

The Impact of the Financial Crisis of 2008 on Austria and its Economy

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Abstract:

This paper examines the extent of the impact of the financial crisis of 2008 on Austria and its economy. This is done by analyzing economic indicators of a recession in Austria using the United States as a reference point. The comparison is done through macroeconomic effects including GDP growth rate and net trade balance, Austrian banks' leverage ratios and interest rates on loans, non-bank Austrian firms' return on stock and co-movements with the US market, and effects on individuals through change in the unemployment rate and household investments. Rinde concludes that Austria experienced a brief recession lasting close to two years.

The financial crisis of 2008 was not isolated to just the United States. Its effects rippled throughout the world, provoked massive reform, and altered public perceptions of investing. Interest rates were significantly lowered, not only by the Federal Reserve to combat the increasing number of people defaulting on their mortgages, but also by the European Central Bank. This was not only a great recession for the US, but also a turning point in the outlook of future economic prosperity¹.

To briefly summarize the impact on the US, the crisis shed light on the relationships between businesses, banks, government, and individuals. The crisis was caused by the creation of a subprime mortgage market²; a direct result of banks approving mortgages to people that were unlikely to be able to pay back their loans. These loans were packaged together by banks with other assets, and sold as securities to different entities that were hoping to make money by investing in them. Major US investment banks along with other major US businesses filed for default. New groups were formed along with existing entities to investigate the causes of the crisis including the Financial Stability Forum, the Center for Financial Studies, the International Monetary Fund, the Group of Thirty, and the Financial Crisis Inquiry Commission. The latter concluded that the crisis could have been prevented with fewer risky investments, stopping lobbying for looser regulation in the financial sector, or even revoking each US firm's

right to choose its own auditor. Once the severity of the housing crash surfaced, the US had the option to either use taxes to help provide for its citizens with public assistance, or help prevent large firms from defaulting. The US chose to assist the large defaulting firms.

If the scope of the impact was known before it happened, investors would have behaved differently. Before 2008, many internationally traded derivatives included bets on the housing market in the US; these derivatives were attractive to investors because they believed that they would later be more profitable, and could sell them at a higher price than they purchased them for. A global credit freeze followed the collapse of Lehman Brothers investment bank in September 2008 since lenders no longer trusted borrowers to return their funds (Ciro 42). Lehman Brothers collapsed because it invested heavily in the subprime mortgage market. When the housing bubble burst, it did not have the equity to pay off its debt. Firms were forced to cut their expenses in a number of ways in order to prevent default; this included laying off employees, causing both structural and frictional unemployment. In addition to the loss of jobs, close to eight and a half million US citizens had their homes foreclosed on, or were in the process of foreclosure (Financial Crisis Inquiry Commission). It is clear that the financial crisis of 2008 greatly affected the United States, however with a growth in globalization and international financial trade, the question

1 Broadly defined, a recession is an extended decrease in economic activity. The Bureau of Economic Analysis (BEA) says that a recession is often defined as two consecutive quarters of negative GDP growth. However, to be more accurate, BEA consults the National Bureau of Economic Research (NBER), a private non-profit research organization, that uses monthly indicators such as GDP growth, employment, real income, industrial production, and wholesale-retail sales to retroactively conclude when a recession has occurred (The NBER's Recession Dating Procedure).

2 The subprime mortgage market is a market that gives loans to people with low credit scores to buy houses.

stands to what extent other countries felt the impact of the recession. For those interested in the German speaking world, the goal of this paper is to provide that answer for one of the smaller, lesser referenced countries, Austria.

I have chosen to examine Austria for a number of reasons. Being a student of German studies, learning about the connections that the US has with Germany, and having studied abroad in both Germany and Austria made me curious about the connections that Austria has with the US. Noticing the lack of analyses on Austria, I wanted to shed light on this relationship and add research to the public knowledge. In an effort to make a wider selection of topics available to people in the humanities, I wanted to make a comprehensive assessment on the economic effects that globalization has had on Austria. Since there is more data available for the 2008 financial crisis than there is for that in 1929, in addition to increased globalization, researching the impact from 2008 makes the context of negative effects on interconnected markets ever more interesting and pertinent to both discourse in the humanities and business. I am choosing to only examine the years 2007 to 2011 because the following years start to include effects of the refugee crisis which skew a number of Austria's statistics. Additionally, these years are debatably the most critical since the realization of the recession in the US began in early 2008. Efforts to combat the effects began right away at this point.

To examine the extent of the impact at all levels that the financial crisis of 2008 had on Austria and its economy, this paper will research four aspects of society 1) through macroeconomic indicators including growth in GDP per capita, net trade balance, and changes in tourism, 2) through Austrian credit institutions' leverage ratios, the changes in interest rates on loans, and in regulation, 3) through Austrian firms' return on stock and co-movements with the US market, and 4) through the effects on Austria's citizens measured by the employment rate, unemployment rate, and changes in household investments. The United States will be used as a basis for this comparison as it was the epicenter of the crisis.

1. Macroeconomic Effects

This section compares the macroeconomic effects of the financial crisis on Austria by examining the annual GDP growth rate and the net trade balance with the US. Austria's statistics are compared with those in the US since it was the center of the financial crisis and the most affected. To close, I will examine the annual changes in tourism for nonresident overnight stays within Austria and the changes in real output in travel accommodation in the US.

This is being examined as an indicator of changes in income for the country.

a) Annual GDP growth rate

One way to compare economies and countries on a macroeconomic scale is by observing their annual growth in GDP per capita. Having a positive growth rate shows that a country is able to increase its production of goods from the previous year, which signals good economic standing. If a country was in worse economic standing with regards to the previous year, then it would, in theory, not invest its resources in producing more goods, but in social programs for its public, or in the case of the United States, in bailing out large entities to keep them from failing. The GDP growth rate began to fall in both Austria and in the US in 2008; both reached a negative value in the following year (Figure 1). Despite this, Austria's GDP growth rate per capita recovered close to its pre-financial crisis rate by 2011 (The World Bank Group). This suggests that Austria was able to quickly return to its growth in production following the crisis, despite having reached a point lower than that of the US in 2009. The US GDP annual growth rate continued to fall after 2010, but still remained positive. It is important to note that if you look at data following these years, the GDP annual growth rate falls significantly in both the Euro area and Austria, but fluctuates around one percent in the US (The World Bank Group). This drastic dip in GDP annual growth could be caused by the Euro crisis or an additional aftereffect following the financial crisis (Timeline).

b) Net trade balance on goods and services

Another indicator of economic prosperity is net trade balance. Exporting more than importing indicates that a country is earning a net income and not a net loss. In addition to Austria's recovered GDP growth rate that is described above, Austria's net trade of goods and services remained positive during the financial crisis. In spite of this, Austria's net trade balance fell from around \$16,900 million in 2008 to almost half of that value, \$8,700 million in 2009 (OECD Data). In both 2010 and 2011, Austria's net balance increased to around \$13,000 million. Although this is not the original amount, one can conclude that Austria was able to increase its production of goods and services following a dip in the peak of the recession in 2009 while making money from its exports; these offer a basis for a higher standard of living. In comparison, the US imported \$779,242 million more than it exported in 2007, and decreased its annual trade deficit to \$442,764 million in 2009. However, it continued to import even more than

it exported in the years following 2009 (OECD Data).

If Austria were strongly affected by the financial crisis, one would see a prolonged staggering GDP growth, or in an extreme case, an increase in the demand for imports since this would show that Austria is no longer able to produce enough goods to counter the amount that it needs to purchase. Additionally, Austria has continued to have a positive net trade balance in recent years showing that the United States financial crisis did not have a lasting impact on Austria's ability to produce, sell, and provide goods and services.

c) Annual changes in nonresident tourism in Austria and changes in travel accommodations' real output in the US

Changes in tourism represent inflows of cash that help support the Austrian economy. Tourism is a potential sign of visitor spending; increases in tourism are typically signs of increased revenue for the country and its businesses. Measuring only the number of nonresidents that enter and leave the country does not implicitly mean that Austrian businesses received any increase in revenue. The amount of nonresident overnight stays implies that tourists stayed at an inn, or hotel. Therefore, this change is a direct measure of potential inflows of revenue for Austrian businesses. Nonresident overnight stays in Austria increased by five percent from the previous year in 2008. In 2009, this amount decreased by just over three percent resulting in a net difference of 2.98 million tourists not coming to stay a night in Austria. The following year continued with another decrease in overnight stays; 2011 showed almost a one percent increase (Tourism).

To find a similar type of data to compare with the numbers of overnight stays, I focused on US tourists' spending for travel accommodations. This is comparable and relevant since tourists will choose a cheaper option if they are affected by the financial crisis, or choose to not travel altogether. Both choices result in a decrease in spending. The US experienced a decrease in real output from travel accommodations starting in 2009 after slowed growth from 2007 to 2008. The decrease from 2008 to 2009 accounts for a drop in consumers' spending of 9,095 million dollars (Zemanek 20). Both countries experienced drops in tourism and the income that comes from tourism.

The decrease in 2009 affects Austria's economy in a multitude of ways. An increase of 4.4 million tourists one year might force businesses to change their plans for the following years and encourage them to prepare for another surge of tourists. By doing this, they might hire extra employees, or preemptively purchase extra supplies

for the expected surplus of guests. The negative effect of having a large decrease following a sharp increase in tourism that is followed by two more stagnant years can cause business to reevaluate their expenses and potentially layoff recently hired employees. If the extra inventory purchased is perishable, then a prolonged decrease in tourism can result in a loss in income.

2) Effects on Austrian Banks

In this section, I explore the impact of the crisis on Austrian banks with reference to their leverage ratios and interest rates. First, I discuss the scope of the financial crisis in the US and the change in banking regulation. I then give examples of the leverage ratios that Austrian banks: Raiffeisen Bankengruppe, Erste Group Bank, and UniCredit Bank Austria had during the peak of the crisis. Next, I offer a comparison between changes in interest rates that the central banks in the US and EU set for commercial banks and credit institutions. This section concludes with a comparison between three-month interest rates in the US and EU to examine the central banks' demand for short-term investment.

a) Leverage ratio

After the financial crisis, it was discovered that many investment banks had significant, risky positions. In the case of the US government-sponsored enterprises, Fannie Mae, also known as the Federal National Mortgage Association, and Freddie Mac, also known as the Federal Home Loan Mortgage Corporation, their combined leverage ratio showed that for every 75 dollars in assets, there was one dollar of equity to cover its losses (Financial Crisis Inquiry Commission).

In order to discourage this sort of default risk in banks, the Basel Committee on Banking Supervision strengthened Basel II regulations in July 2009. Basel II originally said that firms that worked internationally were required to have a capital ratio of no lower than eight percent (Bank for International Settlements). This means that the amount of capital assets to risky assets that a bank is allowed to carry is allowed to be no less than eight percent of its total capital assets that are defined by the national bank, in this case, OeNB. The committee strengthened this further in Basel III by the end of 2010. It required that banks still have a capital ratio of no less than eight percent, but the weights for external assets were increased (Bank for International Settlements 12).

The top three banks/lenders to Austria in terms of total assets are Raiffeisen Bankengruppe, Erste Group Bank, and UniCredit Bank Austria (BMI Research).

Although UniCredit Bank Austria was acquired by an Italian company in 2005, it remains a top lender to Austrians and Austrian firms (BMI Research). The historical leverage ratios of these three banks reveal that debt made up more than 90 percent of their funding from 2007 to 2011 and peaked at 2008 in all three.

Raiffeisen Bankengruppe and UniCredit Bank Austria had leverage ratios around 19 euros in assets for every one euro in capital³. Erste Group Bank carried a similar amount of risk with just over 17 euros in assets for every one euro in capital to cover its losses. Even after exchange rate conversions, the size of these banks' leverages are only a fraction of those made by US investment banks before the housing bubble burst. This shows that even though they were not as ambitious as those in the US, the banks in Austria also took risky bets and increased their amount of debt. Although increasing debt can provide greater profit for a firm by acting as a tax shield, it also devalues equity in the case of default. Equity loses value in default as a result of firms being required to first pay back debt holders before they pay their shareholders; if there is money left for shareholders they will typically receive less than they paid for.

b) Interest rates on commercial banks

Interest rates on loans affect not only banks and businesses, but individuals as well. Before a recession, interest rates will increase. National banks will respond by switching to expansionary policy by decreasing the borrowing rates in order to make getting loans cheaper for borrowers, and ultimately increase the demand for investment in projects that improve infrastructure and spur economic growth. This encourages its citizens and businesses to take on loans, and circulate more money in its economy. Continuing with this cycle, once investment in the economy increases and the demand for loans is too high, then the national bank will try to regulate the demand by reversing its original action, and increase the borrowing rate to discourage people and entities from applying for loans.

The European Central Bank was still in the process of increasing its interest rate for commercial banks to 5.25% in 2008 while the Federal Reserve had already dropped its rate from 4% to 2.25% (Figure 2).⁴ The Euro area interest rate only fell to 1.75% in April 2009 while the US interest rate hit its lowest point a few months ear-

lier in December 2008 at 0.5% (International Monetary Fund). The interest rate changes show a delay in the Euro zone's reaction to combat changes in the United States that were affecting its own markets, but suggests that the European Union was not as affected by the events in the United States as the US itself was. This in turn means the same for Austria because it is a part of the EU.

Changes in the three-month interest rate can show the change in demand for short-term financing needed by the national bank. In the case of the Euro area, the average three-month interest rate peaked in 2008 at 4.63% and fell to 0.81% in 2010. By 2011, the average three-month interest rate returned to 1.39%, although it has continued to fall and is now negative today (Three-month interest). In comparison, the US peaked in 2007 with an average three-month interest rate at 5.30% and dropped to 0.34% by 2011, however, it has increased to over one percent (Three-month interest). For Austria and the Euro area this means that the European Central Bank wanted to encourage its citizens to make more short-term investments to boost the economy in 2010.

3) Effects on Non-Bank Austrian Firms

In this section, I explore the impact of the financial crisis on Austrian firms, excluding banks, using Telekom Austria AG, OMV AG, and Voestalpine AG as examples. First, I compare these companies' return on stock with that of the S&P 500 stock index. Additionally, I compare the stock index for Austria with that of the S&P 500 stock index. I then compare potential external and indirect factors that could have contributed to negative returns in the individual companies. This is done to put the data in context and to rule out potential misinterpretations. External factors exclude the financial crisis. Internal factors are being defined as the strategic decisions made by the company.

a) Return on stock

Stock prices indicate what traders and shareholders expect the value of a firm to be worth. The changes in actual returns on stock price show the sometimes drastically changing traders' perception of the future value of the firm. A negative return suggests that traders think that the firm will not be as profitable in the future as it was before. During the financial crisis, investors began to lose trust in financial markets and many of them liquidated

³ The data on leverage ratios was taken from annual reports from each of the firms. In the interest of time, capital ratios have not been calculated since they use a risk-adjusted weight on each individual asset as defined by Basel II for years 2007 to 2009 and Basel III for years 2010 to 2011.

⁴ The data provided for the US interest rate is given monthly while the Euro area is given quarterly. Nevertheless, this does not affect the overall trend.

their investments. The decrease in demand for US stocks was reflected in the stock prices and resulted in investors losing money as a result of having to sell their stocks for cash.

The following analysis combines data from the Wiener Börse for the historical stock prices from the Austrian companies: Telekom Austria AG, OMV AG, and Voestalpine AG as well as Yahoo Finance for both the S&P 500 stock index and for the Austrian stock index. When compiling the data, a number of points were missing from the Austrian companies, however I found that all of these points accounted for Austrian holidays when stocks were not traded on the Vienna Stock Exchange and therefore stock prices were not recorded for them. These days were subtracted from the S&P 500 stock index to allow for an equal analysis. Additionally, the daily returns on the stocks were calculated and then averaged monthly. The correlations were calculated using each stock's covariance with the S&P 500 and both standard deviations.

My analysis uses the S&P 500 to measure the overall state of US firms since it is an index that follows an averaged stock price of 500 large market capitalization companies. Small market capitalization stocks are riskier than large capitalization stocks, so using the returns on the three largest Austrian companies traded on the Vienna Stock Exchange (excluding banks) provides a comparable base for evaluating how the profitability of Austrian firms changed during the financial crisis. Figure 3 shows the monthly average return for three Austrian company stocks: Telekom Austria AG, OMV AG, and Voestalpine AG along with the return on the S&P 500 from November 2007 to October 2011. Additionally, these companies were chosen for the reason that they produce commodities used for infrastructure, including steel, oil and gas, and fixed-line, data and multimedia services respectively. If the Austrian economy was not doing well, then investors would also believe that the firms that support Austria's infrastructure would in turn also show a decrease in returns. This would therefore happen if stockholders believed that the financial crisis affected the Austrian economy.

Figure 3 shows a positive correlation between the returns on the S&P 500 and Austrian stocks. I calculated each firm's actual correlation to the market between 2007 and 2011⁵ Table 1 shows that Telekom Austria AG has the lowest correlation with the S&P 500 at 0.5319, OMV AG follows with a correlation of 0.7661, and finally Voestalpine AG has an almost perfect correlation at 0.9003

which says that for every one percent change in the S&P 500, these companies move by a fraction of that which is given by the correlation value. The Austrian stock index shows an overall correlation of 0.8718; this suggests that the changes in Austrian firms' returns moved relatively closely with US returns during the time of the financial crisis. Figure 4 compares the Austrian stock index with the S&P 500 stock index to give a more generalized view of how Austrian businesses were affected.

b) Corporate leverage ratios were not as risky as those in the US

The leverage ratios for these companies are included in this analysis as a way to compare non-bank Austrian firms with Austrian banks. During the financial crisis, none of the Austrian large-cap companies held positions as risky as those held by US investment banks. OMV AG held a leverage ratio just over one to one, Voestalpine AG increased its leverage ratio in 2008 and 2009 to just over two to one, but then decreased its position in following years. The exception to both of these is Telekom Austria AG that had a leverage ratio of two and a half to one in 2007 and after the financial crisis continued to increase to 7.4 to one in 2011.

c) Other explanations for negative returns during this time

Looking more closely at all three companies' actions can show the effects the financial crisis had on their strategic decisions. Voestalpine AG shows the greatest volatility and largest negative returns. One point in particular for March 2009 shows a drop in Voestalpine AG's stock price when the other stocks and the S&P 500 did not drop. The large dip in return in March 2009 could be explained by the acquisition of multiple firms. Voestalpine AG acquired multiple firms including Leading Edge Enterprises Inc., Bohler Welding Group Middle East FZE, BU Precision Strip Trading Co. Ltd., and Brueckmann GmbH (Mergent Online). Investors' perception of risk in these investments could account for the stock price of the purchasing firm to fall after announcing its intentions. This would then lead to a short-term decrease in the return on the stock. This drop could alternatively be the result of the company's international ties. Voestalpine AG exports steel to automobile manufacturers. During the financial crisis, it noticed a significant drop in orders which manifested as a 40 percent decrease in sales

5 Each correlation was calculated using the formula: $\beta = \sigma_{im} / (\sigma_m^2)$, where β represents the correlation, σ_{im} represents the covariance of the firm's return with the return on the S&P 500, and σ_m^2 represents the variance of S&P 500 returns.

revenue. As a response, Voestalpine AG cut its staffing hours by 15 percent which included decreasing workers' hours and laying off an additional 3,500 workers (Pratten 477).

At the end of 2009 OMV AG also acquired its large competitor, MOL, which can explain its drop in return in October 2009 (Cohen 274) (see Fig. 3). OMV AG provides oil and gas to Central Europe which explains why it was not as volatile as Voestalpine AG during this time; it did not have any direct major customers in the United States. However, the total number of employees dropped significantly by almost 35 percent from 41,243 in 2008 to 30,618 in 2011 (Annual Reports 2008 129) (Annual Report 2011 139). This shows that although OMV AG was working on expanding, it tried to cut costs by decreasing its workforce.

Telekom Austria AG's fluctuations in negative returns on stock could be a result of increasing competition in Europe's mobile phone market and not directly from the financial crisis. With an increase in mobile phone providers, fees charged to customers were pushed down (Classe 457). Contrary to this, 97 percent of Austrian households used Telekom Austria AG as their carrier for broadband packages including telephone, television, and internet services (Classe 456). These means that although Telekom monopolized the Austrian market for broadband services, its prices were still being pushed down to discourage competitors from trying to enter its geographically defined market. The fluctuations in stock return cannot assume to have been affected by the financial crisis. The one direct effect of the financial crisis is Telekom Austria AG's decision to withdraw its listing on the New York Stock Exchange in 2007 (Classe 456). This may not have had an effect on the stock price, but it did show that Austrian firms lost trust in US financial markets.

The closely moving average return on monthly stock prices of the three largest Austrian companies in terms of market capitalization with the S&P 500 can suggest a few different things. Either that the Austrian market is so closely linked to the US market, that investors believed that Austrian firms became less profitable when US firms did, or that investors noticed that the Austrian firms took similar risks that the US firms did. Either way, this still means that fewer investors wanted to invest in Austrian firms during this time.

4) Effects on Austria's Population

Finally, this section will explore the changes

manifested at the household level in Austria that directly have an impact on its citizens' lives and investment habits. These changes are discussed in both the employment rate and its composition as well as the unemployment rate. The composition of employment type becomes particularly relevant when comparing Austria with the United States. This is followed by a summary of the changes in the amount of household investment and type of investments. I then discuss the increase in the standard minimum deposit guarantee and how this can affect deposit habits. To close, I will share the percent changes in real car sales and repairs.

a) *Employment and unemployment rates*

As a result of the financial crisis, a number of firms defaulted, or laid off workers. Comparing the changes in employment in Austria with those in the US can directly show the effects of the crash on individuals in the population. Using the employment to population ratio makes the effects comparable between both countries, because they have significantly different population sizes. During the financial crisis, the employment to population ratio in the US dropped dramatically from 62 percent to just under 58 percent (The World Bank Group). This translates to more than 26 million people experiencing sudden frictional, or structural unemployment (Financial Crisis Inquiry Commission). However, as seen in Figure 5, the ratio of employment to population did not change as dramatically in Austria as it did in the US. One reason for this is that many Austrian workers were still employed, but had reduced hours and became part-time employees. The part-time employment rate increased by 2.6 percentage points between 2007 and 2011 to account for 257,844 people becoming part-time workers (Statistik Austria).⁶

In 2009 Austria's unemployment rate increased by 1.3% to 7.2%. Its number of registered unemployed persons increased by 22.6% from the previous year (AMS Österreich). In the two years leading up to 2009 and following it, there was a small decrease in unemployment. In comparison, in the US the unemployment rate skyrocketed from just over 4% to 10% and did not recover as quickly as Austria's did. The US stayed above 8% by the end of 2011 (U.S. Department of Treasury 5). Even though the financial crisis caused a surge of unemployment in 2009, Austria continued to have one of the lowest unemployment rates in the 27 EU countries following only Cyprus, Denmark, the Netherlands, and Lithuania

6 This data includes self-employed workers as well.

(AMS Österreich).

b) Changes in the amount and type of household investments

The change in savings deposits in banks can hint at depositors' certainty, or uncertainty in financial markets. At the household level, Austrians increased their savings from 2007 to 2008 which accounted for more than 74% of their total financial investments in bank deposits in 2008 (Financial Stability Report 17 149). This shows that Austrian depositors were uncertain in the future of financial markets at this time. If they were certain, then they would have invested in more long-term securities. However, the average Austrian household had 13.8% in risky assets in their financial portfolio (Financial Stability Report 17 59). Despite the losses in these securities as a result of the financial crisis, the overall effect on Austrian households was minor since most investors in securities were wealthy households; this translates to about three percent of households at the time of the crisis (Monetary Policy and the Economy 61). Total household investment decreased in the years following 2008. By 2011, net financial household investment had fallen to about half of what it used to be before the crisis in 2007; Austrian households invested a net total of 9.8 billion euros, but had earned a total of 468.7 billion euros (Financial Stability Report 23 28). Austrian households were more willing to invest before the crisis; higher income households were more willing to take on risk before the crisis. This drastic change in total investment shows that Austrians became increasingly uncertain with the future of financial markets.

c) Change in minimum standard deposit guarantee

Increases in deposit guarantees show the central bank's effort to support its citizens in a time of financial crisis. This also discourages depositors from withdrawing their deposits. In times of financial crisis, withdrawal can lead to greater overall loss as seen in the Great Depression. In response to the financial crisis in the US, the Federal Deposit Insurance Corporation (FDIC) temporarily increased the standard maximum insurance amount of \$100,000 to \$250,000 in October 2008 after Lehman Brothers crashed and was planned to revert the amount back at the end of 2010, however, the FDIC decided to extend the increased amount in May 2009 to the end of the year in 2013 (FDIC).

The Austrian government has a different type of deposit guarantee that requires that credit institutions guarantee a certain portion and that the government guarantees the remaining amount. Before 2008, the de-

posit guarantee was set at €20,000 for credit institutions and was increased to €50,000 at the end of 2009 when the EU changed its minimum requirement policy (The Monetary and Capital Markets Department). This means that any amount deposited above €50,000 and below €100,000 was guaranteed by the government.

Ultimately, the deposit guarantee for depositors did not change, but the amounts from those making that guarantee did. The Austrian Banking Act took effect in the beginning of 1994. This act included a deposit guarantee of €100,000 per depositor per credit institution which included the €20,000 guarantee from credit institutions (The Austrian Banking Act). Despite the increase in the EU's minimum deposit guarantee, because the deposit guarantee in Austria was not increased, we can conclude that the Austrian government was not explicitly trying to keep its depositors from withdrawing their savings. Instead the Austrian government was trying to discourage credit institutions' investments in risky securities. This suggests, that the Austrian government was not as affected by the financial crisis as the US and also that it was less affected than the EU.

d) Changes in real car sales

Real car sales show another form of household investment. These sales in Austria include ready to sell automobiles as well as repairs and maintenance done on those vehicles. Looking at car sales and repairs shows how willing Austrians are to invest in long-term machines. The data shows immediate growth following 2009 which is different from other similar data sets regarding consumer spending during the financial crisis. Retail trade excluding cars fluctuated between positive and negative years of growth (Trade sales). After a year of no change in real car sales in 2007, 2008 decreases by 0.8 percent followed by another decrease of 4.6 percent in 2009. Both 2010 and 2011 show growth above four percent and six percent respectively (Trade sales).

These percent changes in real car sales in 2008 and 2009 imply that Austrians may have wanted to wait to see if the recession in the US had greater effects in their country before buying a vehicle. The increases in both 2010 and 2011 were not a spontaneous decision by Austrians to purchase new vehicles. Instead, it was an offer by the Austrian government to trade in functioning cars that were over 13 years old for a credit to buy a new car and aid car dealers after their previous decrease in sales (Bundesministerium für Finanzen).

CONCLUSION

Austria was not unaffected by the 2008 financial crisis. Using the Bureau of Economic Analysis's definition of a recession,⁷, it can be concluded that Austria went through one. At the macroeconomic level, it saw a decrease in GDP growth at a rate similar to the US during the peak of the crisis in 2009, but was able to return to its pre-crisis growth rate in the years following. Austria's net trade balance stayed positive throughout the examined period, but still fell close to half the net balance it had in the previous year in 2009. In the following year, 2010, although its net trade balance did not return to its peak 2008 level, it increased quickly. During the beginning of the financial crisis in the US, Austria experienced a large increase in tourism followed by a large decrease in 2009. The impact of the financial crisis in the US seems to have lagged in reaching Austria by one year. Using these indicators of economic wellbeing, Austria was only partially affected and was able to recover, however, it still saw yearlong decreases in its macroeconomic indicators which match with the broad definition of a recession.

Austrian banks experienced a peak year of leverage ratios in 2008. Even before weighting each asset's risk, the implied capital ratios of all three banks examined in this analysis hover around 5 percentage points. This suggests that Austrian banks, like their United States counterparts, also took on increased default risk. The interest rate on loans for commercial banks set by the European Central Bank did not decrease at the same time that the Federal Reserve decreased its interest rate. Not only did the decrease in interest rate in the Euro zone lag, but it also did not decrease as significantly as the rate in the US market and decreased for less than two quarters while that in the US decreased multiple times in the course of more than two quarters. Similarly, three-month interest rates followed the same rate that the discount rate on commercial banks followed in both markets. Using the actions of both central banks as an indicator of perceived urgency, the need to encourage Austrian citizens to invest more existed, but was not as desperate as that in the US. Following the broad definition of a recession, the European Central Bank intervened for more than two quarters while the Federal Reserve perceived the need to help by decreasing rates for almost two years.

Austrian non-bank firms' average return on stock closely followed those of the S&P 500 stock index. Two of the three companies examined laid off a significant percentage of their workforce between the peak of employment in 2008 to 2011 in order to cut costs. Leading up

to the beginning of the financial crisis, both Voestalpine AG and OMV AG acquired companies to expand their operations. Voestalpine AG experienced a significant decrease in revenue. This decrease is directly tied to its major customers for steel, the Detroit automobile manufacturers, who were realizing their losses and were in the process of defaulting. The exception to these is Telekom Austria AG which monopolized the Austrian market, but still experienced decreases in revenue from an increase in competition. The returns on stock suggest that Austrian firms' returns were closely correlated. Therefore, the Austrian stock returns were affected by the financial crisis, however, not all Austrian firms had major customer ties to the US. Some of these return fluctuations were actually affected by other, industry specific, factors.

Austrian citizens may not have experienced a substantial increase in lasting unemployment, but they did lose full-time positions that turned into part-time positions. Net financial household investment halved by 2011, although the deposit guarantee did not decrease in Austria. The household level indicates a negative impact on future investment habits.

Overall, Austria was not as affected by the financial crisis as the US was, but like the US, it experienced a recession. On a macroscale, we see a dip in the GDP growth rate and the net trade balance, but both recovered and continued to grow in 2010 and 2011. Through stricter regulation, its banks began to decrease their default risk after 2008 by decreasing their positions in debt. Non-bank Austrian firms' return on stock closely followed the S&P 500 which shows that investors' impressions of the future of the financial market were tied to the international market as a whole. The greatest impact of the financial crisis was on Austria's citizens inasmuch as their experience in reduced work hours, or resulting unemployment. Their collective impressions and decrease in trust in the market can be seen in their significant decrease in investing. The efforts by the European Central Bank, Austrian firms, and credit institutions helped provide a framework for Austria to quickly recover from its decrease in economic activity after its lowest point in 2009. The financial crisis of 2008 may not have been isolated to the United States, but with the actions of these entities, they were able to isolate the impact of it in Austria to be only a brief recession.

⁷ See footnote 1 on page one.

Appendix

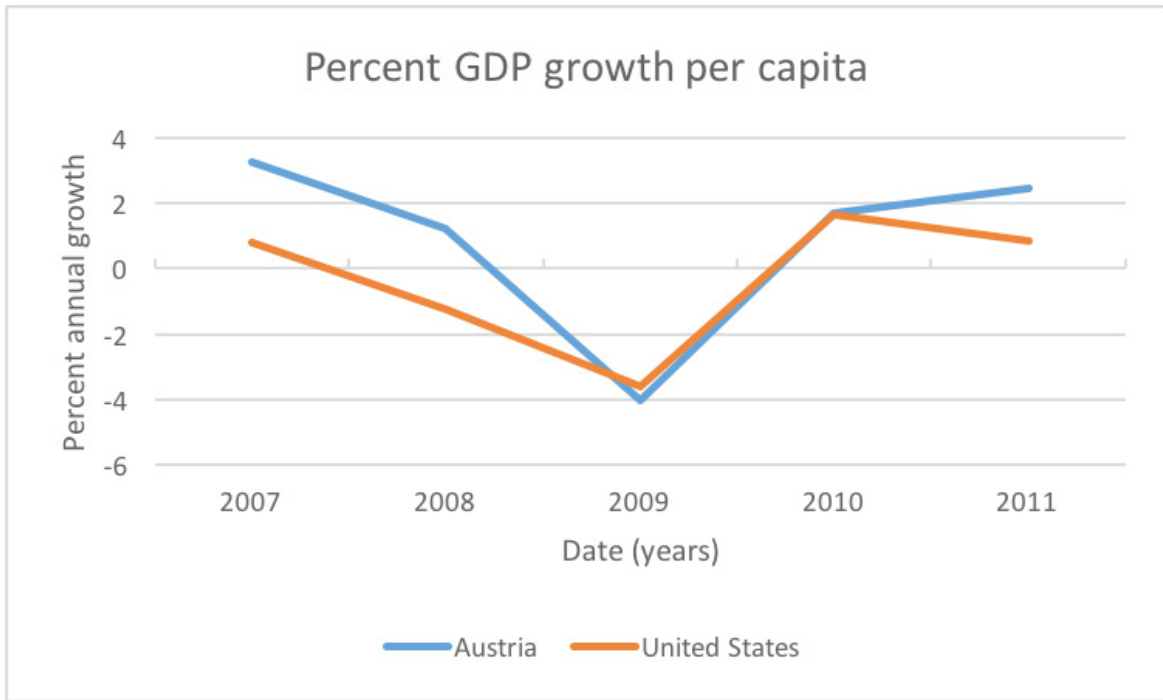


Figure 1 – Source: The World Bank Group

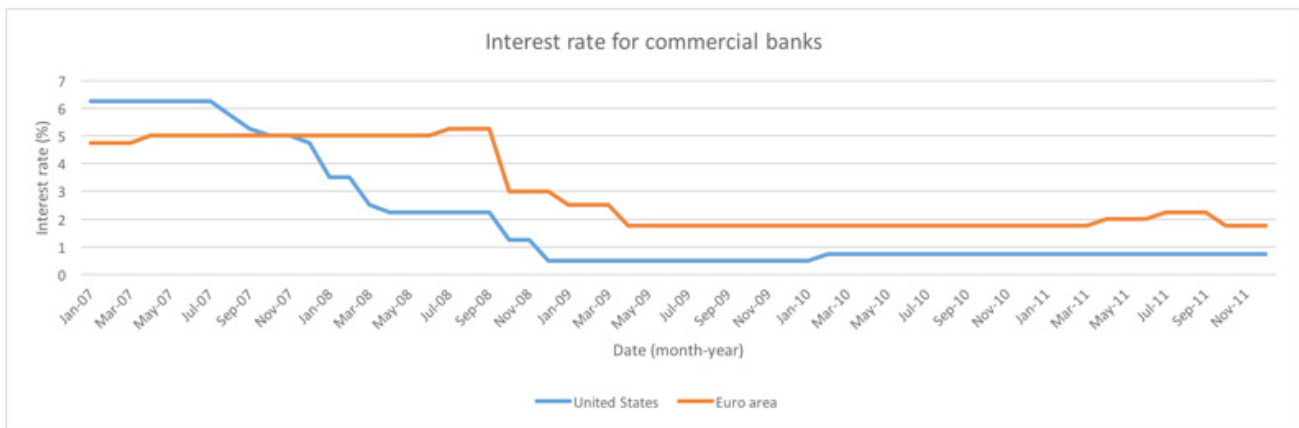


Figure 2 - Source: International Monetary Fund

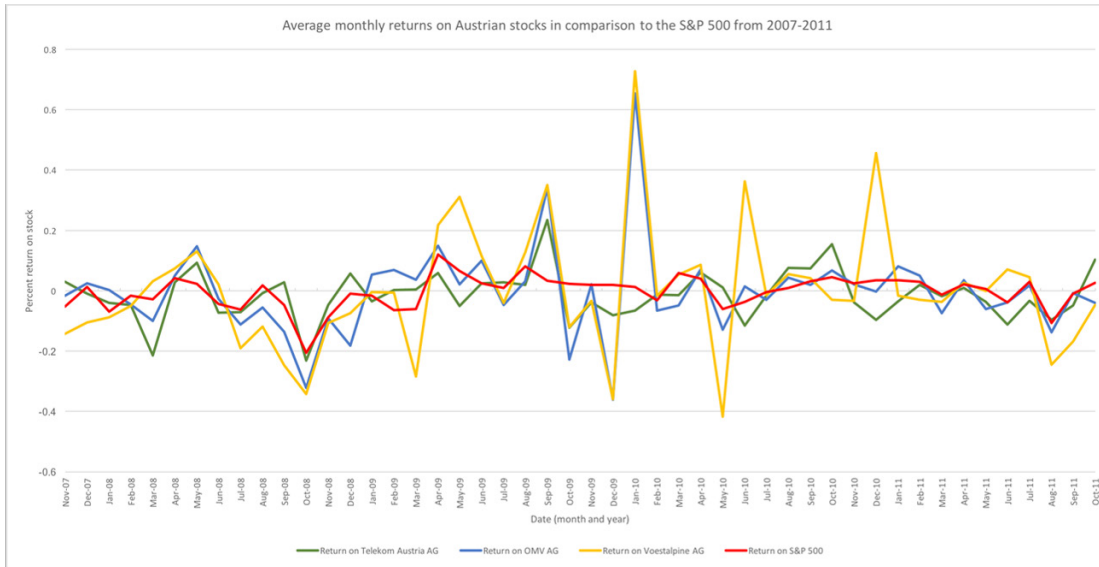


Figure 3 - Sources: Wiener Börse AG, Yahoo Finance

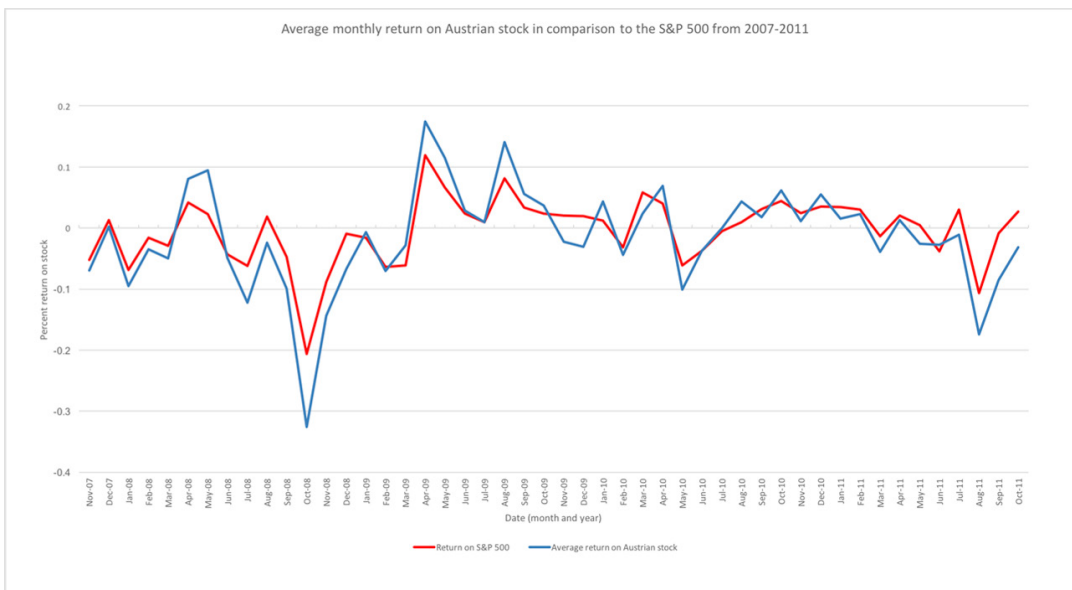


Figure 1 - Sources: Wiener Börse AG, Yahoo Finance

Figure 4 - Sources: Wiener Börse AG, Yahoo Finance

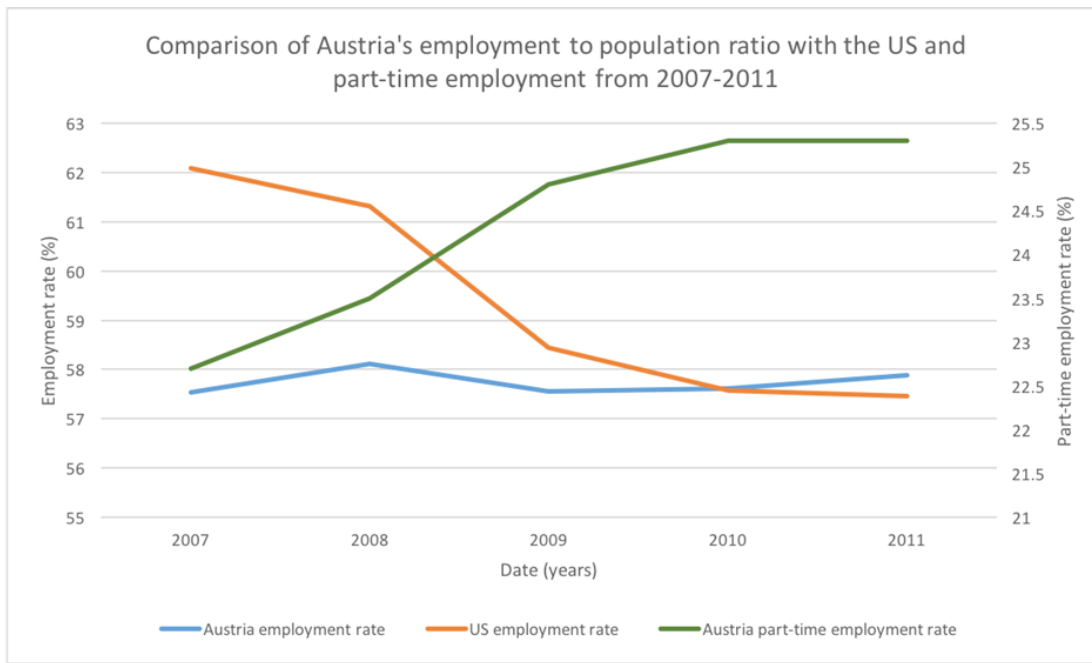


Figure 1 - Sources: Statistik Austria, The World Bank Group

Figure 5 - Sources: Statistik Austria, The World Bank Group

The Spread on Returns and Correlations of Austrian Stocks with the S&P 500 between 2007-2011

| | Telekom Austria AG | OMV AG | Voestalpine AG | Austrian Stock Index (ATX) | S&P 500 |
|--------------------|--------------------|-----------|----------------|----------------------------|------------|
| Variance | 7.9071 | 94.3621 | 142.8330 | 673746.7968 | 35549.7326 |
| Covariance | 282.0120 | 1403.1384 | 2028.6420 | 134927.2846 | 35549.7326 |
| Correlation | 0.5319 | 0.7661 | 0.9003 | 0.8718 | 1.0000 |

Table 1 - Sources: Wiener Börse AG, Yahoo Finance

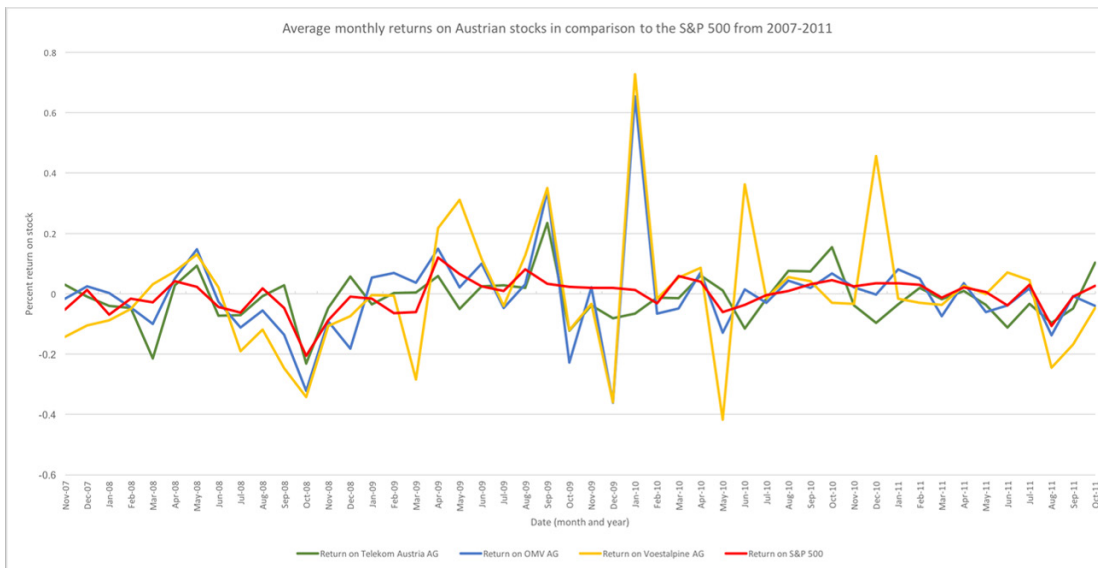


Figure 3 - Sources: Wiener Börse AG, Yahoo Finance

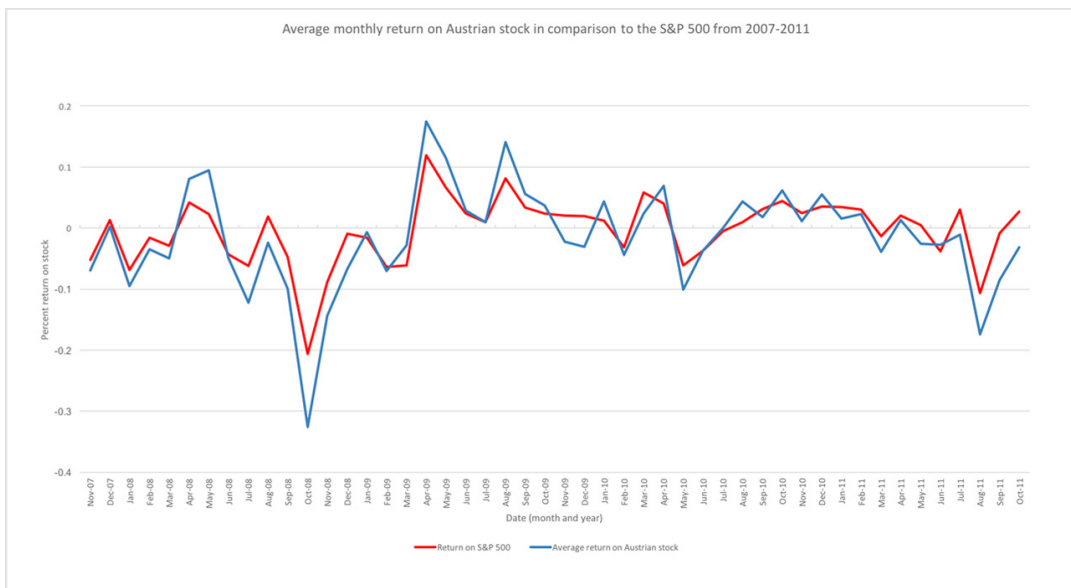


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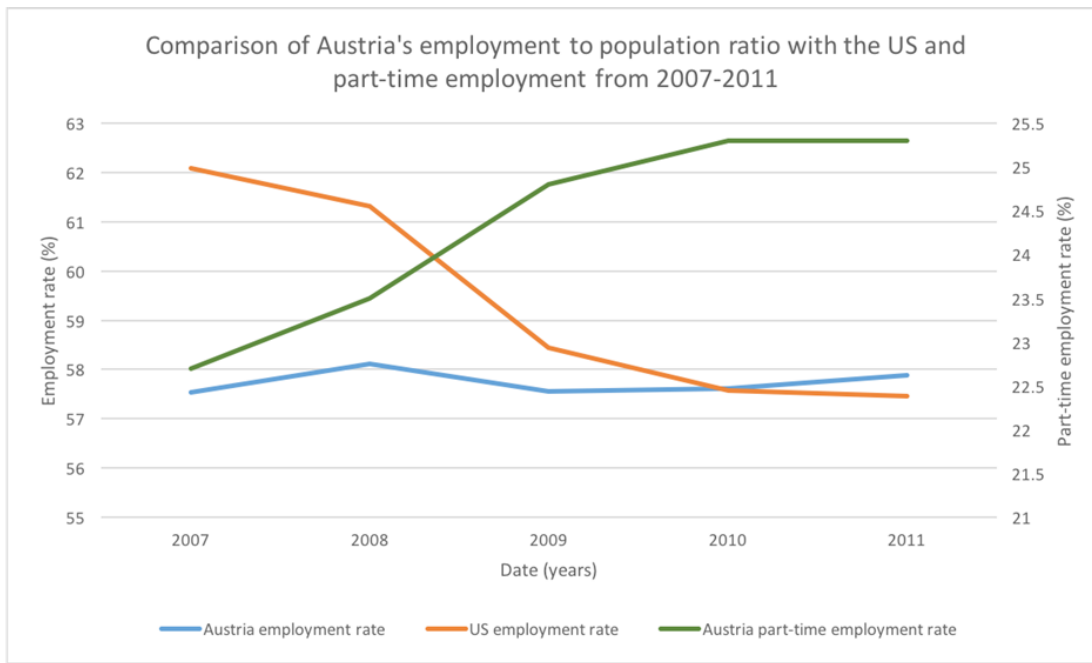


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