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SME Financial Inclusion for Sustained Growth in the

Middle East and Central Asia

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Abstract

This paper offers empirical evidence that greater financial inclusion of small and medium enterprises (SMEs) can promote higher economic growth and employment, especially in the Middle East and Central Asia regions. First, we show that countries with higher SME financial inclusion exhibit more effective monetary policy transmission and tax collection. Second, we find substantial employment and labor productivity growth gains at the firm level from access to credit, gains that are higher for SMEs. We also obtain evidence of a substantial positive impact on SME employment and labor productivity growth from improved credit bureau coverage and insolvency regimes. Finally, cross-country aggregate evidence confirms the employment and growth gains from SME financial inclusion, which appear larger in the Middle East and Central Asia than in other regions.

I. INTRODUCTION

Sustained and inclusive economic growth and job creation are critical for most countries in the Middle East and Central Asia regions, as recently highlighted in the Opportunity for All study (IMF, 2018a). One way to achieve these objectives is to bring small and medium enterprises (SMEs), which represent an important share of firms and employment in the regions, closer to their output and employment potential.[1] Indeed, according to IMF (2018c), SMEs represent about 96 per cent of all registered companies in the region and employ 48 per cent of the labor force, and these shares are likely to be higher if one includes the informal sector where SMEs are even more prevalent. However, the same study also highlights that SME access to finance in the Middle East and Central Asia is low compared to other countries with similar levels of economic development. In this paper, we offer some empirical evidence on the effect of greater SME financial inclusion on macroeconomic policy efficiency, employment and economic growth in the Middle East and Central Asia regions.

Effective macroeconomic policy is key for preserving macroeconomic stability, which is necessary for sustained growth in the Middle East and Central Asia regions. Adequate macroeconomic policy could attenuate recessions that have been shown to have a persistent impact on economic growth (Cerra and Saxena, 2017). Thus, we first look at the link between SME financial inclusion and the effectiveness of monetary and fiscal policies in the Middle East and Central Asia regions. We show empirically that countries with higher level of SME financial inclusion benefit from stronger monetary policy transmission and more efficient tax collection. Moreover, we argue that providing SMEs with broader access to formal finance could also lead to improved financial sector stability in certain circumstances.

We then present micro-econometric evidence of substantial economic growth gains from SME financial inclusion in the Middle East and Central Asia regions. In particular, we estimate firm-level employment and labor productivity growth gains from SME access to formal finance. These gains are confirmed by exploiting cross-country variation in the implementation of reforms that may boost SME financial inclusion, such as the establishment of credit bureaus and variation in insolvency regimes (World Bank, 2018). Using firm-level data from the World Bank Enterprise Surveys, our estimates suggest that these gains are economically significant, and indeed much larger for SMEs than for large firms. We use these point estimates to perform a simple Solow growth accounting exercise to evaluate aggregate growth effects from greater SME financial inclusion.

Finally, we confirm our firm-level findings using cross-country aggregate data. Our panel data estimates suggest that increasing the share of total lending that goes to SMEs lowers unemployment and increases economic growth. We also argue that such gains from SME

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[1] The G20 has done extensive work on SME Financial Inclusion as can be seen, for example, in Global Partnership for Financial Inclusion (2017).

financial inclusion are likely to be more pronounced in the Middle East and Central Asia, which lag other regions in SME access to bank credit.

The rest of the paper is organized as follows. In Section II, we estimate the effect of greater SME financial inclusion on the effectiveness of monetary and fiscal policies. Section III provides firm-level evidence on employment and labor productivity growth gains from access to formal finance and discusses their macroeconomic impact. Section IV confirms our firm-level evidence using cross-country aggregate data. Section V concludes and provides suggestions for future work.

II.   MACROECONOMIC POLICIES AND SME FINANCIAL INCLUSION

Greater macroeconomic policy effectiveness could support macroeconomic stability and sustained growth in the Middle East and Central Asia regions. In this section, we empirically test whether the effectiveness of monetary and fiscal policy is positively associated with SME financial inclusion. We first empirically assess whether higher financial inclusion of SMEs is associated with more effective monetary policy transmission, following earlier work of Mehrotra and Yetman (2014) and IMF (2018b) for other regions. However, as illustrated during the recent global financial crisis, monetary policy might not suffice to achieve stability and sustained growth, which motivates our further consideration of links between SME financial inclusion and financial stability, as well as its effect on fiscal policy implementation, with a specific focus on the efficiency of tax collection.[2]

Throughout our analysis in this section, we measure the level of SME financial inclusion across countries using the new index developed by the IMF (2018b). This index is calculated as the first principal component of a range of indicators measuring access to formal finance contained in the World Bank Enterprise Surveys (higher index values correspond to higher levels of SME financial inclusion).[3] This ensures that the indicator is sufficiently comprehensive when it comes to reflecting on different aspects of financial inclusion. As a cross check, Figures 1 and 2 in Annex 1 plot our new indicator (labeled as the PCA measure) across two other measures of SME financial inclusion: the World Bank measure of the percentage of partially or fully credit constrained firms (from Kuntchev et al., 2014), and the proportion of firms with rejected loan applications (from the World Bank Enterprise Surveys), that indicates demand for credit from firms. Based on the world sample (not limited to the MCD region), the correlation is quite high (-0.53, -0.52 respectively) in both cases.[4] Moreover, we present evidence that suggests that SME financial inclusion is strongly associated with financial inclusion of all firms. In Figure 3, we recalculate the same index separately for large firms and all firms available in

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[2] Other potential implications for fiscal policy that go beyond the efficiency of tax collection (such as through fiscal multipliers) are not addressed in this paper and left to future research.

[3] Details of the index construction, including the particular variables used, are in the Annex 1 of IMF (2018c).

[4] The correlations hold in the Middle East and Central Asia regions sample as well.

each of the country-years in the World Bank Enterprise Surveys. As can be seen in Figure 3, countries with higher overall firm financial inclusion are those with the smallest gap between financial inclusion of large firms and SMEs.

As for the countries contained in our sample, we focus on the Middle East and Central Asia, subject to data availability. Specifically, our baseline sample includes Jordan, Lebanon, Egypt, Iraq, Morocco, Tunisia, Yemen, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Djibouti. For some calculations, the sample is smaller due to limited data availability (see specifications in each exercise description).

A. SME Financial Inclusion and Monetary Policy Transmission

Potential gains from greater SME financial inclusion may include larger effectiveness of monetary policy (Mehrotra and Yetman, 2014). We focus on two potential channels. Firstly, as more SME have access to formal borrowing and lending, the role of the interest rate in the economy may increase, facilitating stronger monetary policy transmission. Secondly, under this same hypothesis, higher financial inclusion may strengthen the linkage between real and nominal sides of the economy, making it easier for monetary authorities to target and achieve price stability leading to lower relative volatility of inflation.

To test this hypothesis, we construct a macroeconomic dataset covering our sample of countries in the Middle East and Central Asia region.[5] We collect annual time series (1990–2017) on real GDP, which we transform into the output gap in percent of deviation from the trend that we estimate by HP filtering, inflation and the short-term nominal interest rate. In addition, we use the SME financial inclusion index to subdivide our countries into High and Low SME financial inclusion countries.[6][7]

We use these data to estimate the impact of SME financial inclusion on the effectiveness of monetary policy, measured first by the relative strength of monetary policy transmission and then by the relative ability to achieve price stability. Firstly, we test our hypothesis regarding the relative strength of monetary policy transmission by following Mehrotra and Yetman (BIS, 2014) and estimating a panel VAR of the following form:

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[5] Djibouti, Lebanon as well as Gulf Cooperation Council (GCC) countries are excluded due to data shortages. IMF (2018d) provides specific analysis of SME financial inclusion in the GCC region.

[6] High SME financial inclusion countries present indices above above the mean and are Morocco, Tunisia, Armenia and Georgia. Those below the mean (Low SME financial inclusion countries) are Jordan, Egypt, Iraq, Yemen, Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan.

[7] Our measure of SME financial inclusion is based on data for formal enterprises, and may therefore overestimate the *absolute* degree of SME financial inclusion, to the extent that informal enterprises are more financially excluded. However, our SME financial inclusion index is still valid for *relative* (e.g. High vs. Low) cross-country comparisons, as long as relative financial inclusion of informal and formal SMEs is similar across countries.

$$Y_{it} = AY_{i,t-1} + u_i + v_t + e_{it}, \tag{1}$$

where $Y_{it} = \{output\ gap, inflation, nominal\ insterest\ rate\}_{it}$ in country i and year t; u_i and v_t are, respectively, country and year fixed effects; e_{it} is the error term. The order of variables in Y also gives the recursive ordering for identifying structural shocks. We measure the strength of monetary policy transmission by the magnitude of impulse response of the output gap to a structural shock to the nominal interest rate. Further, in order to assess the relative strength of monetary transmission in Low versus High SME financial inclusion countries we use the above panel VAR separately for the two groups of countries and compare the relative sizes of impulse responses. Secondly, regarding the ability to achieve price stability, we measure it by the ratio of unconditional variances of output and inflation, and compare the ratios across countries with different levels of SME financial inclusion. [8]

Our panel VAR estimates are consistent with the hypothesis that greater SME financial inclusion strengthens monetary policy transmission. Figure 4 shows that when our panel VAR is estimated on the whole sample, a 100bp structural increase in the nominal interest rate leads to a peak of 0.13 percentage point (pp) drop in the output gap. However, the effect is not statistically significantly different from zero at 90 per cent confidence level. The result changes once we restrict our sample to High financial inclusion countries: the observed 0.15 pp peak drop in the output gap is statistically significant in the first two years following the shock. Estimating the effect on the Low financial inclusion subsample leads to an output gap contraction that is close to and insignificantly different from zero. Therefore, our panel VAR exercise supports the hypothesis that countries in the Middle East and Central Asia regions with higher SME financial inclusion benefit from stronger monetary policy transmission.

Our second test suggests that SME financial inclusion increases the ability of central banks to achieve price stability in countries in the Middle East and Central Asia regions. Figure 7 shows that countries with High SME financial inclusion have a greater ratio of output and inflation variances, suggesting that those countries' central banks are better able to minimize price fluctuations, which manifests itself in an increased volatility of the output gap. Overall, results from both exercises confirm our hypotheses regarding greater efficiency of monetary policy being associated with higher SME financial inclusion. This is also in line with findings in the literature (Mehrotra and Yetman, 2014; IMF, 2018b). [9]

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[8] Differences between estimated responses for High vs. Low SME financial inclusion countries may reflect heterogeneities across the two subgroups (e.g., the degrees of exchange rate flexibility or central bank independence). However, our approach remains valid to the extent that these sources of heterogeneity are orthogonal to the degree of SME financial inclusion.

[9] It should be mentioned that our estimated benefits to monetary policy transmission coming from greater SME financial inclusion are quantified under the assumption that all extra access to SME funding comes from the traditional banking sector. However, recent years have witnessed a rapidly expanding supply of credit from alternative lenders, such as FinTech, whose behavior is arguably less sensitive to monetary policy decisions. As

As witnessed in the recent global financial crisis, strong monetary policy transmission and low inflation volatility may not be enough to guarantee financial stability. Following Mehrotra and Yetman (BIS, 2014) and IMF (2013), higher SME financial inclusion, under appropriate risk management and financial supervision, could lead to greater financial stability. For example, one mechanism that could lead to this is that as more firms get access to formal loans, banks' credit portfolios become more diversified.

B. SME Financial Inclusion and Tax Collection

Greater SME financial inclusion may boost the formalization of SME activities and thus have a positive impact on the efficiency of tax collection. We test this hypothesis empirically by augmenting our dataset from the previous subsection with annual time series of tax revenue as a share of GDP. Further, we estimate a similar panel VAR:

$$Y_{it} = AY_{i,t-1} + u_i + v_t + e_{it}, \tag{2}$$

where $Y_{it} = \left\{\frac{Tax}{GDP}, output\ gap, inflation\right\}_{it}$ in country i and year t; u_i and v_t are, respectively, country and year fixed effects; e_{it} is the error term. The order of variables in Y also gives the recursive ordering for identifying structural shocks. We measure the efficiency of tax collection by the impulse response of $\frac{Tax}{GDP}$ to a structural positive shock to the output gap. In order to assess the link between SME financial inclusion and tax collection, we re-estimate the above panel VAR separately for countries in top and bottom quartiles of the SME Financial Inclusion index, and compare the estimated efficiencies of tax collection.[10]

Our panel VAR estimates support the hypothesis that SME financial inclusion strengthens tax collection and is thus associated with more effective fiscal policy. As shown in Figure 8, when estimated on the full sample of countries, our panel VAR suggests that a 1 pp expansion in the output gap leads to an increase in tax-to-GDP ratio of about 0.4 pp after one year. The estimate is significantly different from zero at the 90 percent confidence level for the first two years. However, as shown in Figures 9 and 10, the result holds in the top-quartile SME financial inclusion subsample but not in the bottom-quartile SME financial inclusion subsample.

III. EMPLOYMENT AND LABOR PRODUCTIVITY GAINS FROM SME FINANCIAL INCLUSION

In this section, we aim to test whether SME financial inclusion may boost economic growth in the Middle East and Central Asia. The difference between financial depth, measured by metrics

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such, therefore, our estimates could be treated as an upper bound of the overall effect of SME financial inclusion on the strength of monetary policy transmission.

[10] Estimation for top and bottom halves of SME Financial Inclusion, as in the monetary policy subsection, yields noisy results, which guides our choice of comparing more extreme subsamples.

such as the credit-to-GDP ratio, and financial inclusion, or how credit is allocated across different firms in the economy, can be essential for employment creation and productivity growth. Moreover, there is evidence both for the Middle East and Central Asia regions, as well as other developing countries, that SMEs are particularly financially constrained, suggesting that relaxing the credit constraint for SMEs, as opposed to large firms, may lead to larger employment and labor productivity gains and, therefore, contribute substantially to boost economic growth (Ayyagari et al., 2016).

To empirically assess the potential employment and labor productivity growth gains from greater financial inclusion in the Middle East and Central Asia regions, we use firm-level data from the World Bank Enterprise Surveys (2008-2016), covering firms from the following countries in different years: Azerbaijan, Armenia, Djibouti, Georgia, Iraq, Kazakhstan, Jordan, Kyrgyzstan, Lebanon, Morocco, Tajikistan, Tunisia, Egypt, Uzbekistan and Yemen.[11] Following the Enterprise Survey definition, a firm is considered *large* if it has more than 100 employees, *medium* if it has between 20 and 100 employees, and small if it has less than 20 employees.[12]

We follow Ayyagari et al. (2016) and employ the following econometric specification:

$$\Delta E_{ijt} = \alpha F_{ijt} + \beta X_{ijt} + Z_{jt} + C_j + Y_t + \varepsilon_{ijt}, \qquad (3)$$

where ΔE_{ijt} is annual employment growth or labor productivity growth for firm i in country j in survey year t, F_{ijt} is an indicator variable for a formal loan outstanding. Hence, α could be interpreted as the employment, labor productivity, or growth gain from greater SME financial inclusion, *ceteris paribus*. X_{ijt} and Z_{jt} are firm-level and country-level controls respectively; C_j and Y_t are country and survey year fixed effects that would capture any macroeconomic covariate. To assess whether employment or labor productivity growth gains are indeed larger for SMEs as opposed to large firms, we re-estimate (3) separately for the two categories of firms.

Our estimates in Table 1 in Annex 1 are consistent with the hypothesis that greater SME financial inclusion boosts employment and labor productivity growth. Holding other things equal, access to formal finance leads to a 2.07 pp increase in the rate of employment growth for an average firm in our sample.[13] However, once we estimate the effect separately for large firms and SMEs, one can see that most of these gains come from SMEs. We thus confirm, in

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[11] As noted above, GCC countries are not covered here, as they are not included in the World Bank Enterprise Survey (see IMF (2018d) for further analysis of SME financial inclusion in the GCC region).

[12] The data does not include micro enterprises that contain 5 or fewer employees, or enterprises that are not in the formal sector. Moreover, following Ayyagari et al. (2016) we do not consider firms in top and bottom 1 percent of employment and labor productivity growth.

[13] This point estimate is slightly lower than that found by Ayyagari et al. (2016) using the World Bank Enterprise Surveys data, but in line with their estimate using the Orbis sample.

the context of the Middle East and Central Asia regions, the earlier findings in the literature that most employment growth gains from access to formal finance come from SMEs, as opposed to large firms.

The same analysis for labor productivity growth provides similar results. For the whole sample, giving access to finance leads to 0.94 pp increase in labor productivity growth; however, most of the effect is driven by SMEs. Indeed, giving access to finance to SMEs leads to 1.22 pp increase in productivity growth, as opposed to only 0.43 pp for large firms. Moreover, most of the effect for SMEs seems to be driven by medium, as opposed to small firms.

We also explore the potential impact of policy interventions such as the establishment of credit bureaus or the reform of insolvency regimes on SME financial inclusion in the Middle East and Central Asia. Our proxy for the degree of credit bureau coverage is the share of covered adults, and for the insolvency regime, we use the index of insolvency regime quality. Both are obtained from the World Bank Doing Business dataset. The econometric specification is as follows:

$$\Delta E_{ijt} = \alpha S_{jt} + \beta X_{ijt} + Z_{jt} + C_j + Y_t + \varepsilon_{ijt}, \qquad (4)$$

where ΔE_{ijt} is annual employment growth or labor productivity growth for firm i in country j in survey year t, S_{jt} is either the credit bureau coverage or the insolvency regime index in country j in survey year t, α measures the employment or labor productivity growth gains from an extra percent covered by credit bureaus, or one percent increase in the index, with and without survey year fixed effects given the cross-sectional variation of our proxies at the country level.[14]

Our estimates support the hypothesis that greater credit bureau coverage could boost SME employment growth. Estimates in Table 3 suggest that, without survey year fixed effects, a one pp increase in credit bureau coverage leads to a statistically significant increase in employment growth of 0.18 pp. However, once the effect is estimated separately for large firms and SMEs, the effect on large firms' employment growth is small and insignificant from zero, whereas SMEs show a statistically significant 0.23 pp increase. Similar estimates accounting for survey year fixed effects are smaller and noisier, but the overall result of larger effects for SMEs persists.

Our results also suggest a positive impact on employment of a more efficient insolvency regime framework. Table 4 indicates that a unit increase in the insolvency regime index leads

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[14] Our proxies for credit bureau and insolvency regimes could be proxies for supply side variation, in the spirit of Ayyagari et al. (2016) on the establishment of credit bureaus, and of IMF (2018c) that shows that both insolvency regimes and credit information play a key role in boosting SME access to credit.

to a statistically significant increase of 0.23 pp (without survey year fixed effects).[15] The estimated slope for large firms is, however, substantially lower (0.12 pp) than the effect for SMEs (0.30 pp). Once survey year fixed are added, all of the effects become larger, and the effect for SMEs remains bigger than that for large firms.

Our regression analysis suggests a similarly positive relation of both credit bureau coverage and insolvency regimes with labor productivity. First, Table 5 suggests that a one pp increase in credit bureau coverage increases labor productivity growth by 0.29 pp, a result statistically significant from zero (without controlling for survey year fixed effects). Unlike our previous results, the estimated effect is of comparable magnitude for large firms and SMEs.[16]

Second, Table 6 suggests that labor productivity grows by 0.57 pp following a unit increase in the insolvency regime index (with no survey year fixed effects). Consistent with previous results, the effect is larger for SMEs than for large firms (0.60 and 0.44 pp, respectively).[17]

Figures 11 and 12 show estimated cumulative gains for countries in the sample from moving to average levels of credit bureau coverage and insolvency regime observed in Emerging Market and Developing Economies (EMDE). This suggests that SME employment and labor productivity growth would rise by close to 3 and 3.5 pp, respectively, if countries in the sample moved to the third quartile level among EMDEs for credit bureau coverage. Similarly, moving to the third quartile among EMDEs for the insolvency regime index is estimated to deliver 2.5 and 4.5 pp increases in SME employment and labor productivity growth. While these estimates appear large, this may reflect the assumption that the effects are linear rather than diminishing with the marginal returns to reforms – which would be a more realistic assumption. Therefore, these results should be considered as an upper bound of the real effect.

Positive employment and labor productivity gains suggest the existence of economic growth gains from SME financial inclusion in the Middle East and Central Asia regions. A simple growth accounting exercise building on the previous point estimates indicates that SME financial inclusion could boost GDP growth by 1.1 percent. The additional 2.1 percent in SME employment growth, added to a gain from augmented labor productivity of 1.2 percent

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[15] The resolving insolvency index of the Doing Business Indicators varies from 0 to 100 and summarizes the time, cost, outcome and recovery rate for a commercial insolvency and the strength of the legal framework for insolvency with the index value of 100 indicating the most efficient insolvency regime.

[16] One reason behind this could be that, as seen earlier in Table 2, most labor productivity gains from SME access to finance are captured by medium-sized, as opposed to small firms. At the same time, the result for large firms could be driven by firms whose size is marginally above 100 employees. Thus, the effect of greater credit bureau coverage on labor productivity of SMEs and large firms could be of a similar magnitude.

[17] In all of our labor productivity growth regressions capturing the effects of credit bureau coverage and insolvency regime index, we have also tried controlling for survey year fixed effects. Most of these regressions yield results that are either very noisy and/or negative in sign, and as such difficult to interpret.

(assuming a labor share equal to two-thirds) imply an additional 1.1 percent of GDP growth (assuming that SMEs represent about half of the economy).[18]

IV. MIDDLE EAST AND CENTRAL ASIA IN A CROSS-COUNTRY PERSPECTIVE

In this section, we assess the extent to which the above findings on employment and growth gains from higher SME financial inclusion, which are based on firm-level data, are confirmed by analysis based on cross-country aggregate data. In addition, we discuss the degree to which such gains may be more pronounced in the Middle East and Central Asia.

Cross-country data from the IMF Financial Access Survey (FAS) show that in Middle East and Central Asia economies, SMEs have consistently lower shares in total bank lending than in other regions (Figure 13).[19] Furthermore, SMEs' shares in total lending seem to decrease over time, both in the Middle East and Central Asia (Figure 14) and in the overall FAS sample, in parallel with an increase in the share of governments and state-owned enterprises (SOEs) in bank lending (Figure 15).

To study the potential impact of a higher share of bank lending to SMEs, we apply the following dynamic panel econometric specification:

$$U_{it} = \delta\, U_{it-1} + \beta_1 SME\_Share_{it} + \beta_2 FD_{it} + \beta_3 SME\_Share_{it} \times FD_{it} + \theta\, X_{it} + \gamma_t + \alpha_i + \varepsilon_{it} \qquad (5)$$

where U_{it} a real sector outcome of interest, such as unemployment or the rate of economic growth, measured by the growth of GDP per capita, in country i in year t, FD_{it} is our measure of financial depth, given by the natural logarithm of the total amount of outstanding loans provided by commercial banks to resident nonfinancial corporations and households relative to the country's GDP, SME_Share_{it} is the natural logarithm of the share of SMEs in total bank lending, X_{it} is a set of country-level time-varying controls including measures of credit to governments and SOEs, income, population and inflation; in addition, α_i are country-specific fixed-effects and γ_t are year fixed effects, which capture global shocks. Since our data sample

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[18] This simple exercise provides some indications of gains from SME financial inclusion. More precise estimates require further analysis. The next section provides complementary results based on cross-country evidence.

[19] The countries used in this section include Albania, Argentina, Bangladesh, Belgium, Burundi, Chile, China, Colombia, Congo, Czech Republic, Egypt, El Salvador, Fiji, Greece, Hungary, Indonesia, Ireland, Italy, Jordan, Kazakhstan, Korea, Latvia, Malawi, Malaysia, Malta, Mexico, Mongolia, Myanmar, Namibia, Pakistan, Peru, Russia, Rwanda, Slovakia, Sudan, Sweden, Switzerland, Thailand, Tonga, Turkey, United Kingdom, Uruguay, Venezuela, and Zambia. Figures 13-15 show probability density functions estimated non-parametrically for the different groups. While the value of SME loans to total loans may be a biased measure of SME financial inclusion in the presence of a few large loans to SMEs, it is a valid proxy since individual loans to SMEs are not likely to be large given the size of these enterprises; future research with alternative data may consider the ratio of the total number of loans to SMEs to the number of total loans in the banking sector as an alternative measure of SME financial inclusion.

has a short time dimension, but a wide cross-sectional dimension, we estimate (5) using the Generalized Method of Moments (GMM) approach developed by Arellano and Bond (1991). [20]

Table 7 reports a positive impact of a higher share of SME credit on both employment and economic growth.[21] Columns (1) and (2) present an elasticity measure in the range of -0.6-0.7, implying that a 1 percent increase in the share of SMEs in total bank lending leads to a 0.6-0.7 pp decline in the unemployment rate in the short run, which may increase to an elasticity of 1 in the long run. The positive coefficient of the interaction term between financial inclusion and financial depth indicates that the marginal employment benefits of financial inclusion are lower at higher level of financial development, consistent with findings from Sahay et al. (2015).[22] Column (3) reports the results of similar analysis for the rate of economic growth. We find a positive impact of SME financial inclusion on economic growth conditional on the impact of financial depth. We report an elasticity estimate in the range of about 0.4, that is, a 1 percent increase in the share of SMEs in total bank lending leads to a 0.4 pp increase in the GDP per capita growth rate in the short run, which may increase to 0.6 pp in the long run. In line with our labor market analysis, the negative interaction term between financial inclusion and financial depth suggests declining returns to financial inclusion as financial depth increases.

Therefore, our cross-country analysis using aggregate data confirms the large employment and growth gains found using firm-level data in Section III. Further, given the evidence that the share of SMEs in total bank lending is lower in the Middle East and Central Asia compared to other countries in our sample, and has declined further in recent years, our analysis suggests

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[20] The procedure first takes first differences of both side of the specification; in order to account for potential correlation of the first difference ΔU_{it-1} with the error term, the procedure then constructs an instrument set of deeper lags of the dependent variable. These lags are strongly correlated with the first difference ΔU_{it-1} but plausibly not correlated with the error process. An underlying assumption here is that the error process exhibits no serial correlation implying that lagged levels of the variables used as instruments are uncorrelated with future error terms. We proceed by estimating our first-difference GMM model while using the first two lags, but different choices of the instrument set present robust results not reported here but available upon request. For each set of results, we test for autocorrelation of the residuals and for over-identifying restrictions.

[21] Specifications differ in the measure we employ for financial depth. For instance, we use the share of outstanding loans with commercial banks to GDP and the private credit to GDP as a measure financial depth in some specifications. In addition, specifications differ in the choice of the instrument set we include. However, our results are generally robust to the choice of the instrument set and the measure of financial development.

[22] Similarly, we find evidence of a positive impact of financial inclusion on labor force participation rate–regression results are available upon request. Moreover, based on the positive sign of the interaction between financial inclusion and financial depth in column (2), we are also able to document the same finding related to the decreasing return on financial inclusion as countries become more financially developed.

that gains from financial inclusion could be particularly pronounced in the Middle East and Central Asia.[23]

V. CONCLUSION

This paper investigates whether improving SME financial inclusion could help promote sustained economic growth in the Middle East and Central Asia. We perform a number of empirical exercises that suggest substantial benefits from greater SME financial inclusion both in terms of higher macroeconomic policy effectiveness and improved employment and labor productivity growth, with consistent positive impact on labor markets and aggregate economic growth.

These results could have implications for both policy making and future academic discussions.[24] They suggest that in addition to monitoring the aggregate amount of credit in the economy, policymakers should pay attention to the distribution of credit across firm size, and to various structural constraints on SME access to finance, such as the coverage of credit bureaus or insolvency regimes, which are addressed in this paper. Future academic work could also address further the channels though which these distributional issues matter for the formulation of optimal monetary and fiscal policies.

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[23] Future academic work could provide an adequate theoretical framework to quantify more precisely the channels and size of these benefits.

[24] See IMF (2018c) for a deeper discussion on policy issues related to SME Financial Inclusion in the Middle East and Central Asia.

VI. REFERENCES

Arellano, M. and S. Bond (1991). "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations", *Review of Economic Studies,* 58(2): 277.

Ayyagari, M., A. Demirguc-Kunt and V. Maksimovic (2016). "Access to finance and job growth: firm-level evidence across developing countries", *World Bank Policy Research Working Paper No. 7604*

Cerra, V. and S.C. Saxena (2017). "Booms, crises and recoveries: a new paradigm of the business cycle and its policy implications", *IMF Working Paper No. 17/250*

Global Partnership for Financial Inclusion (2017), "G20 Financial Inclusion Action Plan (FIAP) 2017", Global Partnership for Financial Inclusion.

IMF (2013)," Global Financial Stability Report," Chapter 2-October.

IMF (2018a), 'Opportunity for All: Promoting Growth and Inclusiveness in the Middle East and North Africa', July 2018, Departmental Paper No. 18/11

IMF (2018b), 'Financial Inclusion in Asia Pacific', October 2018, Departmental Paper No. 18/17

IMF (2018c) "Financial Inclusion of Small and Medium-Sized Enterprises in the Middle East and Central Asia", Departmental Paper No. 19/02

IMF (2018d) "Gulf Cooperation Council: How Developed and Inclusive are Financial Systems in the GCC?", IMF Policy Paper, December 2018

Kuntchev, V., R. Ramalho, J. Rodriguez-Meza and J.S. Yang (2013) "What have we learned from the enterprise surveys regarding access to credit to SMEs", *World Bank Policy Research Working Paper 6670*

Mehrotra, A. and J. Yetman (2014). "Financial inclusion and optimal monetary policy", *BIS Working Paper No. 476*

Sahay, R.; Čihák, M.; N'Diaye, P.; Barajas, A.; Mitra, S.; Kyobe, A.; Mooi, Y. and S. Yousefi (2015). "Financial Inclusion: Can It Meet Multiple Macroeconomic Goals*?", IMF Staff Discussion Note, SDN/15/17.*

World Bank (2018) "Doing Business 2018, Reforming to Create Job," *A World Bank Group Flagship Report*

ANNEX 1. FIGURES AND TABLES

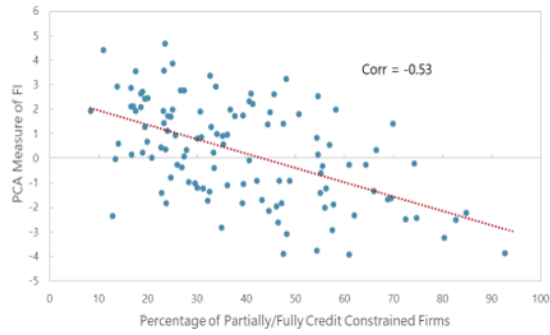Figure 1. PCA Measure Versus World Bank Measure

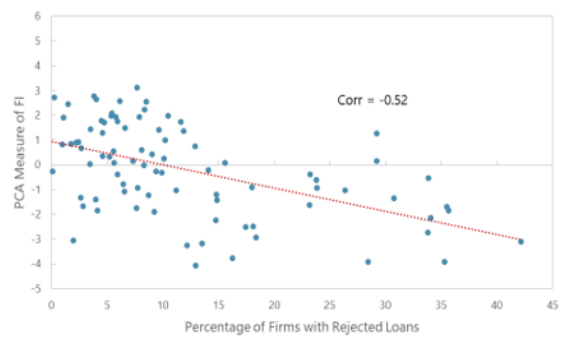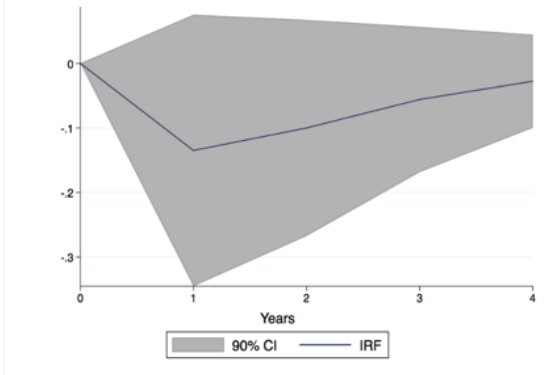Figure 2. PCA Measure Versus Share of Rejected Loans

Figure 3. PCA Measure Versus Financial Inclusion Gap between Large Firms and SMEs
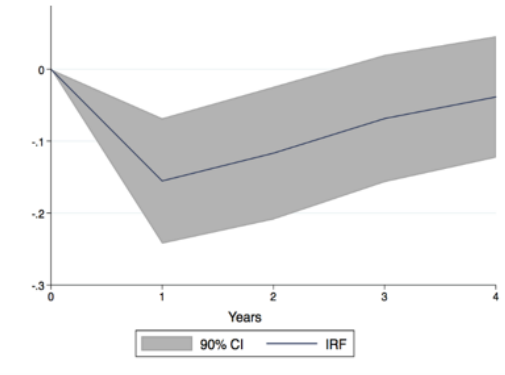

Sources: Kuntchev et al. (2013), World Bank Enterprise Surveys, IMF Staff Calculations.

Figure 4. Output Gap Response to 100bp Nominal Interest Rate Tightening (Full Sample)

Figure 5. Output Gap Response to 100bp Nominal Interest Rate Tightening (High SME Financial Inclusion)
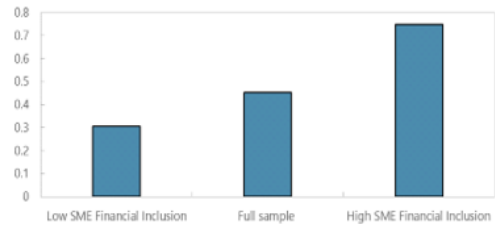

Figure 6. Output Gap Response to 100bp Nominal Interest Rate Tightening (Low SME Financial Inclusion)
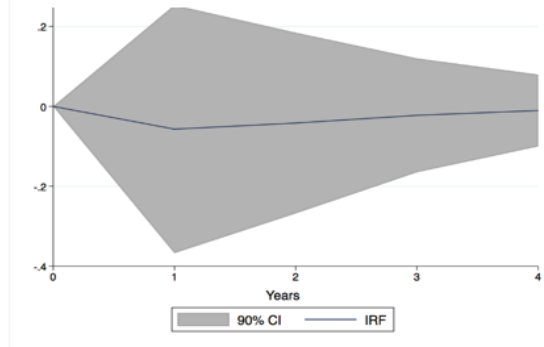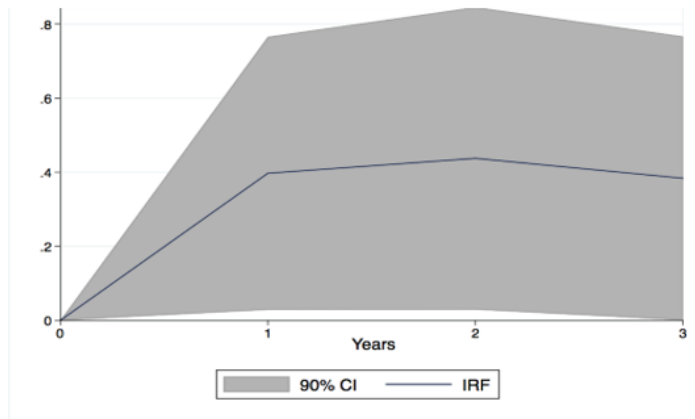

Figure 7. Ratio of Variances of Output and Inflation

SME FI and Achieving Price Stability
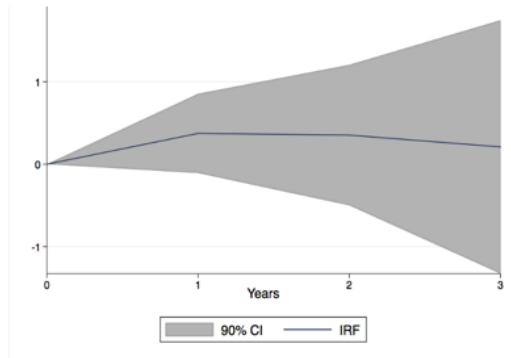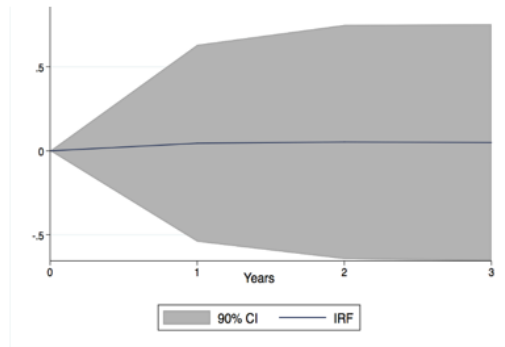(Ratio of variances of output gap and inflation)

Figure 8. Tax/GDP response to 1 percentage point output gap expansion (All countries)

Figure 9. Tax/GDP response to 1 percentage point output gap expansion (Top quartile of financial inclusion)

Figure 10. Tax/GDP response to 1 percentage point output gap expansion (Bottom quartile of financial inclusion)

Table 1. Estimating the Effect of Access to Formal Finance on Employment Growth					
Dependent variable: employment growth (percent)	**All firms**	**Large firms (>100)**	**SMEs (<100)**	**Small (<20)**	**Medium (20-100)**
Access to formal finance	2.07*** (0.31)	0.89* (0.52)	2.14*** (0.38)	2.31*** (0.60)	1.84*** (0.51)
Firm-level controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Survey year fixed effects	Yes	Yes	Yes	Yes	Yes
R^2	0.09	0.08	0.10	0.11	0.10
No. of observations	10,402	2,059	8,343	4,286	4,057

*Standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level*

Table 2. Estimating the Effect of Access to Formal Finance on Labor Productivity Growth					
Dependent variable: labor productivity growth (percent)	**All firms**	**Large firms (>100)**	**SMEs (<100)**	**Small (<20)**	**Medium (20-100)**
Access to formal finance	0.94 (0.62)	0.43 (1.19)	1.22* (0.74)	-0.26 (1.16)	2.39** (0.97)
Firm-level controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Survey year fixed effects	Yes	Yes	Yes	Yes	Yes
R^2	0.21	0.07	0.24	0.28	0.20
No. of observations	7,999	1,613	6,386	3,241	3,145

*Standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level.*

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Table 3. Estimating the Effect of Credit Bureau Coverage on Employment Growth

Dependent variable: employment growth (percent)	All firms	Large (>100)	SMEs (<100)	All firms	Large (<100)	SMEs (<100)
Credit Bureau coverage (percent)	0.18*** (0.03)	0.08 (0.07)	0.23*** (0.04)	0.04 (0.06)	-0.02 (0.15)	0.07 (0.06)
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Survey year fixed effects	No	No	No	Yes	Yes	Yes
R^2	0.08	0.08	0.09	0.09	0.08	0.08
No. of observations	10,585	2,126	8,459	10,585	2,126	8,459

Standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level.

Table 4. Estimating the Effect of Insolvency regime on employment growth

Dependent variable: employment growth (percent)	All firms	Large (>100)	SMEs (<100)	All firms	Large (<100)	SMEs (<100)
Insolvency regime (index)	0.23*** (0.03)	0.12** (0.05)	0.30*** (0.04)	0.57*** (0.13)	0.60* (0.32)	0.63*** (0.15)
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Survey year fixed effects	No	No	No	Yes	Yes	Yes
R^2	0.09	0.08	0.10	0.09	0.08	0.10
No. of observations	10,585	2,126	8,459	10,585	2,126	8,459

Standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level.

| Table 5. Estimating the Effect of Credit Bureau Coverage on Labor Productivity Growth						
Dependent variable: labor productivity growth (percent)	**All firms**	**Large (>100)**	**SMEs (<100)**	**All firms**	**Large (<100)**	**SMEs (<100)**
Credit Bureau coverage (percent)	*0.29**** (0.07)	*0.32*** (0.15)	*0.27**** (0.07)	*-0.42**** (0.12)	*-0.89*** (0.37)	*-0.30*** (0.13)
Firm-level controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Country fixed effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Survey year fixed effects	*No*	*No*	*No*	*Yes*	*Yes*	*Yes*
R^2	*0.20*	*0.06*	*0.22*	*0.22*	*0.08*	*0.24*
No. of observations	*8,120*	*1,657*	*6,463*	*8,120*	*1,657*	*6,453*

Standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level.

| Table 6. Estimating the Effect of Insolvency Regime on Labor Productivity Growth						
Dependent variable: labor productivity growth (percent)	**All firms**	**Large (>100)**	**SMEs (<100)**	**All firms**	**Large (<100)**	**SMEs (<100)**
Insolvency regime (index)	*0.57**** (0.06)	*0.44**** (0.12)	*0.60**** (0.07)	*-0.67**** (0.29)	*-1.33* (0.87)	*-0.45* (0.31)
Firm-level controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Country fixed effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Survey year fixed effects	*No*	*No*	*No*	*Yes*	*Yes*	*Yes*
R^2	*0.20*	*0.06*	*0.23*	*0.22*	*0.08*	*0.24*
No. of observations	*8,120*	*1,657*	*6,463*	*8,120*	*1,657*	*6,453*

Standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level.

Figure 11. Employment Growth Gain from Moving to Advanced Economy Levels of Credit Bureau Coverage and Insolvency Regime
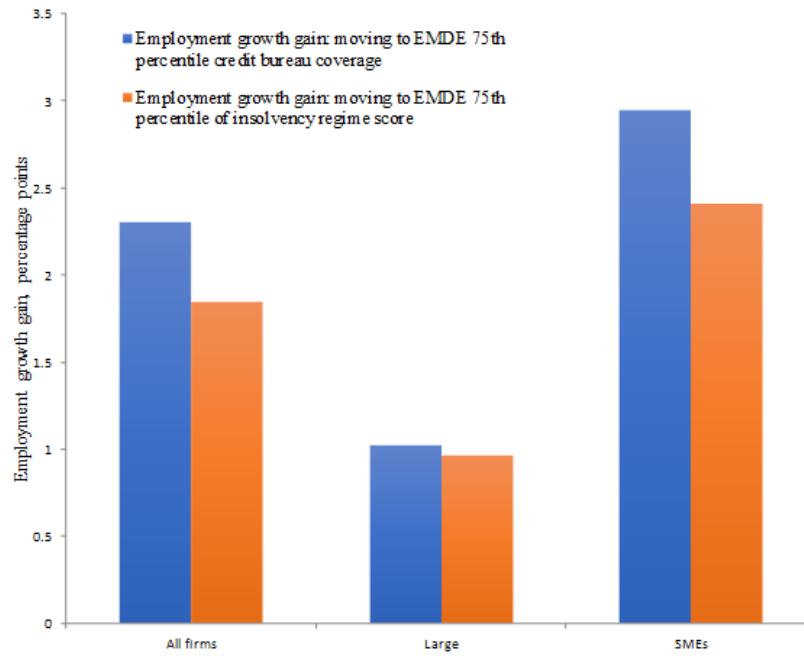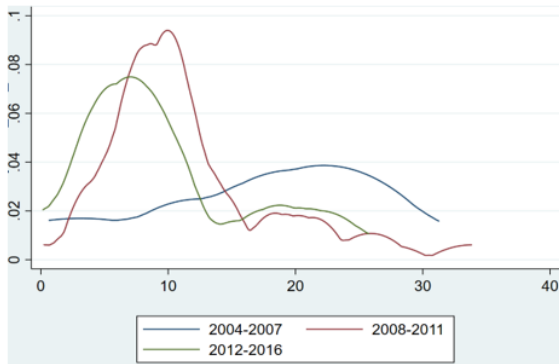

Figure 12. Labor Productivity Growth Gain from Moving to Advanced Economy Levels of Credit Bureau Coverage and Insolvency Regime
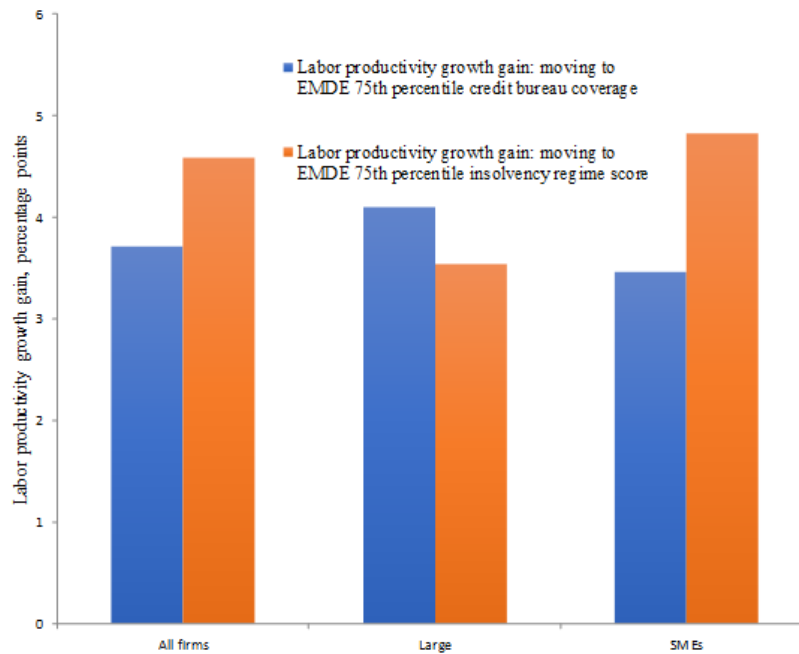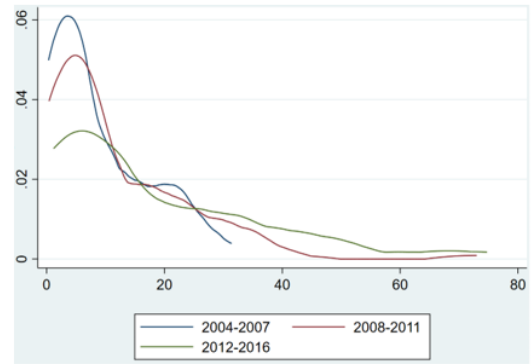
Figure 13. Probability Density Function (PDF) of the Share of SMEs in Total
Lending (Middle East and Central Asia is MCD)
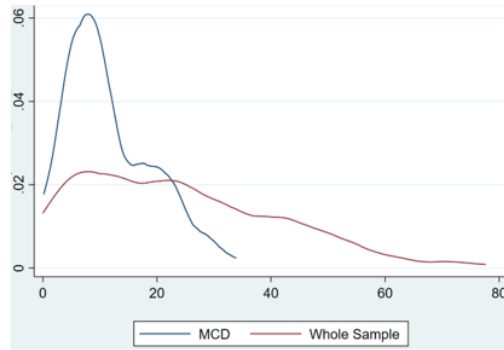
Figure 14. Trends of PDFs of Share of SMEs in Total
Lending for Middle East and Central Asia countries

Figure 15. Trends of PDFs of Credit to Government and SOEs
for Middle East and Central Asia Countries

Table 7. Cross-Country Evidence on the Effect of SME Financial Inclusion on Unemployment and GDP per Capita Growth			
As in equation (5)	(1)	(2)	(3)
Unemployment last period, U_{it-1}	*0.210***	*0.278****	
	(0.100)	(0.0897)	
GDP per capita growth, U_{it-1}			*0.551****
			(0.0664)
Share of SMEs in total Bank Lending	*-0.664****	*-0.692**	*0.426****
	(0.245)	(0.400)	(0.159)
Loans with commercial Banks/GDP	*-0.420*		*0.336****
	(0.428)		(0.127)
Interaction of SME Share and Total lending	*0.104**		*-0.0848***
	(0.0610)		(0.0389)
Private credit/GDP		*-0.507*	
		(0.318)	
Interaction of SME Share and private credit/GDP		*0.199**	
		(0.116)	
Country fixed effects	*Yes*	*Yes*	Yes
Year fixed effects	*Yes*	*Yes*	Yes
Observations	263	265	294
Number of countries	36	36	43

Robust standard errors are reported in parentheses; ***(**, *) denotes statistical significance from zero at 1% (5%, 10%) level. Additional controls include measures of credit to governments and SOEs, income, population and inflation.