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 - Authors:** CHRISTINE A. GRAHAM and M. ANN EASTERBROOKS
 - Journal:** Development and Psychopathology, Volume 12, Issue 02, pp 201 -213
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 - Title:** Economic Recovery from the Argentine Great Depression: Institutions, Expectations, and the Change of Macroeconomic Regime [Journal]
 - Authors:** Gerardo Della Paolera and Alan M. Taylor
 - Journal:** The Journal of Economic History, Volume 59, Issue 03, pp 567 -599
 - DOI:** doi:10.1017/S0022050700023494 (About doi). Available on CJO 03 březen 2009
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- Result 3:**
 - Title:** Adjuvant occupational therapy for work-related major depression works: randomized trial including economic evaluation [Journal]
 - Authors:** AART H. SCHENE, MAARTEN W. J. KOETER, MARTIJN J. KIKKERT, JAN A. SWINKELS and PAUL McCRONE
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The screenshot shows the search results after applying filters. The sidebar on the left is updated as follows:

- Search Filters:** author name :Peter Temin > Remove, print date:2004 > Remove, subject :Economics > Remove, Remove All
- Content Type:** Journal Articles (2)
- Subject:** Economics (2), History (2)
- Author:** Peter Temin (2), Thomas Ferguson (1)
- Year:** 2004 (2)

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- Result 1:**
 - Title:** Comment on "The German Twin Crisis of 1931" [Journal]
 - Authors:** THOMAS FERGUSON and PETER TEMIN
 - Journal:** The Journal of Economic History, Volume 64, Issue 03, pp 872 -876
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- Result 2:**
 - Title:** Productivity, Growth, Inflation, and Unemployment. By Robert J. Gordon. Cambridge: Cambridge University Press, 2004. Pp. xii, 504. \$130.00, cloth; \$48.00, paper [Journal]
 - Author:** PETER TEMIN
 - Journal:** The Journal of Economic History, Volume 64, Issue 03, pp 910 -911
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- 5) Naším cílem je článek s názvem „Comment on „The German Twin Crises of 1931““. Pokud na něj klikneme, zjistíme něco o samotné rešerši. Poté si můžeme nechat zobrazit celý text v pdf.

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NOTES AND DISCUSSION

Comment on "The German Twin Crisis of 1931"

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It is lovely to see attention to this critical episode in the Great Depression. Isabel Schnabel repeats the familiar argument that bank behavior was a primary cause of the German crisis. We have argued elsewhere that the German crisis clearly began as a currency crisis, not a banking crisis. The purpose of this comment is to examine the data that Schnabel's article brings to bear on this question and evaluate the evidence it presents in support of its hypotheses.

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Comment on "The German Twin Crisis of 1931"

THOMAS FERGUSON AND PETER TEMIN

It is lovely to see attention to this critical episode in the Great Depression. Isabel Schnabel repeats the familiar argument that bank behavior was a primary cause of the German crisis. We have argued elsewhere that the German crisis clearly began as a currency crisis, not a banking crisis.¹ The purpose of this comment is to examine the data that Schnabel's article brings to bear on this question and evaluate the evidence it presents in support of its hypotheses.

It should be noted that although Schnabel indicates in her title that the crisis was a twin crisis, in which problems of the mark loomed as large as problems with the banks, her article concentrates almost entirely on the banks. The article states early on that, "[T]he German crisis had two independent causes." A page or so later, however, it says, "The most important data sources used in this study are the balance sheets of German banks before and during the crisis of 1931." By the end of the article, Schnabel's claim is unequivocal:

Because deposit withdrawals and reserve losses were tied together in a vicious circle and foreign support was unobtainable, the banking panic translated into a run on the German currency and resulted in the factual abandonment of the gold standard.

Schnabel continues, "it is quite possible . . . that the crisis of 1931 would not have occurred if the banks had acted with caution in the 1920s." It may have been a twin crisis according to Schnabel, but it was caused by incautious bank behavior.

Schnabel makes two claims in support of this view. First, the large German banks indulged in behavior indicating moral hazard because they were "too big to fail." Second, the Reichsbank did not act as a typical gold-standard central bank.

The article advances two lines of evidence to show that the great banks in Berlin were acting under the influence of moral hazard. First, they had a large share of bills of exchange in their liquid "means" in November 1929 (Schnabel's table 3). A neighboring footnote, however, adds the apparently innocent qualification, "that in 1931 the shares of bills of exchange in liquid assets were still well below the ones obtained in 1913." The data on bills as a share of liquid means in November 1929 in Schnabel's table 3 are updated to November 1930 in her table 6. This mode of presentation makes comparison difficult, but it is hard to see any change. The share of bills for monthly reporting banks went from 56.7 percent to 54.6 percent. The share for the great branch banks went from 66.1 percent to 68.9 percent. There is no evidence of a deterioration of bank balance sheets in these data even though they come from the period when Nazi electoral success and German budget deficits were roiling financial markets.

Second, equity ratios for the Berlin great banks were below those of other banks (Schnabel's table 4). This is not a new observation: both at the time and later, many commentators drew attention to the decline in the equity ratios of the great banks since

The Journal of Economic History, Vol. 64, No. 3 (Sept. 2004). © The Economic History Association. All rights reserved. ISSN 0022-0507.

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¹ Ferguson and Temin, "Made in Germany."

the stabilization of 1924. Contemporary opinion, as the following comment from *The Economist* suggests, did not regard lower equity as a smoking gun that banks were more prone to take on risks. Indeed, on the very eve of the crisis, it was even hailed as part of a package that would lower overall risk:

The fact that the short term credits of the German banks were reduced in 1930 is no longer regarded as a misfortune; it is recognized as desirable to keep Germany's short-term foreign debt within relatively narrow limits. . . . The banks were obliged in the course of last year to support their own shares, and the [Deutsche Bank] is using the shares it bought for this purpose to reduce its capital from Rm 285 to 250 millions. Even then, its capital and reserves amount to over 9 percent of its deposits, whereas the corresponding ratio for the English banks is only 6-7 percent.²

Finally, Schnabel argues that the Reichsbank was not a typical gold-standard central bank. The evidence? "Instead of letting insolvent banks such as Danat bank fail, the Reichsbank exhausted its reserves by supporting them." Schnabel raises this point to a critical one in her discussion of whether the crisis could have been avoided. She notes the Reichsbank's limited options in the crisis with this caveat: "However, it is well possible that an early discontinuation of support to insolvent banks such as Danat bank would have prevented the outbreak of the crisis."

There is no evidence that the Reichsbank "exhausted its reserves" supporting the Danat bank. This can be seen clearly in Schnabel's figure 3, where Reichsbank reserves are shown to be increasing in April and May. In fact, the Reichsbank did not lose reserves until the first week of June, as Brüning geared up for his famous denunciation of reparations.³ Neither Schnabel nor anyone else has produced any evidence suggesting that the Reichsbank was supporting the Danat bank before June or that it was putting itself in danger by so doing.

There also is no evidence that undisclosed problems at the Danat bank threatened the Reichsbank before the currency crisis of early June. As shown in Schnabel's table 7, the Danat bank did not lose many deposits before June. On 13 June the Reichsbank raised its discount rate by two percentage points, a very strong reaction to the pressure on the currency. On 17 June news of the Nordwolle failure leaked. It is possible that these two events were related, that the increase in the discount rate increased the cost of Nordwolle's inventories, leading it to collapse. If so, the Danat bank, although possibly unwise to have loaned so much to Nordwolle, might not have been in trouble, or as much trouble, if there had not been a currency problem.

By June, when the Danat bank's trouble became public, the decisive factor was the pressure the currency crisis placed on the Reichsbank. The Reichsbank attempted to help the Danat bank, but it was prevented from doing so by its responsibility to preserve the gold value of the mark. In Schnabel's words: "When the currency problems came to a head, the Reichsbank could not keep up its liquidity support to the great banks, which triggered the breakdown of the Danatbank." That is the hall-mark of a currency crisis, not a banking crisis. It reveals that the Reichsbank indeed was a typical gold-standard central bank.

Turning to narrative, Schnabel acknowledges the difficulty of disentangling currency and banking problems and argues for comparison with earlier episodes. She presents data on various currency crises of 1929-1931 in her figure 3, leading to the following conclusion: "The timing of the crises suggests that the deposit withdrawals

² *The Economist*, 9 May 1931, p. 8.

³ Ferguson and Temin, "Made in Germany," table 8.

were a consequence of the currency problems and not vice versa. The crises started immediately after political shocks and ended when the political situation calmed down. . . . The wish to transfer money abroad translated into deposit withdrawals at German banks." But only a few pages later, Schnabel presents data on foreign deposits in her table 5 and asks, "How can we explain the high withdrawals of foreign deposits of foreign deposits at the great branch banks?" She suggests that the answer may lie in bank behavior, apparently forgetting the explanation she gave for deposit withdrawal a few pages earlier (and just quoted here). If foreign investors were fearful about the mark, not the banks, they would reduce their exposure in marks by reducing their deposits in German banks. So of course they would withdraw from the great banks, because, to paraphrase a famous American bank robber's explanation for why he practiced his trade, that is where the foreign deposits were. In the context of the budget catastrophe, paramilitary stirrings, the change in the international climate that followed the hare-brained German scheme for a customs union with Austria, and the German government's denunciation of reparations, invoking banking problems is superfluous. The evidence cited in this note does not indicate that they were material.

The two crises shown in the data therefore were identified as currency crises. Schnabel adds a third "crisis," the FAVAG crisis of August 1929. This was a business failure, and the article reveals that the failure resulted only in a few bank failures, not any general banking crisis: "[T]he crisis can hardly be detected in the aggregate deposit series (figures 3 and 4)." By using this case as an analogy, Schnabel implicitly compares the failure of the Nordwolle in 1931 with the failure of FAVAG in 1929. But the latter failure did not result in a generalized banking crisis; the analogy does not explain why the former should have done so.

Schnabel also points to the heterogeneity of deposits at German banks as evidence of the importance of bank behavior in the 1931 crisis. The primary evidence appears to be that "some banks such as Danatbank and Dresdner Bank already lost fairly high shares of their deposits in May." The source for this observation is Schnabel's table 7, in which it is clear that deposits in both of these banks remained above 95 percent of their size in March 1931 at the reporting date of 31 May 1931. Schnabel's claim in the text is contradicted directly by the cited table in the article; the prose in the article at this point shows the triumph of ideology over data.

Deposits in the Dresdner Bank did not fall more than the average of the great banks even in June. Deposits in the Danat bank did fall, but the Nordwolle failed in that month. The paper provides no evidence of any banking runs in May. As Ferguson and Temin showed, banks were not calling in loans, there was no run on demand deposits, and only time deposits were decreasing.⁴ Acceptances, including many of foreigners, actually were rising. Table 1 demonstrates this observation with simplified data from the same monthly bank reports used by Schnabel. "Demand deposits" (DD) were accessible in a week or less, "time deposits" (TD) were accessible in a week to three months. Demand deposits did not fall at all in the crisis, indicating that there was no panic among depositors at the great banks. Time deposits fell only in June; depositors were repositioning their assets in anticipation of possible currency problems.

Schnabel's data confirm this conclusion. As shown in her table 8, the data do not provide evidence of banking problems or moral hazard. At the end of May foreign deposits at Berlin's great banks were at 95 percent of their level at the end of March. Domestic deposits were at 99 percent of their March level. Domestic depositors do not seem to have been frightened; only foreigners appear to have made a small adjust-

⁴ *Ibid.*

TABLE I
1931 GROSSBANKEN DEPOSITS BY SPEED OF ACCESS
(million Rm)

	28 February	31 March	30 April	31 May	30 June	31 July
Demand Deposits	3,756	3,819	3,657	3,626	3,626	3,891
Time Deposits	4,627	4,666	4,801	4,632	3,519	2,370

Source: Ferguson and Temin, "Made in Germany," table 5.

ment. The differential decline indicates fear of the currency rather than fear of banks. The first, relatively faint signs of trouble with the currency appeared toward the end of May, as word began leaking out that the Brüning government was contemplating a move on reparations as part of a broader budgetary retrenchment. In the first week of June, as the rumors turned into fact, the currency's problems snowballed. By the end of June, foreign deposits had fallen to 75 percent, while domestic deposits stayed at 99 percent. Even with the developing problems of the Danat bank, domestic deposits in the great banks did not fall! There was no crisis of confidence in the great banks. Only foreigners, reducing their mark assets for fear of devaluation or currency controls, drew down their deposits. This of course is the story in Ferguson and Temin's work.⁵ Schnabel's article confirms that story with additional data; it does not add a believable banking crisis to it.

In the interests of furthering this debate, we present a small amount of new evidence in Figure 1. This graph shows the daily price of Young Plan bonds in Paris from 1 April to 30 June. Young Plan bonds were traded widely, but we found the most complete series for Paris. It provides a good index of investor sentiment in the spring and summer of 1931. After rallying early in the year, the bond price stayed remarkably constant from March to May, and then fell sharply during the week of 27 May. Why? There was no news about German banks in late May, but German newspapers began by 25 May to discuss the rumor that Brüning was likely to ask for some sort of relief in regard to reparations, as he did in June.⁶ This, not phantom withdrawals from banks, was the beginning of the fatal run on the currency that paralyzed the Reichsbank precisely at the moment it needed reserves to foster domestic stability.

⁵ *Ibid.*

⁶ Ferguson and Temin, "Made in Germany," p. 29. The data on Young Plan bond prices come from a compilation in the Archives of the French Ministry of Finance, Carton B32398, Savigny-le-Temple, France. The series also reflects two other processes discussed by Ferguson and Temin. The first is the fact that financial markets briefly held out hopes that Briand could somehow bring off a compromise that would patch up relations between France and Germany after the storm over the customs union blew up ("Made in Germany," p. 24). The second is the brief rally that took place in Young Plan bonds in mid-late June, as prospects for international assistance to Germany momentarily brightened, before their final collapse ("Made in Germany," p. 49, note 93).

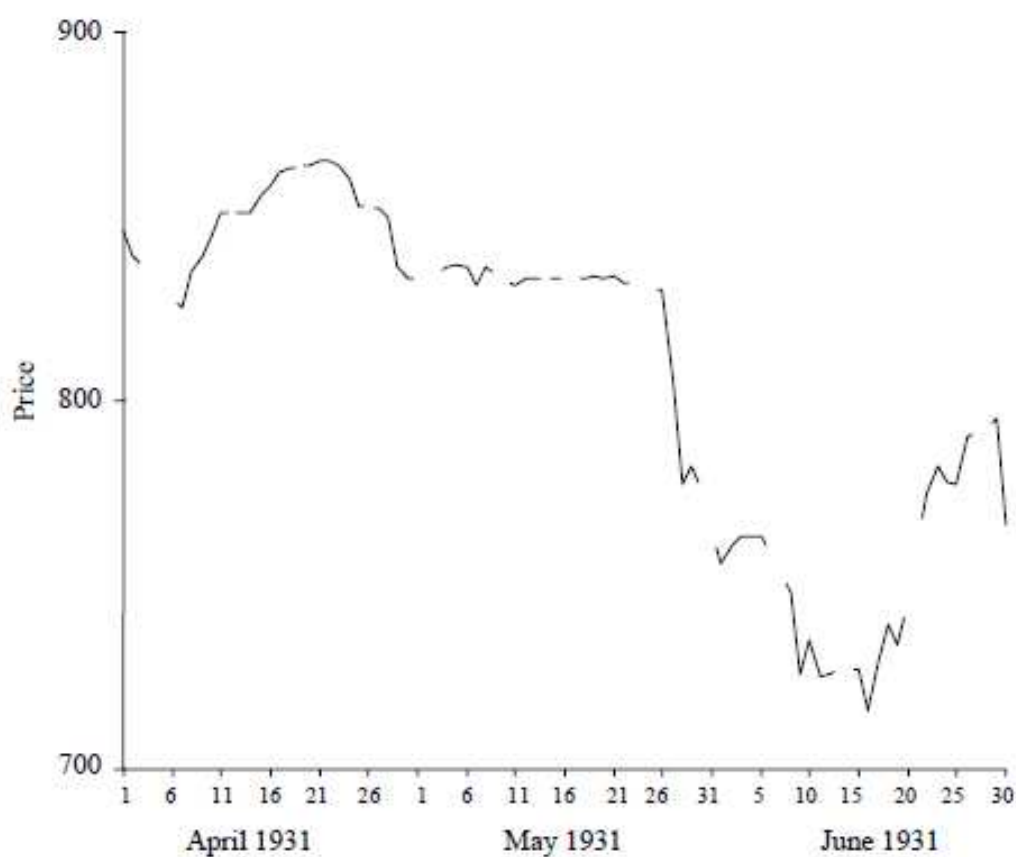


FIGURE 1
YOUNG PLAN BONDS IN PARIS, 1 APRIL TO 30 JUNE 1931

Note: Breaks in series indicate no quotation (e.g., weekends).

Source: Archives, French Ministry of Finance, See Note 6.

REFERENCES

Archives, French Ministry of Finance.

Ferguson, Thomas, and Peter Temin. "Made in Germany: The German Currency Crisis of 1931." *Research in Economic History* 21 (2003): 1-53.

Schnabel, Isabel. "The German Twin Crisis of 1931." *This JOURNAL* 64, no. 3 (2004): 822-71.

Rozšířené vyhledávání

- 1) Na Úvodní straně si překlikneme do režimu „Advanced Search“ – rozšířeného vyhledávání.

The screenshot shows the Cambridge Journals website homepage. At the top, there is a navigation bar with links for Home, Contact Us, Site Map, Help, FAQ, Accessibility, and Register. Below this, there is a search bar with a dropdown menu set to 'Journal and Book Content' and a 'Search' button. The 'Advanced Search' link is highlighted with a red box. To the right of the search bar, there are links for 'Cite Search', 'Quick Search', and 'CrossRef Search'. Below the search bar, there is a banner for the 'Welcome to Czech Republic HSS Consortium' with a 'Register for an Account' button. To the right of this banner, there is a large image of a neuron with text about CJO releases and a 'Read More' button. Below the neuron image, there are four buttons: 'New CJO Features', 'New Journals for 2011', 'News & Announcements', and 'Journals Price List 2011'. At the bottom, there is a 'Browse Journals' section with a dropdown menu set to 'All Categories' and two buttons: 'Browse by Subject' and 'Browse by Title'. To the right of this section, there is a featured journal cover for 'Journal of Developmental Origins of Health and Disease' with a brief description.

- 2) Vyhledávání necháme nastavené na vyhledávání v obsahích knih a časopisů, do kolonky pro „Article or Chapter Title“ zadáme „macroeconomics“ a stáří článku si vyhradíme od ledna 2009 do prosince 2010. Dáme „Search“.

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S **INTRODUCTION TO MACROECONOMIC DYNAMICS SPECIAL ISSUE: PUBLIC POLICY, EXTERNALITIES, AND ECONOMIC GROWTH** Journal [+ preview](#)

Stephen J. Turnovsky and Ronald Wendner

Macroeconomic Dynamics, Volume 14, Supplement S2 , pp 145 -150
doi:10.1017/S1365100510000362 (About doi). Available on CJO 20 září 2010

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INTRODUCTION TO MACROECONOMIC DYNAMICS SPECIAL ISSUE: PUBLIC POLICY, EXTERNALITIES, AND ECONOMIC GROWTH

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RONALD WENDNER
University of Graz

1. INTRODUCTION

Externalities are a fundamental aspect of any modern interdependent economy. The fact that agents interact with one another makes it inevitable that their decisions will influence one another directly, in addition to any indirect impact that may occur through the market place. Ever since the earliest stages of the discipline, externalities have been of prime concern to economists, who have long argued that they provide an important motive for (economic) decision making. To cite one prominent example, in *The Theory of Moral Sentiments*, Adam Smith notes that “Though it is in order to supply the necessities and conveniences of the body that the advantages of external fortune are originally recommended to us, yet we cannot live long in the world without perceiving that the respect of our equals, our credit and rank in the society we live in, depend very much upon the degree in which we possess, or are supposed to possess those advantages. The desire of becoming the proper objects of this respect . . . is perhaps the strongest of all our desires” [Smith (1759, pp. 348–349)]. In modern terminology, Adam Smith is referring to a *consumption externality*.

First versions of most of the papers of this special issue of *Macroeconomic Dynamics* were presented at the European Science Foundations *Public Goods, Public Projects, and Externalities* Workshop (PGPPE), Graz, Austria, July 9–11, 2009, documentation of which can be found at <http://www.uni-graz.at/ronald.wendner/PGPPE09/index.html>. Financial support from both the European Science Foundation (SCSS: PGPPE program) and the Schumpeter Centre of the University of Graz, Austria is gratefully acknowledged. Financial support alone, however, would not have made possible the Graz PGPPE Workshop without the excellent support of all members of the steering and program committees. In particular, we thank Monique Florenzo, Richard Sturm, the discussants at the workshop, and all referees, who submitted excellent reports in response to both submissions for consideration of presentation at the Graz PGPPE Workshop and submissions for consideration of publication in this special issue of *Macroeconomic Dynamics*. Special thanks go to Johanna Pfeifer, whose help in organizing the PGPPE Workshop was invaluable. Address correspondence to: Stephen J. Turnovsky, Department of Economics, University of Washington, Box 353330, Seattle, WA 98195, USA; e-mail: sturn@u.washington.edu.

Many authors have elaborated further upon Smith's (1759) argument. Consumption externalities are at the heart of Veblen's (1899) *Theory of the Leisure Class* and were first formalized as a determinant of aggregate consumption by Duesenberry (1949) in his development of the "relative income hypothesis." More recently, they have been extensively studied in the context of models of jealousy and "keeping up with the Joneses," which analyze their implications for such issues as asset pricing, short-run macroeconomic stabilization, tax policy, the level of consumption, and more recently economic growth.

Production externalities also have a long history, dating back to Marshall (1890). In contrast to consumption externalities, production externalities provided the cornerstone of the endogenous growth model pioneered by Romer (1986) and the revival of growth theory that it spawned.¹ The key feature of this framework is that even though the individual firm's capital stock may be subject to diminishing marginal product, the presence of an aggregate production externality enhances its productivity so that in equilibrium the economy is able to sustain a steady endogenously determined growth rate.

Empirical evidence on the importance of externalities is sparse and indirect, but overall, the existing evidence provides convincing support for their importance. An early study by Easterlin (1973) demonstrated that money does not buy happiness. In particular, he showed that although income had substantially increased over the previous decades, this rise in income was not accompanied by a rise in (self-reported) happiness, suggesting the presence of a negative consumption externality. More recently, the quantitative effects of consumption externalities have been empirically assessed. Both survey-experimental analyses and studies based on econometric analyses of panel data on individuals' incomes and self-reported happiness demonstrate the significance of consumption externalities; see, e.g., Clark and Oswald (1996) and Frank (1997). Evidence on production externalities, although less conclusive, is nevertheless also quite compelling; see, e.g., Caballero and Lyons (1990).

In the light of the empirical evidence supporting the presence of externalities, the question of how they influence economic performance is important. To what extent do they introduce distortions into savings and investment decisions and the resulting growth performance? And what are the appropriate corrective policy responses? This special issue of *Macroeconomic Dynamics* presents a number of papers addressing these issues.

2. EXTERNALITIES, PUBLIC POLICY, AND GROWTH

All papers in this issue of *Macroeconomic Dynamics* relate to all three themes of this special issue: public policy, externalities, and economic growth, although the interactions between them are quite diverse. In any macrodynamic framework, externalities will almost always affect the growth rate(s), both along transitional paths and in steady-state (balanced-growth) equilibrium. Moreover, the presence of externalities will, in general, influence how any given public fiscal policy affects

the equilibrium growth performance and welfare of the economy. Therefore, one focus of this special issue is the impact of externalities on the positive effects of *given* fiscal policies.

A second focus of this special issue is analyzing significant normative aspects of externalities. Once externalities are present, a competitive equilibrium, in general, does not yield an efficient allocation of resources. Optimal fiscal policies respond to externalities in the process of correcting for such "market failures." As several of the papers in this issue make clear, the analysis of normative aspects of externalities goes along with significant informational requirements. Those informational requirements present a major obstacle for designing optimal policies. For example, a country's level of public infrastructure is shown to affect the pure rate of time preference, which, in turn, affects the optimal level of public infrastructure investment. Empirical estimates of public investment's effect on the pure rate of time preference are scarce, at best. Unfortunately, this sensitivity is indispensable for evaluating and justifying public infrastructure investments.

A third focus of this special issue is heterogeneity. The canonical representative agent framework does not always capture key facts about economies well. Some papers demonstrate that taking into account the heterogeneity of agents leads to qualitative differences in the effects of fiscal policies from a more conventional framework with homogeneous agents.

3. THE PAPERS OF THIS SPECIAL ISSUE

This special issue comprises eight papers. Although some of the papers deal primarily with just one of the three issues we have noted, others have a broader focus. Several papers investigate the impact of externalities on the effects of *exogenous* fiscal policies. The fiscal policies investigated typically include increases in the capital income tax, the labor income tax, and a consumption tax with lump-sum revenue rebating.

Heijdra and Mierau consider a production externality, where labor productivity depends positively on the aggregate capital stock. Using a continuous-time overlapping-generations framework, they consider three features: labor-leisure choice, age-dependent mortality rates, and imperfect annuity markets. This framework allows one to replicate key macroeconomic (stylized) facts, such as a hump-shaped consumption pattern over the life cycle. The endogenous (balanced) growth rate is generally affected by different policies. Whether or not a given fiscal policy increases the (balanced) growth rate depends on the "direction" of resource transfers induced by the fiscal policy. If the fiscal policy effectively transfers resources toward cohorts with a high (low) propensity to save, the endogenous growth rate rises (falls).

Wendner also considers a continuous-time overlapping-generations model with a production externality, where labor productivity depends positively on the aggregate capital stock. With an exogenous labor supply and constant mortality rates but gradual retirement, he demonstrates that the effects of a

keeping-up-with-the-Joneses consumption externality depend on the rate of gradual retirement. For a low rate of retirement, the balanced growth propensity to consume out of total wealth rises, and the balanced growth rate declines. The opposite is true for a "high enough" retirement rate. He also addresses optimal allocation and demonstrates that a high rate of gradual retirement necessitates a pay-as-you-go transfer system. If the rate of gradual retirement is low, however, optimality is obtained by imposing a reverse pay-as-you-go transfer system. A keeping-up-with-the-Joneses consumption externality amplifies the regressivity (progressivity) of the optimal transfer system.

Koyuncu and Turnovsky analyze several fiscal policies in an infinitely lived heterogeneous agent model, where the source of heterogeneity is differential initial endowments. Investment gives rise to a positive production externality, as in the papers described above. In addition, agents exhibit a *catching-up-with-the-Joneses* consumption externality.² With infinitely lived agents, important fiscal policies that have no effects under *keeping-up-with-the-Joneses* preferences affect both transitional and balanced growth paths under *catching-up-with-the-Joneses* preferences. Moreover, the paper shows that the consumption externality alters transitional paths substantially. With a catching-up-with-the-Joneses externality, inequality evolves over time, and (second-best) fiscal policy changes income inequality by more than it does in the case of conventional preferences without consumption externalities. In contrast to time-separable preferences, a capital (labor) income tax reduces (increases) wealth inequality.

In contrast to these three papers, Fisher employs a small open-economy framework to investigate the effects of a *wealth* externality on endogenous growth, where households derive utility from an above-average level of wealth. He shows how the endogenous growth rate is permanently increased (decreased) by a rise in the tax on international bonds (on capital income).

Dioikitopoulos and Kalyvitis consider the growth-maximizing level of public infrastructure investment. Public spending imposes two externalities. It affects the pure rate of time preference, and it raises the return of private factors of production. For an endogenous rate of time preference, the growth-maximizing ratio of government spending to the GDP exceeds the elasticity of output with respect to public capital. If the impact of public spending on the rate of time preference is significant enough, this higher share of public spending is financed by a lower tax rate, as the decline in the rate of time preference induces more growth and thereby raises the tax base.

Public infrastructure investment also provides a positive production externality across countries, as argued by Hashimzade and Myles. As a consequence, individual countries underprovide public infrastructure. For financing public infrastructure, individual countries choose the growth-maximizing tax rate, which, however, is lower than the welfare-maximizing rate. Capital mobility creates an additional externality, made worse by international tax competition. This provides a role for a supranational body to coordinate public policy.

Rezai's paper relates climate change induced by economic growth to optimal fiscal policy. The dynamic integrated model of climate and the economy (DICE) simulation model is modified in two ways. The recast DICE model allows for nonzero mitigation of greenhouse gases from the beginning of the simulation period (whereas the DICE model assumes zero mitigation over the first 25 decades), and it introduces "plausible" upper limits on the atmospheric concentration of carbon dioxide. The recast DICE model shows that the original model's policy prescription, according to which it is optimal to backload mitigation, is not robust with respect to the introduced modifications. In contrast, early mitigation is shown to yield a Pareto improvement.

The Creedy, Li, and Moslehi paper relates to both normative aspects and heterogeneity. In an overlapping-generations framework, the authors consider the impact of inequality on the optimal mix of public good expenditure and redistributive transfer payments. Both greater income inequality and a greater social preference for inequality aversion give rise to a larger optimal ratio of (redistributive) transfer payments to public good expenses. The model is then used to infer inequality aversion for a range of countries. The results accord well with previous empirical cross-sectional assessments of inequality aversion.

4. LOOKING AHEAD

The papers in this special issue of *Macroeconomic Dynamics* demonstrate that connecting public policy with externalities is a significant undertaking. As externalities affect both balanced growth paths and transitional paths, ignoring externalities may yield large welfare losses. Two important channels for future research suggest themselves.

First, a large prior literature takes consumption externalities into account in economic analyses. This literature, however, fails to consider key aspects of the findings of behavioral economics. In many cases, consumption externalities are formulated in a way inconsistent with experimental research. For example, Fehr and Schmidt (1999) demonstrate that people dislike inequality (especially when their income falls short of some reference level), and people like being ahead of others. These findings represent *different* aspects of consumption externalities, and they are most likely not symmetric.

Second, empirical estimates of key parameters determining externalities are scarce and unreliable. However, both positive and normative policy analyses are sensitive with respect to specific externality-related parameters, as is demonstrated in the papers of this special issue. Obtaining a more reliable range of empirical estimates for externality-related parameters is therefore a high research priority.

NOTES

1. Actually, the type of externality proposed by Romer can be found in an early formulation by Frankel (1962).

2. "Catching up with the Joneses" refers to a situation in which a household's utility is affected not only by a present level of reference consumption but also by *past* levels of reference consumption.

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