bills of exchange and government securities. Open market operations were the principal way through which the Fed sterilised the domestic impact of gold flows. DNB was actively using open market operations to make a return and, increasingly, to stabilise the guilder. France and Germany, however, were unable to follow the US example because new laws restricted the Banque de France and the Reichsbank out of fear of (hyper-) inflation.

A perennial concern of central bankers was a perceived global shortage of gold. The subject of international conferences and government inquiries, their idea was inadequate gold supplies were causing deflation. Eichengreen (1992: 199) argues these concerns were factually incorrect; there was more than enough gold in the system. Rather, it was the international *distribution* of this gold which was the problem, with France in particular being guilty of unnecessary gold hoarding after it joined the gold standard in 1928.

Another concern was the exchange rate at which currencies joined gold. The contemporary consensus was sterling was overvalued by at least 10 per cent, and the French franc undervalued by the same amount (Keynes, 1925; Irwin, 2010). But because this exchange rate was locked in with gold, prices had to adjust. They did so only gradually; wages were sticky. Balance-of-payments deficits should also have helped with adjustment, but did not: countries, like the UK and the US, whose currencies were held by others as reserve currencies, saw trading partners return claims in the form of foreign deposits (Irwin, 2010).

⁸ Open market operations refer here to buying government debt and investing in domestic securities.

Central bankers could, of course, have collaborated in the supply of lender-of-last-resort facilities to confront the most dangerous adjustment problems and liquidity concerns. But they failed to do so. The BoE was no longer the *de facto* coordinator of central bankers; its financial power or informal influence was significantly reduced. Efforts to coordinate policies internationally were limited to attempts to stabilise peripheral countries (see Marcus, 2018, for the case of Austria). By the 1930s, central banks were essentially competing with one another to attract gold.

3.2 Monetary Policy Instruments

How were the Dutch able to commit to the gold standard? The Netherlands' central bank had five formal policy instruments, and one set of informal instruments. All were used to differing degrees, at different instances during the period, in defence of the gold standard. First, DNB could influence the interest rate paid by Dutch banks by changing its policy rate. Second, it could actively lend to Dutch banks and businesses. Third, it had full control over the country's gold and foreign exchange reserves. Fourth, it could conduct open market operations using foreign bills of exchange and sovereign debt.⁹ DNB's fifth policy instrument was its control over the domestic money supply; it had the monopoly on the minting of coin and the printing of paper money. DNB's sixth policy lever was more informal in nature, and we are the first to fully document its existence: the ability to influence the movement of gold across international borders through various *ad hoc* policies, including manipulating gold convertibility requirements, delaying gold orders and entering into gentlemen's agreements with the country's major banks. These informal policy instruments were a way for DNB to restrict the most important component of capital mobility for the maintenance of the gold standard.¹⁰

During the classical gold standard, which the Netherlands left when its government suspended gold convertibility on 31 July 1914, the discount rate was the primary instrument used to maintain the guilder's fixed exchange rate.¹¹ The remaining policy instruments were used more actively only during the interwar period. Figure 3 shows the Dutch and UK policy rate

⁹ The acquisition and sale of foreign exchange is equivalent to the acquisition and sale of gold.

¹⁰ These policies have been labelled elsewhere as 'gold devices' (Bloomfield, 1959; Officer, 2008). De Jong (1967: 517-522) described similar manipulations of gold flows in the Dutch case during the classical gold standard.

¹¹ Indeed, Ettinger (1940) argues, incorrectly, that it was the sole instrument used before 1914.

between 1919 and 1939. We find policy rates became much more volatile after countries joined the gold standard; the Dutch and UK policy rates became a factor 12 more volatile after April 1925. However, for the US and France the magnitude of the increase in the volatility was a factor four smaller. The question remains: did the Dutch set their monetary policy independently? Did policymakers choose to conduct independent interest rate policies, or were they forced to consider other countries to sustain their fixed exchange rate?

[Insert Figure 3 here]

Using time series econometric methods, we determine to what degree the Dutch policy rate was conditional on foreign interest rates. We follow Shambaug (2004) and Obsfeld and Taylor (2005) and use auto-distributive lag models to examine the co-integration of policy rates. We examine four issues. First, we answer whether the Dutch policy rate was perfectly co-integrated with foreign policy rates. Perfect co-integration implies the fixed exchange rate regime is credible and that international coordination was effective in keeping exchange rates stable. Second, we address what type of policy the Dutch conducted. We distinguish three types: (a) ineffective, when policy rates are perfectly dependent on foreign interest rates; (b) offsetting, when Dutch rate increases are *smaller* than foreign rate increases; and (c) reinforcing, when Dutch rate increases are *larger* than foreign rate increases. Third, we measure the stability (co-integration) of Dutch policy with respect to its foreign counterparts. Fourth, we examine how quickly the Dutch needed to adjust their policies when faced with policy changes abroad. Appendix B presents our theoretical motivation, econometric specification and tables containing our econometric findings. These are summarised in Table 1.

[Insert Table 1 here]

We find the interwar gold standard is characterised by two distinct periods: before the UK left the standard, and after. From April 1925 until September 1931 we find Dutch monetary policy was highly conditional on rate changes in the UK; the Netherlands sacrificed its independent monetary policy relative to the UK. However, this strategy was by no means stable: it took DNB a full year to fully adapt to any changes in policy made by the BoE. While the Dutch might have sacrificed their monetary independence, they were unwilling to quickly absorb

changes in BoE's interest rate policies. After the UK left gold, the Dutch fully regained their monetary independence and started offsetting any policy changes by the BoE. This allowed the Dutch to more quickly absorb foreign changes in policy.

With respect to the US, we find DNB maintained an independent monetary policy between April 1925 and September 1933, when the US left the gold standard. The Netherlands' central bankers were able to offset policy changes made by the Fed. France was the largest economy of the remaining Gold Bloc. However, we find Dutch policymakers did not consider it to be its new hegemon. The Dutch maintained their monetary independence with respect to France throughout the entirety of the interwar gold standard; indeed, after the UK left, Dutch rates adjusted more quickly, suggesting increased monetary policy independence with respect to France.

This analysis leads to three characterisations of Dutch monetary policy management during the interwar period. First, after having coordinated re-entry with the UK in April 1925, the Dutch considered the UK the monetary hegemon of the new standard. This helped in fixing the Dutch exchange rate and succeeded in making Dutch monetary policy predictable. Second, the departure of the UK in 1931 in fact *increased* the stability with regard to the coordination, and thus weakened the co-movement, of Dutch and foreign policy rates. DNB was much better able to absorb foreign shocks to their economy and able to set their own domestic policy objectives. Third, the degree of monetary independence enjoyed by Dutch policymakers suggests they must have employed other policy instruments besides the interest rate, including putting limits on capital mobility. And this is exactly what we find.

[Insert Figures 4, 5, 6 & 7 here]

Figure 4 shows the evolution of gold reserves and outstanding banknotes between 1919 and 1936. DNB kept its gold reserves relatively stable prior to joining the gold standard. In the immediate run-up to April 1925, DNB sold approximately 15 per cent of its gold reserves, allowing for the guilder to re-join at the value of 10 guilders = 6.048 grams of pure gold, equal to its pre-1914 parity. After April 1925, DNB's gold reserves became approximately 19 times more volatile, indicating that they were using their reserves to support the currency. Much of this, however, originated from the period *after* the UK had left the standard. While the Dutch

were conducting independent monetary policy, this policy was still very much geared towards achieving the goal of maintaining the gold standard. For example, we see a sharp increase in gold reserves on DNB's balance sheet and a significant increase in the number of banknotes being issued after 1931. But DNB was only partially sterilising its gold influx; it failed to increase the money supply to the same degree as the increase in gold.

We find the Dutch kept the net of the in- and outflow of gold relatively stable prior to the UK's departure from the gold standard. While the Dutch government imposed an official, fixed, gold price for the purposes of backing the guilder, Figure 5 suggests a policy of permitting gold import and export markets to function relatively unimpeded before 1931. The kilograms of gold flowing into the Dutch economy became volatile only from the six months immediately preceding the UK's departure in September 1931 – evidence of first-generation currency crisis. Figure 6 shows how the regulated gold price compared to the Dutch market price of gold implied by the international trade of gold. This price was very volatile prior to the UK's departure from the gold standard, representing the potential for arbitrage opportunity for Dutch gold traders (i.e., buying cheap South African gold, and selling it on at a high price). Squaring the volatile trade in gold after 1931 with the limited price volatility implies DNB must have controlled the in- and outflow of gold – (lack of) price movements is smoking gun evidence of government policies to limit capital mobility. Figure 7 shows the implied price difference between the import and the export of gold and suggests arbitrage opportunities were eliminated.

In addition to managing its gold reserves and in the import/export of gold, DNB also conducted significant open market operations by accepting and selling foreign bills of exchange. Figure 8 shows the evolution of the foreign bills of exchange on DNB's balance sheet. Prior to joining the standard these bills were already accepted and sold regularly, as part of DNB's normal business model. After the Dutch joined the standard, the monthly volatility in the quantity of bills of exchange on the DNB balance sheet increased by a factor of ten. Central bankers were actively using their position in the exchange market to offset and affect the money supply. After the UK left, they quickly reduced their foreign bills of exchange holdings as they constituted a significant exchange rate risk. This, however, promptly limited the policy options available to DNB, leaving only policy rates, gold reserves and informal capital control measures as its tools to navigate the gold standard's demise between 1931 and 1936.

[Insert Figures 8 & 9 here]

Amidst continuously increasing global gold prices, the Dutch economy suffered a period of significant deflation. The debt-deflationary crisis of the early 1920s had a scarring effect on the Dutch economy, with hundreds of banks going out of business, more than 24,000 businesses declared bankrupt, and many surviving businesses struggling to find adequate financing. Figure 9 shows DNB's lending portfolio between 1919 and 1939, and suggests the central bank did attempt to offer policy relief to affected parties. During the financial crisis of the 1920s, DNB provided additional liquidity to the market by stepping up its short-term lending, while avoiding long-term lending. DNB promptly reduced its short-term lending as the 1920s banking crisis neared its end. Then, upon joining the gold standard, DNB once again stepped up its lending practice. Its lending portfolio suggests the central bank did not use its long-term lending facilities to cope with external shocks. However, its short-term lending facility provided additional liquidity; its short-term liquidity provision was inversely related to DNB's reserve politics; decreases in DNB's gold reserves corresponded to significant increases in its liquidity provision.

What aided in their independent monetary policy were the restrictions DNB and the Dutch government placed on capital mobility, specifically with respect to the export of gold. Consistent with the predictions of our quantitative evidence, we uncover qualitative evidence the Dutch engaged in two distinct types of capital controls. We think their use was intensified after the UK's departure from the standard. They employed formal capital controls. For example, a letter from the League of Nations (LoN) to Trip in December 1931, sent in the aftermath of sterling's departure from gold, reveals DNB intensified its vigilance against speculation.¹² These controls were kept out of the media spotlight. Central bankers attempted to portray their actions as conforming to "best practice".¹³

DNB sold practically all its foreign exchange reserves to purchase gold in the aftermath of the UK's departure, and so it was no longer flexible in its ability to counteract currency speculation. This inflexibility was partially solved with a series of "pendulum accords". Bilateral

¹² The concern of LoN officials was that it took too long for DNB to convert foreign exchange into gold because of DNB's process of assessing whether gold requests were "genuine"; see letter from League of Nations to L. Trip (24 December 1931), Archief De Nederlandsche Bank NV, Amsterdam (hereafter ADNB): Inv. No. 17.478.

¹³ 'Nota' (28 December 1931), ADNB: Inv. No. 17.478.

deals struck between DNB and other central banks, both inside and outside the gold standard, these agreements allowed temporary deviations in the exchange rates between currencies to be countered with gold located in the vaults of the other country's central bank. This meant gold did not have to be shipped as frequently, cutting transaction costs. The gold would simply be "earmarked", or relabelled.¹⁴ Additionally, DNB became much more active in gold markets after 1931. Figures 5 and 6 already demonstrated the import and export of gold (in kg) was no longer a net of zero – evidence of the efficacy of DNB's measures to eliminate gold arbitrage.

In the aftermath of speculation against the US dollar in March 1933, DNB changes its policy on gold convertibility in a way which amounts to a partial suspension of free capital mobility. In particular, it refuses to issue gold coins to the public, *de facto* moving the Netherlands from a gold coin to a gold bullion standard in which only bankers had access to the precious metal underpinning the currency.¹⁵ Then in May, DNB strikes up a gentlemen's agreement with the Netherlands' key banks to cease speculation against the guilder.¹⁶ Later that month, DNB agrees a temporary general ban on the private shipment of gold by post, further extending the central bank's ability to monopolise control over the currency.¹⁷ In June, DNB's board increases the burden of information requested of bankers when they approach the central bank for gold; they had to justify their gold demand, including the intended destination of any international shipment.¹⁸ And from July DNB requires banks to declare their foreign holdings of gold in their requests for bullion – an attempt to ration gold.¹⁹

This analysis merits two conclusions with respect to Dutch monetary policy. First, we find Dutch policymakers had significant autonomy with regards to managing their adherence to gold. They did so – at first – by offsetting policy changes in the US and France, and later offsetting changes in the UK. Second, aside from managing its policy rate, DNB engaged in

¹⁴ See, e.g., notes on shipment of gold from DNB to the Banque de France in February 1935, 'Aantekeningen Secretaris' (February 1935), ADNB: Inv. No. 3.519. Eventually, when the quantities of earmarked gold were deemed sufficiently large, they would be shipped in one go to or from DNB's vaults on the Oude Turfmarkt. Some of the physical infrastructure for gold shipment survives at DNB's old Oude Turfmarkt headquarters, which is now a building of the University of Amsterdam.

¹⁵ 'Aantekeningen Secretaris' (9 March 1933), ADNB: Inv. No. 3.516.

¹⁶ 'Aantekeningen Secretaris' (9 May 1933), ADNB: Inv. No. 3.516.

¹⁷ 'Aantekeningen Secretaris' (29 May 1933), ADNB: Inv. No. 3.516.

¹⁸ 'Aantekeningen Secretaris' (29 June 1933), ADNB: Inv. No. 3.516.

¹⁹ 'Aantekeningen Secretaris' (5 July 1933), ADNB: Inv. No. 3.516.

significant gold and foreign exchange purchases and sales, open market operations and short-term lending to sustain the guilder-gold exchange rate at pre-war parity. Third, after the UK left, the dynamics of Dutch monetary policy management changed. No longer was the BoE a policy benchmark. After April 1931, the Dutch central bank started hoarding gold, its policy rate became more volatile, foreign exchange and bills of exchange were eliminated from its balance sheet, short-term liquidity provision was at an all-time low, and it engaged in a set of “exotic” policies with the aim of influencing the international mobility of gold.

3.3 Macroeconomic Impact

We have mapped out the different instruments used in the management of monetary policy. We now examine the consequences of the use of these instruments. The Dutch economy enjoyed significant prosperity during the first two decades of the twentieth century. The 1910s were characterised by high and upward trending economic growth, with the five-year average growth in net national product at approximately 5 per cent, increasing to 15 per cent in 1920 (see Figure 10). This growth was facilitated by Dutch neutrality during World War I and the subsequent strong post-war demand for Dutch goods and services (De Jong, 2005).

[Insert Figures 10 & 11 here]

Then, in the early 1920s, the Dutch economy suffered a long and protracted recession; economic growth rebounded only in 1927. The principal cause of this recession was a debt-deflationary crisis, which especially hit the financial services sector and forced many banks into distress (Jonker and Van Zanden, 1995; Colvin et al. 2015). The Dutch economy’s dependence on its export markets had made it sensitive to importing adverse shocks from abroad. Trade balances deteriorated quickly (see Figure 11). The number of bankruptcies increased significantly to 325 per annum, reversing only in early 1928 (see Figure 12). Unemployment remained relatively stable during the 1920s, apart from the seasonality of the Dutch agricultural sector (see Figure 13). Moreover, while the Amsterdam stock market was hit during the early years of the 1920s, by the end of 1924 Dutch markets had started to recover (see Figure 14).

When the Netherlands re-joined the interwar gold standard in 1925, economic growth had reached a 20-year low and imports from the US and UK had significantly overtaken exports to these countries. Evidence suggests fixed exchange rates and relatively low interest rates did not deliver; the policy had detrimental macroeconomic consequences, especially after 1931.. We argue the deflationary bias inherent to a gold standard (see Balderston, 2003) meant the Netherlands' experience of the Great Depression was particularly severe. Figure 15 shows the univariate relationship between inflation and unemployment: severe deflation coincided with significant unemployment – a relationship similar in nature to that documented by Phillips (1958) for the same period in the UK. Similarly, we find a significantly strong and negative association between inflation and corporate bankruptcies.

[Insert Figures 12, 13, 14 & 15 here]

With the benefit of hindsight, we can quite easily conclude the choice of fixing the Dutch guilder to gold was not conducted for sound economic reasoning. That is, we argue the Dutch mismanaged their monetary policy. Indeed, the guilder's exchange rate with the pound and the dollar was not particularly volatile in the period prior to re-joining the gold standard. In a counterfactual history in which the political decision to re-join gold had not been taken, the Netherlands' central bankers would easily have been able to stabilise the guilder – without irrevocably fixing its value – using DNB's then-ample gold and foreign currency reserves. However, we agree with the overall conclusions of Griffiths (1987) that such a counterfactual history is unrealistic; our analysis in the next section suggests policymakers thought they were making prudent choices in the interest of the Dutch economy – or in the interest of those sectors with which they were (politically) aligned.

When the UK left the standard in 1931, it caught Dutch policymakers by surprise. Britain's exit also significantly affected the performance of the Dutch economy. Central bankers at DNB were forced to support the guilder. They turned on the printing press, sold off foreign reserve exposure and stepped up liquidity provision by more than 15 per cent.²⁰ At the same

²⁰ DNB lost about 30 million guilders because of sterling's devaluation, about the size of its entire capital reserve. The debacle proved to be the death knell for then-DNB President Gerard Vissering's already waning career (De Vries, 1994). He resigned from his post, to be replaced by Leonardus Trip, a career central banker who was long touted as a possible successor; see Heldring's diary entry for 31 December 1930 (Heldring, 1970, pp. 905-906).

time, Dutch interest rates were lowered to historic levels, and general price deflation (which had already reoccurred in 1928) returned. Meanwhile, unemployment skyrocketed to 29 per cent and the number of bankruptcies increased to more than 475 per annum in 1932. While policy elites did everything to protect the guilder, they appeared unable to significantly improve the domestic situation; various attempts to support hard-hit sectors were ineffectual. By 1934, Dutch national income was shrinking by 5.5 per cent per annum, making the 1930s the worst non-financial crisis the Dutch have ever experienced.

While the previous section demonstrated Dutch policymakers were able to wield significant monetary independence after the UK had left the standard, we conclude that this did not benefit the domestic economy. Exchange rates were stable after the UK left, and central bankers regained their monetary policy independence, but Dutch citizens did not benefit from this change. The guilder's fixed exchange rate certainly did not improve the country's trade balance. And Colijn's fiscal stimulus failed to mitigate the effects of the structurally high and seasonal unemployment. When combined with the prevailing dogma of balancing government budgets, the dogma of gold meant such subsidies were always too few and too small to have an impact. The policy elite's veneration of gold meant government's hands were tied.

Of course, an overvalued guilder did mean there were some winners. Figure 14 suggests those benefiting from the Netherlands' policies of supporting the guilder and providing low interest liquidity were businesses exporting goods abroad and stock market participants. Evidence presented in the next section suggests these were the exact constituencies which policy elites were interested in keeping on their side. Dutch policymakers provided liquidity (i.e., emergency relief) when the UK left the standard, but they failed to continuously provide short-term credit. Rather, both long-term and short-term credit provision were significantly reduced. These choices added to the rise in unemployment levels, the number of bankruptcies and the steep decline in economic growth.

The literature on the interwar gold standard in the Netherlands focuses on whether gold policy was to blame for the poor performance of the Dutch economy during the 1930s. Indeed, in his inaugural lecture, Van Zanden (1996) characterises the work of Keesing (1947) and Klein (1973) – previously the two giants in this literature – as being a debate on the culpability of monetary policy. Van Zanden attributes to Keesing (1947) the view that the long duration of

the Depression was down to monetary policy, and to Klein (1973) the alternative that structural weaknesses were to blame – the country’s small size, open character and dependence on agriculture.

Van Zanden argues the Dutch economy was structurally relatively well-equipped to absorb the economic shocks of the early 1930s. He rejects the hypothesis small open economies are inherently less able to adapt, and argues the country was anyway sufficiently rich and diversified to substitute imports for domestic production. The fact this did not occur to the extent it could have, then, is for Van Zanden down to policy decisions. He argues the austerity policies of the 1930s had a scarring effect on the Dutch economy. Like Van Zanden, our evidence points to Keesing’s (1947) argument that policy choices stemming from gold standard adherence were to blame for the Dutch experience of the Great Depression. The next section discusses exactly how these choices were arrived at.

4. Explaining Dutch Monetary Policy Choices

The previous section shows how policymakers were able to maintain the gold standard beyond 1931 by wielding independent monetary policy and restricting international capital mobility. We show this policy choice came at a significant cost to the Dutch economy. The current section explores the ideas which led to this policy choice. First, we document how policy actors central to the decision-making process understood the function of the gold standard, focusing in on key government ministers and their reasoning for monetary policy. Then we uncover the views of the policymakers charged with the day-to-day running of the gold standard: the central bankers. We summarise the views of single-issue pressure groups, which included opinion leaders from across the public and private sectors. Finally, we outline how contemporary academic economists understood the economics of the interwar gold standard. Together, this section helps to explain why policymakers chose to pursue gold, despite growing evidence it was no longer fit for purpose.

4.1 Policy Leaders

Despite personnel changes in high politics following the 1933 general election, we uncover very little change in the policy stance of the Netherlands’ main policy actors. However, support from

key parliamentary parties, which kept the governing coalition in power, did decline. There were some attempts by ministers to offset the negative effects of monetary policy with economic stimulus packages targeting specific sectors. But the dogma of gold continued to be all-encompassing well into the 1930s, even beyond the gold standard's suspension in 1936. Domestic policy was always considered subservient to international monetary politics. We outline some of the evidence for our conclusion in what follows.

Colijn's centrality to policy decision making means his personality and politics must be considered in some detail. Colijn's background in business and finance is particularly relevant in explaining his commitment to gold. He was the Netherlands' finance minister when he oversaw the country's re-entry into the gold standard. It was also during this ministerial tenure that he organised the bailout of the *Rotterdamsche Bankevereeniging* (Colvin, 2014). Aside from a stint in the Dutch colonial armed forces, he had been involved in the running of various corporations, including Shell. And he fulfilled a series of positions in the world of high finance during his "political wilderness years", between the fall of his first cabinet in 1926 and his re-entry into politics as prime minister in 1933; he was a non-executive director of the *Nederlandsche Handelsmaatschappij* (NHM), the country's largest bank.

In terms of Colijn's economics, De Vries (1981: 123-124) argues he saw the gold standard as a natural mechanism which should not be interfered with. He treated it as an economic anchor against inflation. Most importantly, he venerated gold standard membership as a matter of national prestige. Leaving the standard was, in his view, akin to reneging on sovereign debt; it would be unethical. Szàsz (1995) presents various public statements and private communications that show Colijn was unconvinced by the arguments advanced by those in favour of abandoning gold; he remained very conservative and saw changing the guilder's exchange rate regime as a highly risky endeavour. De Vries (1987) argues Colijn's views on the gold standard were typical of his political party, the neo-Calvinist *Anti-Revolutionaire Partij* (Anti-Revolutionary Party). But the party treated gold standard adherence as a purely technical matter rather than a manifesto principle.

It is from the records of the NHM that we can see Colijn's commitment to gold survived

sterling's departure in 1931.²¹ Colijn reported to his colleagues he was unconcerned with recent public pronouncements by Henri Deterding, then-CEO of Shell, that the Netherlands should follow the UK's lead and devalue the guilder. He argued sterling was artificially overvalued when the gold standard was restarted in 1925, and he was of the view the guilder did not suffer this fate. Unlike the UK, which was forced to leave the gold standard, a devaluation of the guilder would in his view be a voluntary decision – one that was for him immoral and, therefore, unconscionable.

Colijn assumed the premiership for the Anti-Revolutionaire Partij in 1933, and endured a difficult coalition formation where he resorted to establishing an extra-parliamentary “crisis cabinet” (Langeveld, 2004).²² He immediately became intimately involved in the running of the London Economic Conference, an international conference held in June and July of 1933 which aimed to win agreement on measures to fight the Great Depression, revive trade and stabilise exchange rates. Colijn believed strongly in the power of international cooperation in reviving the economy (De Vries, 1981: 119), and was greatly invested in the outcome (Szász, 1995).²³ The Dutch delegation believed the conference would be a great success.²⁴

However, the conference turned into a failure following new US President Franklin Roosevelt's rejection of the negotiated plans to stabilise the US dollar.²⁵ Colijn then briefed his cabinet that in the absence of international cooperation, it was incumbent on the Netherlands to “flex its own muscles”. In practice, this meant being more assertive in trade policy and attempting to negotiate bilateral agreements with remaining gold standard members. Examples

²¹ Minutes of the College van Commissarissen (29 September 1931), Archief van de Nederlandsche Handel-Maatschappij, NL-HaNA 2.20.01: Inv. No. 37. The NHM made significant losses when sterling was devalued, because its directors incorrectly judged the UK's continued adherence to gold was ensured.

²² This was a coalition government in which ministers sat in personal capacity rather than as members of their political parties. Langeveld (1987: 84-88) explains Dutch interwar cabinets, following the introduction of proportional representation system, were all coalitions of confessional Catholic and Protestant parties, occasionally with liberals too, and were all formed to keep out socialists and others. The socialists were anyway not principally opposed to the gold standard. As we discuss in this section, if anything opposition came from the Catholic party, which was in government.

²³ Colijn chaired the monetary and trade sub-committees and attended conference for its full six weeks, commuting weekly from the Netherlands.

²⁴ Heldring's diary entry for 24 January 1933 (Heldring, 1970: 1021).

²⁵ While the US delegation had previously been positively predisposed to the ideas discussed at the conference, Roosevelt's priorities shifted following the 1933 US banking crisis. Heldring describes how the US crisis was viewed from the Netherlands, with DNB preparing for large gold outflows; Heldring's diary entries for 5, 8 and 21 March 1933 (Heldring, 1970: 1029).

of the latter are the gold pendulum accords discussed in the previous section. Langeveld (2004: 86–87) is of the view the absence of cabinet-level discussion on the gold standard itself speaks volumes; Colijn saw the maintenance of the gold-guilder link as something that could not be questioned. But the fact the Netherlands was in a position to negotiate these bilateral deals to prolong its fixed exchange rate when others had been forced off the gold standard suggests Colijn was fully justified in his belief he could sustain his monetary politics.

The Netherlands' key policymaking circles maintained their view that "gold is best" all throughout 1930s.²⁶ Rather, the political elite's policy stance remained that domestic policies should be adjusted to make the gold exchange rate more sustainable. Colijn's government attempted to resolve the policy inconsistencies resulting from gold by coupling his agricultural subsidies with new policies aimed at reducing unemployment, and with his ongoing effort to deflate wages.²⁷ These new fiscal policy initiatives were ineffectual; competition between government departments hampered implementation and there was no reduction in unemployment. The evidence suggests the Dutch government was unwilling to fully accept the implications of gold in terms of the resulting trade-offs; his central bankers complained that he did not sufficiently adjust his domestic policies to the degree which was necessary to make them fully consistent with the guilder's exchange rate. While high-level policymakers were aware of trade-offs resulting from their exchange rate policy, they found it politically difficult to follow the logic of these trade-offs. And while they attempted to offset their inconsistent choices with various policy initiatives, they found it operationally very difficult to implement these policies.

Colijn could not keep discussions about the future of gold out of his cabinet forever. When Colijn's economy minister had to resign for health reasons in mid-1934, he installed a political rival at the ministry's helm: Max Steenberghe, a leading figure within the Roomsche Katholieke Staatspartij (Roman Catholic State Party), the single-largest party in parliament, and the only major party to have members who questioned the benefits of the gold standard (Langeveld, 1987). Langeveld (2004) argues Colijn brought Steenberghe into his cabinet to

²⁶ For example, even in early 1934, when opposition to the gold standard started to get broader and more organised, Heldring opines merely that the arguments of those in favour of devaluation remained 'superficial'; Heldring's diary entry for 30 January 1934 (Heldring, 1970: 1062).

²⁷ He set up a government fund in 1934 whose purpose was to allocate subsidies to public works, but only on the condition that the wages of subsidised workers be set below prevailing market wages (Langeveld, 2004: 98–99).

neutralise public opposition to gold. But a condition of Steenberghe accepting his appointment was to reserve the right to start cabinet-level discussions on the future of monetary policy. Steenberghe exercised this right when Belgium left the gold standard in March 1935.²⁸

Steenberghe commissioned a report in early April 1935, authored by his top civil servant Hans Max Hirschfeld, which set out the case for re-considering the Dutch position in light of Belgium's exit.²⁹ At the heart of the report was the argument there were now insufficient countries left on gold to make it viable. Hirschfeld's report argues deflation was crippling the Dutch economy and the magnitude of the necessary further adjustment in light of Belgium's departure would lead to politically unsustainable unemployment levels. It concludes devaluation would significantly reduce the need for agricultural subsidies and lead to wins for Dutch shipping. It concedes leaving could bring the entirety of the gold standard to an end as Switzerland would likely be forced to follow suit. But while the report concedes the initial adjustment following devaluation may be bumpy, Hirschfeld is confident DNB can be adequately mandated to intervene to quell any financial unrest.

A subsequent cabinet note authored by Colijn outlines his scepticism leaving gold would result in any of the benefits articulated in Hirschfeld's report, i.e., the increased exports, better returns, or reductions in costs.³⁰ In particular, Colijn expected devaluation would not bring any tangible improvements for Dutch consumers, who would likely see prices increase. Pieter Oud, Colijn's finance minister and a member of progressive liberal *Vrijzinnig Democratische Bond* (Free-thinking Democratic League), also authored a note attacking Hirschfeld's arguments.³¹ Oud argued devaluation would lead to capital flight, and that imposing capital restrictions to stem such flight would be undesirable. He rejects the idea some managed capital flight might be beneficial to help revalue the guilder because he argues any such flight would lead to an

²⁸ Belgium ostensibly left to avoid a banking crisis (Hogg, 1987). Heldring is privately very sympathetic to Belgium's devaluation, and writes that he had even recently suggested to the Belgian Prime Minister that Belgium could probably "get away" with such a course of action; see Heldring's diary entry on 26 March 1935 (Heldring, 1970: 1111–1112).

²⁹ 'Het Probleem van den Gouden Standaard voor Nederland' (May 1935), Collectie 281: Oud, NL-HaNA 2.21.252: Inv. No. 6. Also partially reproduced in Hirschfeld (1959: 195–218).

³⁰ 'Nota van den Voorzitter van den Raad van Ministers' (15 May 1935), Collectie 281: Oud, NL-HaNA 2.21.252: Inv. No. 6. Also partially reproduced in Hirschfeld (1959: 219–226).

³¹ 'Opmerkingen van den Minister van Financiën naar aanleiding van de nota "Het probleem van den gouden standard in Nederland"' (May 1935), Collectie 281: Oud, NL-HaNA 2.21.252: Inv. No. 6.

irreparable loss in the credibility of the government. While he sees any benefit of leaving gold as highly uncertain, he believes the downside risk to be almost assured; he envisages only chaos on financial markets. He does not believe devaluation would improve the Netherlands' trade position, as recently-erected trade barriers imposed by other countries were prohibitive.³²

Steenberghe's plea to re-evaluate gold was rejected in cabinet, and so he resigned from his ministerial position. Ironically, a cabinet crisis ensued in which speculation against the guilder nearly forced the currency off gold. Indeed, the Queen permitted Colijn to continue to govern after he persuaded her of the dire economic consequences should she ask for a new cabinet formation. In his letter to the Queen, Colijn quoted private advice he received from Trip, which stated DNB would only be able to support the guilder for another three or four days, at which point clarity on the government had to be reached to calm financial markets and quell capital flight.³³ Essentially, Colijn used the gold standard's precariousness to cling onto power by bullying the country's head of state.

Whether or not senior politicians seriously considered continued adherence to gold in 1936 when France exited is the subject of speculation. Langeveld (2004: 213–215) thinks it is likely key players in monetary policymaking saw France's exit as a way out. The Dutch government had already received confidential news from French counterparts on 24 September 1936 that it was planning to devalue the franc.³⁴ When the franc was uncoupled from gold on Friday 26 September, the Swiss government followed suit immediately, much to the surprise of Dutch policymakers.³⁵

Minutes of subsequent meetings by DNB's board secretary Joachim Ferdinand de

³² Like Colijn, Oud was firmly committed to gold, and was responsible for implementing wide-ranging budgetary cuts in 1935 to facilitate continued adherence. He was vigilant against individuals who publically talked the guilder down, and even considered prosecuting one business which used newspaper adverts to argue investors should prepare for imminent devaluation; see various correspondence (June 1935), Archief Ministerie van Financiën, NL-HaNA 2.08.41: Inv. No. 801. The business's advice: buy shares rather than bonds.

³³ Copy of letter from Trip to Queen Wilhelmina (Thursday 25 July 1935), Collectie 281: Oud, NL-HaNA 2.21.252: Inv. No. 6. The letter also advised the Queen's against calling an election so soon after the previous elections in May, as this would lead to further gains by the National Socialists and Communists.

³⁴ Trip immediately flew to Paris to discuss this at the Banque de France; 'Aantekeningen Secretaris' (24–25 September 1936), ADNB: Inv. No. 3.518.

³⁵ Swiss policymakers had only hours before assured their Dutch counterparts that Switzerland would not devalue; 'Aantekeningen Secretaris' (26 September 1936), ADNB: Inv. No. 3.518. The Dutch diplomatic core was caught off guard by Swiss devaluation, and forced to account for their oversight; 'No. 4072/1181: Devaluatie van den Zwitserschen Franc' (21 December 1936), Collectie 281: Oud, NL-HaNA 2.21.252: Inv. No. 6.

Beaufort suggest ministers were initially very hesitant to accept Trip's assessment that the end of gold was now unavoidable.³⁶ The group agreed on a politically more palatable position: the prohibition of gold exports, which, of course, is the same thing as an exit from gold. Ministerial discussions continued into the weekend, and a decision was made to suspend the Amsterdam stock exchange on the Monday and Tuesday in order to quell potential unrest.³⁷ Minutes also suggest Colijn had to be forced into engaging with the media by his central bankers, who feared what would happen on financial markets if there was no news.³⁸ Colijn needed be dragged by his central bankers into accepting the new post-gold reality. Overall, we conclude the Netherlands' policy elite, with Colijn at the helm, mismanaged the country's monetary policy. Influenced by the world of high finance and exhibiting an unwillingness to consider policy alternatives, the Dutch were unable to escape their gold dogma.

4.2 Central Bankers

How did the beliefs and actions of the Netherlands' central bankers affect the policy stance taken by the country's political leaders? The dogma of gold within DNB is articulated most succinctly in the correspondence of influential Amsterdam banker Ernst Heldring with DNB president Trip. Heldring, who was a non-executive director of DNB, lobbied Trip in October 1931, when he had just been made its new president, on the dangers of following the UK out of the gold standard.³⁹ He equates leaving gold with coin debasement and counterfeiting, and labels it a morally repugnant failure to meet international obligations. He fears leaving would lead to financial chaos and ruination for shareholders in Dutch corporations.⁴⁰ In what follows, we present evidence which shows this view remained strong among the central bank's leadership

³⁶ 'Aantekeningen Secretaris' (27–28 September 1936), ADNB: Inv. No. 3.518.

³⁷ They agree that securities can be continued to be traded when the market is closed, but that there would be no official listing. There is some opposition to this measure from the stock market association, and on Monday DNB faced requests from customers wishing to take out loans on the basis of Saturday's prices.

³⁸ The group helped Colijn to draft a radio address explaining the government's change in monetary policy, which was delivered on the morning of Monday 29 September.

³⁹ 'Letter from E. Heldring to L. Trip' (23 October 1931), ADNB: Inv. No. 17.478.

⁴⁰ The letter was sent in response to rumours that the guilder was about to leave gold, confirmed by reports sent from New York; see 'Letter from Pierson & Co., Amsterdam, to L. Trip' (16 November 1931), ADNB: Inv. No. 17.478. Heldring writes a very similar letter to Trip, using almost identical turns of phrases on counterfeiting and morality, following the US departure from gold in February 1933; see 'Letter from E. Heldring to L. Trip' (1 February 1933), ADNB: Inv. No. 17.478.

throughout the 1930s, but suggest central bankers had a more nuanced understanding of the economic consequences of this policy stance than government ministers.

Heldring's lobbying was unnecessary; Heldring was preaching to the converted. In a letter sent in December 1931 to Dirk Jan de Geer, the then-Minister of Finance, Trip argues the government should remain vigilant against critics of gold and not give in to their demands for new fiscal policies.⁴¹ He is of the view that gold is in the interest of all layers of Dutch society, but feared certain social groups did not recognise this "fact" and incorrectly blamed the monetary system itself for their problems. In the interest of maintaining gold, he therefore cautions the minister against an expansionary government budget.

The Netherlands' central bankers were able to carve out an important niche in the global monetary order that followed the UK's departure from gold by adapting the new international institutions which were created to solve the various disputes surrounding German reparations and international loans. The most important of these institutions was the Bank of International Settlements (henceforth BIS), an organisation formally owned by central banks and located in Switzerland. Its institutional remit evolved to become the place where central bankers from across the world met to discuss policymaking. Trip was central to the early running of the BIS, a platform from which he attempted to advance his views on independent central banking.⁴²

In 1933 Trip was charged with preparing an *aide mémoire* on ways in which the BIS could improve the workings of the gold standard.⁴³ The report makes the distinction between actions of a political nature to be taken by governments, and those of a financial and monetary nature that can be taken by central bankers. The aim of the committee was to re-establish a 'free international gold standard' to reverse the restrictions various countries had introduced on foreign exchange and gold flows. The *mémoire* makes a big point of describing the balancing act that central banks have to play between national and international considerations, and argues the BIS can be used to facilitate the latter.

⁴¹ Letter from Trip to Minister of Finance (16 May 1931), Archief Ministerie van Financiën, NL-HaNA 2.08.41, Inv. No. 801.

⁴² First as a member of its board of directors, then in 1933 as vice-chair, and from May 1935 as the organisation's chair. Johan Willem Beyen, a Dutch banker whose views on gold are discussed in the next section, then replaced him in 1937.

⁴³ 'League of Nations Monetary and Economic Conference Preparatory Commission of Experts' (9 November 1932), ADNB: Inv. No. 17.468.

Specifically, the policy advice of the *mémoire*, which was designed to be the opinion of the committee and was not attributable to any one BIS member, was to: (a) lobby governments to balance their budgets; (b) create flexibility to allow the free flow of capital to have its ‘required effects’ on prices; (c) maintain domestic financial stability; and (d) adopt ‘strong and sound’ central banking policy. Regarding (b), the committee argued it was vital for countries to allow gold movements to have their influence felt both in gold receiving and gold losing countries. The committee wished central bankers to be directed to use open market operations to ‘strengthen the effects of gold movements’ and ‘refrain from taking measures [...] to maintain excessive gold stocks’; the committee was lobbying against sterilisation. Regarding (d), the committee argued central banks should be given ‘greater freedom of action’ by reducing legal minimum cover.⁴⁴

Colijn’s government established an economic council in 1933 to advise the Minister of Economic Affairs on the matters of the day, but it was not really very independent. Trip was given a prominent role on this council, a position from which he could close down any official discussion on the Netherlands’ continued membership of the gold standard (De Vries, 1994: 89).⁴⁵ Trip’s membership of the council was part of his increasingly important role in the economic governance of the Netherlands under Colijn’s premiership. For example, Colijn gave Trip wide discretion to talk with leaders of rival political parties on subjects that had little to do with his remit as the country’s chief central banker. While Trip was a public advocate of independent central banking and apolitical technical economic governance of monetary affairs, in practice he worked hand-in-glove with Colijn.⁴⁶ Exactly who was instructing who is unclear. Petram (2016) uncovers that successive finance ministers had bought up practically all shares in DNB by the late 1910s; the central bank was *de facto* nationalised long before it was officially nationalised after World War II. So while DNB was technically a public corporation aiming to make a return for its shareholders, in practice it had become an agency of the state, carrying out the interests

⁴⁴ Trip saw the London Economic Conference as a way of advancing the ideas on independent central banking which he had been developing for the BIS. But Trip got pushback on his plans from BoE governor Norman; see, e.g., Letter from M. Norman to L. Trip (23 May 1933), ADNB: Inv. No. 17.468.

⁴⁵ Nekkers and Salzmann (1990) argue the council was largely ineffectual, and point to an instance where Trip was able to prevent it from actively considering the future of the gold standard (pp. 214-215).

⁴⁶ He was even an interlocutor between Colijn and opposition leaders during the latter’s various cabinet formations (Langeveld, 2004: 145). The idea was that Trip’s position permitted him to do things that the conventions of Dutch parliamentary democracy meant Colijn could not himself do.

of the political parties in charge of government.⁴⁷

But not everyone inside DNB was always vehemently pro-gold. De Vries (1994) describes various episodes in which a few of DNB's non-executive directors voiced opposition to the overall policy stance of the central bank.⁴⁸ Such opposition always came from a small minority within the central bankers and was easily neutralised by Trip. So, while DNB remained pro-gold overall, there was a growing realisation within the central bank of important trade-offs between macroeconomic policies. This is evident from private correspondence between Trip and Colijn in October 1934, just as a new government budget was being formulated (Langeveld, 2004: 93–96). Trip articulates what he saw as a policy inconsistency: the level at which the guilder was fixed to gold was not compatible with domestic policy. But he advocates domestic policy should be adapted to comply with existing monetary policy, not the other way around. In particular, Trip was worried about government subsidies to agriculture introduced in the early 1930s and continued under Colijn's government, and the likely increase in municipal taxation necessitated by a recent reduction in the government's block grant to local authorities. He argues both policies made the cost of living artificially high and prevented downward adjustment in prices.⁴⁹

Given Trip's aim of improving the functioning of the gold standard, it is perhaps a little ironic that he resorted to employing the various policy measures, described in the previous section, to impede the free flow of gold. It appears that what he argued in 1933, and what he was forced to do in 1935, are quite different. We could see these gold manipulations as a continuation of prevailing policy norms that pre-dated the suspension of gold; De Jong (1967) describes similar interventions taken by the Netherlands' central bankers during the classical gold standard era. What they reveal is his steadfast commitment to maintaining gold parity; he was willing to sacrifice his other ideals to maintain the gold standard, at almost any cost. Besides, his attempts to reform the workings of the gold standard through international institutions like the BIS had failed; he had to direct his central bank staff to implement measure to maintain gold unilaterally.

⁴⁷ During the banking bailouts of the financial crisis of the early 1920s, Colijn's finance ministry had attempted to publicly distance the actions of DNB from the Dutch state. But archival records reveal this to have been only a façade; government money was crucial in the various bank rescue operations (Colvin, 2015; Petram, 2016).

⁴⁸ For example, when the non-executive directors raised the topic of devaluation in light of the US departure from gold in 1933, Trip argued simply that the Netherlands would be punished for devaluing the guilder and left it at that (De Vries, 1994: 92-96).

⁴⁹ Trip never voiced his concerns in public; he made sure to lobby Colijn in strictly private communications.

4.3 Interest Groups

While discussions of the efficacy of the gold standard were kept away from the work of official bodies for a long time, they were by no means eliminated from society. The previous section showed discussions continued in private, such as in the boardroom of DNB. There was also significant public discussion from private sector lobbyists and organised interest groups. But while the significant costs of gold were well articulated there, this did not lead those in power to advocate devaluation.

Heldring perhaps best articulates the views of the establishment and of high finance. He argued in a personal memo, written in January 1933, that the government, out of electoral concerns, had displayed very little thought leadership on the future of the gold standard, while the Netherlands' political parties had been free to advance the views of their electorate, particularly of farmers and labourers.⁵⁰ He was especially concerned with the influence of the former; the agricultural subsidies to farming cost the nation hundreds of millions of guilders, and worked against the government's aim of lowering prices and wages.⁵¹ Then, in early 1934, when opposition to the gold standard started to get broader and more organised, Heldring opines merely that the arguments of those in favour of devaluation remained 'superficial'.⁵² The world of high-finance did not wish to see the gold standard abandoned; rather, bankers were concerned the government was not sufficiently committed to gold.

Of course, not everyone was in favour of gold. Various members of the "inner social circles" of both Colijn and Trip who had any reservations about gold made a point of keeping their personal views private. Others in positions of influence were not so inhibited. And so big debates about the future of gold moved into the public realm, with a host of groups established to lobby on the future of the standard, and impassioned discussions in the country's leading newspapers (De Vries, 1994: 91). These groups included members from across the political spectrum; apart from a few exceptions, like the anti-gold Dutch Fascists and pro-gold Marxists,

⁵⁰ Authors' translation, draft of memo (presumably as a basis for any subsequent correspondence) on the consequences of leaving the gold standard (18 January 1933), Collectie 148: Heldring, NL-HaNA 2.21.085, Inv. No. 176. 'It looks like the pleas of those wishing to leave the gold standard are completely unnecessary; an unholy coalition of faulty insight and electioneering will bring us to the brink of leaving gold anyway'.

⁵¹ Heldring remains worried about agricultural subsidies; in his personal diary he mused later that year they could eventually 'cost us the gold standard'; see Heldring's diary entry for 28 November 1933 (Heldring, 1970: 1057).

⁵² Heldring's diary entry for 30 January 1934 (Heldring, 1970: 1062).

it is difficult to prescribe any one view on gold to a single political party (see contributions to Griffiths, 1987). The Katholieke Staatspartij, which included gold standard opposition voices like Steenberghe, supplied the government with ministers and voted in support of government in parliament (Langeveld, 1987). However, it is clear to conclude consecutive governing coalition governments were in favour of the *status quo* with respect to gold and systematically fought to exclude dissenting voices.

The Nederlandsche Vereeniging voor Waardevast Geld (NVWG) was the main single-issue lobby group to advocate an alternative monetary policy. Established in 1934 and chaired by Rotterdam-based economist Nico Polak, the organisation was an attempt to put public pressure on government to reconsider its adherence to the gold standard. Its founding followed a series of failed private lobbying efforts by the organisation's founding members the previous year (Vanthoor and Dehing, 1990). Besides economists, the NVWG included a wide array of prominent supporters, including business leaders such as Hoogovens director and future DNB President Marius Holtrop, Unilever CEO Samuel van den Bergh, and ex-finance minister Steenberghe. *Waardevast geld* literally translates as value-fixed money and was a concept developed by prominent economist Gerard M. Verrijn Stuart in his PhD thesis.⁵³ Exactly what value-fixed money meant in practice proved controversial and was the subject of much discussion by members of the organisation (Vanthoor and Dehing, 1990: 24). Indeed, the group's members disagreed on what would replace the gold standard as the new monetary system: should they advocate devaluation and re-joining gold at a lower parity, replacing gold with another commodity standard, or floating the guilder?

An NVWG splinter-group involving key members of the organisation formed a Comité voor Devaluatie (committee for devaluation) in May 1935 in an attempt to present a more unified and coherent message to the general public. Minutes of this committee suggest the group held very lively meetings to plan and strategize how to counter those advocating the continued adherence to the gold standard.⁵⁴ They organised public campaigns to get their message across using advertising and other propaganda, held public debates and academic congresses to discuss the future of Dutch monetary policy, and also continued their earlier efforts to lobby ministers

⁵³ See the next section for further discussion of his economics.

⁵⁴ Archief Vereeniging voor Waardevast Geld (1934-1941), NL-HaNA 2.19.042.32, Inv. No. 2.

privately. However, Vanthoor and Dehing (1990) conclude neither the NVWG nor the Comité proved very successful at shifting public opinion. Most of the mainstream press proved to be generally against the idea of devaluation, and the public simply failed to understand the problem.

The single-issue lobby group established in favour of maintaining the gold standard was the Groep van Anti-Devaluïsten (group of anti-devaluationists). The group included individuals from high finance; the board of the Rotterdamsche Bankvereniging (Robaver) was particularly well represented among its initial members: Robaver directors Karel Paul van der Mandele, Johan Willem Beyen and Andries van Sandick were all in the founding committee (De Vries, 1994: 106-107).⁵⁵ In contrast to the devaluationists, the anti-devaluationists took a more private approach to lobbying, even keeping its membership secret (De Vries, 1994: 107-110). They lobbied the government and the central bank directly, writing notes to government ministers and senior civil servants. For example, they approached Stephanus Louwes, a senior civil servant in charge of implementing Colijn's agricultural subsidies, to join their movement on the eve of the guilder's devaluation in 1936.⁵⁶ The anti-devaluationists saw weaknesses in the real economy, not monetary policy, as the root cause of the Great Depression (De Vries, 1981: 122).

While the NVWG appeared to have won the argument in that the gold standard was abandoned in 1936, De Vries (1994: 112) argues this was not attributable to their lobbying. Rather, he argues that the guilder's devaluation was entirely due to exogenous factors. The arguments of organised lobbyists from both sides of the debate were essentially just white noise; those in charge had already made up their minds. They listened only to those in high finance. Indeed, the anti-devaluationists did not see the guilder's departure from gold as proof they had lost the argument.⁵⁷ These special interest groups were headed by leading academics, highlighting the role of Dutch economics profession in the monetary policy debate.

⁵⁵ Beyen was later appointed to the BIS, and became a senior member of the Dutch delegation at Bretton Woods (Weenink, 2005). Earlier he had worked at the Dutch Ministry of Finance. His career is an example of the revolving door between government, central banking and high finance.

⁵⁶ Letter from H. W. Bordewijk to S. L. Louwes, 18 July 1936, Collectie 459 S. L. Louwes (1934-1953), NL-HaNA 2.21.238, Inv. No. 15. Louwes, who sympathised with their ideas, refused to sign because he considered the wording of the manifesto was too strong.

⁵⁷ The NVWG held a public debate on the subject in November 1937, and invited anti-devaluationist Van Sandick to speak at the event. Van Sandick challenged the idea that the value of the floating guilder now depended on the value of the real economy. He argued that the guilder's value remained intrinsically linked to the quantity of gold in the vaults of DNB (Nederlandsche Vereeniging voor Waardevast Geld. *De Beteekenis van Waardevast Geld*. Minutes of debate held in Amsterdam, Saturday 27 November 1937. Available at <http://www.delpher.nl>).

4.4 Academic Economists

The writings of Dutch academic economists and policy commentators contemporary to the interwar gold standard reveal many were convinced policy trade-offs resulted from fixing the guilder's exchange rate. What differentiated them was their opinion about of the nature and severity of these trade-offs. Dullaart (1984) argues while economists in the 1920s focused on explaining changes in prices, in the 1930s they were more concerned with their effects, especially on the level of unemployment. They also shifted in their focus of policy instrument, stressing the use of fiscal rather than monetary policy to facilitate economic recovery (Dullaart, 1984: 107). Our own reading of the literature suggests their interest in monetary policy concerned how it specifically related to fiscal policy.

Contemporary economic ideas about the gold standard introduced here can broadly be divided into three groups: (1) Austrian economic thinking, which advocated policy inaction; (2) Classical economic doctrines advocating policy adjustments to facilitate continued adherence to a (revised) gold standard; and (3) revolutionary economic ideas highlighting the social and political consequences of gold, which advocated the abandonment of gold and replacement with something else. Some economists are difficult to categorise precisely as they appear to have shifted their views across the period of the Great Depression.

Austrian economics was an influential school of thought among the Netherlands' business economists. In 1925, Dutch economics journal *Economisch-Statistische Berichten* published an article by Austrian economist Joseph Schumpeter on central banking. Written in opposition to the growing influence of John Maynard Keynes, Dullaart (1984: 112-116) argues this article had a significant impact not just on Dutch academia, but also on policy practitioners. Schumpeter, who at this point in his career was actively seeking academic employment after having failed spectacularly both in Austrian politics and banking (Allen, 1991: 196), argued against any policy aimed to stabilise prices. He noted monetary policy instruments which had previously been used only in exceptional circumstances were now being employed as a matter of course to actively manage the medium of exchange. He argued such "monetary management" represented 'a substantial limitation of the possibilities of the private initiative and a strong deviation from the economic principles of private ownership and free competition' (Schumpeter, 1925: 554). Fase (1993: 63) summarised Schumpeter's view as favouring gold because it was an automatic policy

the government, or the central bank, could not manipulate.⁵⁸

Mees (1934) is an example of the impact of *laissez-faire* Austrian thinking even when the gold standard was failing internationally. Mees questions the efficacy of an active monetary policy, and argues monetary policy cannot be analysed in isolation of other government policies. He argues any policy choice is automatically neutralised by economic events; the Dutch economy would not have performed any differently had the country left gold with the UK in 1931. He concludes it would be a bad idea to abandon gold, which he views as one of the few policies through which the Netherlands can contribute to global economic recovery.

The work of father-and-son economists Coenraad A. and Gerard M. Verrijn Stuart fits in the second group of economists, which advocated policy adjustment rather than revolution. The father was a public economist, founding director of the Centraal Bureau voor de Statistiek (Dutch statistical office) and professor at Utrecht. The son was a banking economist who had earlier worked at the Robaver, completed a PhD on monetary economics supervised by his father, and later “inherited” his father’s chair in Utrecht when he retired in 1934 (Holtrop, 1970). Both father and son were both prominent members of the NVWG. The father engaged in active debates with other public intellectuals on the efficacy of gold, arguing a gold standard-based currency did not fulfil the necessary requirements of a medium of exchange, in that it did not have a stable purchasing power (De Jong and C. A. Verrijn Stuart, 1932).

Meanwhile, the son came into public conflict with DNB president Trip about the former’s opposition to gold when he wrote a series of articles in *Economisch-Statistische Berichten*, which led to the latter’s resignation from the journal’s editorial advisory board. G. M. Verrijn Stuart (1934) is an example of one of these articles. In it, he is critical of DNB’s president for not considering the drawbacks of gold at the prevailing exchange rate. Describing DNB’s policy stance as “unscientific dogma”, he argues DNB had failed to learn from the good economic performance of those countries which had already left gold. He also questions the DNB view that leaving gold will result in financial chaos. He concludes one of the central bank’s stated justification for staying on gold – that it reduces transaction costs of trade – does not match the evidence. He ends with a prediction: sooner or later, when gold threatens societal advancement,

⁵⁸ Schumpeter’s contribution led to an active debate among Dutch economists (see, esp., Koopmans, 1925).

it will be recognised as defunct dogma and replaced with something more fit-for-purpose.

In the previous section, we discussed the various policy measures introduced by Colijn's government to attempt to mitigate the negative economic effects of monetary policy. Government subsidies to agriculture were a perennial concern of policy commentators in *Economisch-Statistische Berichten*. An example is Van der Valk (1934), an editorial comment. Van der Valk argues deflation and currency depreciation could in theory constitute policy substitutes. But in practice, he argues deflation had affected some groups in society much more severely than others. Farmers had been the big winners, at the cost of consumers; he argues wage deflation had not been accompanied by the same magnitude of price deflation. He concludes prices need to come down a further 15 per cent for the country's monetary policy to work.

Another important example of the second group is Willem Lodewijk Valk.⁵⁹ Highly critical of Austrian economics (Dullaart, 1984), Valk argued most of his contemporary economists failed to understand the full implications of monetary policy (Valk, 1931). He characterised a "traditional understanding" of monetary policy in which limiting credit to industry had the effect of increasing competition, improving the terms of trade, attracting foreign capital and improving the exchange rate.⁶⁰ Valk argued this traditional understanding failed to take account of the limited scope for deflationary policy because Dutch business was heavily cartelised and wages were sticky. Just as Van der Valk, Valk was concerned deflation had an unbalancing effect on the Dutch economy, as it affected some groups more than others.

In subsequent work, Valk (1937) sets out his explanation for the Great Depression: it was the result of the economy being in disequilibrium, with prices above what they should normally be, which creates unemployment (Valk, 1937: 45). He stresses the role of monetary policy (Valk, 1937: 47-49), where decreasing the money supply to achieve the necessary falling prices had led to excessive saving and reduced consumption. He did not advocate the abandonment of the gold standard; rather he wished the guilder to be depreciated against gold until some future point at which a replacement fixed exchange rate regime could be introduced. Dullaart (1984: 119) sees Valk as a 'Keynesian *avant-la-lettre*' in that he believed in the power

⁵⁹ Valk led the Nederlands Economisch Instituut, a not-for-profit policy think-tank later associated with Nobel Prize winner Jan Tinbergen.

⁶⁰ He saw credit rationing as functionally equivalent to interest rate policy (Valk, 1931).

of government policy, especially counter-cyclical fiscal policy, in helping the Netherlands exit the Great Depression.

The work of Jan Goudriaan Jr – a prominent member of the NVWG, a professor at the Nederlandsche Handels-Hogeschool (now Erasmus University) and a part-time director at Philips (Klein, 2013) – became more radical in his analysis of the gold standard and is our key example of the third group. Goudriaan (1935) argued the cause of the Netherlands’ slow recovery was the Colijn government’s indecision in relation to economic policy. He thinks Colijn was arrogant in his out-of-hand dismissal of alternatives to the gold standard, and remarks that the Netherlands had failed to learn the lessons from the UK, which in his view had experienced a remarkable economic recovery since leaving gold. He acknowledged DNB could likely continue to maintain the guilder-gold link indefinitely because of its ample gold reserves. But he repeats the argument he advanced earlier (Goudriaan, 1934) that such a policy would lead to further unemployment.

But Goudriaan’s alternative to gold was not a floating exchange rate regime. Indeed, it is difficult to find Dutch economists who advocated floating exchange rates. Instead, Goudriaan advocates a “tabular standard” in which currencies are fixed to a basket of commodities constituting goods that are ‘essential to satisfy human wants’ and ‘capable of taking on monetary function’ (Goudriaan, 1932: 9), and making central banks responsible for intervening in these commodity markets to ensure constant purchasing power.

The description of these three views shows there were significant disagreements among professional economists across the interwar period on the efficacy of the gold standard, even among faculty members of the same institutions. We think the second and third group, which advocated reform or abolition of the standard, commanded more attention from both academic and practitioner-orientated economics journals in the 1930s. But it is clear from the previous sections that the first group, which advocated the continuation of the *status quo*, had more clout with policymakers. Indeed, De Vries (1981) argues Colijn systematically sought only the advice of economists who agreed with him rather than entertaining any dissenting views. We can go as far as stating he ignored the economics, rather viewing continued adherence to gold in ethical terms.

5. Conclusion

The Mundell-Fleming macroeconomic trilemma remains the dominant model of explaining the policy consequences of fixed exchange rate regimes. The evidence presented in this paper is consistent with this theory. Our quantitative analysis suggests Dutch monetary policy was linked to that of the UK prior to sterling's departure from gold in 1931. But in the period which followed, the Netherlands was able to wield a substantial degree of policy autonomy. Just as the IS-LM-BP model would predict, policymakers furthered their policy preferences through a variety of means, including actively intervening in gold markets and by exerting controls on the international shipment of gold. However, we demonstrate policymakers squandered their policy freedom; while they had the means to set the Netherlands on a recovery path, their policy choices only damaged the country's economic prospects.

Historians of interwar monetary policy have long noted the Netherlands's catalogue of policy mistakes. Griffiths (1987) and De Vries (1994) both argue the Netherlands' central bankers were not making the necessary policy choices to facilitate economic recovery. But they also argue these same central bankers were making their bad choices with the best of intentions. Any criticism of the Netherlands' decision to remain on gold is unjustified in their view, because we have to see the choices of Dutch policymakers in the context of a time and place where gold was associated with economic freedom and continued prosperity. We have revisited these "established conclusions" by explicitly combining economic theory with econometric analysis and historical, archival, evidence. This mixed-methods approach to understanding Dutch interwar economic history allows us to look again at the formulation and justification of monetary policy, and link this to its subsequent impact on Dutch society. In particular, we are able to study the domestic political economy of gold. We can ask the question posed by Keynes's belief that economic ideas are more powerful than vested interest; was monetary policy conducted so poorly because Dutch policymakers were captured by powerful lobbies, or was it because they mistakenly believed their policies to be beneficial?

Our approach leads us to conclude Griffiths, De Vries and others were missing a crucial part of the story. Central bankers, and their political masters, were aware of arguments surrounding various trade-offs which resulted from the gold standard. They even attempted to

adjust other domestic policies to counteract the negative effects of the gold standard. Certainly they had the necessary autonomy to conduct macroeconomic policies which would have enabled the Netherlands to escape the Great Depression earlier. But they failed to learn from dissenting voices in politics, academia and civil society, or from the performance of other countries which had left gold early, because they were captured by the financial services lobby which privileged the *status quo* and associated the gold standard with the memories of prosperity experienced by the Netherlands before World War I. Yes, there was no clearly-articulated consensus policy alternative to gold; policy alternatives were numerous and many were not well articulated. And yes, the actions of those in charge were understandable given the context; pro-gold interest groups in academia, business and civil society – ostensibly the groups which were being listened to – all genuinely, but mistakenly, believed the stability consequences of leaving gold would be severe. Defunct economic ideas mattered, but so did the vested interests who held these ideas.

Frieden's (1991; 1997) political economy approach to understanding the *classical* gold standard characterises a country's commitment to gold as a consequence of a political balance of competing interests. We find this approach also fits the Dutch case during the *interwar* gold standard. We suggest there was regulatory capture. Key ministers had professional backgrounds in the sectors, especially high finance, which policymakers perceived as benefiting from gold. Broz and Frieden (2006) contrast three competing mechanisms which link exchange rate policy options to decisions. We provide evidence of all three mechanisms, but with different degrees of success: (1) single-issue interest groups actively lobbied for and against gold, but the anti-gold lobby was systematically ignored by policy leaders and central bankers; (2) members of political parties held diverse views, but the leaders of these parties were largely in favour of the *status quo*; and (3) political institutions were adapted and exploited by prime minister Colijn and his inner circle to maintain the gold standard, and even to cling on to power.

Overall, we conclude the Dutch mismanaged their exchange rate and monetary policies during the interwar period because of a fundamental misunderstanding of the costs and benefits of fixed exchange rates. Led by an almost religious belief in gold, the Dutch stuck to a fixed exchange rate which, in the end, brought nothing but economic turmoil and political instability. Like De Vries (1989), we think the gold standard's longevity in the Netherlands is indeed totally understandable. But unlike De Vries (1989), we think it is not totally excusable.

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Table 1: Summary of econometric findings on Dutch monetary policy independence.

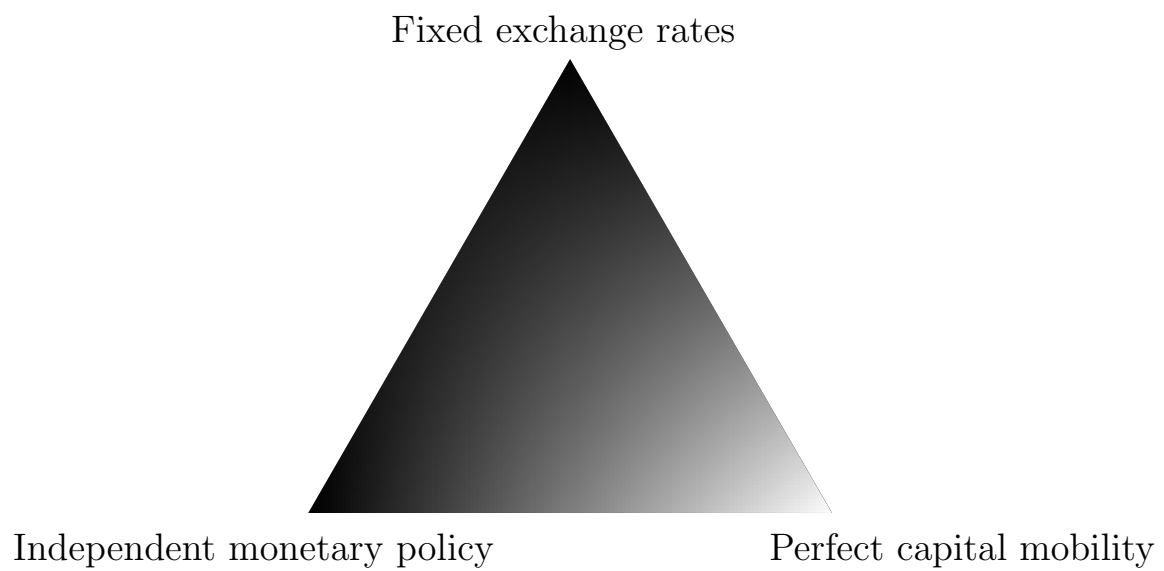
	NL-UK	
	Apr-1925 – Sep-1931	Oct-1931 – Sep-1936
Policy independence?	No	Yes
Policy type	Ineffective	Effective offsetting
Stable?	No	Yes
Adjustment speed (months)	12	3

	NL-US	
	Apr-1925 – Sep-1933	Oct-1933 – Sep-1936
Policy independence?	Yes	Undetermined
Policy type	Effective offsetting	Undetermined
Stable?	Yes	No
Adjustment speed (months)	3	3

	NL-FR	
	Apr-1925 – Sep-1936	Oct-1931 – Sep-1936
Policy independence?	Yes	Yes
Policy type	Effective offsetting	Effective offsetting
Stable?	Yes	Yes
Adjustment speed (months)	7	3

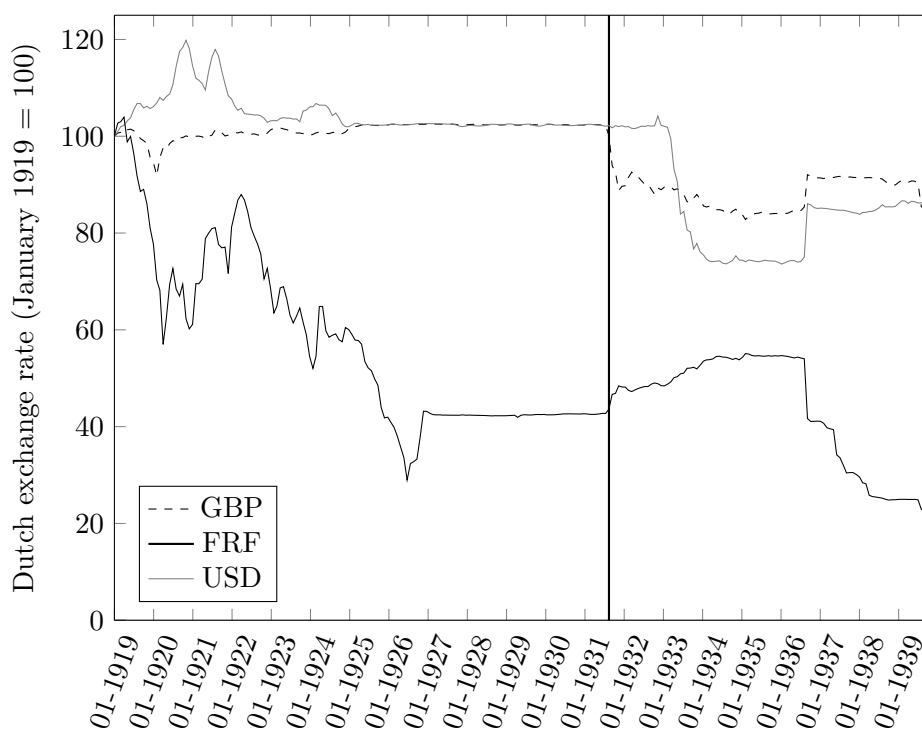
Note: See Appendix B for underlying analysis.

Figure 1: The Mundell-Fleming Monetary Policy Trilemma.



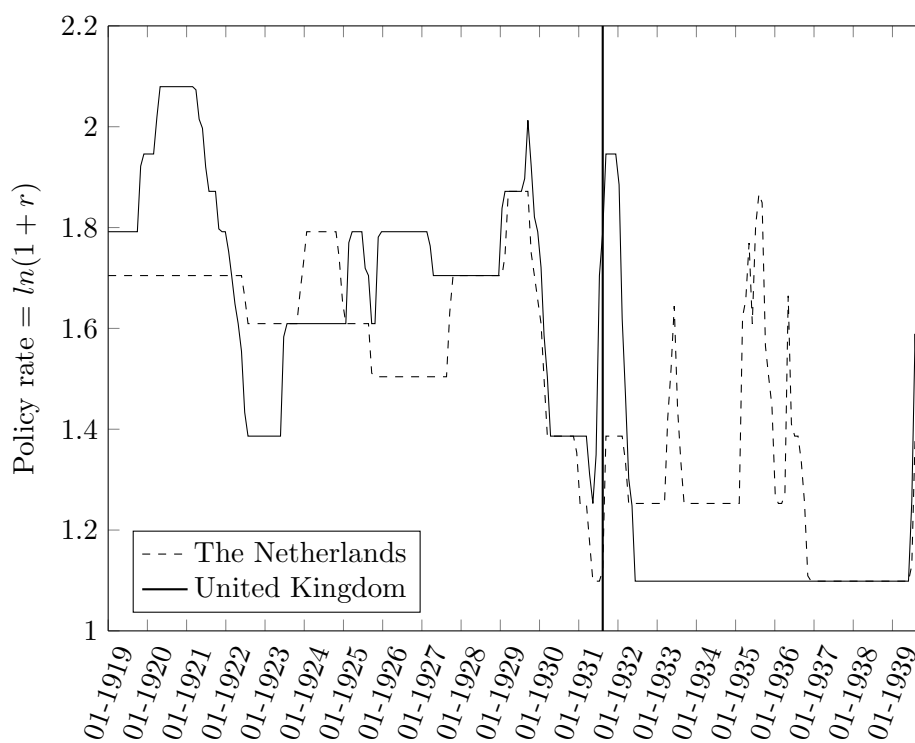
Note: The trilemma theory posits that countries must choose any two from the three policy options; one of the three must be sacrificed. In a fixed exchange rate regime, a country must either sacrifice its independent monetary policy or restrict capital mobility.

Figure 2: Exchange rate of the Dutch guilder (monthly frequency), between 1919 and 1939.



Note: Depicted is an index of the value of the guilder expressed in GBP, FRF and USD.
Source: Bohlin (2010).

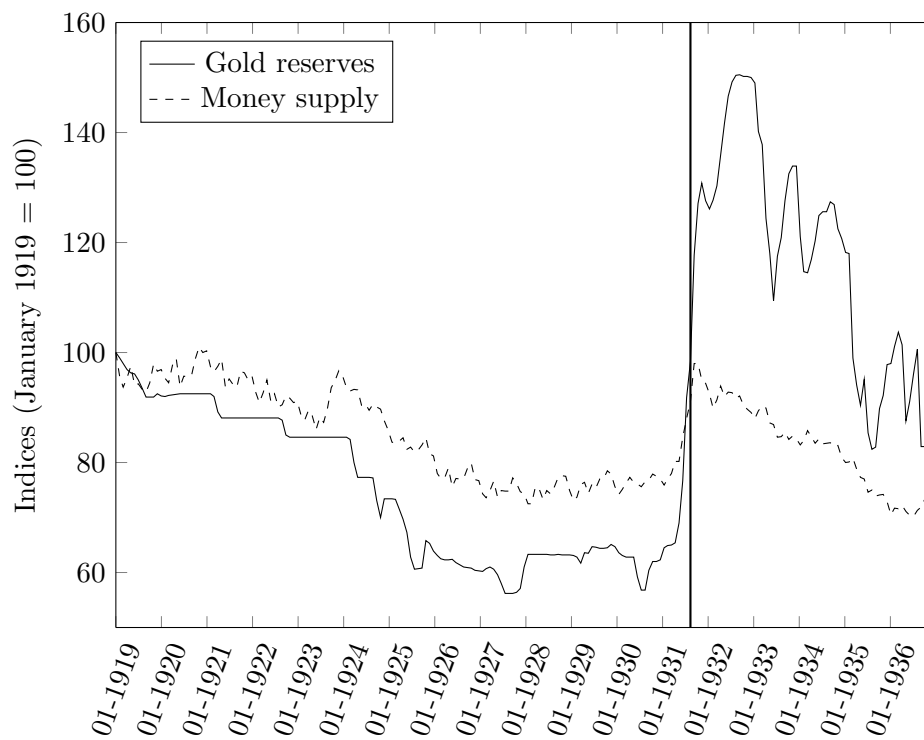
Figure 3: Policy rates (monthly frequency), between 1919 and 1939.



Note: Depicted are the key policy rates set by DNB and the BoE.

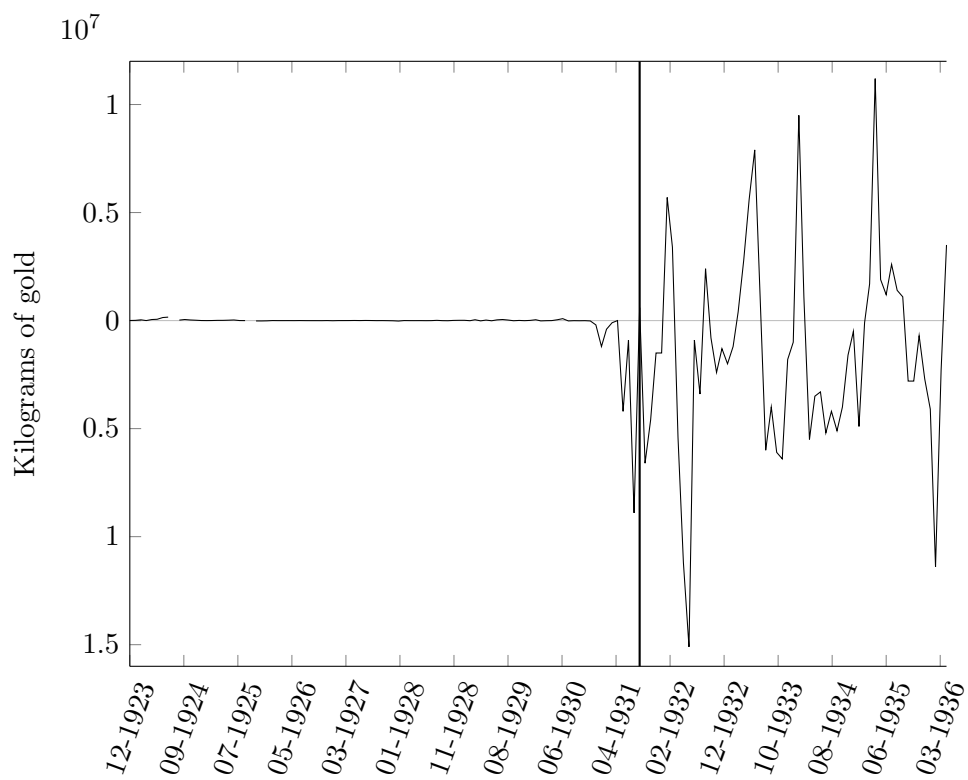
Source: Dutch policy rate: DNB website; UK policy rate: *Historical Financial Statistics*, following Hills et al. (2010) and Capie and Webber (2013).

Figure 4: Gold reserves and money supply of DNB (monthly frequency), between 1919 and 1936.



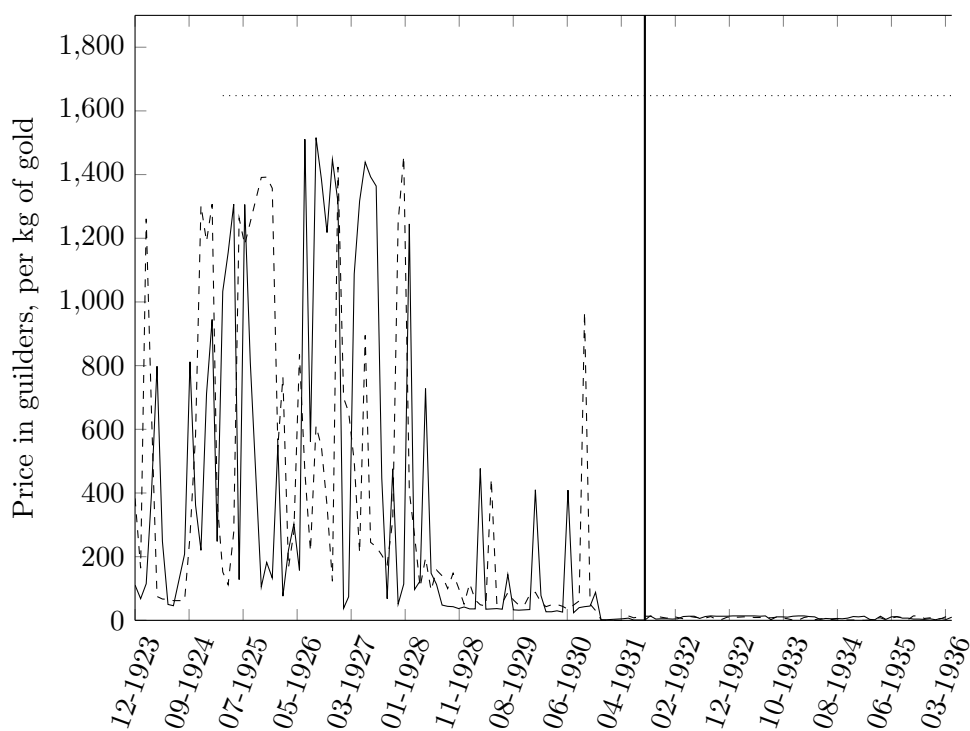
Note: Depicted is an index of the stock of gold coin and bullion held by DNB, and bank notes and coins in circulation.
Source: DNB's weekly balance sheets (1919-1936).

Figure 5: Net trade in gold and gold materials (monthly frequency), between 1924 and 1935.



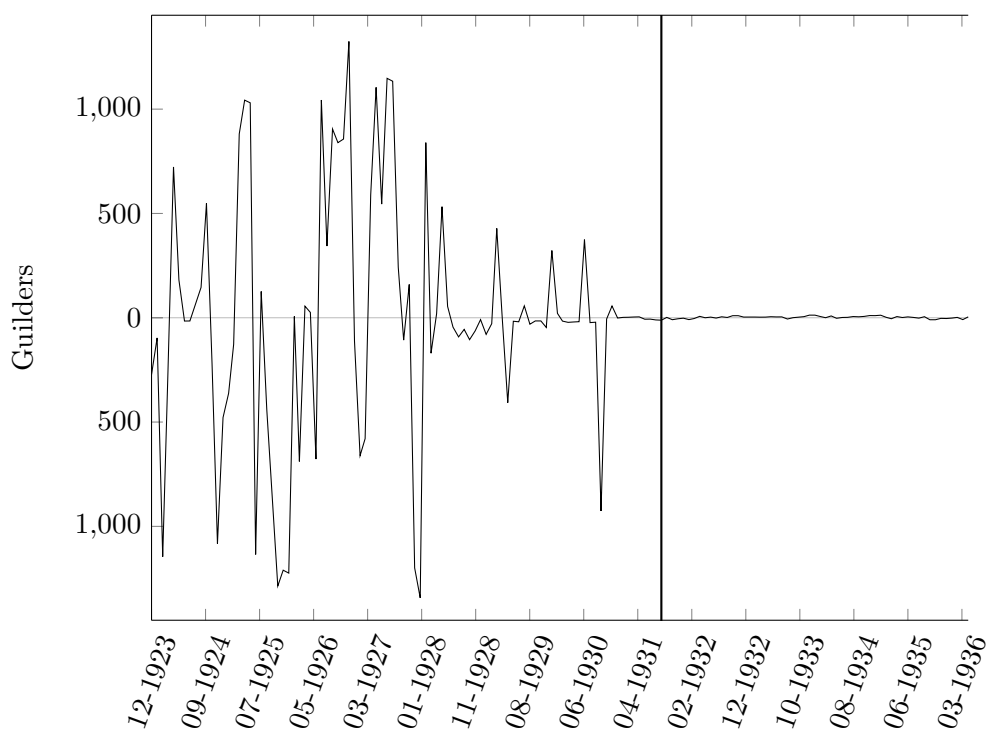
Note: Quantity of gold exported subtracted from the quantity of gold imported to the Netherlands (in kg).
Source: Centraal Bureau voor de Statistiek (1920-1935).

Figure 6: Implied prices of gold import and exports (monthly frequency), between 1924 and 1935.



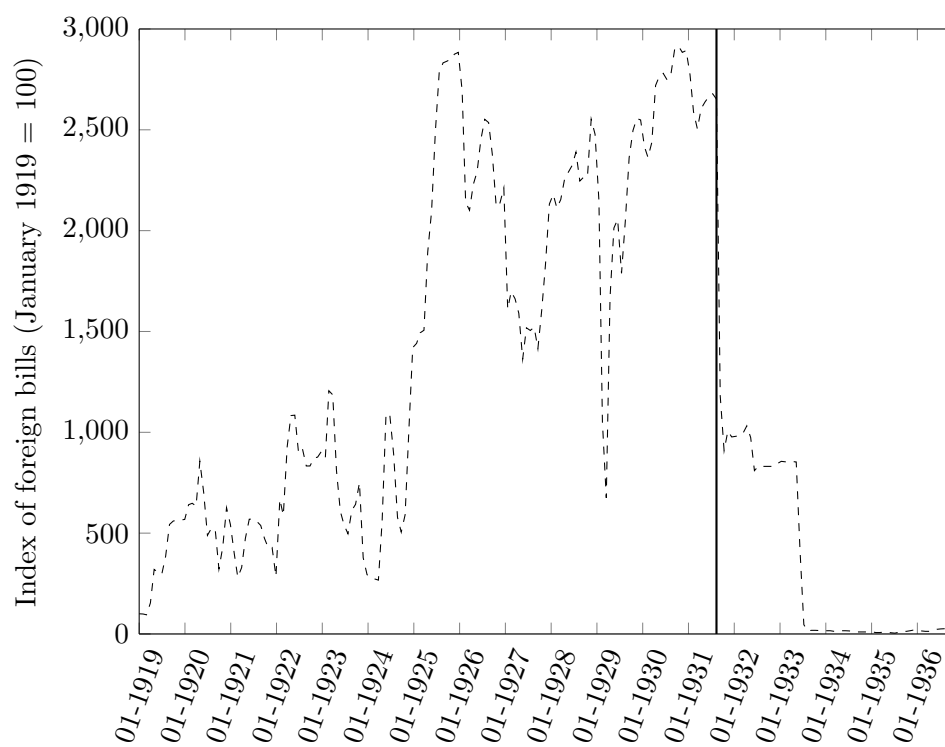
Notes: Import price (dashed): market value of imported gold divided by the amount of kilograms of gold imported. Export price (solid): market value of exported gold divided by the amount of kilograms of gold exported. Official price (dotted): regulated price set by DNB and the Dutch government, calculated as the average gold price between 1901 and 1910. Reported were monthly index figures (i.e., always a value of 100); within month fluctuations are minor. Source: Centraal Bureau voor de Statistiek (1920-1935).

Figure 7: Implied price difference between gold exports and imports (monthly frequency), 1924-1936



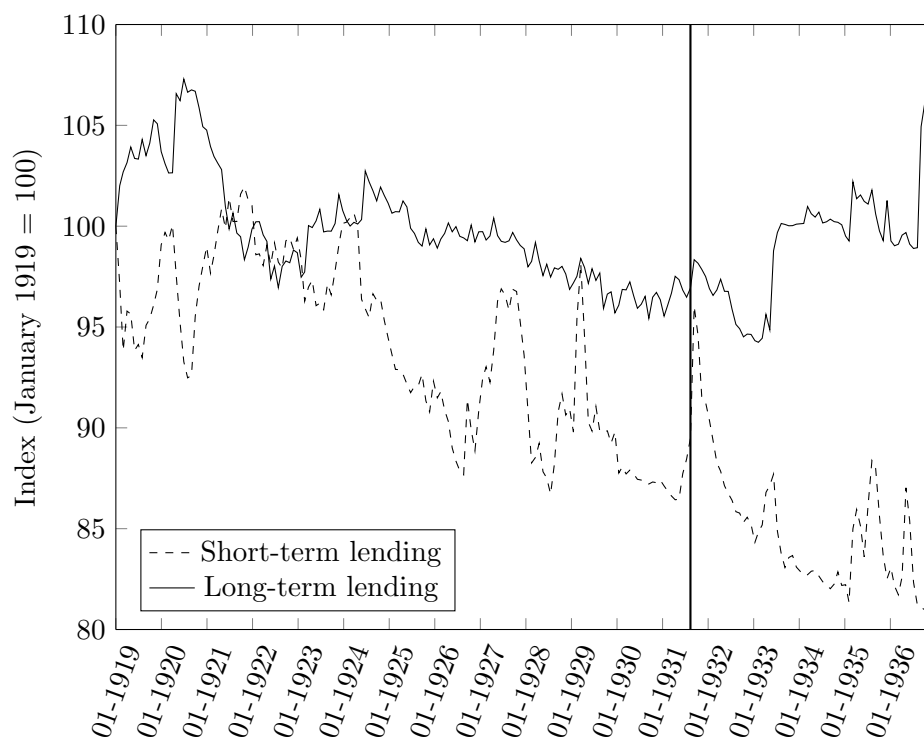
Note: Import price subtracted from export price (in guilders).
Source: Centraal Bureau voor de Statistiek (1920-1935).

Figure 8: Foreign bills on DNB's balance sheet (monthly frequency), between 1919 and 1936.



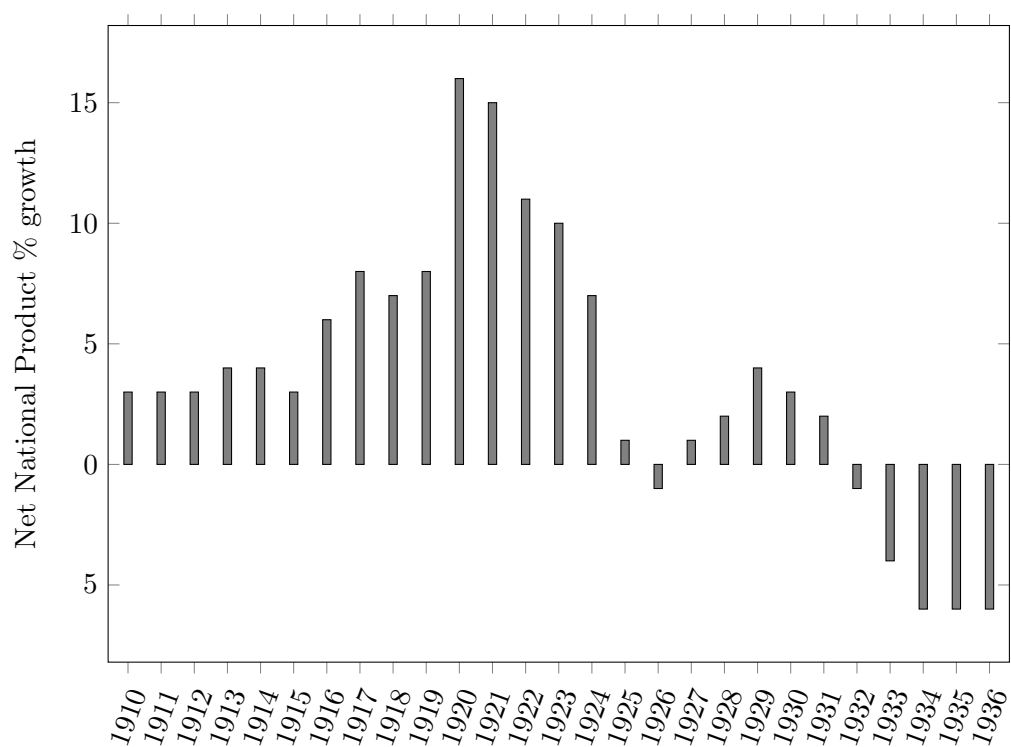
Source: DNB's weekly balance sheets (1919-1936).

Figure 9: Lending practices of DNB (monthly frequency), between 1919 and 1936.



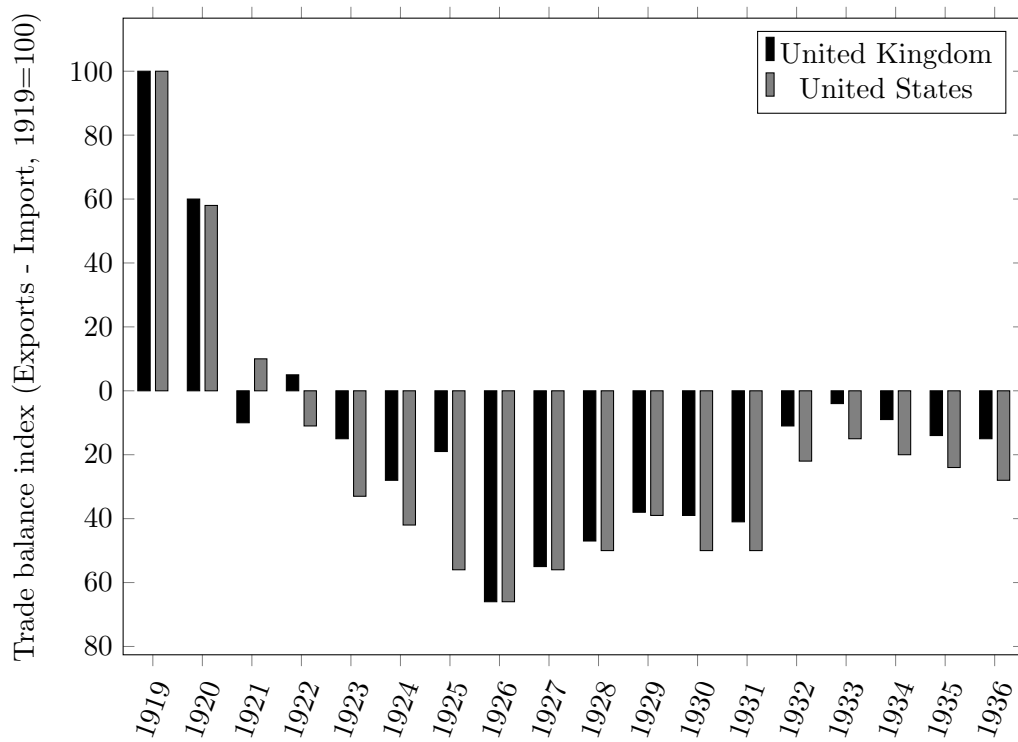
Note: Depicted are indices of the quantity of short-term and long-term lending to private institutions originated by DNB.
Source: DNB's weekly balance sheets (1919-1936).

Figure 10: Growth in Net National Product (at market prices) over the past five years (annual frequency), between 1910 and 1936.



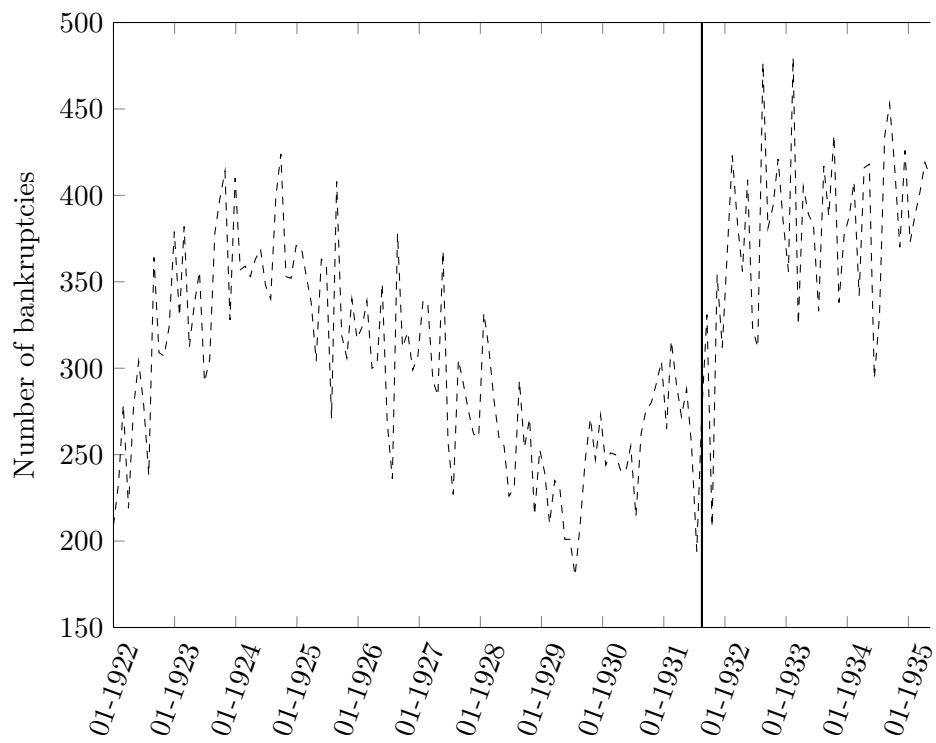
Source: Centraal Bureau voor de Statistiek, *Historie Nationale Rekening*.

Figure 11: Dutch trade balance with the UK and US (annual frequency), between 1919 and 1936.



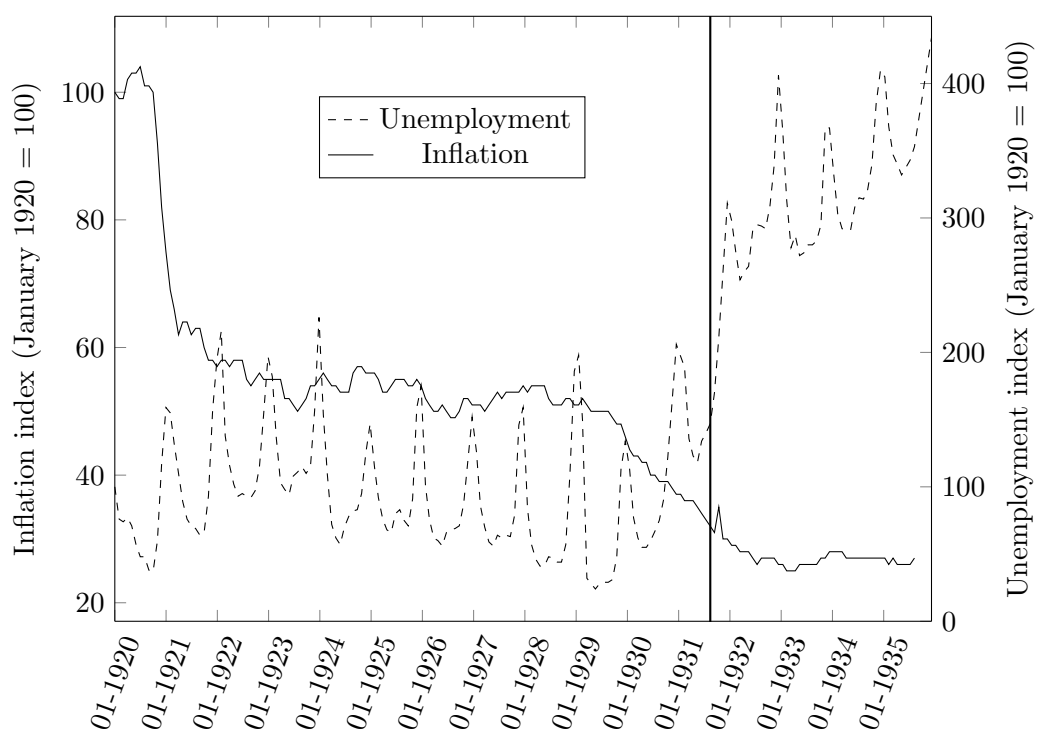
Source: International Historical Statistics (2013), *Balance of Payments*.

Figure 12: Number of bankruptcies declared by the Dutch courts (monthly frequency), between 1922 and 1935.



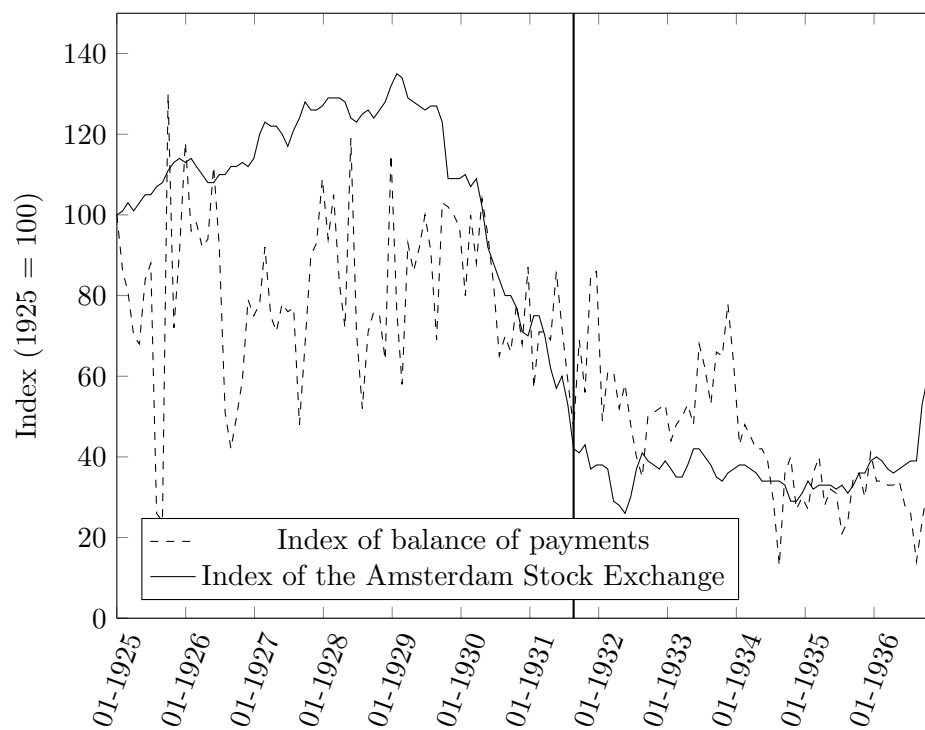
Source: Centraal Bureau voor de Statistiek (1920-1925).

Figure 13: Inflation and unemployment (monthly frequency), between 1920 and 1936.



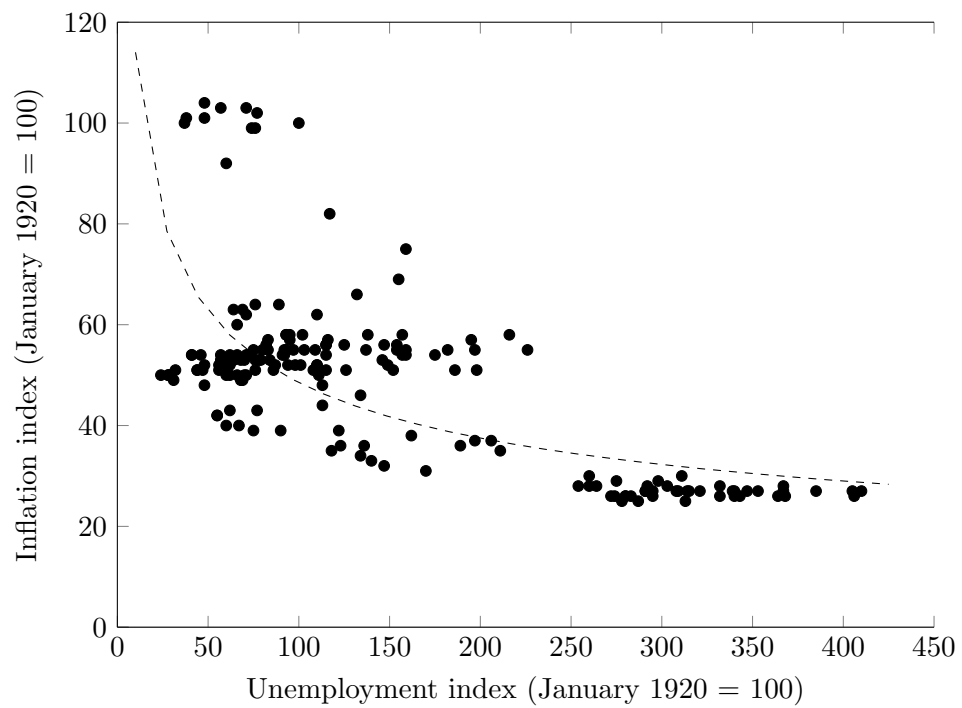
Source: Centraal Bureau voor de Statistiek (1920-1935).

Figure 14: Evolution of the Amsterdam stock exchange, and the overall balance of payments of the Netherlands (monthly frequency), between 1925 and 1936.



Source: Statistische Reichsamt (1936-7).

Figure 15: Univariate relation between inflation and unemployment (monthly frequency), between 1920 and 1936.



Source: Centraal Bureau voor de Statistiek (1920-1925).

Appendix A. Data and Sources

We make use various quantitative data series pertaining to the period 1919-1939. Data were either available at a monthly frequency, or were aggregated to monthly frequency. All data are described below and are available upon request. We supplement our quantitative data with qualitative archival sources. These are described in full in various footnotes in the main text and can be consulted independently.

We construct a time series of Dutch monthly exchange rates with respect to the United Kingdom pound (GBP), the United States dollar (USD) and French franc (FRF). The data were obtained from Sveriges Riksbank and can be found in Bohlin (2010); the series is depicted in Figure 2. We supplement our data with policy rates for the same countries. For the Netherlands we collect daily policy rates from the Centraal Bureau voor de Statistiek (CBS), which is the discount rate on bills of exchange. For the UK we collect daily policy rates from the BoE, which is the inter-bank rate, following Hills et al. (2010) and Capie and Webber (2013). For the US we collect the federal discount rate from the Board of Governors of the Federal Reserve System. For France we collect the discount rate following Flandreau and Zumer (2004), Homer and Sylla (2005) and Loubet (1900). All interest rates are subsequently averaged at a monthly frequency. All interest rates are expressed in the form $\ln(1 + r)$ following Obstfeld et al. (2005). The policy rate time series is depicted in Figure 3.

We collect various bond yields for the same countries. We obtain these data from the League of Nations (1930/31-1942/44). For the Netherlands we collect yields on the following bonds: unspecified perpetual, redeemable bond, 4% prime bond, government bond, two series of miscellaneous public and private bond baskets, miscellaneous public bonds, 2.5/3% perpetual bond, 3/3.5% 1938 state lone. For the United Kingdom we collect yields on: 2.5% perpetual bond, 3.5% 1932 war loan, basket of industrial loans. For the United States we collect: basket Liberty and Treasury bonds, 10 year treasury bond, a basket of all treasury bonds not due for more than 12 years, partly tax-exempt bonds, taxable bonds not due for more than 15 year, municipal bonds, basket of utility bonds, basket of railway bonds and a basket of industrial bonds. For France we collect the following: a combination of 3% perpetual and 4.5% 1932 loan, 4% 1918 bond, 4.5% 1932 Tranche A, basket of miscellaneous government and private bonds

(two significant revisions in 1929, and 1939). All yields are expressed in the form $\ln(1 + r)$. For all countries we average the different yields to have an extended series.¹

We collect all data on Dutch monetary policy instruments from DNB's weekly balance sheets, obtained from DNB's annual reports prepared by the directors and board members in advance of their annual shareholder meeting. We collect information on the Dutch gold holdings (i.e., the amount of gold on DNB's balance sheets). Additionally, we calculate the money supply, defined as banknotes in circulation. We also include data on DNB's holdings of foreign bills of exchange. Finally, we include information on DNB's long- and short-term (*disconto*) lending facilities. All data obtained from DNB's balance sheet was collected at a weekly frequency and averaged over a monthly period. The data from DNB's balance sheets are depicted in Figure 4, Figure 8 and Figure 9. We also include information on global gold price developments. Additionally, we collect data on net import/export statistics of Dutch gold trade from *Maandschrift van het Centraal Bureau voor de Statistiek* (1920-1935).

We collected more general macroeconomic information on the Netherlands. We collect Dutch Net National Income statistics (at market prices), which we obtained from the CBS volume *Historie Nationale Rekening* (1900-2012); the data are depicted in Figure 10. We supplement these data with trade balances with the UK and the US from *International Historical Statistics* (2013, J3 – Balance of Payments); these are depicted in Figure 11. We also include monthly data on inflation, unemployment, court-declared bankruptcies, and gold import/export quantities and market values. We obtain these data from the monthly CBS periodical *Maandschrift van het Centraal Bureau voor de Statistiek* (1920-1935); they are depicted in Figures 5-7, Figures 12 and 13 and Figure 15. Additionally, we include data on the full Dutch balance of payments and the evolution of the Amsterdam stock exchange. These data were obtained from Statistische Reichsamt (1936/7); they are depicted in Figure 14.

¹ Although the majority of the yields are at-yields, some of the yields collected from the LoN include corrections for terms of redemption. The averaging of different series results in an equally-weighted basket of country bonds. The constructed series does not necessarily reflect the average yield obtainable in every country. However, for our purposes of understanding the integration of bond markets between countries, our constructed series is sufficient.

Appendix B. Test for Monetary Policy Independence

B.1 Theoretical Predictions

The trilemma theory introduced in our study states that in a fixed exchange rate regime, the balance of payments can only be equated by shifts in demand for goods, securities and money, conditional on the difference in interest rates between two countries. For the model to be in equilibrium, the exchange rate must be “credible”, i.e., the long-run relationship between the changes in domestic and foreign rates is stable. This only occurs when foreign and domestic policies strongly co-move, i.e., when they are co-integrated.

To understand how domestic and foreign interest rates move together, we follow Shambaugh (2004) and consider the interest parity equation for an open economy:

$$i_{d,t} = i_{f,t} + E_t(e_{t+1} + e_t) + \rho \quad (\text{B1})$$

where $i_{d,t}$ is the interest rate in the Netherlands at time t , and $i_{f,t}$ is the foreign interest rate at time t , $E_t(e_{t+1} + e_t)$ is the expected change in the log of the nominal exchange rate, and ρ the difference in risk between the two countries. The intuition is simple: local interest rates must equal the base rate, and assuming that $\rho \approx 0$ (or uncorrelated to ΔR), then under a fixed exchange rate regime (i.e. $E_t(e_{t+1} - e_t) = 0$):

$$\Delta i_{d,t} = \Delta i_{f,t} \quad (\text{B2})$$

Equation B2 implies perfect co-movement of Dutch and foreign interest rates. This co-integration can be seen as the degree of independence of monetary policy, driven by policy rate targets. When the exchange rate regime becomes more credible (i.e., stable), then policy rates will move together more closely.

Following Shambaugh (2004), we can test the degree to which local interest rates follow changes in the base rate, conditional on the credibility of the regime. If the regime is not credible, then changes in exchange rates and risk differentials are expected to be non-zero. This yields:

$$\Delta R_{d,t} = \beta \Delta R_{f,t} + \theta \Delta E_t(e_{t+1} - e_t) + \gamma \Delta \rho + u_{i,t} \quad (\text{B3})$$

where $\beta = 1$ if the system is credible (i.e., perfectly co-integrated), and:

$$\frac{\text{cov}(\Delta R_{f,t}, \Delta E_t(e_{t+1}) + \Delta \rho)}{\text{var}(\Delta R_{f,t})} = 0 \quad (\text{B4})$$

That is, there is no co-variance between changes in foreign interest rates and future expected changes in the exchange rate, which implies the ineffectiveness of monetary policy. In any case, if monetary policy is independent, then $\beta \neq 1$ and $\frac{\text{cov}(\Delta R_{f,t}, \Delta E_t(e_{t+1}) + \Delta \rho)}{\text{var}(\Delta R_{f,t})} \neq 0$. In other words, governments and central banks choose not to follow foreign interest rates and allow for exchange rates to offset changes in foreign interest rates.

However, when interest rates are fixed, equation C3 can be rewritten as:

$$\Delta R_{d,t} - \beta \Delta R_{f,t} = \gamma \Delta \rho + u_{i,t} \quad (\text{B5})$$

That is, under fixed exchange rates, interest rate differentials purely represent differences in risk between the domestic and foreign country. Overall, the model has several implications for the long-run relationship between foreign and domestic interest rates:

Corollary B1. If foreign and domestic interest rates are perfectly co-integrated, monetary policy **cannot be independent under any circumstances.**

Corollary B2. If foreign and domestic interest rates are (im)perfectly co-integrated, monetary policy **cannot be effective in the absence of domestic demand shifts.**

B.2 Econometric Specification

To investigate the degree of monetary policy independence enjoyed by policymakers in the Dutch government and its central bank, we estimate auto-regressive distributive lag models (ARDL) and examine the co-integration of domestic and foreign policy rates. Our ARDL models follow the theoretical setup of equations B1-B4, capturing the co-movement of domestic and foreign policy rates, and correcting for time series properties such as auto-correlation and non-stationarity. Our models are equivalent to an error-correction model (Engle and Granger, 1987; Hassler and Wolters, 2006).

Below we provide the base specification for testing the co-integration of central bank policy rates.

$$\begin{aligned} \Delta R_{NL,t} = & \alpha_0 + \theta(r_{NL,t-1} - \beta r_{f,t-1}) \\ & + \sum_{i=1}^{p-1} \psi_{r_{NL,t-i}} + \omega' r_{f,t} + \sum_{i=1}^{p-1} \psi_{r_{NL,t-i}} \Delta r_{f,t-i} + u_t \end{aligned} \quad (B6)$$

where:

$$\theta = \sum_{j=0}^q \frac{\beta_j}{\alpha} \quad (B7)$$

Equation C7 contains an autoregressive structure with a maximum lag of three months; the optimal lag structure is determined by the Bayesian Information Criterion. The parameters in our model are: α_0 is a constant term; θ is the sensitivity of domestic interest rate changes to the differential of current domestic policy rate and the foreign policy rate; β is the strength of the long-run relationship between the changes in the domestic policy rate and the foreign interest rate (i.e., the degree of co-integration – see equation B3); and $\sum_{i=1}^{p-1} \psi_{r_{NL,t-i}}$ and $\sum_{i=1}^{p-1} \psi_{r_{NL,t-i}} \Delta r_{f,t-i}$ are the autoregressive component of the domestic and foreign policy rate.

Since we are primarily interested in the long-run relationship (i.e., the degree of co-integration) between Dutch policy rates ($r_{d,t}$) and foreign policy rates ($r_{f,t}$), we focus our analysis on β . Table C1 provides an overview of the relevant testing procedure.² As such, these tests reveal whether corollary 1 or 2 prevails. If $\beta = 1$ monetary policy is dependent and it cannot be effective. Alternatively, if Dutch policy makers would have significant freedom in setting policy we would expect $\beta \neq 1$ and (/or) unstable as $\theta \neq 0 \cap (\sum_{j=0}^q \beta_j)$.

B.3 Quantitative Findings

Table B2 reports the tests described in Table B1. The results presented are for the period when the UK was still on the gold standard (April 1925 – September 1931), and after the UK's departure from gold (October 1931 – September 1936). In each estimation, $r_{f,t}$ is either the policy

² For testing the stability of the co-integration we rely on the bounds testing procedure described by Pesaran et al. (2001), using asymptotic F-distributions, which are independent of whether out variables are I(0) or I(1), we refer to this as PPS-methodology.

rate of the UK, US or France.³

We find the adjustment speed (θ) is always negative and significant during the interwar gold standard period, except for France.⁴ This suggests, subsequent to a shock in the foreign rate, Dutch interest rates adjust to restore the equilibrium relationship, with a half-life of approximately 12, 5 and 33 months relative to policy rates in the UK, US, and France. As is common when using ARDL models, we assume $I(0)$ in our series and we find weak evidence there is a significant long-run levels relationship (i.e., $\beta \neq 0$ and PPS bounds test advise rejection at the 10 per cent level).⁵ However, this stability is only observed *after* the UK departed from gold. We find the Netherlands had significant freedom to conduct independent monetary policy as the co-integration was far from perfect (i.e., $\beta < 1$), except with respect to the UK while they were on the standard; DNB offset the consequences of foreign interest rate increases.

Our findings are largely consistent with the essential assumption of the Mundell-Fleming model: the Netherlands was a small open economy. Throughout the interwar gold standard, DNB conducted independent monetary policy, even though it closely monitored policy rate changes of other countries, primarily the UK.⁶ With respect to the US, the Netherlands continued to have independent monetary policy, offsetting any change in US federal rates. With respect to France, we find that prior to the UK's departure, Dutch and French interest rates co-moved, albeit not significantly. However, the low adjustment speed prompts the conclusion that the Dutch did not consider the French an important member of the gold standard prior to the UK's departure from gold. It took Dutch policy rates approximately 33 months when considering the relation with French policy rates. However, after 1931, we

³ We do not pool these periods together and use interaction terms because we are interested in the existence of a levels relationship in the distinct periods. The PPS-methodology only tests for the existence of a levels relationship. However, when we do pool the data, results are as expected.

⁴ That is, we find that interest rate differentials move towards their equilibrium levels.

⁵ Additional tests show that are series are not integrated beyond $I(0)$.

⁶ Additionally, we find joining the gold standard did, in fact, *increase* the co-integration between Dutch and foreign policy rates (i.e., $\beta_{1919-1925} < \beta_{1925-1936}$). However, it by no means resulted in dependent monetary policy or even reinforcing foreign policy.

find the Dutch regained their ability to make independent monetary policy decisions, and started offsetting changes in foreign policies.^{7,8}

While we argue the departure of the UK was probably the most important macroeconomic event for the Dutch economy during the duration of the gold standard, we also consider the departure dates of the US and France. Table B3 presents these results; the first two columns are the UK's estimations and are equivalent to the first and fourth columns of Table B2. We make two striking observations. First, the co-integration of interest rates between the Netherlands and the US cannot be rejected. However, due to the limited extent of our time-series between October 1933 and September 1936, we do not place much weight on this estimation. More importantly, we find the Dutch did not consider the French important in determining their interest rate policy at any point during the standard. DNB had significant independence in setting its own monetary policy, unconditional of the different period that we define.

Overall, our econometric analysis prompts two conclusions. First, the UK's departure from gold was indeed a major shock to the interwar gold standard. Second, during the interwar standard, the Dutch enjoyed significant independence in setting their monetary policy, even more so after the UK had left. Given the theoretical trilemma trade-offs, we conclude the Dutch must have imposed significant (formal and/or informal) controls to limit the in- and outflow of (gold) capital from the Netherlands. This is exactly what we find.

[Insert Tables B1, B2 & B3 here]

⁷ We carry out similar estimations for the integration of Dutch bond markets with the various countries. We find that Dutch bond markets were perfectly co-moving with UK bond markets. This co-movement is primarily driven by the integration of bond markets after the UK had left the standard. We conclude that between April 1926 and September 1931, the period during which most countries were on the gold standard, bond markets were not co-integrated; they were by no means co-moving in a predictable manner. That is, the interwar gold standard did not provide the desired financial stability.

⁸ Once the UK left the standard, Dutch bond markets co-moved with markets in the UK and were inversely correlated with French bond markets. This is consistent with evidence that the French were hoarding gold (Irwin, 2012). During the second part of the gold standard regime, yields increase in France, and Dutch yields then decreased significantly. This suggests shifts in perceived risk (higher risk in France) caused French bond prices to decline, and increased the demand for Dutch bonds (forcing down the yields).

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Table B1: Test of presence of long-run relationship, and implications for monetary policy.

Test	Intuition	If significant?
1 $\beta \neq 0$	Is there an effect?	Measurable effect size
2 $(\alpha = 0) \cap \left(\sum_{j=0}^q B_j/\alpha = 0\right)$	Is there a long-run effect?	Fixed exchange rate regime works
3 $\beta = 1$	Is the co-integration perfect?	Dependent monetary policy
4 $\beta > 1$	Imperfect co-integration	Reinforcing foreign monetary policy
5 $\beta < 1$	Imperfect co-integration	Offsetting foreign monetary policy

Table B2: Co-integration of interest rates (before and after UK departure from gold standard).

	Apr-1925 – Sep-1931			Oct-1931 – Sep-1936		
	UK	US	FR	UK	US	FR
θ	-0.056*	-0.129**	-0.021	-0.221***	-0.232***	-0.260***
	(-1.912)	(-2.621)	(-0.901)	(-2.773)	(-2.846)	(-3.061)
β	1.247**	0.656***	0.792	0.175	-0.135	0.343
	(2.398)	(5.359)	(0.827)	(0.645)	(-0.476)	(1.235)
Observations	78	78	78	60	60	60
R-squared	23%	35%	20%	13%	13%	14%
Adj R-squared	20%	31%	17%	10%	9%	11%
Half-life (months)	12.4	5.4	33.0	3.1	3.0	2.7
Break date	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
F-test	0.23	7.92	0.05	9.26	16.14	5.60
Prob > F	0.64	0.01	0.83	0.00	0.00	0.02
Stability @ I(0)	n.s.	n.s.	n.s.	*	*	*
Stability @ I(1)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Independence	n.s.	***	n.s.	***	***	**
Policy	Ineffective	Offsetting	Undetermined	Offsetting	Offsetting	Offsetting

Table B3: Co-integration of interest rates (before and after local departures from gold standard).

	UK		US		FR
	Apr-1925 – Sep-1931	Oct-1931 – Sep-1936	Apr-1925 – Sep-1933	Oct-1933 – Sep-1936	Apr-1925 – Sep-1936
θ	-0.056*	-0.221***	-0.221***	-0.212**	-0.104***
	(-1.912)	(-2.773)	(-3.936)	(-2.049)	(-2.860)
β	1.247**	0.175	0.696***	-1.300	0.391*
	(2.398)	(0.645)	(6.544)	(-0.870)	(1.809)
Observations	78	60	102	36	138
R-squared	23%	13%	33%	12%	6%
Adj R-squared	20%	10%	29%	7%	4%
Half-life (months)	12.4	3.1	3.1	3.3	6.7
Break date	n.a.	n.a.	Jul-31	n.a.	n.a.
F-test	0.23	9.26	8.19	2.37	7.95
Prob > F	0.64	0.00	0.01	0.13	0.01
Stability @ I(0)	n.s.	*	***	n.s.	*
Stability @ I(1)	n.s.	n.s.	***	n.s.	n.s.
Independence	n.s.	***	***	n.s.	***
Policy	Ineffective	Offsetting	Offsetting	Undetermined	Offsetting