If not otherwise mentioned in the text our baseline results are confirmed by these robustness tests.

We aim at using our variables at the most disaggregated level for which data are available. While our dependent variable is available at the two digit level of ISIC 4 (International Standard Industrial Classification of All Economic Activities), most of our explanatory variables are available at the 1-digit level with the exception of total capital stock and intermediate import penetration which are available at a 2-digit level. For this reason we switch between the two and one digit level according to the specification as explained in the next section.

Estimation period differs due to data availability depending on the variables used in each specification and country. While data for the wage share at sectoral level is available for 1970-2011, the data for the FDI starts only in 1985 and detailed data on imports disaggregated as intermediate and final imports starts in 1995. The estimation period for Austria and most other countries is 1996-2010 for specifications including intermediate imports and 1986-2010 for specifications including FDI, with the exception of Denmark where our sample finishes in 2011. Furthermore, data for our measures of financialisation starts in 1995 for Austria and most other countries with the exception of France where data is available from 1970. It is mostly data on the capital stock that constrains the last year of our sample period, although for same countries, like the US, data for the sector-level wage share also ends in 2010.

We exclude the Agriculture, Hunting, Forestry and Fishing, and Mining and Quarrying sectors as well as mostly publicly owned sectors (Public Administration and Defence, Compulsory Social Security, Education, Human Health and Social Work Activities) from the reported estimations, as these sectors' wage setting behaviour may constitute an outlier and may not be determined by the same forces as in other sectors, but results are robust to the inclusion of these sectors.

5. Estimation Results

Table 1 shows estimation results for Austria for the total sector pool, while the reader is referred to Guschanski and Onaran (2016a) for estimation differentiated by skill group and manufacturing and service sectors.

We estimate specifications (1) to (3) at the 2-digit level while specifications (4) to (8) is estimated at the 1-digit level. We separately estimate the effect of increasing import penetration and outward FDI on the wage share, while controlling for union density and individual government spending at the country level in specifications (1) to (6). To avoid multicollinearity we estimate specifications with union density and government

Table 1: Estimation Results for Austria, all sectors, 1986–2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
growth	−0.065 (0.240)	−0.069 (0.205)	−0.048 (0.313)	−0.212*** (0.001)	−0.211*** (0.001)	−0.210*** (0.001)	−0.134** (0.048)	−0.128** (0.048)
capital stock_t-1	0.013 (0.813)	0.005 (0.930)	−0.060 (0.134)					
int. imports_t-1	−0.399*** (0.003)	−0.369*** (0.001)	−0.112 (0.398)					
other imports_t-1	0.043 (0.127)	0.038 (0.191)	0.073** (0.013)					
social government_t-1		−0.040 (0.258)			−0.004 (0.649)		0.006 (0.674)	0.003 (0.840)
tot. union density_t-1			0.009*** (0.001)			−0.001 (0.736)		
ICT capital_t-1				−0.027*** (0.000)	−0.025*** (0.000)	−0.032** (0.024)	−0.009 (0.723)	−0.020 (0.467)
non-ICT capital_t-1				0.045** (0.029)	0.044** (0.032)	0.051*** (0.011)	0.016 (0.777)	0.029 (0.607)
outward FDI_t-1				−0.016** (0.026)	−0.016** (0.028)	−0.016** (0.036)	−0.011 (0.107)	−0.010 (0.106)
hh debt_t-1							−0.403 (0.185)	−0.415 (0.164)
fin. income_t-1							−0.043 (0.221)	−0.034 (0.329)
fin. payments_t-1							−0.034 (0.215)	−0.069* (0.087)
migration_t-1							3.904** (0.047)	4.927** (0.022)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
gini_t-1								−0.011 (0.146)
constant	0.689*** (0.000)	1.162** (0.011)	0.334** (0.015)	0.675*** (0.000)	0.724*** (0.000)	0.705*** (0.000)	1.635 (0.100)	1.919** (0.047)
withR2	0.084	0.102	0.200	0.347	0.347	0.348	0.245	0.251
F-test	3.355	6.118	14.180	27.750	24.949	28.417	99.925	246.535
Period	1996-2010	1996-2010	1996-2010	1996-2010	1996-2010	1996-2010	1996-2010	1996-2010
Observations	256	256	256	386	386	386	249	249
Number of sectors	19	19	19	20	20	20	20	20

Notes: The dependent variable is the within sector wage share. All estimations exclude Agriculture, Hunting, Forestry and Fishing; and Mining and Quarrying sectors as well as public sectors (Public Administration and Defence; Compulsory Social Security; Education; Human Health and Social Work Activities). Estimations performed using the within estimator with autocorrelation, cross-sectional correlation and heteroscedasticity robust standard errors. P-values below the estimation coefficients in parenthesis. *, **, *** denote statistical significant at the 1%, 5% and 10% level, respectively. The estimation period for specifications 1-3 is 1996-2010 due to data availability.

spending separately and exclude union density from specifications (7) and (8) since it's strongly correlated with other country-level variables (negative correlation below –0.9 for Austria).

We find robust significantly negative effects of globalisation, measured by intermediate import penetration and outward FDI on the wage share in specifications (1) to (6), while the effect of the variables accounting for technological change is not robust and does not always have the expected sign: total capital stock as a ratio to value added is insignificant in all specifications while when capital is disaggregated as ICT and non-ICT capital, ICT capital services as a ratio to value added has a negative effect and non-ICT capital services as a ratio to value added has a positive effect. With regard to the control variables at the country level, we find a positive but not robust effect of union density, while social government spending turns out to be insignificant for the determination of the wage share in Austria. We furthermore include two specifications augmented by additional variables measuring migration, financialisation and person income inequality.[53] Among our financialisation variables, household debt and financial income and payments are significantly negative and robust to changes in the sample when the first difference estimator is applied. Furthermore we find positive effects of the share of migrant workers in total labour force and negative effects of the Gini coefficient although the statistical significance of these two variables varies.

Besides robustness tests using different estimation techniques and different measures of the wage share as described in section 3, we estimated our specifications for different sub-pools, i. e. only manufacturing or only service sectors, as well as for high- and low skilled sectors within manufacturing and services separately. This not only allows us to test the robustness of our results, but at the same time provides insights with regards to the variables that have potentially contrasting effects for manufacturing and services or across skill groups. However, since our cross sections are limited to 20 sectors for the 1-digit level estimations the estimations across skill groups can only provide indicative evidence.

5.1 Globalisation

Among our globalisation variables intermediate import penetration appears to have a negative impact on the wage share across all skill groups within the manufacturing sectors given that it is negative and significant for high and low skilled sectors alike. In the services sectors our data for intermediate import penetration is limited to one sector (recycling), but our results for the total economy are robust to the exclusion of this sector. This finding is also robust when different estimation methodologies are used. Intermediate import penetration is significant in specifications (1) to (3)

when estimated in first differences. The fact that intermediate import penetration has a robust negative effect across all skill groups suggests that outsourcing of intermediate production may have harmed blue and white collar workers alike in Austria.

Outward FDI, equally negative and robust in our estimation for the total sample as intermediate import penetration, appears to have different effects across industry types. It has a negative and statistically significant effect in manufacturing as a whole as well as in low skilled manufacturing sectors, but the effect turns positive in high skilled manufacturing when the financialisation variables are included. For total service sectors its overall effect is positive for all specifications and statistically significant for specification (4). Although this effect appears to be driven mainly by high skilled services sectors, outward FDI is not robust to the inclusion of financialisation variables and switches its sign. Our measure of FDI is the variable for which we are most concerned about non-stationarity as our unit root test indicate that it is likely to be integrated of order one. Therefore we prefer to rely on the estimations in first differences for the analysis of outward FDI. In these specifications, FDI has the same negative effect for total manufacturing sectors while it is positive but statistically insignificant for total services. While the effect of FDI in manufacturing is driven by high and low skilled sectors alike when measured in first differences, the positive sign in services is not present for any of the sub-samples of high or low skilled service sectors. Generally, it is plausible that there is a skill bias creating a higher demand for high skilled labour through outward FDI if it is of a vertical (cost-seeking) nature. It is also plausible that this effect is less strong in non-tradable service sectors with a more horizontal market seeking nature. Other mechanisms like the threat effects associated with a change in the fall back options for capital and labour are also expected to be less important for high skill labour and services than low-skill labour and manufacturing.[54] Our results confirm the different effects for services and manufacturing, although the fact that we fail to find a positive effect for high skilled manufacturing or a robust positive effect for high skilled services suggest that the potential beneficial effects are outweighed by the threat effects or substitution effects even for high skilled workers.

The share of migrant workers in total labour force has a robust and positive effect on the wage share for the manufacturing sectors and the total pool as is robust to different estimation methods. For service sectors the coefficient is insignificant with the exception of high skilled services where migration becomes significant. The positive sign suggests that migrant workers are on average complementary to domestic workers in Austria, thereby increasing the productivity and the wage share.

To sum up there is strong evidence of a negative effect of globalisation on the wage share in Austria. This effect is realised via an increase in inter-

mediate imports and outward FDI and affects all sectors and skill groups with the potential exception of service sectors in the case of FDI. The negative effect of globalisation does not result from the increase of the migrant share of the labour force – on the contrary migration has a positive effect in Austria which points to the fact that migrant workers are complementary to domestic workers.

5.2 Technology

Our technology variables aim to capture the effect of skill-biased technological change on the wage share. We fail to find evidence for the mainstream hypothesis that technological change will decrease the wage share of low skilled workers and increase it for high skilled workers.[55] Indeed for Austria technological change embodied in the accumulation of ICT capital exercises a negative effect on workers in both the skilled and unskilled industries, although the effect is not robust in all samples. This finding is in line with the development of the wage share in Austria which shows a negative trend for all skill groups for manufacturing and service sectors alike, while the share of ICT capital also increased across all sectors. Curiously, the share of non-ICT capital has a positive effect on the wage share in most specifications, highlighting its labour augmenting nature, while it becomes insignificant in some other specifications. Again, no structural difference can be seen for the effect on high or low skilled industries.

A further interesting highlight of our findings indicate that ICT and non-ICT capital services become insignificant when included in an estimation with country-level financialisation variables, while some of our financialisation variables are significant for manufacturing industries applying the within estimator. The results also hold for estimations in first differences especially with respect to ICT capital, the main measure for skill-biased technological change.[56] This result appears to be similar to EC (2007) who report that variables for technological change are not robust to the inclusion of time effects. Our country-level variables are similar to period fixed effects given that they are the same across sectors and differ by year, but they carry much more specific information than a general time effect. Stockhammer (2015) also find that financial globalisation is the main driver of the wage share based on panel data estimations using country level (not sectoral) data. However, these results can only be seen as indicative and require further analysis, preferably with measures of financialisation at the level of disaggregation of the dependent variable, which can be done only using firm level data as in Guschanski and Onaran (forthcoming). Interestingly, we obtain the same effect when we use wages and salaries as a ratio to value added as a dependent variable. This alternative dependent variable, which is equal to our wage share excluding social security contribu-

tion paid by employers to employees, is a better measure of primary market distribution since it excludes secondary distribution.

5.3 Country-level variables

With regard to the control variables, union density has a positive effect on the wage share in specification (3) – indeed it is highly significant and renders the effect of intermediate import penetration insignificant. The effect of union density is however not robust at the 1-digit level in specification (6).[57] The result is confirmed for sub-pools of manufacturing industries. However, given that the variable is measured at the country level, the reliability of the estimation results by sub-pools is questionable. In order to obtain at least indicative results with union density measured at the sectoral level we performed robustness tests with union density measured at the sector level regardless of our concerns about its reliability as mentioned in section 3. In general results for sectoral union density confirm the results for country-level union density. The positive but not robust impact of union density is generally driven by all sector and skill groups. Furthermore, we experimented with adjusted bargaining as an alternative measure for workers bargaining power. However, given that bargaining coverage stayed at a constant level since the 1970s in Austria the variable created multicollinearity with our fixed effects and we had to drop it.

Social government spending turns out to be insignificant or positive for almost all specifications with the exception of estimations for the high skilled manufacturing sectors only where we find an unexpected negative sign for specifications (7) and (8). Nevertheless, like union density, social government spending becomes insignificant for most estimations in first differences, while it is positive for service sectors.

Since there are no measures of financialisation at the sectoral level we can only use country-level variables among which household debt and financial payments appear to have a robust negative effect, albeit mostly for estimations in first differences. This finding is robust to the application of different samples, although the highest statistical significance is achieved for the high-skilled manufacturing sector. Similarly we find a negative effect of household debt for the manufacturing sector for the estimations in levels, in both low and high skilled manufacturing sectors alike. Given that lower income workers might be credit constrained and that the recent surge in household debt was mainly driven by the upper-middle class this result seems plausible. It is not entirely clear, however, why workers in the high-skilled manufacturing sector should be stronger affected by household debt than workers in the high skilled service sector.

Our specification (8) reflects the argument that personal income inequality is an indicator of the command over resources and power relations,

hence we include the Gini coefficient in our set of explanatory variables. We find no statistically significant effect, however, we consider the income share of the top 1% to be a better measure for personal income distribution than the Gini coefficient, because it captures the tail of the distribution where most of the increase in income inequality happened, while the Gini coefficient is rather in-sensitive to changes in the tails. Furthermore, we have less concern in the case of the income share of the top 1% with regard to endogeneity that naturally arises between a measure of functional and personal income distribution that captures the whole population like the Gini coefficient. Unfortunately there is no data on the income share of the top 1% for Austria in The World Wealth and Income Database which is why we revert to using the Gini for Austria, while we experiment with top income shares for the remaining countries in our sample.

5.4 After tax wage share

Our estimation result for the after tax wage share as the dependent variable strongly confirms our initial results for our main variables, although the statistical significance of household debt is increased.[58] Intermediate imports, outward FDI and union density have the same effect across different samples. This implies that the effect of intermediate imports, outward FDI and union density is similarly relevant for after tax wage share as for the before tax wage share.

5.5 Economic effects

Finally, we report the economic significance of our variables for a specification including intermediate import penetration and union density (specification [3]) as well as a specification including all other variables (specification [8]) in Table 2. More precisely, we calculate the predicted change in the dependent variable based on individual covariates by multiplying the estimation coefficient of the respective explanatory variable with the cross-sectional average change of that variable over the sample period and dividing by the change in the wage share.[59, 60]

The decline in the wage share, taken as an average over the two specifications, is 8.7 percentage points, similar to the decline in the country level wage share which constituted 6.6 percentage points. Based on the estimation with union density (specification [3]) we find that union density had the strongest impact in Austria, explaining 85.1 percent of the average decline of the wage share. Increasing imports of capital and consumption goods and the increase in capital intensity have had a sizeable positive effects. Capital intensity had the second highest positive impact, predicting 16.5 of the change in the wage share. Based on specification (8) we find a sizeable negative effect of household debt and, albeit much smaller in size, of ICT

capital intensity. Results indicate that migration had a strong positive effect on the wage share.

Table 2: Economic significance of coefficients for selected specifications for Austria

Method	Δexplanatory var*coeff	Δexplanatory var*coeff
Specification	Based on Table 1, Specification (3)	Based on Table 1, Specification (8)
growth	−0.002	−0.005
capital stock	0.017	
int. imports	−0.008	
other imports	0.006	
social government		0.001
total union density	−0.093	
ICT capital		−0.023
non-ICT capital		−0.009
outward FDI		−0.0003
household debt		−0.102
fin. Income		−0.017
fin. payments		−0.009
migration		0.122
gini		0.001
Period	1996-2007	1996-2007
ΔWage Share	−0.106	−0.068

Notes: Columns 2 and 4 report coefficients for our sample based on estimates from specification (3) and (8) in Table 1 respectively multiplied by the change in the variable. Columns 3 and 5 report the predicted change in the wage share for the change in our explanatory variables over our sample period based on estimates from specification (3) and (8) in Table 1 respectively. A negative (positive) sign in columns 3 and 5 indicates that the variable had a negative (positive) impact on the wage share. The last two rows reports the change in percentage points for the estimations indicated in the top row.

5.6 Comparison with results for selected OECD countries

We obtain considerable differences when comparing the results for Austria with estimation results for the other countries in our sample.[61] We find that globalisation had a strong impact on the wage share in all countries. The effect of globalisation on the wage share was least strong in Denmark. In Austria, Germany and, less robust, in the UK, the effect is due to outward FDI as well as intermediate import penetration which reflects the impact of international outsourcing practices. Intermediate imports penetration had no significant impact in Spain while FDI played a smaller role in France and the US.

Different institutional variables appear to be relevant for each country. Germany exhibits the most robust positive effect of union density on the wage share, and there is also some positive effect of union density in Austria, while collective bargaining coverage plays a more important role in France and the UK together with social government spending.

Financialisation, as captured by household debt, had the most pronounced effect in Austria, the UK and the US, while financial income appears to be relevant in Germany. Estimations for other countries are inconclusive and require analysis using data on a more disaggregated level.

We find mixed results for the effect of personal income inequality on the wage share. However, there is indicative confirmation for a negative effect in Austria, Germany and the UK.

While variables capturing technological change are significant in selected specifications for Austria, Italy and the US, they do not appear to be very robust to the application of different estimation techniques or the split of the sample in services and manufacturing sectors. Furthermore, we do not find strong evidence of skill-bias in terms the effect of technological change, which constitutes the core of the mainstream explanation for increasing inequality. For some specifications we observe that these variables are especially sensitive to the inclusion of country-level measures of financialisation or bargaining power. However, these results are not robust to the application of different estimation methodologies. This suggests that while technological change surely has increased value added, the negative impact on the wage share is more likely to be an effect of reduced bargaining power of workers, brought about by globalisation and a deterioration of bargaining conditions.

6. Conclusion

Our findings lend strong support to the political economy approach to functional income distribution. Technological change had an impact, especially in Austria, Italy, the US, but the effects are not robust with respect to the use of different specifications and the wage share in most countries in our sample appears to be driven by different variables reflecting the bargaining power of labour such as union density, adjusted bargaining coverage and government spending. Furthermore, we don't find strong support for the skill-biased technological change hypothesis which implies an adverse effect for low skilled workers and a beneficial effect for high-skilled workers. Indeed, the high significance of institutional variables suggests that the negative effect of technological change on income distribution stems from the fact that workers weren't able to capture the gains of increased productivity due to a weak bargaining position. In terms of eco-