

Gunther Tichy

The Neglected Mass Saving

The Economic Consequences of Increasing Intermediation

The Neglected Mass Saving. The Economic Consequences of Increasing Intermediation

The current low level of interest rates is mainly due to the fact that the savings plans in Europe and Southeast Asia exceed the investment plans; the expansive monetary policy only strengthened this trend slightly. The savings surpluses are primarily the result of mass saving, which tends to curb consumption and force it into intermediation through the credit apparatus; this inevitably leads to problems of maturity and risk transformation as well as debt. They contribute to the instability of the system. Savings surpluses due to mass saving already occurred in the last quarter of the 19th century, but were eliminated by wars and inflation before they could pose more serious problems. Since 2000 at the latest, however, savings surpluses have been dampening consumption and growth; the economy's willingness to borrow is limited in view of the low growth rates, and national debt tends to be contained. This is unlikely to change much in the foreseeable future. The article shows the problems on the basis of the Austrian development over the last 180 years and discusses possible solutions.

Contact:

Professor Gunther Tichy: WIFO, 1030 Vienna, Arsenal, Objekt 20, gunther.tichy@wifo.ac.at

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The current debate on the monetary policy stance of the ECB, the consequences of Quantitative Easing and the low interest rates supposedly resulting thereof ignores the economic and monetary policy repercussions of a fundamental change in underlying structural forces: over the last decades, the economics of scarcity that had been dominating human history has in large parts of the world been superimposed by elements of an affluent society, not only with regard to aggregate demand, but also to financing: in the EU, in China and Japan, an apparently lasting excess supply of financial capital has emerged as a consequence of mass saving and falling credit demand. It is not the policy of Quantitative Easing, but market mechanisms that drive the demise of interest (Tichy, 2019A). Neither the general public nor the political authorities are fully aware of this new constellation of sustained excess saving: private savers are stunned by the lack of return on their deposits, deplore their "expropriation"¹ and worry about the implications for their private retirement provisions. Policymakers, for their part, disregard the problems inherent in mass saving or even exacerbate them in many instances.

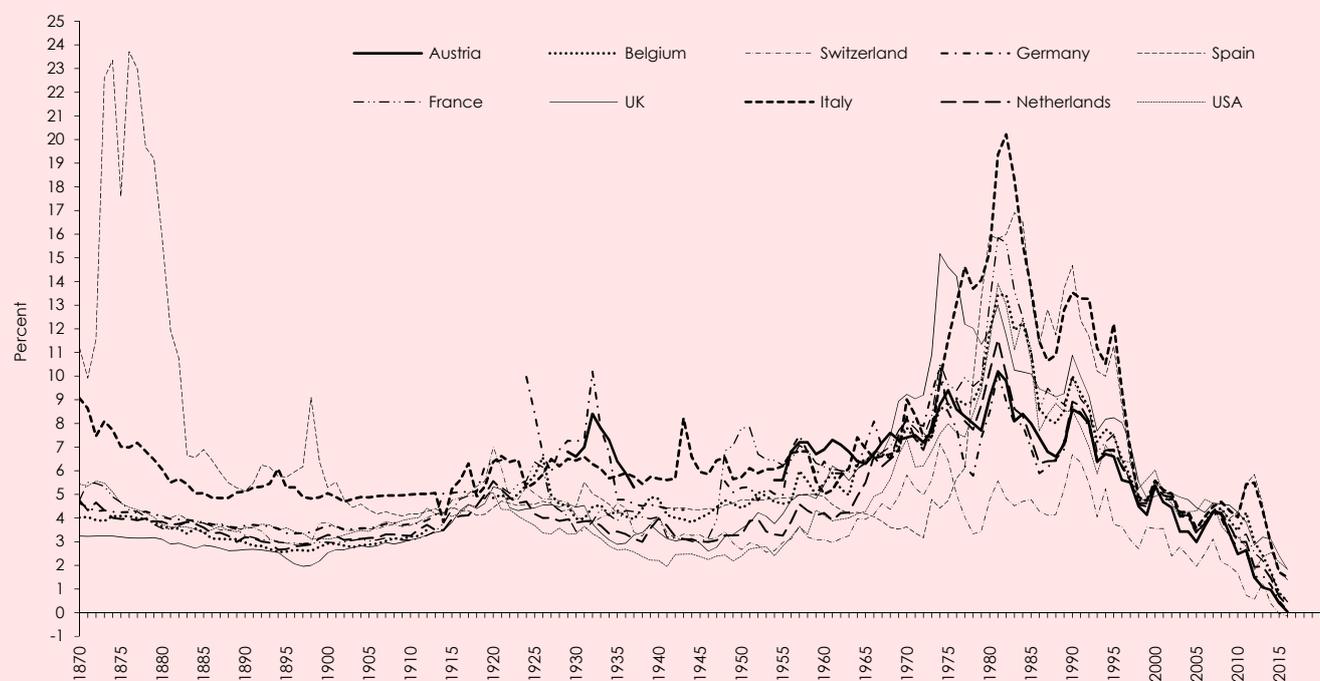
Below, we illustrate the relation between saving and demand for financing in historical perspective, showing two periods where financial saving rose disproportionately: the second half of the 19th century and the period from 1955 until today. The scanty

Low interest rates are the consequences of excess saving.

¹ Hence, the magazine Fokus (2011, (23)) wrote under the heading "the quiet expropriation": "For the reduction of their debt, countries loot the accounts of private savers. The perfidious methods cost German investors billions and billions each year". *Die Welt* (17 July 2018) quantified: "Interest losses of German savers rise to a new record . . . zero-interest has become reality for a long time . . . this means that every German has lost on average 205 euro in the first half year. A turnaround is hardly in sight."

historical evidence suggests that the need for financing in the first period broadly kept up with the growing supply of financial resources, whereas in the latter half of the second period an increasing surplus of savings developed. The results are global economic imbalances, problems of financial intermediation and the effectiveness of monetary policy ("zero bound"), and the danger of a (saving-induced) persistent deficiency in aggregate demand.

Figure 1: Long-term nominal interest rates in historical perspective



Source: Own compilation based on Jordà et al. (2017), Butschek (1999) and OeNB.

1. The traditional model of scarcity of financing funds

Due to the scarcity of financial resources dominating for centuries, the science of economic history sets its focus on the financing of investment. It examines, to what extent industrialisation and economic growth was constrained by a shortage of capital (Bergier, 1973, p. 412). It neglects the issue of where the financial resources came from, the savers and their motives, as well as discrepancies between saving and investment plans and their adjustment in different periods of history. For scholars of economic theory, the mainstream in any case, the issue of investment financing was of minor interest. They assumed that the interest rate regulates supply and demand of financial resources, always steering them towards equilibrium: hence, any deviation would at best be a transitory problem. While this perception matched, even though for other reasons, the conditions prevailing in the first half of the 19th century, it has shaped academic thinking until today – wrongly so, since sustained imbalances emerged early, as a result of low interest elasticity of both investment and saving behaviour. Not only did the interest rate prove to be just one of several factors governing (financial) saving and investment financing; indeed, the interest rate itself is determined not only by actual saving/investment mismatches, but by still other factors, notably risk assessment and inflation expectations in a given situation. Over time, the interest rate has been subject to major fluctuations².

Economic history shows different combinations of saving and investment plans.

² Our data try, wherever possible, to capture the "typical" interest rates in each case; the country series suggest that this has largely been achieved. For theoretical as well as empirical considerations, nominal interest rates

2. $S \equiv I$ in the first half of the 19th century

In the 18th and the first half of the 19th century, the era of the "Classical" Political Economy, the term "accumulation" stood for both, investment and saving; institutional settings were such that saving and investment plans were *de facto* identical. The main reason was the almost complete self-financing of investment. Commercial enterprises were often founded by landowners or merchants from their private wealth, with investment being financed out of profits. Apart from the fact that debt was deemed to be "dishonourable" (Butschek, 2011, p. 91), the early industrialists did not want to see their freedom of action constrained by creditors or participants (Gille, 1973, p. 257), nor were there lenders of capital who would have accepted the risk of financing an industrial enterprise. With unclear legal relationships and under-developed financial reporting and accounting standards prevailing at the time, not only confidence was lacking – the bourgeoisie, bankers and industrialists kept rather aloof from each other (Bergier, 1973, p. 414) –, but also the possibilities of hedging against financial risks. Security-generating institutions in judiciary and accounting did not exist; the "institutional revolution" (Butschek, 2011, p. 74) took place only after the industrial revolution. Likewise, the banking system, notably in England, was not geared towards company financing³. "Self-financing was the rule at the start of industrialisation" (Bergier, 1973, p. 413). However, there was no general lack of resources for financing investment, neither in England nor in Germany (Borchardt, 1961) or Austria. "Capital prospered in the 1840s and industrial profits grew" (Piketty, 2017, p. 8); besides, capital intensity of production was still low (Minichton, 1973, p. 84). In continental Europe, banks – and also the State – played a somewhat bigger role for investment financing than in England, but here also banks' main business was to provide financing for the State and the nobility (März – Socher, 1973, p. 330, Rudolph, 1976, p. 68)⁴. The investment banks mobilised small private assets (Gerschenkron, 1951) and often transformed them into sometimes even long-term industry credits; nevertheless, they also acted mainly as mediators, due to the small base of equity and deposits (Gille, 1973, p. 266). Pioneers like Bosch or Krupp had to finance the establishment of their factories largely via loans from relatives, and investment out of profits (Engelmann, 1970, p. 73f, Pierenkämper, 1990, p. 91, Hertz-Eichenrode, 2004, p. 48f).

Infrastructure like canals, sewage systems or railways were financed in England by nobility and gentry via shares (Gille, 1973, p. 258), but here again uncertainty was initially high, as legal regulation of stock company financing came relatively late: in Prussia in 1843, in England only in 1882⁵. By that time, a well-to-do upper middle class had already developed (Minichton, 1973, p. 176) that was able to meet the swiftly rising capital need for the build-up of infrastructure; in Austria, capital was also mobilised from the discharge of land property (Butschek, 2011, p. 129). The decline of interest rates (Figure 1) and the frequent large over-subscription of share issues (by 98 percent! at the *Credit-Anstalt* according to März, 1968, p. 39) were clear signs of the growing demand for financial investments.

With self-financing dominating, the volume of saving equalled that of investment.

The "institutional revolution" in the financial system lagged behind the industrial revolution.

have been preferred to real ones: rates would have to be deflated not with current CPI values, as usually done, but rather with savers' price expectations for their saving targets. Yet, the latter are difficult to determine, for the past even more than for the present. Besides, a comparison of nominal with "real" government bond yields shows a quite similar pattern: both increased by some 5 percentage points between 1970 and 1990 and declined thereafter by the same amount to slightly below zero percent.

³ Self-financing dominated in England also because banks were rather small and under-capitalised (Gille, 1973, p. 257).

⁴ The granting of credit was not always entirely voluntary and often linked with other business (Eigner et al., 1991, p. 912, p. 917).

⁵ Following the South Sea Bubble, the Bubble Act of 1720 restricted the establishment of public limited companies until 1862.

3. $S \neq I$ due to prosperity-driven monetary capital formation

During the 19th century, the income situation of wider population groups had improved such that beyond the setting aside of reserves the idea of precautionary saving came up and made its way (Wilke, 2016). At the same time, more capital was needed for the build-up of infrastructure (railway, urban public amenities etc.) and industrial investment. External financing gained importance such that individual saving plans could deviate from the financing plans of private investors and the State. This also gave rise to two financial innovations that were at the origin of the subsequently dominating problem of financial intermediation:

The first innovation was 1855 the creation of the *Crédit Mobilier* in France, an instrument for financing industrial and infrastructure investment. Other countries soon followed the example, like Austria with the foundation of the "k.k. privilegierten Österreichischen Credit-Anstalt für Handel und Gewerbe" (Credit institution for Trade and Commerce)⁶. Although the new institution was endowed with a strong capital base and the establishment and investment in industrial and transport companies was part of its statutory mandate, it mainly acted as mediator in its early stages. While it also granted "interest-bearing advance payments", part of its direct financing operations resulted from failed securities issues and from price management (März, 1968, p. 41ff, Eigner – Wagner – Weigel, 1991, p. 964). More relevant for our analysis than its contribution to industry financing is its raising of funds: the original capital was mainly subscribed by the financial elite and was heavily over-subscribed (März, 1968, p. 39). The Credit-Anstalt fulfilled its task of collecting smaller and larger funds via securities issues on the one hand, and a rapidly expanding deposit business on the other; unfortunately, there is no information on the composition of depositors. The Bank never used its statutory option of own issues (März, 1968, p. 44).

The second financial innovation were the Savings Banks, which were founded in large numbers in the early decades of the 19th century, inspired by forerunners in the latter part of the 18th century (Fritz, 1972, p. 37); cooperative banks followed towards the middle of the 19th century. In the second half of the century, probably one-tenth of all workers were in a position to accumulate savings (Schulz, 1981). The later decades saw a substantial rise in general purchasing power (Piketty, 2017, p. 7), and deposits with credit institutions increased accordingly. "Money acquired civil rights . . . pursuit of money became a legitimate goal of bourgeois ambition, and possession of it an acknowledged standard of success" *Erste österreichische Spar-Casse*, 1969, p. 61). As shown in Figure 2, this trend may have started during the 1860s in Austria; for 1880, total bank deposits may be estimated at about half of the (rapidly growing) GDP⁷, for 1910 already at 110 percent. In addition, there were sizeable purchases of railway and government bonds as well as shares, which however cannot be quantified for lack of information.

Research into the sociological profile of depositors seems to be generally lacking, but one may assume a rather high degree of concentration in the distribution. The Savings Banks were not created to satisfy any kind of demand for investment, but for social policy considerations (März – Socher, 1973, p. 335): "in order to allow the factory worker, the craftsman, the day labourer, the servant, the farmer or any other industrious and thrifty person" to accumulate reserves⁸. The first Savings Bank in Austria was founded in 1819 in Vienna, and such banks remained for a long time "a child of the

With rising prosperity, precautionary saving came up over the 19th century,

Two financial innovations were at the outset of the later dominating intermediation problem: the *Crédit Mobilier* and the Savings Banks.

Founded as social initiative for the classes of low income and wealth, the Savings Banks became "financial institutions of humanitarian mission" for the entire population.

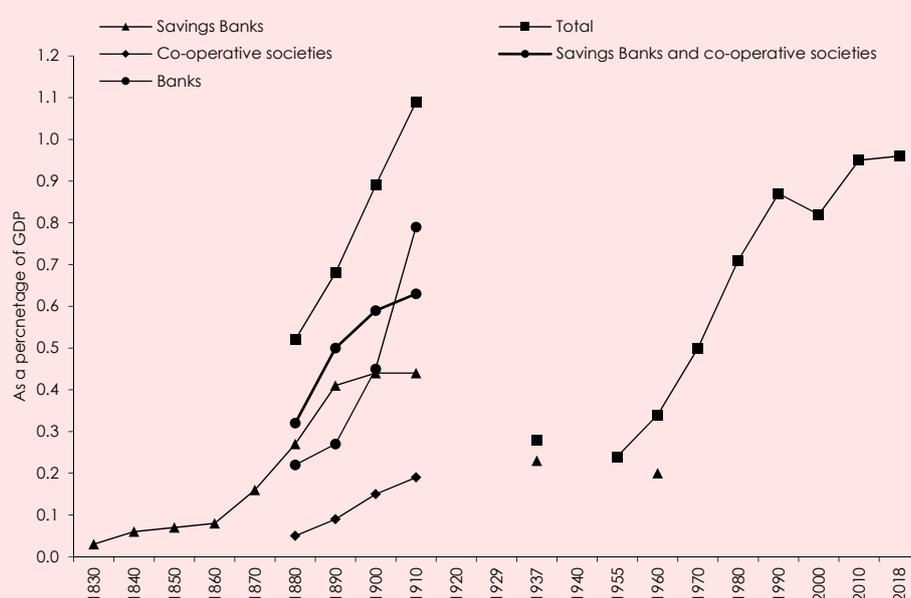
⁶ The "Niederösterreichische Escompte-Gesellschaft" (Escompte Society of Lower Austria) and the "Banca Commerciale Triestina" (Commercial Bank of Trieste), which were established around the same time, confined their business to short-term financing (Rudolph, 1976, p. 69).

⁷ Although data are unavailable for earlier years, one may guess from the Figure that the upward trend had set in already before the middle of the century. The reported values are estimates to the extent that the aggregates sometimes followed different definitions in different periods.

⁸ ". . . with the aim of providing the factory worker, the craftsman, the day labourer, the servant, the farmer or any other industrious and thrifty person with the means to set aside from time to time from their arduous work a small fund in order to gain it in later days for a better provision, dowry, aid in case of sickness, old age, or to achieve any other commendable purpose" (foundation charter of *Erste Österreichische Spar-Casse* – First Austrian Savings Bank).

city" (Fritz, 1972, p. 56): in 1860, 55 percent of Austrian savings funds were held in Vienna where social discrepancies were particularly high, and still 34 percent in 1890 (Scheriau – Gallhuber, 1969, p. 89ff). As a social initiative, the activity of the Savings Banks was initially confined to the "less well-off classes", with statutory interest following a regressive schedule (i.e. declining for higher deposits)⁹. The success in social terms was mirrored by a rapid increase in the number of accounts to a total 664,000 in 1872; the average balance was broadly stable at 200 *gulden* from the 1830s to the early 1870s (Scheriau – Gallhuber, 1969, p. 103ff), which was broadly equivalent to a locksmith-subworker's half annual salary (Fritz, 1972, p. 61)¹⁰. The limitation of the Savings Banks to business with low-savers was increasingly contested by the "wealthier circles" that were excluded from this safe investment (*Erste österreichische Spar-Casse*, 1969, p. 61). After a long and heated debate, the limitation was abolished in 1872 by the *Mustervertrag* (standard charter) that established the Savings Banks as "monetary institutions of humanitarian mission" where people of all social classes could hold accounts subject to the same terms and conditions. As a consequence, not only the average deposit balance doubled (to 510 *gulden* by 1890), but also the number of accounts (1890: 1.230,000; Scheriau – Gallhuber, 1969, p. 103ff).

Figure 2: Deposits in Austria



Source: Butschek (1999), Rudolph (1976, S. 84), Tichy (1977A), WIFO database.

As illustrated in Figure 2, the momentum of monetary capital formation shifted in the last quarter of the 19th century from the Savings Banks and co-operative societies towards commercial banks¹¹. Main reason was the growing prosperity, in particular the emergence of a broad middle class that was ready and able to provide for old age. It was the era of the bourgeois "rentier" (man of private means), of the "*Hausherr und Seidenfabrikant*" (landlord and silk factory owner), according to a popular Viennese song¹². The steep rise in deposits shown in Figure 2 even underestimates the scope of saving activity since, due to lack of data, the rapidly-growing investments in

With rising prosperity, monetary capital accumulation shifted towards commercial banks.

⁹ First Austrian Savings Bank stipulated a minimum deposit of 50 *kreuzer* and a maximum of 100 *gulden* (guilder) (*Erste österreichische Spar-Casse*, 1969, p. 61).

¹⁰ Savers apparently transferred existing reserves towards the safe Savings Banks. A decomposition by depositors is not available for Austria. With *Sparkasse Trier* (Trier Savings Bank), day labourers and servants held one-quarter of savings booklets in 1885, "persons without rank or occupation" two-fifths.

¹¹ Meanwhile, the Savings Banks had spread so widely that the dynamics of new foundations necessarily slowed (Fritz, 1972, p. 382).

¹² Although a large majority of the population was already able to build reserves at the time, mass saving became quantitatively important only from the 1970s onwards.

shares and bonds are not included. This lack is not without problems, since the wealthier classes began, from the middle of the century, to invest into higher-risk projects; a run in equities set in that soon degenerated into a bubble: hence, between 1868 and 1872, 176 banks and numerous insurance companies were founded in Austria, of which no more than one out of four survived the stock market crash of 1873 (*Erste österreichische Spar-Casse*, 1969, p. 75f). The number of public limited companies in Austria-Hungary almost doubled between 1871 (earlier data are not available) and 1873, from 482 to 703, but fell back to 438 until 1880 after the bubble had burst (*Butschek*, 1999, table 6.1.6). The crash of 1873 may have tarnished the image of the corporate share in Austria in a lasting way, as it is often claimed, but it had no major effect on the growth of monetary capital formation. This is confirmed not only by the unabated increase in deposits (Figure 2), but also by the soaring expansion of banks' and Saving Banks' balance sheets; both jumped four-and-a-half times between 1881 and 1900 (while the overall price level eased by 7 percent), and from 1900 to 1930 (with prices mounting by 23 percent) by three-and-a-half times (banks) and twice for the Saving Banks (*Erste österreichische Spar-Casse*, 1969, p. 111 for the latter). In addition, the number of quotations listed with the Vienna Stock Exchange rose strongly between 1873 and 1913: from 137 to 301 for bonds, from 47 to 2018 for *Pfandbriefe*, and even the number of listed industrial shares climbed from 82 to 176. However, many bank and transportation values disappeared from the stock exchange list (*Butschek*, 1999, table 1.6.4).

The stock market crash of 1873 had no impact on monetary capital formation.

With the strong increase in monetary capital accumulation, initially driven by the wealthier class, the identity of saving and investment plans that formerly had been forced by the high degree of self-financing, was no longer to be taken for granted. The fall in interest rates (Figure 1) suggests the emergence of excess savings. An important part of savings no longer translated directly into investment, but first went to the financial institutions which had to transform them into credits for the financing of investment (intermediation). This gave rise to problems of instability, overextension as well as maturity and risk transformation. Higher instability manifested itself notably in the stock market crash of 1873. The other problems did not yet strike for the time being: transformation still did not play the same role as today; the well-off savers preferred longer maturities due to higher expected returns, invested more in securities¹³, and the rapid build-up of infrastructure was often financed directly (self-financing, shares or bonds). Nor did the danger of excessive indebtedness related to external financing yet become acute, because war and inflation destroyed debt and financial assets still before debt could become excessive.

The rise in monetary capital formation ended the identity of saving and investment plans.

4. $S \approx I$ in the recovery period of the "Golden Age"

The first period shaped by excess saving and rising intermediation ended in Austria (like in Germany) with the extinction of monetary assets and debt burdens by the two World Wars, the Great Depression and the implicit inflation spells. In 1949, Austria's GDP was no higher in real terms than in 1912. With the normalisation of economic conditions, a speedy recovery of growth set in from the middle of the 1950s, accompanied by a second wave of rapid monetary capital formation. Its scope is strikingly similar to the first one, as illustrated in Figure 2: deposits mounted, monetary wealth of private households climbed from 5 percent of GDP in 1952 to 81 percent in 1990 (*Seidel*, 2017, p. 557). Nevertheless, there are also significant differences: first, the post-war period was characterised by *high interest rates* (Figure 1); second, monetary capital accumulation was for rather long time driven by *short-term savings* out of small and middle incomes, and third, *intermediation* played a relatively larger role due to the lack of long-term investment options (*Seidel*, 2017, p. 215ff). In this respect, an interesting interplay can be observed: the strong expansion of liquid mass savings would not have been possible, had the banks not pressed ahead with maturity transformation, since only in doing so they could use the short-term funds for financing long-term investment.

A second phase of mass saving began after the Second World War.

¹³ As antiques, such papers may nowadays earn again high prices.

Fourth, the increase in mass saving changed the *composition of monetary capital accumulation* (Seidel, 2017, section 6.2). Tichy (1977A, 1977B) identifies three phases: after the quasi-complete extinction of financial assets (just as private debt), the 1950s saw a gradual reconstitution first of sight deposits, followed by term and savings deposits. This "replenishment" phase gave way to a *differentiation phase* in the 1960s, caused by growth differences between the established *clientele* of different financial institutions. The broad-based welfare gains boosted the deposits with Saving Banks and credit co-operatives at an above-average pace, which created a dual problem: banks were short of funds for financing the rising credit demand from industry, and the Savings Banks were lacking investment options for their fast-growing deposit stocks. Accordingly, the third phase in the 1970s was characterised by marketing strategies of *expansion into new business areas*, namely into those of competitors. The Savings Banks encroached on the commercial credit business, the banks into the mass deposit segment. Rather than focussing on their traditional sector-specific business areas and customer groups, all credit institutions strived for becoming universal banks, documenting this also with their corporate name¹⁴. Hence, an intense predatory competition set in, leading to a rapid increase in balance sheet totals (1970-1980 +430 percent) and the number of branch offices¹⁵. Profitability became more and more critical (Tichy, 1983, p. 331): the equity ratio fell until the end of the 1970s to 2½ percent (Tichy, 1983, p. 42)¹⁶, exposing the banking system to crisis. The Banking Act (Kreditwesengesetz) of 1979 set limits by requiring banks to provide for a substantially higher equity ratio (the regulation was tightened further by the 1986 amendment), while at the same time liberalising the credit market. The measures put a brake on the expansion of balance sheet totals (1980-1990 "only" +220 percent), and the equity ratio headed up gradually towards the stipulated 4½ percent.

To what extent investment and financing plans in that period were actually higher than saving plans is not easy to clarify. Since Austria's current account was regularly in deficit, one may infer *ex post* that aggregate saving was rather too low. Credit policy was on the whole restrictive, capital market transactions were confined to government financing, and financial as well as goods markets were only tentatively liberalised. The relation between financing and monetary saving may have largely been determined by policy decisions like credit restrictions (see in this context also Seidel, 2017, p. 194ff and p. 234).

The composition of monetary capital formation changed; at the same time, predatory competition between banks jeopardises their equity base.

5. $S > I$ as a consequence of mass saving

Towards the end of the 20th century, excess saving tended to prevail not only in Austria. After Japan, where this has a long tradition, monetary capital accumulation has come to exceed financing demand in China since 1996, in the EU like in Austria since 2000, and in Germany since 2002¹⁷; correspondingly, the USA have registered sizeable saving deficits from the early 1980s. Since the financial market crisis of 2008, even the corporate sector has on aggregate shown a financing surplus¹⁸, granting credit and acquiring shares and other financial stakes¹⁹. Until 2010, the respective monetary surpluses were absorbed by the government sector, but less and less or no longer thereafter. As illustrated by Figure 3, the turnaround in Austria was driven by the lower corporate financing requirement rather than by the saving of private households.

Since the end of the 20th century, excess saving has been dominating, putting downward pressure on interest rates.

¹⁴ Thus, the Raiffeisenkassen turned into Raiffeisenbanks, or the Zentralsparkasse der Gemeinde Wien became the Zentralsparkasse und Kommerzbank Wien.

¹⁵ The number of branch offices rose from 2,653 in 1956 to 4,556 in 2000, but declined thereafter to 3,639 by 2018.

¹⁶ A similar trend could be observed in Germany, whereas equity ratios were approximately twice as high in Switzerland, the UK and the USA.

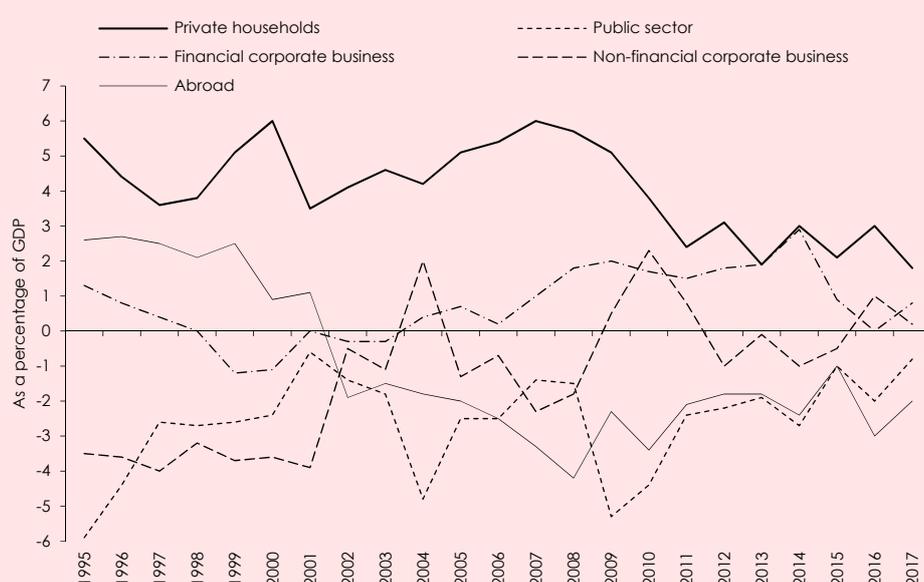
¹⁷ Already during the 1980s, Germany had featured substantial excess saving.

¹⁸ Koo (2011) calls the tendency of declining corporate financial balances "balance sheet recession" and considers it a consequence of the financial market crisis, like in Japan. In Austria and Germany, the same trend has nevertheless been observed already since 2000 (Tichy, 2019B).

¹⁹ To a large extent, this may mirror foreign financial investment (i.e. financial stakes in foreign subsidiaries as part of the holding balance).

Accordingly, the current account surplus, i.e. financing deficit of the external sector, widened significantly. Since the financial market crisis, this polarisation has moderated somewhat in Austria, as excess saving of households has narrowed markedly; yet, the remaining surplus is no longer absorbed by the public sector like before 2010. In Germany, however, the polarisation has further exacerbated: household monetary capital formation continued to rise, while both the corporate and the government sector reduced their respective debt, the former even massively, driving the current account surplus to new highs (Tichy, 2019B, p. 72). The widespread excess savings²⁰ squeezed financial asset yields worldwide (on average for the countries covered by Jorda – Schularick – Taylor, 2017): from 13 percent in 1981 to 4 percent at the outset of the financial market crisis – and further from 1¼ percent at the beginning of Quantitative Easing in 2014 to below 1 percent most recently. In Austria, they fell from 10 percent (1981) to 4 percent (2008), 1¼ percent (2014) and lately ¾ percent, being thus negative in "real" terms.

Figure 3: Monetary capital formation



Q: Eurostat Sector accounts. Financial balance = revenue – expenditure = change in assets – change in liabilities.

Contrary to the proposition widely held in political quarters and the media that the ECB policy were responsible for the low interest rates, it now becomes clear that they are largely the consequence of excessive saving in leading economies²¹. This is confirmed by investigations into the effects of Quantitative Easing. Theoretical analyses actually deny any impact of policy on interest rates, assuming that market participants would use arbitrage opportunities to full extent (see e.g. Cúrdia – Woodford, 2011). Empirical studies, despite rather different methods applied, nevertheless identify moderate interest rate declines as a consequence of Quantitative Easing: for the USA about ½ percentage point (50 basis points, with a range from 13 to 107 basis points; Chen – Cúrdia – Ferrero, 2011), for the EU likewise 50 basis points for government bonds and still less for other bonds (De Santis, 2016). In countries more severely hit by the financial market crisis, the interest-rate-depressing effect of Quantitative Easing proved more significant (in Italy and Spain 70 basis points each), whereas in France (30 basis points) and Germany (20 basis points) the impact was minimal. Moreover, the effect faded markedly over time (Urbschat – Watzka, 2017). Hence, not the

The current low level of interest rates blunts the traditional monetary policy instruments.

²⁰ The problem manifests itself in the entire euro area and in the aggregate of the industrialised countries (Lukasz – Summers, 2019, p. 25).

²¹ In the USA, the low interest rates facilitate the financing of substantial saving shortages, thereby providing relief for government households.

policy of Quantitative Easing has probably been decisive for the interest rate decline, but rather have, the other way round, the low interest rates blunted the traditional instruments of monetary policy ("zero bound") and compelled the authorities to use alternative instruments (Chen – Cúrdia – Ferrero, 2011). Only few studies are available on the impact of Quantitative Easing on the real sector: the ECB (De Santis, 2016) and Demiralp – Eisenschmidt – Vlassopoulos (2017) identify an increase in bank lending and a fall in interest cost; Boeckx – Dossche – Peersman (2017) and Breuss (2017) estimate the induced increase in euro area GDP at 1 and 0.6 percentage points respectively, while Chen – Cúrdia – Ferrero (2011) find for the USA a raise in the growth rate by ½ percentage point.

Over time, the present period of buoyant monetary capital accumulation has come to be akin to the earlier one insofar as the prevalence of mass savers has been accompanied by a gradual return of the "rentier" (man of private means) ("development of financial capitalism": Seidel, 2017, p. 223): the income distribution became more unequal and large financial wealth enjoyed above-average gains. The richest 1 percent of Austrian households by now own almost one-fourth of monetary assets, and private wealth of the top decile is higher than the one owned by the other 90 percent (Fessler – Lindner – Schürz, 2019)²². In parallel, deposits lose importance vis-à-vis other types of investment (Figure 2). On the other hand, the present period differs from the earlier one in excessive "financialisation" and a growing aversion against debt. Financialisation, i.e. the increasing influence of financial markets on the real economy and the shift "from managerial capitalism to investor capitalism" (Styhre, 2016) manifests itself not only in the composition of corporate executive boards where financial experts increasingly dominate, and in the alignment of operational management towards shareholder value, but also in the swift expansion of financial transactions on the part of manufacturing enterprises. In this respect, rather than observing a "savings glut", one should diagnose an "investment drought", that is to say of *real* investment²³. The purported high level of gross corporate indebtedness, to many observers a matter of concern, derives only in (a minor) part from the financing of real investment, but to an important degree from buybacks of shares and (speculative) financial investments (Tichy, 2019B)²⁴.

The extent of financialisation becomes even clearer when looking at the *financial industry* that has turned away from credit business proper with clients from the real economy towards complex financial constructions and inter-bank transactions²⁵. Dore (2008, p. 1097) refers to "increasingly leveraged and increasingly incomprehensible intermediation between savers and those in the real economy who need credit and insurance". This is partly the result of the growing importance of purely financial arbitration and speculative motives among financial transactions, and partly of the increasing complexity of instruments for maturity and risk transformation, turning risks into a tradeable good. The original lender-borrower relation was extended and rendered anonymous via a growing number of intermediate transactions: credits were compounded, traded in tranches of differential risk (collateralised debt obligations), with investment funds and shadow banks playing an increasing role. The financial market crisis of 2008 in the USA and Europe was the inevitable consequence of the

The current period of buoyant monetary capital accumulation produces a more unequal income distribution and above-average gains on financial assets. Concentration of financial wealth and "financialisation" are on the rise.

Banks' operations shifted from the credit business proper towards sophisticated financial constructions and inter-bank transactions.

²² The trend of monetary capital formation is similar: debt of the poorest 10 percent of the population is higher than the (low) aggregate savings in this group (negative net wealth); nearly one-fourth of all households do not save at all (Fessler – Schürz, 2017). The savings ratio of those who save ranges from 2 percent to over 50 percent of the respective household net income, rising steeply with income: households in the top income decile save over 30 percent of net income, but even within the middle 40 percent (3rd to 7th decile), the savings ratio varies between 4 and 15 percent.

²³ In the literature, the issue is actually discussed under the headings of "savings glut" vs. "investment drought" (Bernanke, 2007, Bernanke et al., 2011, Weizsäcker, 2010A, 2010B, Tichy, 2017).

²⁴ Since companies in many instances acquired financial assets, the increase in *net* debt was much lower: in 2017, gross corporate debt in Austria amounted to 808 billion €; when set against financial assets of 534 billion €, net debt was only 275 billion €.

²⁵ "When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done" (Keynes, 1936, p. 159).

higher complexity of intermediation that added to the instability of the system (Tichy, 2013).

6. The consequences for economic policy

Given the high and in many cases further rising government debt, the existence and scope of excess saving in a large number of European countries is by no means a matter of course. The literature offers several approaches to explain the saving/investment imbalances as well as the low interest rates. *Constâncio* (2016), *Farhi – Gourio* (2018) and *Lukasz – Summers* (2019) perceive the low interest rates on financial markets not so much as a consequence of excess saving, but of a decline in the "natural" interest rate, i.e. adjusted for inflation and risk²⁶, as suggested *inter alia* by sluggish total factor productivity; *Caballero – Farhi* (2014) as well as *Draghi* (2016) explain the low interest rates by the short supply of "safe assets", *Constâncio* (2016) by the sharp fall in inflation expectations and *Lisack – Sajedi – Thwaites* (2017) by the demographic trend; *Draghi* (2016) also points to the ageing-related precautionary saving²⁷. Accordingly, the literature anticipates an extended period of low interest rates, and some authors see a danger of secular stagnation (*Koo*, 2011, *Lukasz – Summers*, 2019). The Central Banks for their part have subscribed to the proposition of persistent low interest rates (*Constâncio*, 2016, *Draghi*, 2016). However, economic policy and the general public largely ignore the structural change and its implications; if they take note of the issue at all, they expect a "normalisation of interest rates"²⁸. Yet, neither empirical evidence nor the prevailing course of policy argue in favour of such expectation.

Rising global welfare suggests that *household* saving will remain abundant – a trend that may even be reinforced on account of the progressively unequal income distribution and the likely persisting uncertainty. Not only growing global risks, but also the retrenchment of social benefits and the fragility of retirement finances add to such uncertainty. Another reason to expect a further increase in excess saving may be a potential scarcity of investment options, since the high *private household* savings may face limited demand for credit. Many *corporations* in recent times did not even invest their profits and cut their debt levels; an early turnaround in favour of an appropriate balance between private saving and investment is not likely. With trend economic growth expected at 2 percent or lower, the capacity effect of replacement investment will suffice²⁹, and technological progress steadily reduces the prices for investment goods (*International Monetary Fund*, 2014, *Eichengreen*, 2015); moreover, as a consequence of financialisation in general and tighter regulation in particular (notably higher equity requirements), the financial industry may be less inclined to provide corporate financing.

Financing demand on the part of almost all *governments* is likely to recede even more: the latter want to or must cut remaining deficits rather sooner than later, thus rely on own financing for their investments; some even plan to trim debt levels in absolute terms. Indebtedness has nowadays earned a bad reputation generally. In the current perception, the negative aspect of burdening future generations outweighs the benefit of financing forward-looking investment: the lower the debt of households, companies and government authorities, the better – a strange perception by policy

In view of the worldwide economic welfare, the combination of excess saving, low interest rates and slackening financing requirements is set to persist.

²⁶ In the industrialised economies, the "neutral real rate" fell from about 4 percent (1971) to ½ percent (2016) or even –1 percent, when abstracting from the contribution of public debt.

²⁷ While this is in line with life cycle theory (*Modigliani – Brumberg*, 1954), the corresponding liquidation of savings in old age has not been observed so far (*Jappelli – Modigliani*, 1998, *Fessler – Schürz*, 2017, p. 21). The rising demand for nursing care services in an ageing society may give rise to higher liquidation of savings, although this may partly or entirely be compensated by higher build-up of reserves.

²⁸ Especially in Germany, where the savings surplus is particularly high (8 percent of GDP), the problem is neglected and the authorities see no need for action: "we expect a gradual normalisation of interest rates" (Finance Minister Scholz on the occasion of the submission of the draft federal budget for 2019: <https://ch.marketscreener.com/boerse-nachrichten/Scholz-erwartet-allmahliche-Normalisierung-der-Zinsen-in-Euro-Zone--26886269/>). Austrian Chancellor Kurz claimed: "Debt accumulation is the most unsocial thing that a state can do" (*Die Presse*, 24 April 2019).

²⁹ For the rather limited physical capital formation, firms should not need foreign financing, while the more important technological innovations usually do not rely on external financing and are, in the era of digitalisation, rather knowledge-based than capital-intensive.

and the public, because impossible for simple arithmetic reasons in the light of unabatedly high saving.

Regardless of the logical inconsistency of the call for a *general* reduction of debt at unchanged saving activity: since monetary capital and aggregate debt must of necessity be equal *ex post*, a lasting surplus of savings is problematic for four reasons: first, in such constellation, the population foregoes the return on its efforts, by working for beneficiaries "abroad"; second, excess savings in part of countries forces savings deficits in others, a problematic situation in the longer run; third, permanent excess saving significantly narrows the scope of action of monetary policy ("lower bound"); and fourth, it triggers a vicious circle towards recession via the savings paradox popularised, though not invented, by Keynes: high savings mean lower consumption, hence less need for investment, credit and debt. Koo (2011) as well as *El-Erian* (2019) refer to the example of Japan that has been caught in such trap for the last three decades.

The current unintended (exacted by export countries' current account surpluses) "solution" of shifting national excess savings abroad is not without problems, since the domestic economy foregoes forward-looking investment and consumption for the acquisition of foreign debt instruments that are by no means risk-free. A transfer of the savings surplus abroad is further problematic, as it necessarily creates (sustained) current account deficits in the target countries, as witnessed by the present problems in the USA³⁰. But even for the own country, this strategy is not sustainable since it requires sooner or later a revaluation of the domestic currency (or the euro), thereby depreciating (in real terms) the foreign assets.

The question thus arises how policy should deal with the presumably permanent savings surpluses. With a view to the *Japanese experience*, *El-Erian* (2019) recommends "a much broader mix of policies to address both the demand side and the supply side of the economy. . . . The strongest protection against japanification, then, is a combination of demand- and supply-side measures at the national, regional (in the case of Europe), and global levels. In countries with adequate fiscal space, this could mean looser government budgets and more productivity-enhancing investments (such as in infrastructure, education, and training)". This is, of course, a rather general proposition, where notably the contribution of structural policy towards reduction of the savings surplus remains unspecified. What would be the recommendations for the EU, and in particular for Germany and Austria?

In principle, policy could, in the vein of conventional demand management, stimulate foreign-financed investment or discourage private saving. As general and straightforward policy approach, however, both options are deemed unrealistic. As the strategy of Quantitative Easing has shown, externally-financed investment can barely be raised even via extremely low interest rates; and efforts to reduce saving, if promising at all, would be dubious from a political perspective, since own financial arrangements should remain an important element of each individual's precautionary strategy.

The lack of general and straightforward solutions obliges the authorities to look for indirect and more sophisticated instruments. What comes to mind in the first place is a *more expansionary macro-policy*; however, implementation is difficult insofar as fiscal policy is currently constrained by deficit and debt rules, while monetary policy is hitting against the Lower Bound and wage policy is largely withdrawn from government intervention. Nevertheless, this does not mean that such instruments would necessarily be impracticable: fiscal rules could be modified (see below), and monetary policy has meanwhile developed a number of additional tools (see e.g. *Yellen*, 2018).

A second strategy may address the issue from the *redistribution* side: higher taxation of wealth, directly or via an inheritance tax, may dampen monetary capital formation without compromising individual precautionary provisions. Problems arise, however, from the fact that higher capital taxation would not leave investment unaffected,

The situation of sustained excess saving appears problematic.

At present, the surplus savings are being transferred abroad.

The problem can be mitigated by means of expansionary policy, redistribution, reduction of uncertainty or reform of the financial system.

³⁰ US policy of the current administration, however, attributes the problem entirely to import pressure and overlooks the domestic shortage of savings.

while higher taxation, if confined to monetary capital, may be critical and encourage investment abroad.

As a third option, focussing on the *reduction of uncertainty* may make a non-negligible contribution that would not only provide incentives for higher investment, but also dampen precautionary saving. While global political uncertainty cannot be removed, domestic uncertainty can indeed be importantly averted, namely via stability-oriented and predictable economic and social policies, adequate income risk insurance and credible retirement provisions³¹.

Reforms of the financing system may contribute towards *reducing potential instability caused by mass saving*, although not to lower excess saving as such:

- First, the financial industry ought to return to its original task of financing investment; a financial transaction tax may contribute to this end, as well as tighter regulation of shadow banks.
- Second, one may try to shorten existing *intermediation chains*. An approach in this direction would be to oblige lenders to assume a substantial part of credit risks on their own account.
- Third, one may try to *reduce intermediation*, by shifting part of aggregate saving from bank deposits towards shares, bonds, or asset funds. While savers would thereby be constrained in terms of security and liquidity of their deposits, actual losses should *de facto* prove small: in the past, both security and liquidity of deposits have been overestimated, as losses from zero-interest rates and from systemic instability had to be borne by the savers themselves as taxpayers.

In any case, a shift towards direct financing will not occur without accompanying policy measures. Apart from the abolition of counter-productive tax advantages granted to corporate foreign financing (tax deductibility of interest payments), liquidity of capital market instruments ought to be enhanced, transaction cost of direct financing (issuing and deposit fees) be cut, or ways be found to lower the currently high cost of intermediation via the financing industry (issue, sale, portfolio management)³².

None of these measures will by itself do away with the savings surplus; nevertheless, as an integrated "package", the measures may indeed prove successful. Whether it will suffice to remove the surplus and the potential instability inherent in intermediation is doubtful. If not, and in the event of the "savings paradox" adding to forces of recession, the fiscal rules in their present form should be up for review. Although for a number of countries it should indeed be appropriate to reduce government debt, stipulating a "zero deficit" as *general* objective in times of excess saving would be counter-productive. As *Blanchard* (2019) shows, additional government spending is self-financing in a context where risk-adjusted interest rates are below the rate of growth. Moreover, it is difficult to see why the government should be required to finance investment benefiting future generations out of current tax revenue ("golden rule" of public finance). In this respect, a fiscal rule that limits indebtedness to a certain fraction of investment spending would not only be fair, but could contribute importantly towards liquidating the monetary capital surplus.

It would be meaningful to replace the government debt brake by the "golden rule".

7. References

- Bergier, J.F., "The industrial bourgeoisie and the rise of the working class", in *Cipolla* (1973), pp. 397-451.
- Bernanke, B.S., Global imbalances: Recent developments and prospects, Federal Reserve, Washington D.C., 2007, <https://www.federalreserve.gov/newsevents/speech/bernanke20070911a.htm>.
- Bernanke, B.S., et al., "International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007", Board of Governors of the Federal Reserve System, International Finance Discussion Papers, 2011, (1014).

³¹ A deficient social safety net and high education cost are main reasons for the high savings ratio in China. Often exaggerated concerns about the financing capacity of future retirement benefit claims may add to precautionary saving in Germany and Austria.

³² See for example the poorly-publicised possibility to directly acquire Federal treasury bills.

- Bernanke, B.S., Gertler, M., "Inside the Black Box: The Credit Channel of Monetary Policy Transmission", *Journal of Economic Perspectives*, 1995, 9(4), pp. 27-48.
- Blanchard, O., "Public Debt and Low Interest Rates", *American Economic Review*, 2019, 109(4), pp. 1197-1229.
- Boeckx, J., Dossche, M., Peersman, G., "Effectiveness and Transmission of the ECB's Balance Sheet Policies", *International Journal of Central Banking*, 2017, 13(1), pp. 297-333.
- Borchardt, K., "Zur Frage des Kapitalmangels in der ersten Hälfte des 19. Jahrhunderts in Deutschland", *Jahrbücher für Nationalökonomie und Statistik*, 1961, 173, pp. 401-421.
- Breuss, F., "The United States-Euro Area Growth Gap Puzzle", WIFO Working Papers, 2017, (541), <https://www.wifo.ac.at/wwa/pubid/60596>.
- Butschek, F., *Statistische Reihen zur österreichischen Wirtschaftsgeschichte*, WIFO, Wien, 1999, <https://www.wifo.ac.at/wwa/pubid/8206>.
- Butschek, F., *Österreichische Wirtschaftsgeschichte. Von der Antike bis zur Gegenwart*, Böhlau, Wien, 2011.
- Caballero, R.J., Farhi, E., "The safety trap", NBER Working Papers, 2014, (19927).
- Chen, H., Cúrdia, V., Ferrero, A., "The macroeconomic effects of large-scale asset purchase programs", *Federal Reserve Bank of New York Staff Reports*, 2011, (527).
- Cipolla, C.M. (Eds.), *The Fontana economic history of Europe. Volume 3: The industrial revolution*, Fontana/Collins, Glasgow, 1973.
- Constâncio, V., "The challenge of low real interest rates for monetary policy", Vortrag an der Utrecht School of Economics, 15 June 2016.
- Cúrdia, V., Woodford, M., "The central-bank balance sheet as an instrument of monetary policy", *Journal of Monetary Economics*, 2011, 58(1), pp. 54-79, <https://ideas.repec.org/s/eee/moneco.html>.
- Demiralp, S., Eisenschmidt, J., Vlassopoulos, T., "Negative interest rates, excess liquidity and bank business models: Banks' reaction to unconventional monetary policy in the euro area", *Koç University, Tüsiad Economic Research Forum, Working Paper Series*, 2017, (1708), <https://www.econstor.eu/bitstream/10419/166748/1/884609243.pdf>.
- De Santis, R.A., "Impact of the asset purchase programme on euro area government bond yields using market news", *EZB Working Papers*, 2016, (1939).
- Dore, R., "Financialization of the global economy", *Industrial and Corporate Change*, 2008, 17(6), pp. 1097-1112.
- Draghi, M., *The International Dimension of Monetary Policy*, Rede anlässlich des ECB Forum on Central Banking, Sintra, 28. Juni 2016.
- Eichengreen, B., "Secular Stagnation: The long view", *American Economic Review*, 2015, 105(5), pp. 66-70.
- Eigner, P., Wagner, M., Weigel, A., "Finanzplatz: Wien als Geld- und Kapitalmarkt", in Chaloupek, G., Eigner, P., Wagner, M. (Eds.), *Wirtschaftsgeschichte 1740-1938. Teil 2: Dienstleistungen, Jugend und Volk*, Vienna, 1991, pp. 911-997.
- El-Erian, M.A., "How Western economies can avoid the Japan trap", *Project Syndicate*, 2019, <https://www.neweurope.eu/article/how-western-economies-can-avoid-the-japan-trap> (abgerufen am 20. April 2019).
- Engelmann, B., *Krupp. Legenden und Wirklichkeit*, dtv, Munich, 1970.
- Erste österreichische Spar-Casse, *Festschrift: Wien, am Graben 21. 150 Jahre Erste Österreichische Spar-Casse – 150 Jahre österreichische Geschichte*, Vienna, 1969.
- Farhi, E., Gourié, F., "Accounting for macro-finance trends: Market power, intangibles, and risk premia", *Federal Reserve Bank of Chicago, Working Paper Series*, 2018, (WP-2018-19), <https://ideas.repec.org/p/fip/fedhwp/wp-2018-19.html>.
- Fessler, P., Lindner, P., Schürz, M., *Eurosystem household finance and consumption survey 2017: First results for Austria*, OeNB, Vienna, 2019.
- Fessler, P., Schürz, M., "Zur Verteilung der Sparquoten in Österreich", *Monetary Policy & the Economy*, 2017, (3), pp. 13-33, <https://ideas.repec.org/s/onb/oenbmp.html>.
- Fritz, H., "Geschichte", in *Hauptverband der österreichischen Sparkassen (Eds.), 150 Jahre Sparkassen in Österreich. Band 1: Geschichte*, Sparkassenverlag, Vienna, 1972, pp. 1-96.
- Gerschenkron, A., "Economic backwardness in historical perspective", in *Gerschenkron, A., Economic Backwardness in Historical Perspective: A Book of Essays*, Belknap Press of Harvard University Press, Cambridge, MA, 1951.
- Gille, B., "Banking and industrialisation in Europe. 1730-1914", in *Cipolla (1973)*, pp. 255-300.
- Hertz-Eichenrode, A., *Süßes Kreditgift: die Geschichte der Unternehmensfinanzierung in Deutschland*, Frankfurt, 2004.
- International Monetary Fund, "Perspectives on global real interest rates", *World Economic Outlook*, 2014, (April).
- Jappelli, T., Modigliani, F., "The age-saving profile and the life-cycle hypothesis", in Klein, L.R. (Eds.), *Long-run Growth and Short-run Stabilization: Essays in Memory of Albert Ando. Chapter 2*, Edward Elgar, Cheltenham, 1998, <https://www.elgaronline.com/view/1843766434.00002.xml>.
- Jordà, Ò., Schularick, M., Taylor, A. M., "Macrofinancial history and the new business cycle facts", in *Eichenbaum, M., Parker, J.A. (Eds.), NBER Macroeconomics Annual 2016*, University of Chicago Press, Chicago, 2017, pp. 213-263.
- Keynes, J.M., *The General Theory of Employment, Interest and Money*, Palgrave Macmillan, London, 1936.
- Koo, R.C., "The world in balance sheet recession: causes, cure, and politics", *Real-World Economics Review*, 2011, (58), <http://www.paecon.net/PAERreview/issue58/Koo58.pdf>.

- Lisack, N., Sajedi, R., Thwaites, G., "Demographic trends and the real interest rate", Bank of England Working Paper, 2017, (701).
- Lukasz, R., Summers, L.H., "On falling neutral real rates, fiscal policy, and the risk of secular stagnation", Brookings Papers of Economic Activity, Conference Drafts, March 7-8, 2019, <https://www.brookings.edu/bpea-articles/on-falling-neutral-real-rates-fiscal-policy-and-the-risk-of-secular-stagnation/> (downloaded on 5 May 2019).
- März, E., Österreichische Industrie- und Bankgeschichte in der Zeit Josephs I. am Beispiel der k. k. priv. Österreichischen Credit-Anstalt für Handel und Gewerbe, Europa Verlag, Vienna, 1968.
- März, E., Socher, K., "Währung und Banken in Cisleithanien", in Brusatti, A. (Eds.), Die Habsburgermonarchie 1848-1919. Band 1: Die wirtschaftliche Entwicklung, Österreichische Akademie der Wissenschaften, Vienna, 1973, pp. 323-368.
- Minichthon, W., "Patterns of demand 1750-1914", in *Cipolla* (1973), pp. 77-186.
- Modigliani, F., Brumberg, R.H., "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data", in Kurihara, K.K. (Eds.), Post-Keynesian Economics, Rutgers University Press, New Brunswick, 1954, pp. 388-436.
- Pierenkämper, T., "Zur Finanzierung von industriellen Unternehmensgründungen im 19. Jahrhundert, mit einigen Bemerkungen über die Bedeutung der Familie", in Petzina, D. (Eds.), Zur Geschichte der Unternehmensfinanzierung, Duncker & Humblot, Berlin, 1990, pp. 69-97.
- Piketty, T., *Capital in the Twenty-First Century*, Belknap, Cambridge, MA-London, 2017.
- Pohl, H., Die rheinischen Sparkassen: Entwicklung und Bedeutung für Wirtschaft und Gesellschaft von den Anfängen bis 1990, Franz Steiner Verlag, Stuttgart, 2001.
- Rudolph, R.L., *Banking and industrialization in Austria-Hungary*, Cambridge University Press, 1976.
- Scheriau, W., Gallhuber, P., "Statistik", in Hauptverband der österreichischen Sparkassen (Eds.), 150 Jahre Sparkassen in Österreich. Band 3: Statistik, Vienna, 1969.
- Schulz, G., "Der konnte freilich ganz anders sparen als ich. Untersuchungen zum Sparverhalten industrieller Arbeiter im 19. Jahrhundert", in Conze, W., Engelhardt, U. (Eds.), Arbeiterexistenz im 19. Jahrhundert, Stuttgart, 1981, pp. 487-515.
- Seidel, H., Österreichs Wirtschaft und Wirtschaftspolitik nach dem Zweiten Weltkrieg, Manz, Vienna, 2005, <https://www.wifo.ac.at/www/pubid/25482>.
- Seidel, H., Wirtschaft und Wirtschaftspolitik in der Kreisky-Ära, Böhlau, Vienna, 2017, <https://www.wifo.ac.at/www/pubid/60441>.
- Styhre, A., *Corporate Governance, The Firm and Investor Capitalism*, Edward Elgar, Cheltenham, 2016, <https://ideas.repec.org/b/elg/eebook/16918.html>.
- Tichy, G. (1977A), "Drei Phasen des Strukturwandels im österreichischen Kreditapparat", Österreichisches Bankarchiv, 1977, 25(VIII), pp. 307-319.
- Tichy, G. (1977B), "Zu einigen wichtigen Strukturmerkmalen des österreichischen Kreditapparats", Österreichisches Bankarchiv, 1977, 25(IX), pp. 322-340.
- Tichy, G., "Bankregulierung und Eigenkapitalbildung", Quartalshefte der Girozentrale, 1983, 18(IV), pp. 35-60.
- Tichy, G., "Banken- und Staatsschuldenkrise: Ursachen, Folgen, Lösungsansätze", in Hilpold, P., Steinmair, W. (Eds.), Neue europäische Finanzarchitektur – Die Reform der WWU, Springer, Heidelberg, 2013, pp. 223-247.
- Tichy, G., "Vom Kapitalmangel zur Savings glut: Ein Phänomen der Wohlstandsgesellschaft?", in Hagemann, H., Kromphardt, J., Keynes, Schumpeter und die Zukunft der entwickelten kapitalistischen Volkswirtschaften, Metropolis, Marburg, 2017, pp. 33-68.
- Tichy, G. (2019A), "Niedrigzinsen: EZB-Politik oder ökonomisches Gesetz?", Wirtschaftsdienst, 2019, 99(3), pp. 203-220, <https://archiv.wirtschaftsdienst.eu/jahr/2019/3/>.
- Tichy, G. (2019B), "Die europäische Schuldenaversion", *Wirtschaft und Gesellschaft*, 2019, 45(1), pp. 67-87.
- Urbschat, F., Watzka, S., "Quantitative Easing in the Euro Area", Munich Discussion Paper, 2017, (2017-10).
- Weizsäcker, C.C. (2010A), "Das Janusgesicht der Staatsschulden", FAZ, 4 June 2010, pp. 12.
- Weizsäcker, C.C. (2010B), Ergänzung zu meinem FAZ Aufsatz vom 4. Juni 2010 (für Fach-Ökonomen), 2010.
- Wilke, F., *Sparen für unsichere Zeiten*, Springer, Wiesbaden, 2016.
- Yellen, J.L., Comments on monetary policy at the effective lower bound, The Brookings Institution, Washington D.C., 2018, <https://www.brookings.edu/blog/up-front/2018/09/14/comments-on-monetary-policy-at-the-effective-lower-bound/>.