

International Aspects of the Great Depression and the Crisis of 2007: Similarities,
Differences, and Lessons¹

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ABSTRACT

We focus on two international aspects of the Great Depression--financial crises and international trade—and try to discern lessons for the current economic crisis. Both downturns featured global banking crises which were generated by boom-slump macroeconomic cycles. During both crises, world trade collapsed faster than world incomes and the trade decline was highly synchronized across countries. In the Depression, income losses and rises in trade barriers explain trade's collapse. Due to vertical specialization and more intense trade in durables, today's trade collapse is due to uncertainty and small shocks to trade costs hitting international supply chains. So far, the global economy has avoided the global trade wars and banking collapses of the Depression perhaps due to improved policy. Even so, the global economy remains susceptible to large shocks due to financial innovation and technological change as recent events illustrate.

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I. INTRODUCTION

Despite the severe stagnation that has gripped the world's economy in the aftermath of the Subprime Crisis, the Great Depression remains, without question, the longest, deepest, and broadest economic contraction that the industrialized world has ever known. In all seventeen of the countries for which data are presented in Figure 1, real GDP per capita growth during 1930-33 was far slower than during the pre-World War I period (1871-1913), the interwar period as a whole (1919-39), the early post-World War II period (1948-73), and the later post-World War II period (1974-2006). More than three quarters of these countries experienced negative economic growth. Unemployment rates of above 20 percent were common (Table 1). Banking and financial crises were widespread (Table 2). Trade also declined substantially (Figure 3): exports in 27 leading countries declined by over 50% between 1929 and 1932 while real GDP in these same countries fell some 15% during those same years. Consequently the share of world exports in world GDP in 1933 was a little more than half the size of that in 1929.

Prior to the 1980s, academic research on the Great Depression concentrated disproportionately on the United States (Kindleberger, 1973 is a prominent exception), focusing in particular on whether the downturn was the result of monetary forces (Friedman and Schwartz, 1963) or a decline in some component of real expenditure (e.g., Temin, 1976). Starting in the 1980s, a growing literature, including Choudhuri and Kochin (1980), Eichengreen and Sachs (1985), Temin (1989), Bernanke and James (1991), Eichengreen (1992a), and James (2001), began to take a more global perspective (Bernanke, 1995, Eichengreen, 2004). And although the argument that the Great Depression originated in—and emanated from—the United States is still powerful (Romer,

1993), the importance of international factors in driving the Great Depression is better established than ever.

In this article, we focus on two aspects of the Great Depression which had important international dimensions: banking crises and international trade. We conclude with a comparison between the Great Depression and today's global downturn and some observations on the path of economic policy and our understanding of how the global economy is evolving.

II. BANKING CRISES

Financial crises were a defining characteristic of the Great Depression, as they have been of the Great Recession. Of course, the term “financial crisis” encompasses many different classes of episodes, including banking crises, currency crises, debt defaults, and securities market crises, to name but a few (Kindleberger, 1978: 21–2). We concentrate on banking, rather than currency or securities market crises for two reasons. First, given that the international gold standard regime collapsed during the 1930s, virtually every country that had been on the gold standard experienced some sort of currency crisis. All seventeen countries catalogued by Bordo *et al.* (2001: web appendix) underwent at least one currency crisis during 1930-36. Second, although a number of stock market crashes took place during the Great Depression, the scholarly consensus is that, with the possible exception of the October 1929 crash on Wall Street (Romer, 1990), crises in securities markets were not important in bringing about the Great Depression (Kindleberger, 1973: 108 and Eichengreen, 1992b), but were most often a consequence of the collapse of the banking and non-financial sectors of the economy.

By contrast, banking crises play a central role in many analyses of the causes of the Great Depression (e.g., Friedman and Schwartz, 1963, Temin, 1976, Bernanke, 1983). Bernanke and James (1991), for example, find that countries that experienced banking crises had significantly worse depressions than those that did not. Table 2 classifies 26-- primarily European, but including Canada, Japan, and the United States--countries by whether or not they had banking crises during the Great Depression.

Although there is compelling evidence that banking crises played an important role in the Great Depression, there is no consensus on the channel through which the crises affected real economic activity. Friedman and Schwartz (1963) and Cagan (1965) argue that banking crises increased the public's desired currency-to-deposit ratio, as depositors strove to convert deposits into cash, which reduced the money supply and led to a decrease in prices and output. Fisher (1932, 1933), Minsky (1982), and Kindleberger (1978) view banking crises as a crucial link in the debt-deflation process: just as banks extended credit to ever more marginal borrowers during the preceding economic expansion, the subsequent downturn left these marginal borrowers unable to repay their debts, which led to a decline in prices and an increasing number of debt defaults. Bernanke (1983) emphasizes the role of banks in providing intermediation services, and argues that bank failures during the Depression raised the cost of credit intermediation and worsened the economic downturn. Eichengreen (1992a) and Temin (1993) highlight the role that banking crises played in the international spread of the Great Depression.

Financial crises have long transcended regional and national boundaries. Friedman and Schwartz (1963) describe American banking crises as spreading through a "contagion of fear," as the failure of weak banks led to panic withdrawals by depositors in more sound banks, causing them to fail too. Kindleberger (1978: 118) describes their international

transmission as taking place through a variety of channels: "...psychological infection, rising and falling prices of commodities and securities, short-term capital movements, interest rates, the rise and fall of world commodity inventories." He presents a table (p. 127) showing the total number of commercial and financial failures in different cities on a monthly basis, nicely illustrating the geographic spread of a crisis outward from London, to the rest of Britain, to British colonies, and to continental and American destinations following the initial crisis August 1847. The international dimension of banking crises became, if anything, more important during the subsequent crises during the decades of the 1870s, 1890s, and 1900s (Grossman, 2010).

The interwar period saw two distinct waves of banking crises, both of which were initiated by cyclical downturns. The first took place during the early 1920s and affected Belgium, Denmark, Finland, Italy, Japan, the Netherlands, Norway, and Sweden. Although international linkages did contribute to the spread of these crises, they were primarily the result of the collapse of post-World War I booms that occurred in many countries (Grossman, 2010). Further, because virtually no country had yet restored the gold standard, the economic downturn of the early 1920s was relatively short-lived (Eichengreen, 1992a: 100).

The second wave of banking crises was initiated by a cyclical downturn that began in 1929-30. Crises were centered both in the United States, which experienced banking crises in October 1930, March 1931, and March 1933, and in Europe, where banking crises began in earnest in 1931 with the May collapse of Austria's Credit-Anstalt. The Credit-Anstalt had been the largest bank in the Austro-Hungarian Empire, and was by far the dominant bank in post-World War I Austria: following its absorption of the failing Bodencreditanstalt in 1929, it held 70 percent of total Austrian banking assets. The bank

had been overextended for some time and the economic downturn that began in 1929-30 led to losses on the loan portfolio that exceeded the bank's capital (Eichengreen, 1992a: 264ff. and Schubert, 1991).

Revelations about the precarious state of the Credit-Anstalt—it was considered “too big to fail” and was, in fact, rescued by the government and the Austrian National Bank-- led to bank runs in Poland and Hungary, the effective suspension of the Austrian gold standard, and heightened concerns about Germany, which also had large outstanding short-term foreign debts. The failure of a large German textile company, the Norddeutsche Wollkämmerei und Kammgarnspinnerei (Nordwolle), in June led to a run on, and the collapse of, the Darmstädter und Nationalbank (Danat-Bank) in July, which led to capital flight, suspension of the gold standard, and a further spread of banking crises, particularly to banks with German connections in eastern and central Europe and in the Middle East. Britain, which had run persistent balance of payments deficits for several years, now found itself under additional pressure, as the suspensions in Germany and Austria and the freezing of British credit on the continent, called the British gold standard into question. The mounting pressure on the pound forced Britain to leave the gold standard in September 1931 (Eichengreen and Jeanne, 2000), which led to further banking crises.

The banking crises of the interwar period—not to mention those of the more recent sub-prime crisis--were very much in the mold of the “boom-bust” crises described by Fisher (1932, 1933), Minsky (1982), and Kindleberger (1978): rapid economic expansion, accompanied by increasing indebtedness, resulting in heightened financial fragility which leads to crises when the economic boom collapses. The collapse of the post-World War I investment boom throughout Europe and the end of the roaring 20's investment boom in

the United States, as well as the collapse of the sub-prime mortgage boom more recently each led to banking crises.

We can assess a variety of factors which might have enabled—or prevented—banking crises during the Great Depression by comparing the experiences of countries that experienced crises with those that did not (Table 2). These include the extent of branching, bank size, banking concentration, the amplitude of the macroeconomic cycle, and regulatory differences (Grossman 1994).

Banking systems where banks were, on average, more extensively branched typically survived the Depression better than those which were characterized by unbranched (i.e., unit) banks. Extensively branched banks should be less likely to fail than unit banks for three reasons. First, banks with an extensive branch system are likely to have a more diversified loan portfolio than unit banks, which make loans in one area only. Second, branched banks may have a more diversified deposit base and therefore may be less likely to fail due to purely local deposit runs. Finally, a branch system provides seasonal diversification, easing the stringency in money centers caused by the flow of funds to agricultural areas at harvest time.

Banking systems characterized by larger banks were also less prone to crises than those characterized by smaller banks. Large banks might be less prone to failure than smaller institutions because they are better able to diversify their loan and investment portfolios and thereby reduce the risk from any one nonperforming component. Additionally, if leading non-financial firms require larger loans—which small banks do not have the resources to provide—and are less likely to default than small firms, then the banks that make these loans may incur smaller loan losses. Finally, banks with substantial resources may be in a better position to acquire banks that are on the verge of failure and thus help to stabilize the system.

Banking systems that were characterized by a high degree of concentration were also more stable than those that were not. High concentration might increase stability if it reflects the existence of barriers to entry, suggesting that more concentrated banks will be more profitable and, hence, better able to stave off failure during a period of crisis. Further, the existence of a small number of banks suggests that cooperation, such as pooling reserves in times of crisis, will be more feasible. Although formal banking regulation did not account for important differences in financial stability during the Great Depression, having a smaller number of institutions may have made it easier for government, central bank, and other authorities to exert informal supervision over the banking system. Because bank branching, size, and concentration are typically highly correlated, it is difficult to determine which of these attributes was most responsible for banking stability.

Banking systems which had been purged of many of their weak banks by a crisis earlier in the interwar period also typically survived the Great Depression better than those that were not. For example, the banking systems of both the Netherlands and Sweden suffered crises during the post-World War I period, but were relatively stable during the 1930s, perhaps because many of the weaker banks had already exited.

Finally, economies in general--and banking systems in particular—in countries which abandoned the gold standard promptly typically fared better than those in countries that clung to the gold standard. Decoupling from gold was liberating for countries that did so, permitting them to undertake more expansionary monetary policy. The benefits of early devaluation are illustrated in Figure 2, which replicates a figure presented by Eichengreen and Sachs (1985: 936). The horizontal axis presents a measure of exchange rates in 1935 relative to 1929 levels. France did not devalue the franc until 1936, so its value in 1935 was equal to that in 1929; by contrast, the currencies of the Scandinavian countries and

Britain had fallen by 40 percent or more from their 1929 values. The vertical axis presents an index of industrial production in a similar manner. The industrial production indices in Finland, Sweden, and Denmark in 1935 were more than 120 percent of their 1929 levels; those of France and Belgium were just over 70 percent of their 1929 values. The pattern, illustrated by the trend line, is clear: countries that experienced more substantial depreciations exhibited greater industrial recovery (Belgium is an outlier because it devalued during 1935 and the positive effects of currency depreciation on industrial production were not felt until later). Greater depreciation was also associated with increased export volume, greater incentive to invest (Eichengreen and Sachs, 1985), and a reduced likelihood of enduring a banking crisis (Grossman, 1994).

Banking crises contributed crucially to the length, depth, and spread of the Great Depression. The historical record suggests that banking systems characterized by more extensively branched, larger, and more concentrated firms fared better than those that were not. The record also suggests that “history mattered”: banking systems that had undergone crises during the collapse of the post-World War I boom of the early 1920s often shed their weakest members and emerged more resilient in the face of the economic downturn of the Great Depression. Finally, the experience highlights the important role played by the gold standard in propagating the banking crises of the Great Depression.

III. TRADE

III.A **How big was the trade collapse?**

Between mid-1929 and mid-1932 the world witnessed an unprecedented peacetime decline in international trade. Total exports as a percentage of GDP in a sample of 27

leading countries whose data underlie Figure 3 fell from 9.0 in 1929 to 5.0 in 1932.⁴ Total real exports for these nations fell by just over 50% and GDP fell by 15% on average between the peak in 1929 and the trough of 1932. These declines are comparable to those suffered during the recent trade collapse of 2008-09. In the first year of both crashes, trade fell by roughly 20 percent.⁵ In the recent trade bust and during the first year of the Depression the average GDP decline was four percent. Both trade busts also seem to have been highly synchronous across nations. Between 1929 and 1930, 85 percent of these 27 nations had negative trade growth which is the same proportion reported by Baldwin (2009) for 2008-2009.

During the 1930s the trade collapse continued for another two years whereas it appears that today, after only one year, world trade is rebounding strongly. Whatever barriers put the brakes on trade seem to have dissipated rapidly, allowing for a quick rebound. During the Depression a sequence of income declines, and tariff and competitive exchange rate devaluations seem to have dragged trade down in successive rounds. This is famously depicted in the contracting spiral of trade figure – one of the most reproduced figures in all of economics according to Eichengreen and Irwin (1995) – originally published in 1933 in Austria and then by the League of Nations *Economic Survey*. We return to a comparison between the two episodes below.

⁴ These countries are those used in the sample of Jacks, Meissner and Novy (2009a) and cover roughly 70% of global GDP. They include: Argentina, Australia, Austria, Belgium, Brazil, Canada, Denmark, France, Germany, Greece, India, Indonesia, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Portugal, Spain, Sri Lanka, Sweden, Switzerland, the United Kingdom, the United States, and Uruguay.

⁵ See for instance, Eichengreen and O'Rourke (2010). Their values for the "volume of world trade" during the 1930s from the League of Nations imply only about a 13 percent drop in the year after the peak in world trade. The difference between our 20% decline and theirs could be due to the samples or method of deflation. League of Nations statistics do not report the method of deflation. Figure 2 uses the US CPI to deflate the dollar value of trade.

A number of studies have highlighted the extent of disintegration of world trade during the Depression. That is, the amount by which trade declined beyond that warranted by autonomous income declines say due to increased barriers to trade. Assume as a benchmark that both imports and domestic sales depend on local incomes with a unit income elasticity. When international trade declines by more than consumption of domestic tradeables, it implies that there has been an increase in barriers to international transactions. If this not the case, domestic sales would decline one for one with goods shipped across borders. In this case, although trade has collapsed, integration per se between markets is left unaltered, if by integration we have in mind a measure of the barriers to international relative to domestic trade.

The above logic follows closely nearly all conventional international trade literature that relies on the ‘gravity’ model to explain bilateral trade flows (more on this below). Jacks, Meissner, and Novy (2009a) show that most trade models and their gravity equations give rise to a unique metric that implicitly measures all barriers to international trade in tariff equivalent terms. Essentially the gravity model tells us how far actual bilateral trade is from where the model predicts it would be in the absence of all international barriers to trade. This measure rose, on average, by 25 percent during 1929-1933. In other words, after controlling for income losses, it was as if worldwide tariffs had uniformly risen by 25 percent. Nevertheless, there was some variance in outcomes. In the US between 1929 and 1933, exports declined by almost 60 percent while GDP fell by roughly 30 percent. For the US, this implies the tariff equivalent measure of trade costs rose was 26 percent. France and Germany saw declines in exports of 50 percent with falls in GDP of 15 percent. The tariff equivalent rise in trade costs implied by these figures is just under 20 percent.

Hynes, Jacks, and O'Rourke (2009) take a different approach, employing price data from selected commodities to assess the extent of the disintegration of international markets. Price gaps (i.e., the difference between the price in the exporting country and the price in the importing country presumably reflecting barriers to trade) on agricultural commodities stood 160 percent higher in 1933 than they were in the comparatively "normal" year of 1913 (Hynes, Jacks, and O'Rourke, 2009). These rises imply an average 70 percent increase in the costs of international trade in commodities. The UK and its trading partners within the British Empire saw rises of 62 percent. UK and non-empire pairs posted rises of 135 percent. Non-empire country pairs witnessed rises of 200 percent. The Depression put a large wedge between the prices paid for imports and the prices exporters received.

A slightly earlier literature focused on measuring the change in tariffs as a proxy for changes in trade costs. Smoot-Hawley doubled tariff rates on a range of US imports. Irwin (1998) calculates that in 1922 the average ad valorem tariff was 34.61% while after Smoot Hawley in 1930 it was 42.28%. This translates into a rise in the ad valorem equivalent of tariff rates of about 20%, or a rise in the relative price of imports of 4-6% (i.e., $\frac{1+t_1}{1+t_0}$). Since many tariffs were specific, meaning that they were in terms of monetary units per physical unit, the rise in tariffs reflected the global deflation that began in 1929 and involved more than just active legislation to raise the ad valorem tariff. Due to these effects in the US, the ad valorem equivalent average tariff (tariff revenue divided by dutiable imports) rose from about 40 percent to 60 percent. Crucini and Khan (1996) found ad valorem tariff equivalents nearly tripled, from eight to 22 percent in other countries. Madsen (2001) reported a doubling of tariff revenues relative to total imports between 1929 and 1932 in a slightly larger sample of countries.

III. B What Caused the Trade Decline?

How should we understand the decline in world international trade? According to conventional modern trade theories, in general equilibrium the two main factors driving international bilateral trade are terms related to output/income levels of both trade partners and the barriers to foreign trade.⁶ Barriers to foreign trade, often referred to as ‘trade costs,’ consist of all the costs that make foreign goods relatively more expensive than domestic goods. They include, but are not limited to, tariffs, international shipping and insurance costs, exchange rate volatility, and the availability of trade credit (Anderson and van Wincoop, 2004). Can the world trade collapse be understood simply as a by-product of declines in output/incomes? Or was it the result of restrictive trade policies and other shocks to the barriers of trade? If the latter, these policy shocks could have acted as key drivers of the global depression. Yet another possibility is that a vicious cycle was at work, with causality running from income to trade, trade to trade barriers, trade barriers to trade, and trade back again to income. We explore the record on trade, incomes and trade barriers next.

From the mid-1920s through 1929, exports grew by about 50 percent while production increased by roughly 25 percent (Figure 3). Although some nations dismantled quantitative controls imposed during the war period, tariffs remained high compared to levels in 1913 (Findlay and O’Rourke, 2007). However, exchange rate volatility decreased

⁶ It is not difficult to show that if a gravity model of trade governs bilateral international trade and domestic trade as well then these are the two factors that matter. Models that give rise to such a gravity equation include monopolistic competition with complete specialization of a range of goods by country with or without increasing returns and consumers with homothetic preferences and a love of variety; the Ricardian model of trade studied by Eaton and Kortum (2002), and models with heterogeneous firms and/or fixed costs to foreign market entry (e.g., Chaney, 2008). Deardorff (1998) argues that in a Heckscher-Ohlin world with trade costs a similar model holds too.

with the re-establishment of the gold standard, thereby reducing uncertainty for agents involved in cross-border transactions. The League of Nations (1931) cites an increased demand for industrial products and a re-organization of industry in Europe as providing further stimulus to cross-border trade.

The trade boom had stalled by early 1929. The initial cause is likely to have been the tightening of US monetary policy. The rise in US interest rates led to sharper rises in interest rates in deficit nations as they attempted to retain capital to finance their current account deficits. Tightening abroad led to reduced demand for American imports and, indeed, US exports begin to decline from 1928. This suggests that the primary impulse for the decline in world trade was a real interest rate shock which lowered worldwide demand (Eichengreen, 1992a).

The next insult to international trade came with the enactment of the Smoot-Hawley tariff by the United States during the summer of 1930. The impulse for the US tariff rise was mainly political, reflecting a massive logrolling coalition covering a large spectrum of domestic producers. It is incorrect to view Smoot-Hawley as a response to the global downturn. The idea of tariff revision was sponsored as early as 1928 by the Republican candidate Herbert Hoover during the presidential campaign (Irwin and Kroszner, 1996).

Countries reacted to this dramatic rise in tariffs *and* the incipient depression with their own protectionist measures. Germany, Italy and France preemptively raised tariffs on agricultural goods prior to final approval of Smoot Hawley in 1930. During 1931 roughly 61 nations raised tariffs or imposed barriers in response to US policy (Jones, 1934).⁷

⁷ Eichengreen and Irwin (2010) argue that Smoot Hawley itself had a relatively minor direct impact on Europe and on the domestic economy. Instead they view the policy as setting a tone for further tariff escalation in Europe. They also cite the financial crisis of 1931 in Europe and its economic impact as a principal cause of further tariff rises

Although Great Britain had been the world's cheerleader for free trade since the 1840s, it soon responded with tariff hikes of its own. Because of its free trade heritage, internal political debate on the issue was intense in 1931, but free trade ultimately lost.

Jones (1934) argues that failure of the First and Second International Conferences for Concerted Economic Action in 1930-31 meant that international cooperation could not stop the avalanche of protectionism. Britain's general election of 1931 resulted in a National Government that acted on the public's desire to stem the increasing trade deficit and to stabilize sterling. The Tariff Act of 1931 and the Import Duties Act of 1932 meant the loss of a major market for many important countries although members of the British Empire were exempted by the Ottawa Agreements, which were concluded in the summer of 1932. In France, a quota system was implemented between 1930 and early 1931. Madsen (2001) reports that there were 50 such quotas in existence in 1931 and 1,100 by 1932. In Spain, the Wais tariff raised duties on US automobiles. Italy imposed duties on US autos and other goods as well. Canada responded fiercely to Smoot-Hawley by establishing retaliatory duties on agricultural items and enlarged British preference. There is no doubt that the rampant rise in protectionist measures between 1930 and 1933 dealt a major blow to world trade up to 1933.

Retaliation against Smoot-Hawley was costly. If countries discriminated against US goods, an extra duty was to be levied on their exports to the US. Many countries raised tariffs across the board in response. Moreover, Most Favored Nation clauses extending preference to US goods were not reciprocated, which led to the quick decline of such treaties. With the enactment of the Reciprocal Trade Agreements Act in 1934, the US tariff system began to make exceptions to high tariffs on a country by country basis and so invited a more positive worldwide response generating a revival of trade.

What else besides retaliation to US tariffs drove countries to raise tariffs in the 1930s? Foreman-Peck, Hughes-Hallet, and Ma (2000) argue that countries raising tariffs did so with three objectives in mind: to raise production levels to those of 1929; to increase prices to 1929 levels; and to restore trade balance. Since the exchange rate and monetary policy mattered for these outcomes, tariff policy seems to be related more fundamentally to monetary and exchange rate policies. Countries clinging to gold while others devalued gave themselves an overvalued exchange rate, thus widening their trade deficits. And, in fact, nations with stronger exchange rates seem to have imposed larger increases in their tariffs, *ceteris paribus* (Eichengreen and Irwin, 2010). France, which did not devalue until 1936, underwent a doubling of tariffs (as measured by tariff revenue divided by imports) between 1928 and 1938. The Netherlands, Belgium, and Switzerland posted similar increases and also devalued very late in the Depression. Meanwhile, countries that did devalue, such as Sweden, Denmark, and Canada, saw only slight rises or even declines in tariffs. In the exchange control countries tariff changes fell between these two extremes. Nonetheless, Figure 2 in Eichengreen and Irwin (2010) reveals that Britain (early devaluation), Germany (leading exchange control country) and France (gold bloc stalwart) had the highest unconditional rises in tariffs. It would appear that other factors also mattered.

Despite the focus on trade policy in the literature, other forms of trade barriers also arose. The surge in the barriers highlighted in the studies cited above also seems to be attributable to non-tariff barriers, greater exchange rate volatility, rises in foreign shipping costs relative to domestic shipping, and a lack of international trade credit. The demise of the international gold standard raised exchange rate volatility and increased uncertainty in international transactions, while the relative costs of shipping goods on ocean-going tramp

shipping lines rose considerably from the mid-1920s (Estevadeordal, Frantz and Taylor, 2003). Opinions differ on the importance of the latter since the real freight rate series presented in Shah Mohammed and Williamson (2004) do not show rises until the 1930s. Different samples, compositional issues and methods of deflating probably explain these factors. Jacks, Hynes and O'Rourke (2009) provide some preliminary evidence that trade credit dried up also contributing to more limited international trade.

III.C Accounting for the Trade Decline: Trade costs versus Incomes

Many would identify the sharp decline in international trade between 1929 and 1933 with the US tariff hike of 1930 and the alleged retaliation by other nations. Most recent research however shows that income declines and trade barriers can explain the decline in trade. The answer to the question which mattered more appears to depend on the particular sample previous studies have worked with and their particular methodology. What do we know?

Three main methodologies have been used to account for the trade collapse between 1929 and 1933. Irwin (1998) and Madsen (2001) estimate aggregate import and export demand equations. Imports are a function of domestic income and relative prices, and exports are a function of foreign income and relative prices. Relative prices are affected by supply and demand conditions, tariffs, exchange rate movements and other trade costs. Crucini and Khan (1994) study a computable general equilibrium model and run simulated counterfactuals using their model. An accounting exercise, similar in spirit to Baier and Bergstrand (2001) and based on the gravity model of bilateral trade is employed by Jacks, Meissner and Novy (2009a).

Madsen (2001) estimates reduced form regression equations for aggregate exports and imports. Within his sample, which covers 17 countries between 1920 and 1938, trade barriers account for 41 percent of the drop in trade between 1929-1932 while income declines account for about 59 percent (figure 3, p. 865). Madsen argues tariffs could have led to declines in incomes of up to 2 percent. If so, the role of tariffs is slightly higher. Also, Madsen argues that tariff policy reduced demand during the depression along inelastic supply curves. This led to deflation in the tradable sector which further raised the real rate of tariff protection since many tariffs were specific and not ad valorem. In this case, Madsen suggests that the impact of tariffs was as important as the output decline in explaining the trade collapse. Irwin (1998) uses a similar partial equilibrium methodology for the United States between 1929 and 1932 where higher tariffs contributed to about 1/5 of the 40 percent fall in imports. The majority of the 1/5 was due to higher specific duties arising from deflation and not new legislation in the infamous Smoot Hawley tariff bill.

Crucini and Khan (1994) calibrate a general equilibrium model to study the relation between tariffs, imports and GDP. Their model assumes that foreign goods are used as inputs to production. In this case, Crucini and Khan find that in the US tariffs account for about 1/5 to 2/5 of the decline in imports.

Jacks, Meissner, and Novy (2009a) calculate the relative role of trade frictions and output declines using a gravity model of trade and reach a different conclusion. This gravity model represents equilibrium bilateral trade levels in a general equilibrium model of production and trade. Consumers typically are assumed to have homothetic preferences (although this is not a necessary condition) and almost any plausible production structure can be used. This approach yields the following equilibrium equation for bilateral trade

$$x_{ijt}x_{jit} = x_{iit}x_{jtt}(1 + \tau_{ijt})^{(1-\sigma)}.$$
⁸

This shows that bilateral trade (the product of exports (x) from country i to j and j to i) depends on the following two factors: the product of domestic absorption (x_{iit} or *GDP-Exports*) and a term for trade frictions that encompasses tariffs and non-tariff barriers, real international shipping costs, exchange rate volatility etc. In this equation τ_{ijt} is the tariff equivalent of the costs of international trade relative to domestic trade for both country i and j and σ is the time-invariant and constant-across-all-countries elasticity of substitution between any two goods home or foreign.

The gravity model suggests a unit elasticity on domestic absorption and point estimates of this elasticity by Jacks, Meissner and Novy (2009a) are near unity. In the sample of 27 countries and 130 unique country pairs mentioned above, the authors find that *at the average* declines in incomes account for 15 percent of the fall in trade and trade costs account for 93 percent of the fall. Multilateral forces (i.e. a term that accounts for third market effects -- in essence a “price deflator” for bilateral effects) acted to keep trade buoyant and trade would have been 0.133 log points lower had this factor not risen between 1929-1933.⁹ This could happen if tariffs or demand management policies had sufficiently

⁸ The steps to derive gravity are straightforward as Anderson and van Wincoop (2003) show. Demand for exports from country i to j depend on incomes in j and the prices of i 's goods relative to a consumer price index. Using market clearing, it is obvious that world sales for country i (i.e., total income) equal total exports- including domestic sales. Use this equation to solve for the domestic price for i , substitute back into the demand equation and note that bilateral exports are a positive function of income in i and j (relative to world income), price indexes for each country (i.e., multilateral resistance terms) and a negative function of trade costs. To arrive at the above equation, which has eliminated the price index terms using the domestic gravity equation see Jacks, Meissner and Novy (2009a).

⁹ Note that the product of the domestic absorptions (GDP minus exports), the theoretically preferred measures of size, is equal to $y_{ii}y_{jj} \left(\frac{x_{ii}x_{ii}}{y_{ii}y_{jj}} \right)$. This product fell on average by only 0.09 log points while the product of bilateral trade fell on average by 1.41 log points. The remainder of the log point fall (93%) then has to be

stimulative effects and hence positive spillovers. To the extent that income and trade costs are related, there can be biases in the accounting procedure. Madsen (2002) argued that trade costs might have had a negative impact on incomes so that the share of trade costs would be understated. If, however, declining incomes led to higher tariffs and other trade barriers, and some evidence shows this to be the case, the role of trade costs may be overstated.

III.D The Global Trade Slump and the Global Depression: Symptom, Cause or Vicious Circle?

Recent empirical contributions to the literature on the synchronization of business cycles suggest that a doubling of trade intensity would raise the bilateral correlation in output movements by roughly 0.06, relative to an average correlation of roughly 0.3 (Frankel and Rose, 1998). Greater trade integration in the 1930s would be expected to raise countries' exposure to the large economic shocks from abroad. Indeed the French depression is often characterized as emanating in part from a major loss of export markets. And Eichengreen and Sachs (1985) detected that the devaluations of the early 1930s were partially 'beggar-thy-neighbor' policies.

One simple dynamic story that also fits the facts is that the rise in real interest rates in 1928-29 in the US led to a slowdown in capital exports from the US and a decline in US exports (Eichengreen, 1992a: 227-228). As capital flows ceased, commodity exporters liquidated stocks in an attempt to avoid debt default, then devalued in order to do the same. Their incomes plummeted as supply rode down an inelastic demand curve. Next, US

attributable to rises in trade costs assuming that these barriers are not related to incomes and absorption and that the elasticity of substitution is constant.

tariffs, imposed more for political than economic reasons, compounded the shock to incomes by reducing exports further. Devaluations beginning in 1931 with sterling's departure from gold also inspired tariff retaliation and more loss of foreign demand. This decline in demand and expected future reduced demand for domestic tradables led to even larger drops in output due to the loss of foreign markets and the exit of producers. In this story a vicious circle (i.e., a trade multiplier) is the main culprit in the sad story of the interwar trade bust and a contributor to the Great Depression.

Some back of the envelop calculations suggest the potential for explaining the income losses due to trade declines. In the US, where exports fell by 60 percent between 1929 and 1933, even a high trade multiplier of 3 would have decreased overall income only by 9 percent. The overall fall in income was 30 percent. The US had a comparatively small export share near 5 percent in 1929, but in other small open economies the trade collapse might have played a larger role. In Canada for instance, the export share of income was 17 percent. An export multiplier of three and the fall in exports of 45 percent could have led to a 25 percent fall in GDP compared to a 30 percent actual decline.

Several contributions add to our understanding of the microeconomic links between trade and the Depression. Crucini and Khan (1996) and Irwin (1998) propose general equilibrium models of trade in crucial intermediate goods for US final production. When the US raised tariffs on intermediates, crucial to the production process, the marginal productivity of the factors of production fell and incomes declined. Both Irwin and Crucini and Khan suggest that the output losses from rising tariffs were very small relative to the 30 percent drop in overall GDP with a maximal effect of -2%. Perri and Quadrini (2002) examine Italy-- a small open economy where output effects are likely to be larger--using a dynamic general equilibrium model. Their key assumption is also that imports were key

complements to domestically produced factors of production. Unlike the model studied in Irwin, where labor and capital are fully employed, their model allows for changes in utilization of such inputs. With higher tariffs in Italy, its exports became relatively more expensive, reducing demand abroad and ultimately shifting resources into the non-tradable sector or forcing lower employment of capital and labor partially due to sticky nominal wages. Tariffs and sticky wages in their model explain roughly half to $\frac{3}{4}$ of the downturn in Italy in the 1930s. In the Irwin model for the US, wage rigidity does not raise the contribution of tariffs and trade losses to income losses since sectoral reallocation is so small and since the model does not allow for unemployment of resources.

More broadly, other authors have suggested important interactions between trade policy, monetary forces, and international capital markets. Eichengreen (1989) argues that tariffs might have been beneficial to the extent that they were domestically reflationary. In this argument, tariffs helped avoid a rise in real wages due to sticky nominal wages and limited real increases in the value of debt. This result holds even after taking into account retaliation although there are some offsetting effects making the net effect unclear.

Devaluations, long derided as competitive devaluations, were another means to protectionism and recovery, but they too had a variety of side-effects. First and most obviously they led to expenditure-switching and thus a beggar-thy neighbor effect (Eichengreen and Sachs, 1985). Second, the impact of associated monetary loosening might have been to stimulate the economy. A positive spillover via lower international interest rates could have helped boost output abroad too. The positive effect of devaluation and monetary expansion would have been the largest when all nations did it simultaneously. The evidence from the academic literature to date suggests that

devaluations stimulated production and exports (Eichengreen and Sachs, 1985 and Campa, 1990).

One factor limiting the benefits of devaluation might have been foreign debt. Devaluations can be contractionary when debt is denominated in foreign currency or a fixed amount of gold- as indeed it was in the 1920s and 1930s (League of Nations 1931: 219). Whether devaluations are expansionary or contractionary in the presence of hard currency indexed debt depends theoretically on several factors such as the openness to trade, the level of capital market imperfections and overall indebtedness (Céspedes, Chang and Velasco, 2004). Of course, default was an option often taken but the output effects of such actions are unclear. To date, no study we are aware of has examined this important issue so this remains fertile ground for further research.

Overall, the collapse of global trade seems to have been as much a symptom as an important cause in the global Great Depression. The precise impact on incomes of falling trade seems to be sensitive to how trade patterns are modeled and how important trade was for a particular country. In the US, a large relatively closed economy the bulk of the evidence suggests that falling income and tariffs pushed trade down in equal proportions and that trade's impact on income was small. In smaller open economies it appears that trade barriers might have played a bigger role than incomes in bringing trade down and falling trade may have played a more important role in the collapse of incomes than in the US.

IV. LESSONS FROM THE GREAT DEPRESSION

IV.A Banking Crisis and Monetary Policy

The banking crises of the Great Depression, like many of their predecessors, originated with a boom-bust macroeconomic cycle. This was particularly true in the United States, where the Roaring Twenties was followed by the Great Depression. As the bust took hold, a contagion of fear led to large-scale short-term capital movements and, currency and banking crises in many countries.

American macroeconomic policy makers during the early 2000s again bear substantial responsibility for encouraging—through loose monetary, fiscal, and regulatory policies—the housing boom, excessive leverage, and, ultimately, the collapse of the sub-prime bubble. Troubles were further compounded by poor regulation of risk management procedures, which created the potential for contagion and financial panic within the ‘shadow’ banking system and a also regulatory system that allowed institutions to grow ‘too big to fail’ that ended in crisis (it should be added that the modern crisis has not spared banking systems composed of large, extensively branched, or highly concentrated banks). The proliferation of new—and largely unregulated--financial derivatives allowed financial institutions all over the world to take part in the boom—and bust. The modern episode serves as a reminder of the importance of macroeconomic policy and macro-prudential regulation of systemic actors when market failures are part of the landscape.

Responding to crisis during the Great Depression was difficult because of the absence of institutions with an explicit mandate to maintain financial stability. Regulation and supervision, where it existed, was not especially effective. Deposit insurance systems did not exist. And lenders of last resort were too timid to halt crises at home and were wary of contributing to efforts to head them off abroad. Inadequate regulation and supervision bear a large part of the blame for the financial crises associated with the Great

Recession, much as they did during the Great Depression. Improving the regulatory and supervisory framework will be a major challenge for politicians in the months and years ahead.

On the other hand, some lessons of the Great Depression *have* been learned: policy makers' responses to the recent crisis have been far more effective and forthcoming than those of their predecessors. Extraordinary actions by governments and central banks once the panic started have clearly helped to avoid the total meltdown that occurred during the Great Depression. Principal amongst these actions were concerted coordination and cooperation amongst monetary authorities in Japan, Europe and the US, expansionary monetary policy via orthodox and not-so-orthodox policies, and fiscal stimulus policies.

The structural reforms that followed the Great Depression consisted of a set of severe constraints on banks and other financial institutions--a sort of financial "lockdown" (Grossman, 2010). This heavily regulated environment was extremely successful at preventing a recurrence of Depression-style financial crises. For more than 25 years following the end of World War II, the industrialized world's financial system was completely crisis-free! Of course, the financial lockdown was not costless: financial system development was retarded during its duration. The lockdown was eased during the wave of deregulation that began during the late 1960s and early 1970s. Perhaps not surprisingly, this easing was followed by the reemergence of financial crises during the 1970s and 1980s.

It is tempting to suggest that a return to a highly constrained financial system would be a fitting response to the Great Recession. And although some tightening of regulations (e.g., on new financial products and on proprietary trading, as well as more stringent capital requirements) is clearly in order, given the modern consensus that liberalized financial

markets are desirable (James 2001: 208), a return to financial lockdown is unlikely. Further, the globalization in financial markets and improvements in communications technology of the late 20th century means that a lockdown could not be implemented without a coordinated international effort, which is demonstrably not forthcoming at the moment, or a complete shutdown of cross-border financial flows, which also seems to be a non-starter. Nonetheless, the crises of the Great Depression and the Great Recession suggest that something more constrained than the lax regulatory structures of the 1920s and the 2000s is warranted.

IV.B Lessons from Two Trade Busts

Loss of exports via trade linkages was a key factor in the internationalization of the Great Depression for many countries. The global economy today is also characterized by extensive global trade linkages. And indeed a trade collapse has accompanied the recent financial crisis and global recession. The reported fall in real exports in both busts in the first year of the downturn was on the order of 20 percent. Global output fell on average four percent in both periods. Today's trade bust stands out from other recent recessions in that the trade collapse has been highly synchronized (Yi, 2009 and Baldwin, 2009). Similarly, in the first year of the Depression, 85 percent of countries, just like today, had negative export growth. There are many superficial commonalities between the two trade busts.

The difference between then and now appears to be that trade has already started to rebound while it continued to spiral downwards for another two years during the Great Depression. In the 1930s, nations' incomes fell and trade multipliers magnified the impact.

Tit-for-tat commercial and exchange rate policy was not totally synchronized and led to a succession of beggar-thy-neighbor policies with highly negative outcomes. .

The fact that trade dropped equally as quickly and evenly across nations in both busts does not mean that similar factors are to blame. Today it seems plausible that uncertainty and changes to the structure of trade are responsible for the decline. In the Depression, income declines, tariffs and other trade barriers mattered most as our review of the literature has highlighted.

A rapidly expanding literature analyzing the recent trade collapse supports our conjecture regarding the recent collapse.¹⁰ Some evidence exists that world trade has become more sensitive over time to output movements ([Freund, 2009](#)). One reason is that a significant share of trade amongst the largest economies consists of consumer durables and investment goods which are more volatile than total output (Engle and Wang, 2009). In moments of uncertainty, consumer and producers put such purchases on hold. International trade may therefore suffer disproportionately during recessions. Exporters of these goods such as Germany and Japan have seen some of the sharpest falls in exports which appears consistent with this observation. Today the share of such manufactures in world trade is close to 65% whereas in 1929 it was roughly 35%. If both trade collapses were due in part to a rise uncertainty then these statistics might imply the shock to confidence was greater in 1929. Indeed manufacturing trade seems to have fallen much more steeply than food and

¹⁰ Chor and Manova (2010) study trade credit. Alessandria, Kaboski and Midrigan (2010) study the interaction between the credit crunch and inventories in US automobile imports. Levchenko, Lewis and Tesar (2009) focus on compositional issues and to a lesser extent vertical specialization. Jacks, Meissner and Novy (2009b) found evidence that trade fell faster relative to incomes when vertical specialization was more important. Eaton, Kortum, Neiman and Romalis (2010) allow for composition, demand shocks, and trade costs. They also find a role for the composition of trade arguing that the drop in demand for durables was much larger and these are heavily traded. For a range of views see the chapters in Baldwin (2009).

raw material trade in the Depression or today (Saint-Etienne, 1984). Still, the consensus on the Depression is that trade barriers mattered more than uncertainty.

The profound structural changes that have taken place in the last two decades in the international supply chain are also suspected to be a key difference. International production sharing or *vertical specialization* makes trade increasingly sensitive to changes in the costs of international trade (Yi, 2003). Intuitively, the more times a good crosses a border on its way to becoming a final good, the more border costs each good faces. Today, a small rise in all international trade costs could make such trade more costly and cut off a large number of cross-border transactions. These costs are broadly defined and include transportation costs, commercial policy variables, insurance costs, financing costs and a range of other frictions. Incipient protectionism highlighted by the Global Trade Alert and the drying up of trade credit (Chor and Manova, 2010) associated with the financial meltdown could have triggered a magnified fall in trade even if they imply seemingly small rises in the relative costs of trade. The latter explanation is appealing, since once trade credit conditions went back to normal trade would be expected to snap back sharply as it seems to have done. The fact that trade is on a global rebound too makes the production sharing story even more attractive.

The production sharing hypothesis also suggests a reason for the sharp and coordinated downturn and for an enhanced transmission of shocks. While there is evidence that trade enhances the co-movement of output and income shocks in both periods, today's move to vertical specialization might be able to explain the greater synchronicity in the world trade shock (Di Giovanni and Levchenko 2010). Surprisingly, a “decoupling” argument made recently in the academic literature holds that nations' business cycles are

increasingly less synchronized. Domestic demand from within large economies or regional demand (Eurozone, East Asia) is more important than broader linkages between emerging markets and industrialized nations (Kose, Otrok, and Prasad, 2008). The global recession and trade decline of 2008-2009 would seem to provide evidence to the contrary. Evidence from the interwar period suggests that trade mattered in the Depression for output co-movement (Foreman-Peck, Hughes Hallet, and Ma, 2000 and Mathy and Meissner, 2010), but the channel is likely to be quite different from that today.

Is it impossible to insulate an economy from international forces? Although trade is still a major force for transmitting shocks, monetary policy in many countries is not as tightly bound to other nations as it was in 1929 and 1930 when the gold standard was still in operation, although the EMU is a notable exception. The evidence on whether of monetary policy and fixed exchange rates heightens co-movement today is mixed in any case in the recent period (compare Baxter and Kouparitsas, 2005, Clark and van Wincoop, 2001, and Artis and Zhang, 1997). Also, major advances in economics structure and economic policy have changed the landscape from the 1930s. Counter-cyclical fiscal policy and large shares of expenditure accounted for by national governments and the service sector is now a fact of life.

Co-movement is still an issue, although it is unclear how bad it could have been in the absence of counter-cyclical fiscal policy that went into motion in 2008-09. It is still unclear--and too early to know—to what extent monetary, fiscal and trade factors have mattered in the current downturn for co-movement. Significant gaps in our knowledge due to poor data on financial and trade linkages coupled with economic theories that lag behind the rapidly changing structure of international trade and finance plague the real-time assessment of these forces.

Two other significant factors that helped the global economy to avoid a 1930s- style trade collapse are floating exchange rates (within EMU issues notwithstanding) and the World Trade Organization. Floating exchange rates between Japan, Europe, and the United States have allowed for smoother adjustment and less reliance on an implicit exchange rate guarantee for producers. Moreover, less concern about exchange rate levels in the advanced economies have liberated monetary policy makers (the European Monetary Union is again an exception), allowing them to adopt simultaneous, if not fully coordinated, expansionary monetary policies. If the gold standard ‘mentalité’ contributed to tariffs, then we clearly no longer have this problem.

The World Trade Organization has demonstrated itself quite capable of imposing sanctions on egregiously protectionist policies: the WTO seems to work. Although the Global Trade Alert has focused on a number of acts of ‘murky protectionism’ there has been no return to near autarky levels of tariffs like that of the 1930s. Multilateralism has held strong on the trade front, especially for the EU, meaning better outcomes in a significant bloc of nations.

In terms of the structure of production and consumption, the global economy has indeed changed radically. The recent trade collapse seems to be due to uncertainty and small trade costs changes interacting with supply chains. During the Depression, income losses, tariffs and other policy problems were most important in explaining the trade decline. Despite having learned how to impede successive rounds of tariff rises and keep income buoyant, today’s Great Recession has produced an almost equally impressive trade decline in its first year. The fact that trade is rebounding quickly is cause for optimism and a reminder that some lessons have been learned but challenges remain.

REFERENCES

- Alessandria, G., Kaboski, J., and Midrigan, V., (2010), 'The Great Trade Collapse of 2008-09: An Inventory Adjustment?', NBER working paper 16059.
- Anderson, J.E. and van Wincoop, E. (2003), 'Gravity with Gravitas: A Solution to the Border Puzzle.', *American Economic Review*, 93(1), 170-192.
- Anderson, J. and van Wincoop, E. (2004), 'Trade Costs', *Journal of Economic Literature*, **42**, 691-751.
- Artis, M.J., Zhang, W. (1997), 'International business cycles and the ERM: is there a European business cycle?', *International Journal of Finance and Economics*, **2**, 1-16.
- Baier, S.L. and Bergstrand, J. (2001), 'The Growth of World Trade: Tariffs, Transport Costs and Income Similarity.' *Journal of International Economics*, **53**(1), 1-27.
- Baldwin, R. (2009), 'The Great Trade Collapse: What caused it and what does it mean?' in Richard Baldwin (ed.), *The Great Trade Collapse* VOX EU 27 November 2009
<http://www.voxeu.org/index.php?q=node/430>
- Baxter, M., and Koupiritsas, M.A. (2005), 'Determinants of business cycle co-movement: a robust analysis.' *Journal of Monetary Economics*, 52(1), 113-157
- Bernanke, B. S. (1983), 'Nonmonetary Effects of the Financial Crisis in Propagation of the Great Depression', *American Economic Review*, 73 (3), 257-76.
- Bernanke, B. S. (1995), 'The Macroeconomics of the Great Depression: A Comparative Approach', *Journal of Money, Credit and Banking*, **27** (1), 1-28.
- Bernanke, B. S. and James, H. (1991), 'The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison', in R. G. Hubbard (ed.), *Financial Markets and Financial Crises*, Chicago, University of Chicago Press.
- Bordo, M.D., Cavallo, A., and Meissner, C. M. (2010), 'Sudden Stops: Determinants and Output Effects in the First Era of Globalization, 1880-1913', *Journal of Development Economics*, **91** (2), 227-241.
- Bordo, M. D., Eichengreen, B., Klingebiel, D. and Martinez-Peria, M. S. (2001), 'Is the Crisis Problem Growing More Severe?', *Economic Policy*, **32**, 53-82.
- Cagan, P. (1965), *Determinants and Effects of Changes in the Stock of Money, 1875-1960*, New York, National Bureau of Economic Research.

- Cairncross, A. and Eichengreen, B. (1983), *Sterling in Decline: The Devaluations of 1931, 1949, and 1967*, Oxford, Blackwell.
- Cairncross, A and Eichengreen, B. (2003), *Sterling in Decline*. 2nd edition., London, Palgrave Macmillan.
- Campa, J.M., (1990), 'Exchange Rates and Economic Recovery in the 1930s: An Extension to Latin America', *Journal of Economic History*, **50** (3), 677-682.
- Catão, L. A.V., and Solomou, S. N. (2005), 'Effective Exchange Rates and the Classical Gold Standard Adjustment', *American Economic Review*, **95** (4), 1259–1275.
- Céspedes, L.F., Chang, R. and Velasco, A. (2004), 'Balance Sheets and Exchange Rate Policy'. *American Economic Review*, **94** (4), 1183-1193.
- Chaney, T. (2008), 'Distorted Gravity: The Intensive and Extensive Margins of International Trade'. *American Economic Review*, **98**(4), 1707-1721.
- Chor, D. and Manova, K. (2009), 'Off the Cliff and Back? Credit Conditions and International Trade during the Global Financial Crisis', Stanford University mimeo.
- Choudhri, E. U. and Kochin, L. A. (1980), 'The Exchange Rate and the International Transmission of Business Cycle Disturbances: Some Evidence from the Great Depression', *Journal of Money, Credit and Banking*, **12** (4), 565-574.
- Clark, T. E., and van Wincoop, E. (2001) 'Borders and Business Cycles.' *Journal of International Economics*, **55**(1), 59-85.
- Crucini, M. J. and Kahn, J. (1996), 'Tariffs and aggregate economic activity: lessons from the Great Depression', *Journal of Monetary Economics*, **38**, 427–67
- Di Giovanni, J. and Levchenko, A., 'Putting the Parts Together: Trade, Vertical Linkages, and Business Cycle Comovement', *American Economic Journal: Macroeconomics*, **2** (2), 95-124.
- Deardorff, A. V. (1998) 'Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World?' in Jeffrey A. Frankel (Ed.), *The Regionalization of the World Economy*. Chicago: University of Chicago Press.
- Eaton, J and Kortum, S.S. 2002. 'Technology, Geography, and Trade'. *Econometrica*, **70**(4), 1741-1780.
- Eaton, J., Kortum, S., Neiman, B. and Romalis, J. (2010), 'Trade and the Global Recession', mimeo, Penn State University Economics Department.

Eichengreen, B. (1989), 'The political economy of the Smoot-Hawley tariff.' *Research in Economic History*, **12**, 1–43.

Eichengreen, B. (1992a), *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*, New York, Oxford University Press.

Eichengreen, B. (1992b), 'The Origins and Nature of the Great Slump Revisited', *The Economic History Review*, 45 (2), 213-239.

Eichengreen, B. (1996), *Globalizing Capital*, Princeton, Princeton University Press.

Eichengreen, B. (2004), 'Viewpoint: Understanding the Great Depression', *The Canadian Journal of Economics*, **37** (1), 1-27.

Eichengreen, B. (2010), 'Europe's Trojan Horse', Project Syndicate, February 15, 2010, <http://www.project-syndicate.org/commentary/eichengreen14/English>, accessed February 25, 2010.

Eichengreen, B. and Sachs, J. (1985), 'Exchange Rates and Economic Recovery in the 1930s', *The Journal of Economic History*, 45 (4), 925-946.

Eichengreen, B. and Hatton, T. J. (1988), *Interwar Unemployment in International Perspective*, Dordrecht, The Netherlands; Boston, Kluwer Academic Publishers.

Eichengreen, B. and Jeanne, O. (2000), 'Currency Crisis and Unemployment: Sterling in 1931.' in P. Krugman (ed.), *Currency Crises*, Chicago, University of Chicago Press.

Eichengreen, B. and Irwin, D. A. (2010), 'The Slide to Protectionism in the Great Depression: Who Succumbed and Why?' working paper Economics Dept. Dartmouth College.

Eichengreen, Barry and O'Rourke, K.H. (2010) "A Tale of Two Depressions" vox EU <http://www.voxeu.org/index.php?q=node/3421>.

Engel, C., and Wang, J. (2008), 'International Trade In Durable Goods: Understanding Volatility, Cyclicalities, And Elasticities' NBER working paper 13814.

Estevadeordal, A., and Frantz, B., and Taylor, A.M.T. (2003) 'The Rise and Fall of World Trade, 1870-193' *The Quarterly Journal of Economics*, **118**(2), 359-407.

Federico, G. (2005), 'Not guilty? Agriculture in the 1920s and the Great Depression', *Journal of Economic History*, **65**, 949–76.

Findlay, R. and O'Rourke, K.H. (2007), 'Power and Plenty: Trade, War, and the World Economy in the Second Millennium', Princeton, Princeton University Press.

Fisher, I. (1932), *Booms and Depressions: Some First Principles*, New York, Adelphi.

Fisher, I. (1933), 'The Debt-Deflation Theory of Great Depressions', *Econometrica*, **1** 337-357.

Foreman-Peck, J., Hughes Hallett, A., and Ma, Y. (2000), 'A monthly econometric model of the transmission of the Great Depression between the principal industrial economies', *Economic Modelling*, **17**, 515-44.

Frankel, J. A., Rose, A. K., (1998), 'The endogeneity of the optimum currency area criteria', *Economic Journal*, **108**, 1009-1025.

Freund, C., (2009), 'Demystifying the Collapse in Trade', VoxEU.org, 3 July, 2009.

Friedman, M. and Schwartz, A. J. (1963), *A Monetary History of the United States, 1867-1960*, Princeton, Princeton University Press.

Gorton, G., (2010), 'Questions and Answers about the Financial Crisis', NBER working paper 15787.

Grossman, R. S. (1994), 'The Shoe That Didn't Drop: Explaining Banking Stability During the Great Depression', *The Journal of Economic History*, **54** (3), 654-82.

Grossman, R. S. (2010), *Unsettled Account: The Evolution of Banking in the Industrialized World since 1800*, Princeton, Princeton University Press.

Hynes, W., Jacks, D. S. and O'Rourke, K. H. (2009). 'Commodity Market Disintegration in the Interwar Period' NBER working paper 14767.

Irwin, D. A. and Kroszner, R. S. (1996), 'Log-Rolling and Economic Interests in the Passage of the Smoot-Hawley Tariff', *Carnegie-Rochester Conference Series on Public Policy*, **45** 173-200.

James, H. (2001), *The End of Globalization: Lessons from the Great Depression*, Cambridge, Harvard University Press.

Jacks, D. S., Meissner, C. M. and Novy, D. (2009a), 'Trade Booms, Trade Busts and Trade Costs' NBER working paper 15267.

Jacks, D. S., Meissner, C. M. and Novy, D., (2009b), 'The role of trade costs in the great trade collapse.' in Richard Baldwin (ed.), *The Great Trade Collapse* VOX EU 27 November 2009 <http://www.voxeu.org/index.php?q=node/430>

Jacks, D. S., Meissner, C. M. and Novy, D., (2010), 'Trade costs in the first wave of globalization', *Explorations in Economic History*, **47**, 127-141.

Jones, J. M. Jr. (1934), *Tariff Retaliation: Repercussions of the Hawley-Smoot Bill*. Philadelphia, University of Pennsylvania Press.

- Keynes, J. M. (1925), *The Economic Consequences of Sterling Parity*, New York, Harcourt, Brace and Company.
- Kindleberger, C. P. (1973), *The World in Depression, 1929-1939*, Berkeley, University of California Press.
- Kindleberger, C. P. (1978), *Manias, Panics, and Crashes: A History of Financial Crises*, New York, Basic Books.
- Kose, M. A., Otrok, C. and Prasad, E. (2008), 'Global Business Cycles: Convergence or Decoupling?', IZA discussion paper no. 3442.
- League of Nations. (1931), *The Course and Phases of the World Economic Depression*, Boston, World Peace Foundation.
- League of Nations (1938), *Monetary Review*, Geneva, League of Nations.
- League of Nations (1942), *Commercial Policy in the Interwar Period: International Proposals and National Policies*, Geneva, League of Nations.
- Levchenko, A. I., Lewis, L., and Tesar, L., (2009), 'The Collapse of International Trade During the 2008-2009 Crisis: In Search of the Smoking Gun', Gerald R. Ford School of Public Policy, University of Michigan discussion paper 592.
- Maddison, Angus. 2003. *The World Economy: Historical Statistics*. Paris: Organization for Economic Cooperation and Development.
- Maddison, A. (2009), 'Statistics on World Population, GDP and Per Capita GDP, 1-2006 AD', http://www.ggdc.net/maddison/Historical_Statistics/vertical-file_03-2009.xls, accessed February 9, 2010.
- Madsen, J. B. (2001), 'Trade barriers and the collapse of world trade during the Great Depression', *Southern Economic Journal*, **67**, pp. 848–68.
- Mathy, G. and Meissner, C. M., (2010), 'Trade, Exchange Rate Regimes and Co-Movement: Evidence from the Interwar Period', mimeo Department of Economics University of California, Davis.
- Mitchell, B. R. (1978), *European Historical Statistics, 1750-1970*, New York, Columbia University Press.
- Moggridge, D. E. (1972), *British Monetary Policy, 1924-1931: The Norman Conquest of \$4.86*, Cambridge, Cambridge University Press.
- Perri, F. and Quadrini, V. (2002), 'The Great Depression in Italy: Trade Restrictions and Real Wage Rigidities', *Review of Economic Dynamics*, **5**(1), 128-151.

- Romer, C. D. (1990), 'The Great Crash and the Onset of the Great Depression', *The Quarterly Journal of Economics*, **105** (3), 597-624.
- Romer, C. D. (1993), 'The Nation in Depression', *The Journal of Economic Perspectives*, **7** (2), 19-39.
- Schubert, A. (1991), *The Credit-Anstalt Crisis of 1931*, Cambridge, Cambridge University Press.
- Shah Mohammed, S.I., Williamson, J.G., (2004), 'Freight rates and productivity gains in British tramp shipping 1869–1950', *Explorations in Economic History*, **41** (3), 172–203.
- Simmons, B. (1994), *Who Adjusts? Domestic Sources of Foreign Economic Policy during the Interwar Years, 1923–1939*, Princeton, Princeton University Press.
- Temin, P. (1976), *Did monetary forces cause the Great Depression?*, New York, Norton.
- Temin, P. (1989), *Lessons from the Great Depression*, Cambridge, MIT Press.
- Temin, P. (1993), 'Transmission of the Great Depression', *The Journal of Economic Perspectives*, **7** (2), 87-102.
- Wandschneider, K. (2008), 'The Stability of the Interwar Gold Exchange Standard: Did Politics Matter?', *Journal of Economic History*, **68**, 151-181.
- Wicker, E., (1996), *The Banking Panics of the Great Depression*, Cambridge: Cambridge University Press, 1996.
- Yi, K. M., (2003), 'Can Vertical Specialization Explain the Growth of World Trade?' *Journal of Political Economy*, **111**(1), 52-102.
- Yi, K.M. (2009), 'The Collapse of Global trade: The Role of Vertical Specialization', in Baldwin, R. and Evenett, S. (eds.), *The Collapse of Global Trade, Murky Protectionism, and the Crisis: Recommendations for the G20*, a VoxEU.org publication.

Table 1:
Unemployment
in industry
(percent)

Country	Australia	Belgium	Canada	Denmark	France	Germany	Netherlands	Norway	Sweden	UK	US
Year											
1920	5.5		4.6	6.1		3.8	5.8	2.3	5.4	3.2	8.6
1921	10.4	9.7	8.9	19.7	5.0	2.8	9.0	17.7	26.6	17.0	19.5
1922	8.5	3.1	7.1	19.3	2.0	1.5	11.0	17.1	22.9	14.3	11.4
1923	6.2	1.0	4.9	12.7	2.0	10.2	11.2	10.7	12.5	11.7	4.1
1924	7.8	1.0	7.1	10.7	3.0	13.1	8.8	8.5	10.1	10.3	8.3
1925	7.8	1.5	7.0	14.7	3.0	6.8	8.1	13.2	11.0	11.3	5.4
1926	6.3	1.4	4.7	20.7	3.0	18.0	7.3	24.3	12.2	12.5	2.9
1927	6.2	1.8	2.9	22.5	11.0	8.8	7.5	25.4	12.0	9.7	5.4
1928	10.0	0.9	2.6	18.5	4.0	8.6	5.6	19.2	10.6	10.8	6.9
1929	10.2	1.3	4.2	15.5	1.0	13.3	2.9	15.4	10.2	10.4	5.3
1930	18.4	3.6	12.9	13.7	2.0	22.7	7.8	16.6	11.9	16.1	14.2
1931	26.5	10.9	17.4	17.9	6.5	34.3	14.8	22.3	16.8	21.3	25.2
1932	28.1	19.0	26.0	31.7	15.4	43.8	25.3	30.8	22.4	22.1	36.3
1933	24.2	16.9	26.6	28.8	14.1	36.2	26.9	33.4	23.2	19.9	37.6
1934	19.6	18.9	20.6	22.2	13.8	20.5	28.0	30.7	18.0	16.7	32.6
1935	15.6	17.8	19.1	19.7	14.5	16.2	31.7	25.3	15.0	15.5	30.2
1936	11.3	13.5	16.7	19.3	10.4	12.0	32.7	18.8	12.7	13.1	25.4
1937	7.4	11.5	12.5	21.9	7.4	6.9	26.9	20.0	10.8	10.8	21.3
1938	7.8	14.0	15.1	21.5	7.8	3.2	25.0	22.0	10.9	12.9	27.9
1939	8.8	15.9	14.1	18.4	8.1	0.9	19.9	18.3	9.2	10.5	25.2

Eichengreen and Hatton (1988: 6-7).

Table 2: Banking crises during the Great Depression

Crisis countries: Austria, Belgium, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Norway, Poland, Romania, Switzerland, United States, Yugoslavia.

Non-crisis countries: Bulgaria, Czechoslovakia, Denmark, Greece, Japan, Lithuania, Netherlands, Portugal, Spain, Sweden, United Kingdom.

Source: Grossman (2010: 314-6).

Figure 1 Average Growth Rates of GDP for 17 Countries by Period, 1870-2006

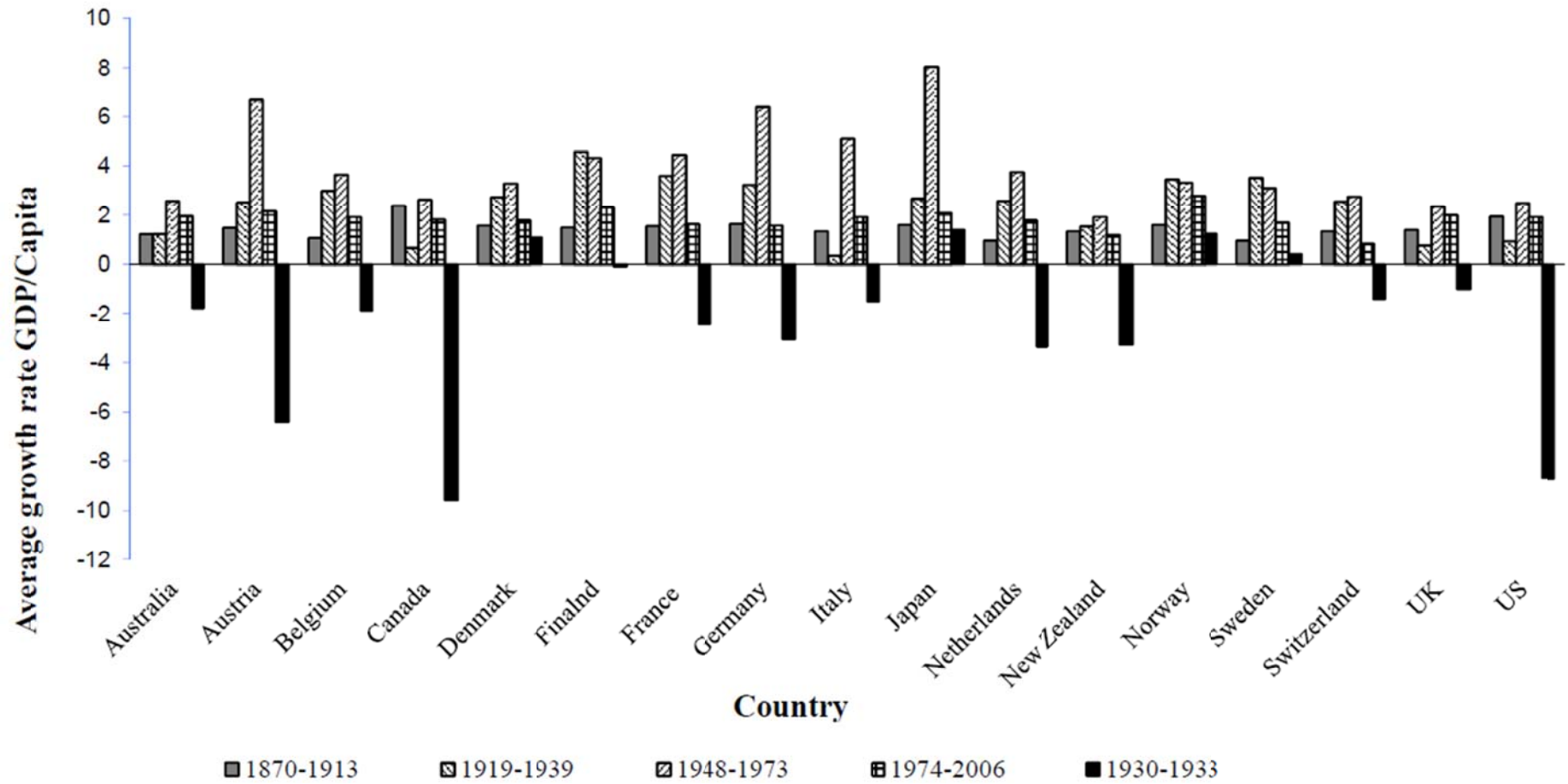
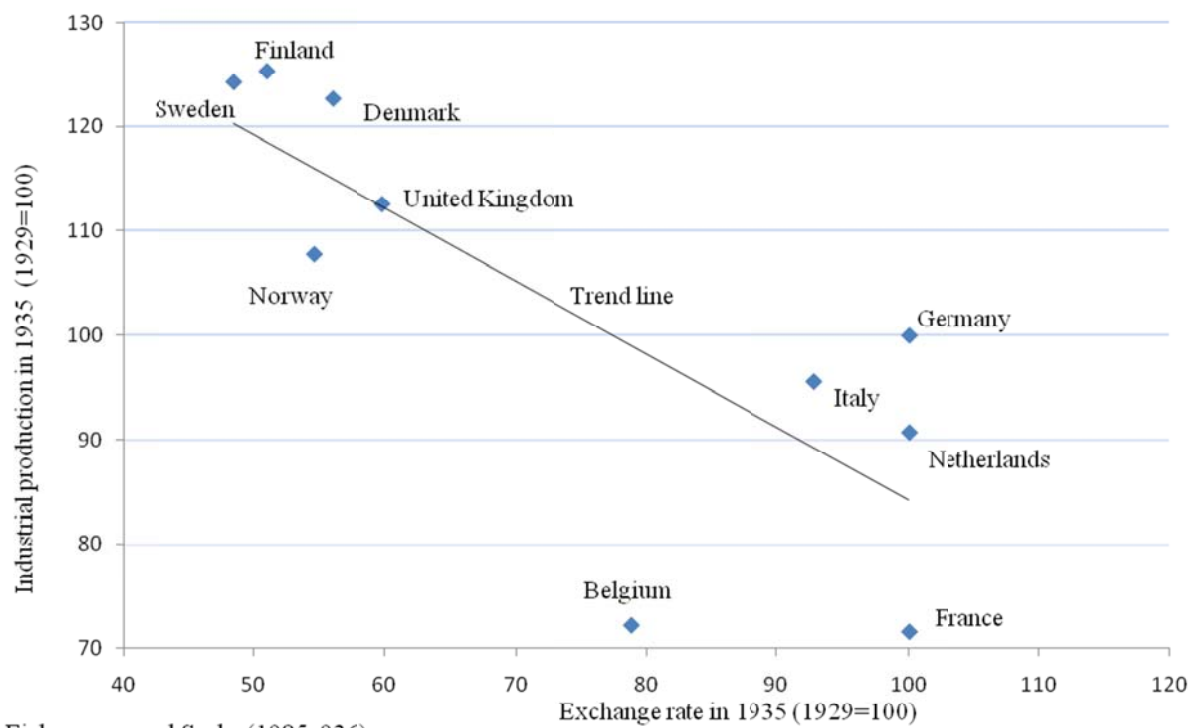
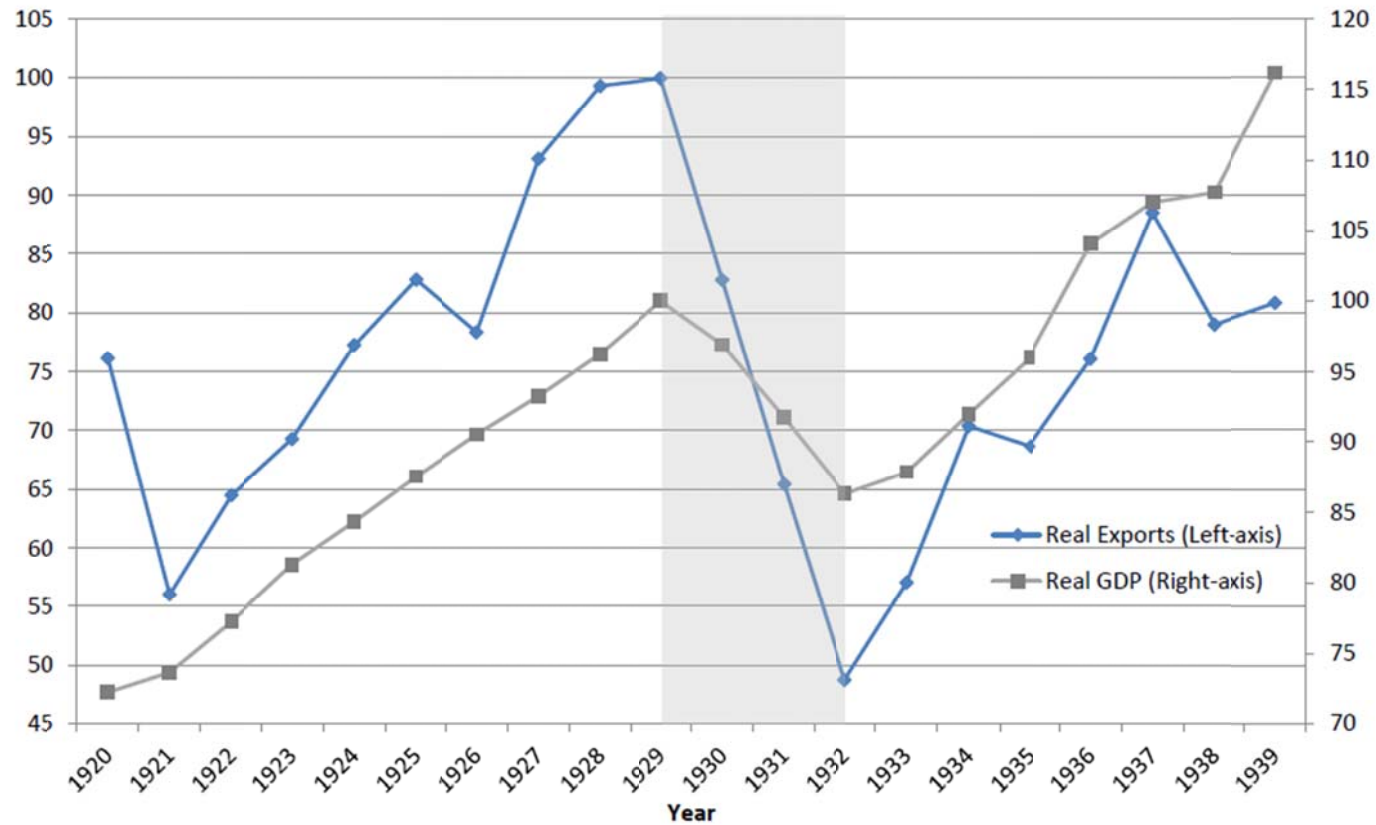


Figure 2: Exchange rates and industrial production, 1935



Reconstructed from Eichengreen and Sachs (1985: 936).
Data sources: Exchange rates: League of Nations (1938:108-109);
industrial production: Mitchell (1978).

Figure 3 Exports and GDP for 27 Countries, 1920-1939



Notes: Total exports in real 1990 US Dollars for 27 countries are divided by real GDP in US dollars for the same set of countries. The countries included are: Argentina, Australia, Austria, Belgium, Brazil, Canada, Denmark, France, Germany, Greece, India, Indonesia, Italy, Japan, Mexico, the Netherlands, New Zealand, Norway, the Philippines, Portugal, Spain, Sri Lanka, Sweden, Switzerland, the United Kingdom, the United States, and Uruguay. Data for GDP are from Maddison (2003). Exports data come from various sources cited in Jacks, Meissner, and Novy (2009a).